BAPRAS

British Association of Plastic
Reconstructive and Aesthetic Surgeons

IAPS

Winter Scientific Meeting

Hosted by BAPRAS and IAPS

27–29 November 2013

The Convention Centre, Dublin, Ireland

CONTENTS

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WEDNESDAY 27 NOVEMBER

08:50 – 10:45

08:50 **Trauma (orthoplastics) special interest group meeting (Liffey B)**
08:50 **Body contouring special interest group meeting (Liffey 3)**

09:00 **Registration and refreshments**

09:55 **Presidents' welcome**

Guest lectures: Training in aesthetic surgery
Chair: Mr A Fitzgerald

10:05 **UK perspective**
Mr M Henley

10:20 **Irish perspective**
Mr S Carroll

Training in cosmetic surgery is an integral portion of the plastic and reconstructive surgery curriculum. Plastic surgeons require these skills to expertly deal with increased aesthetic surgery demand and to adequately deal with complications from, for example, cosmetic surgery tourism.

Aesthetic surgical training is different from other sub-speciality training. Financial and other constraints makes the delivery of the full aesthetic surgery curriculum almost impossible in public hospitals in Ireland. Therefore we must be creative in the way we teach aesthetic surgery. Core knowledge can be taught outside the hospital setting. Aesthetic clinical skills can be taught within the hospital setting but not on aesthetic patients and aesthetic surgical skills can be taught in breast reconstruction, and non-aesthetic facial surgery within the public health system.

The remaining skill sets of advanced surgical and clinical skills in aesthetic surgery will require teaching in private hospitals where the trainers perform aesthetic surgery, and to that end we are currently developing training opportunities. A survey of all current and recent past plastic surgical trainees has been conducted and the results of this surgery will play a large part in the future development of aesthetic surgery training modules in Ireland.

10:35 **Canadian perspective**
Dr L Kasrai

10:45 **Avoiding complications in setback otoplasty**
Dr L Kasrai

Background: Setback otoplasty is one of the more common procedures in paediatric plastic surgery. Many different techniques have been described resulting in a wide variety of aesthetic outcomes and

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complications. The author's philosophy is to achieve an un-operated appearance while minimising complications.

This paper will outline the steps of the surgery and analyse how efforts can be made at each step to minimise potential complications, including:

1. patient selection
2. role of skin excision
3. location of Mustarde suture placement
4. the role of cartilage scoring, incisions and excisions
5. the role of concha-mastoid sutures

Results: The author has performed over 200 cases of setback otoplasty with no cases of infection, hematoma, keloids, suture extrusion and short term recurrence of deformity. There have been five cases that have required repeat setback greater than five years following the original surgery.

Conclusion: Setback otoplasty with minimal complications is best achieved by the thoughtful placement of Mustarde sutures alone.

11:00 Questions and discussion

11:30 Refreshments

Free papers: Skin malignancy
Chairs: Professor B Powell and Mr K Cronin

11:50 Evaluation of excision margins in early oral squamous cell carcinoma: time to challenge standard dogma?
Miss C Anderson, Dr K Sisson, Mr R James, Mr M Moncrieff (Norwich)

There is currently no evidence for optimal excision margins for oral squamous cell carcinoma (OSCC). Clinical margins of 10mm are standard dogma, with the aim of achieving a 'clear' pathological margin of greater than 5mm (Royal College of Pathologists guidance).

This study reports the retrospective analysis of a cohort of 180 patients with primary T1/2 OSCC. All patients were treated with curative intent by surgery with or without adjuvant radiotherapy at the Norfolk and Norwich University hospital between 1997 and 2011. The aim of the study was to assess the adequacy of a 10mm surgical margin.

Our findings were that an average surgical margin of 11.4mm led to 66.6% of patients having 'close' pathological margins (<5mm), and 12.2% having 'involved' margins (<1mm). Adjuvant radiotherapy was given to 31.1% patients. An involved margin was associated with a significantly worse overall survival (p=0.05).

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This is the largest UK study assessing OSCC excision margins. We suggest that a 10mm clinical margin is inadequate, and that consequently levels of pathologically close and involved margins are too high. Patients may be receiving excessive adjuvant radiotherapy as a result. Randomised trials are needed to assess the utility of wider margins or intra-operative frozen section mapping procedures in improving control.

11:57 Questions

12:00 Are the 2010 UK guidelines for follow-up of malignant melanoma already obsolete for too many metastatic patients?
Miss E Shaw, Miss S Butcher, Mrs S Ward, Mr S Rannan-Eliya (Newcastle upon Tyne)

BAPRAS/BAD UK guidelines for management of cutaneous melanoma were revised in 2010, updating those from 2002.

These allowed IA tumours (AJCC 2009 staging) to be discharged at one year, whilst extending follow-up of IB's to five years. Evidence for optimal follow-up regimes is limited, with worldwide variation. Concerned that many patients were presenting with recurrence just outside of the guideline timeframe, we reviewed Stage III/IV patients known to our Newcastle specialist skin MDT to determine the efficacy of the 2010 guidelines.

Records of patients with metastatic melanoma were reviewed, analysing primary histology, demographics, and metastatic presentation.

Between 1988 and 2012, 171 patients with primary melanoma were treated in our department for Stage III /IV melanoma from 1991 to 2012. 37% had metastatic disease diagnosed concurrently with their primary lesion. 63% developed later metastases, of which 46% were identified by the patient, whilst 38% were identified at follow-up. 22% had distant metastases at scanning.

	Time interval to recurrence (years)				
2009 AJCC Staging	0 - 3	0 - 5	5 - 7	>7	Totals
IA	0	0	1	0	1
IB	12	18	3	2	23
IIA	9	12	5	2	19
IIB	22	26	2	0	28
IIC	23	25	1	0	26
TOTAL	**66**	**81**	**12**	**4**	**97**
Percentage	68.04	83.51	12.37	4.12	100.00

We support the extension of follow-up to five years for IB's, but our data suggests follow-up should routinely extend to seven years. Furthermore it suggests a vital role for routine staging scans particularly in view of newly licensed treatments for Stage IV and unresectable Stage III.

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12:07 – 12:20

12:07 **Questions**

12:10 **Guidelines for sentinel node biospy in melanoma: should T1b melanomas be offered a sentinel node biopsy?**
Dr K Joyce, Mr N McInerney, Mr R Piggott, Mr C Sugrue, Ms D Jones, Mr J Kelly, Professor M Kerin, Mr A Hussey, Mr P Regan (Galway)

Introduction: Sentinel node biopsy (SLNB) is now standard practice in the staging of patients with malignant melanoma of Breslow thickness (BT) greater than one millimetre. SLNB allows identification of patients with clinically occult lymph node disease and permits patient stratification with relation to adjuvant treatments. Recent guidelines advise discussion of a SLNB with patients with a BT less than 1mm with tumours which are ulceration or have a mitotic rate greater than 1mm^2.

Aim: To audit all melanoma patients who underwent SLNB in our hospital between 2005 and 2012 to ascertain whether SLNB in T1b tumours was warranted.

Methods: Patients were assessed through retrospective analysis of histopathology reports, chart and radiology review. Statistical analysis was performed using SPSSv18.

Results: In total, 338 patients underwent SLNB in the time period analysed. Superficial spreading melanoma was the most common subtype (42.4%) followed by nodular melanoma (22.6%). 296 patients had a negative sentinel node, 40 patients a positive node and in 2 patients a sentinel node could not be identified. 25 cases of T1b melanomas underwent SLNB with one positive result. Breslow thickness and ulceration of the primary tumour were the strongest predictors of SLN positivity.

Discussion: SLNB is central to staging of malignant melanoma. Nine percent of all SLNB were positive in our cohort with an average BT of 2.2mm. Our analysis highlights a weakness of current melanoma guidelines with regard to T1b melanomas. A low positivity rate (5%) was demonstrated. SLNB for T1b melanoma has questionable utility and its role in melanoma staging, if any, requires further evaluation.

12:17 **Questions**

12:20 **Complication rates of completion lymphadenectomy following positive sentinel node biopsy versus therapeutic lymph node dissection in melanoma**
Mr J Smith, Mr A Wilson, Mr C Stone (Exeter)

Introduction and Aims: Sentinel lymph node biopsy (SLNB) is an established technique for detecting early nodal spread in melanoma.

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Completion lymph node dissection (CLND) is indicated in those patients with a positive SLNB. The aim of this study was to compare post-surgical complications in patients undergoing CLND with those requiring delayed therapeutic lymph node dissection (TLND) for clinically palpable nodal disease.

Method: A prospective study was performed over a twelve-month period. At their first follow-up appointment, post-operative complications were recorded in all patients undergoing CLND and TLND procedures.

Results: One hundred and five patients underwent SLNB between February and August 2012. All 21 patients with positive sentinel nodes elected to proceed to CLND. TLND was performed in 15 patients between February 2012 and February 2013. Complication rates were significantly higher following TLND than after CLND (46.7% versus 19%, p= 0.04). The complication rate after SLNB alone was 5.7%.

Conclusion: Early detection of occult lymph node disease by SLNB, followed by CLND, leads to significantly less surgical morbidity compared with a delayed approach to the management of lymph node metastases in patients with malignant melanoma.

12:27 Questions

12:30 Clinical significance of intra-nodal naevi in sentinel node biopsies for malignant melanoma

Mr J Coelho, Mr O Smith, Mr K Gajanan, Mr G Lambe, Mr D Mowatt, Mr D Oudit, Dr P Shenjere, Mr G Ross (Manchester)

Introduction: Intra-nodal naevi (INN) identified during assessment of a sentinel lymph node for melanoma is not an uncommon finding. Little is known about their clinical significance. Patients with INN are currently treated as sentinel node biopsy (SNB) negative.

Aims: To assess the significance of INN in melanoma patients who undergo SNB.

Material and Methods: All melanoma patients who underwent a SNB between November 1999 and June 2012 were retrospectively analysed from a prospectively collected database.

The patients were then divided into SNB negative, INN and isolated tumour cells (ITC) groups. Outcome measures of nodal recurrence, distal recurrence and survival were used to assess the differences between the groups.

Key Results: 250 patients had negative SNBs. Of these 47 had INN (18.8%) and 13 had ITC. Overall median follow up was 2.3 years (range 0.1–14.1 years).

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Our data demonstrated a statistically significant survival benefit for patients who had a negative SNB or INN, compared to the ITC group (p=0.025). Survival benefit was approaching significance for patients who had INN compared to ITC (p=0.057). Comparison of INN with SNB-negative patients demonstrated no significance for NR, DR or survival.

Conclusion: We have clinically demonstrated that patients with INN on SNB can be adequately treated as SNB negative patients.

12:37 Questions

12:40 The use of superparamagnetic iron oxide nanoparticles for hyperthermia treatments in malignant melanoma

Mr T Oxenham, Dr P Southern, Mr D Marsh, Professor Q Pankhurst, Dr S Quezada, Professor K Chester (London)

Introduction: Despite several breakthroughs in the treatment of melanoma, therapeutic resistance remains a significant clinical problem and there is a need for novel therapies.

Hyperthermia is one promising treatment modality where tissue is exposed to elevated temperatures to induce cell apoptosis and/or necrosis. However, traditional hyperthermia treatments can cause non-specific tissue damage. We believe that superparamagnetic iron oxide nanoparticles (SPIONs) provide an elegant solution to improving therapeutic specificity: when placed into an alternating magnetic field (AMF), they generate heat at a localised site.

Methods: We employed a novel genetically engineered Tyr::CreERxBrafxPten murine model that develops tumours following topical application of 4-hydroxytamoxifen. Histological analysis of these tumours showed that they mimic human melanoma tumour initiation, development and metastasis.

Spontaneous tumours were treated via intradermal injection of clinically-approved SPION, ferucarbotran, and thereafter each mouse was placed into an AMF to facilitate hyperthermia.

Results: We used thermal imaging technology to show that particles within the tumours heated to, and were accurately maintained at 46°C for 30 minutes, a temperature known to induce cell death and facilitate immune recognition. Histological evaluation showed significant cell death in response to hyperthermia, this is in agreement with in-vitro data.

Conclusion: This study illustrates the potential of this novel treatment modality to have several translatable applications.

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12:47 **Questions**

12:50 **Development of a novel method for sentinel lymph node detection using superparamagnetic iron oxide nanoparticles in a genetically engineered mouse model**
Mr T Oxenham, Dr S Quezada, Professor K Chester, Professor Q Pankhurst, Mr D Marsh (London)

Introduction: In the UK, sentinel lymph node biopsy (SLNB) is regarded as the gold standard of care for patients with intermediate depth melanoma. Whilst standard lymphoscintigraphy technique involves the use of a radioisotope and blue dye, we propose a novel method for SLN detection that utilises superparamagnetic iron oxide nanoparticles (SPIONs).

Given that SPIONs are scavenged by the reticulo-endothelial system following in-vivo injection, we believe that this property can be exploited for their use as a novel imaging agent for sentinel lymph node detection in melanoma.

Methods: Using a genetically engineered Tyr::CreERxBrafxPten mouse model that develops spontaneous tumours and nodal metastases following topical application of 4-hydroxytamoxifen, primary tumours were injected intradermally with the clinically-approved SPION ferucarbotran.

Animals were subsequently euthanised and lymph nodes dissected and analysed histologically using Prussian blue staining to detect iron accumulation. Electron microscopy was also performed to further investigate SPION uptake within lymph nodes.

Results: Following local injection into the flank, SPIONs were observed to have accumulated in the draining inguinal lymph node basin within five minutes. Prussian blue staining confirmed that particle uptake was specific to a single nodal basin.

Conclusion: For the first time, we have shown that SPIONs can be used for the detection of melanoma in SLNB.

12:57 **Questions**

13:00 **Electrochemotherapy for the treatment of cutaneous metastasis: a single centre experience of 237 lesions in 81 patients**
Mr C Coutts, Dr M Bourke, Dr S Salwa, Mr J Kelly, Dr D Soden, Mr J Clover (Cork)

Introduction: Electrochemotherapy has recently gained NICE approval as treatment for cutaneous metastasis of skin and non-skin origin

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by targeted localised chemotherapy. Electrochemotherapy combines electroporation with administration of Bleomycin. Electroporation induces a transient cell membrane porosity enhancing the intracellular drug delivery, improving its potency to induce apoptotic cell death.

Methods: Patients treated by electrochemotherapy through the Cork Cancer Research Centre were retrospectively audited for type of tumour, number of lesions treated and response to treatment.

Results: A total of 97 patients were referred for assessment of which 81 patients were treated for a variety of tumours (breast: 29, malignant melanoma: 15, squamous cell carcinoma: 13, others: 17) with a total of 237 lesions. Patients had on average 2.1 sessions of ECT (range 1–10) to an average of four lesions (range 1–29). The overall response rate was 83% (complete response 53%, partial response 30%), 16% had no response, and 0.5% had disease progression.

Conclusions: The overall, complete and partial response rates from this single unit are comparable to recent meta-analysis for the effectiveness of treatment. Electrochemotherapy is a useful adjunct to the multi-disciplinary management of cutaneous metastases of skin and non-skin origins.

13:07 Questions

13:10 Flap or graft? The best of both in nasal ala reconstruction
Ms K Lindsay, Mr J Morton (Liverpool)

Introduction: The area of the nose immediately medial to the nasolabial groove is a common site for relatively small but penetrating basal cell carcinomas (BCC). Whilst larger lesions may necessitate subunit reconstruction, smaller lesions pose a considerable dilemma. Full-thickness skin grafts (FTSG) often result in an unsightly contour defect. Local flap options are limited, but frequently require a nasolabial transposition flap. Whilst on occasion these may give good results, the majority will produce blunting of the nasolabial angle and fullness or pin-cushioning of the flap.

Method: We present a case series of twelve patients with lesions at this site who underwent reconstruction with a combination of a subcutaneous fat transposition flap and a FTSG for resurfacing.

Results: A range of defects including volumes up to an estimated 2.8cm^2 were included in the series; all patients had a successful outcome. The results suggest this to be a reliable and reproducible method that delivers excellent restoration of contour without disrupting the symmetry of the nasolabial region.

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Conclusion: The results illustrated here suggest that this under-used technique- easy to learn and speedy to execute- is demonstrably better than either flap or skin graft alone.

13:17 Questions

13:20 Lunch

(Parallel) Free papers: Miscellaneous (Liffey meeting room 3)
Chairs: Mr P Regan and Mr J Farhadi

11:50 Management of necrotising fasciitis: a ten year review at the Canberra Hospital
Dr M A Hussain, Mr H Yu, Mr R D Farhadieh, Mr G McCarten (Canberra, Australia)

Introduction: Necrotizing fasciitis (NF), is a rare but serious spreading infective process of the skin and subcutaneous tissues. It causes extensive tissue damage and may be fatal.

Methods and Material: A ten year (2003–2013) retrospective study was carried out evaluating the pathology, microbiology, clinical manifestations medical and surgical management of these patients.

Results: Forty-four patients were presented and treated with NF. Thirty-two (72%) were male and 12 (28%) female. Diabetes mellitus was the most common pre-existing medical condition noted. Anatomically, lower limb was involved in 24 (58%) of cases. Different organisms were identified as the causative agents. Twenty-eight (63%) of the patients were managed in ITU with an overall mean hospital stay of 26 days. Fourteen (31%) patients died following admission.

Conclusion: In necrotizing fasciitis, aggressive and early surgical debridement of infected and devitalised is essential. Anatomical site of infection contributes to the probability of death, the extremities are associated with a lower level of fatality, in contrast to the abdomen, groin and perineum.

11:57 Questions

12:00 Reconstructive strategies in the management of complex oncologic spinal defects: the Oxford experience
Dr R Dolan, Dr R Popa, Mr J Wilson-MacDonald, Mr J Reynolds, Ms L Cogswell, Mr P Critchley, Mr H Giele (Oxford)

Background: Bibliometric analysis provides a quantitative assessment of the progress of aesthetic surgery research and identifies historical developments in this sub-specialty. The aims of this study were to analyse

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the publication patterns for common aesthetic procedures and devise a strategy to remain abreast of novel advances.

Methods: Based on the American Society for Aesthetic Plastic Surgery annual statistics 2012, the top five commonly performed aesthetic surgical procedures were selected. Using the Web of Science database, a temporal analysis of publication and citation counts, source institution and country, publishing journal, and funding trends were analysed between 1945 and 2011.

Results: A 50-fold increase in aesthetic surgery publications was observed in the past decade. Articles were published across 726 journals with the top five plastic surgery journals capturing only 48.5% of the total. Breast augmentation was the most frequently published (*n*= 2,825) and funded topic (60.7%).

Conclusion: Subscription to the top five plastic surgery journals restricts exposure to publications in the aesthetic surgery literature. We recommend plastic surgeons embrace social media as a strategy to remain abreast of novel advances in this rapidly developing sub-specialty.

12:07 **Questions**

12:10 **Use of the 'enhanced recovery after surgery' programme in an oncological-plastic surgery setting**

Mr D Jordan, Miss H Richards, Mr G Lambe, Mr D Mowatt, Mr D Oudit, Mr G Ross (Manchester)

Introduction and Aims: The Enhanced Recovery After Surgery (ERAS) programme is well established in many specialties. Since February 2012 our ERAS programme has been implemented across four specialties, including plastic surgery. Results of this audit from a major oncological-plastic unit are presented.

Material and Methods: A group of patients entered onto the ERAS pathway were audited against patients who underwent surgery pre-ERAS introduction to compare length of hospital stay. The cohort consisted of primarily elective skin oncology and breast reconstruction patients.

Key Results: Thirty-four patients were entered through the ERAS programme at the Christie Hospital. Twenty-eight of these were matched for patient demographics and surgical procedure undertaken to patients pre-ERAS implementation. A statistically significant reduced length of stay post-surgery in oncological-plastic procedures with an average reduction from 6.5 to 5 days was demonstrated (unpaired student's test p value 0.0034).

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Conclusion: Successful implementation of an ERAS pathway into our oncological-plastic unit has shown encouraging results including a statistically significant reduced hospital stay as well as lower re-admission rates. A review of the literature has not found a similar study in the plastic surgical field.

This data demonstrates the ERAS pathway is a positive move towards short stay surgery in the oncological-plastic field.

12:17 Questions

12:20 When are circular lesions square? A clinical education audit and study with a UK national focus
Mr B Miranda, Dr K Herman, Mr M Malahias, Mr A Juma (Chester)

Introduction and Aims: To undertake a UK nationwide audit of skin lesion description standards and study of specialty training influences on these descriptions.

Materials and Methods: Questionnaires (*n*=200), with a circular and oval lesion photo, were distributed to UK dermatology/plastic surgery consultants and specialty trainees (ST), general practitioners (GP) and medical students. Variables were analysed against a pre-defined 95% inclusion accuracy standard; site, shape, size, skin/colour, scars.

Key Results: There were 250 lesion descriptions provided by 125 participants. Inclusion accuracy was greatest for consultants over STs (80% versus 68%; $p<0.001$), GPs (57%) and students (46%) ($p<0.0001$), for STs over GPs ($p<0.01$) and students ($p<0.0001$), and for GPs over students ($p<0.01$), not meeting audit standard. Accuracy sub-analysis according to circular/oval dimensions were consultants (94%), GPs (80%), STs (73%), students (37%), with the most common error being implication of a quadrilateral shape (66%).

Conclusion: This national audit addresses BAD guidelines and published requirements for more empirical performance data to improve teaching methods. To improve diagnostic/referral accuracy, healthcare professionals must strive towards accuracy (a circle is not a square). We provide supportive evidence that increased specialty training improves this process and propose that greater focus is placed early on during medical training, and maintained throughout clinical practice.

12:27 Questions

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12:30 **Audiovisual preconditioning enhances the efficacy of an anatomical dissection course**

Dr A Collins, Mr P Ridgway, Professor P Tierney, Mr K Cronin (Dublin)

Aims: The aim of this study was to evaluate the impact of audiovisual (AV) preconditioning on the acquisition of and retention of knowledge at an anatomical dissection course.

Materials and Methods: A prospective case-control study was performed involving 35 attendees at an upper limb dissection course. Participants were randomised to the intervention (*n*=18) and control (n = 17) groups. Prior to instruction, both groups completed an MCQ. The intervention group was subsequently shown a dissection video with a pre-recorded commentary. This was specifically designed to reflect the content assessed in the MCQs. Following initial dissection, both groups completed a second MCQ. The final MCQ was completed at the conclusion of the course. Friedman (F) and Wilcoxin-signed ranks (WSR) were used to compare scores within the groups. Mann Whitney U (MWU) was used to compare performance between the groups. P values were taken to be significant at 0.05.

Key Results: A significant difference in exam performance was demonstrated in the intervention and control groups over the duration of the three MCQs (*p*=0.000, F). The median pre-course score was 60% in both groups (*p*=0.5, MWU). The intervention group significantly outperformed the control group immediately following AV preconditioning [median difference: 12% (*p*=0.002, MWU)]. Similarly in the post-course MCQ, the intervention group performed significantly better than the control group [median difference: 10% (*p*=0.04, MWU)].

Conclusion: Audiovisual preconditioning improves the efficacy of an upper limb dissection course. It is a simple and effective modality that should be incorporated into future courses to optimise course learning.

12:37 **Questions**

12:40 **Demystifying coding**

Mrs N Hachach-Haram, Mr R Alamouti, Mr S Saour, Ms J Lane, Mr K Milanifar, Mr M Tahir, Mr K Gesakis, Mrs J Geh, Mrs P Mohanna (London)

Introduction: 'Payment by results' necessitates accurate coding. Increasing responsibility is being placed on clinicians to ensure that they are generating enough workload/revenue for their respective departments. Coding errors underestimate and distort the picture of clinical activity and can be very costly.

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Methods: A retrospective analysis was carried out in a single plastic surgery unit across all subspecialties over a one-month period. The details of all surgical activity in the form of operation notes, electronic discharge summaries and allocated procedure codes was collated and compared. Subsequently a new proforma was introduced to eliminate errors by coding at the point of service provision.

Results: A total of 278 cases were reviewed for which a coding error of up to 54% was identified costing the department >£40,000 loss per month. Re-audit after the proforma was introduced and scanned to the electronic patient records demonstrated a reduced coding error rate of 10%.

Conclusion: Coding is a multi-step process with potential for cumulative error. Limiting the error-prone steps with clinician's participation is the solution. We present a proforma, specific to each subspecialty, which should be added to the operation note making it a simple tick-box exercise at the time the operation note is generated.

12:47 **Questions**

12:50 **Cloud-based solution to run a plastic surgery department**
Mr B Nizar, Mr J Kelly (Cork)

Cork University Hospital is the only level 1 trauma centre in Ireland. The plastic surgery department caters to a population of nearly one million people. Referring patients, scheduling theatre lists, writing up operation notes, sending out letters to the general practitioner and collating audit and research data has always been a challenge for stakeholders.

We have developed a cloud based complete solution that is intelligent, robust and reliable.

The patient can be referred via an electronic referral pathway with the capability of transferring clinical and x-ray images. These patients can be scheduled for surgery with ease of a click of a button.

Their injuries can be classified according to our custom in house classification system which is easily modifiable. We have incorporated a sophisticated and detailed procedure codes that actually reflect the real nature of the operations. The surgical elogbook and ICD 10 codes are also incorporated in parallel. The system is capable of generating automated letters to the general practitioner, occupational therapist and physiotherapist.

This is the only system that has been developed to date addressing all problems faced by surgeons.

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12:57 **Questions**

13:00 **Cosmetic websites: legal or lurid?**
Dr E Gunn, Mr T Athanassopoulos, Mr A Munnoch (Dundee)

Background: The provision of cosmetic interventions and their advertising have recently come under intense scrutiny.

Aim: An audit Scottish of websites was conducted to determine adherence to the advertising standards and regulations currently in place.

Methods: Regulations are provided by the Advertising Standards Authority, Committee on Advertising Practice, Independent Healthcare Advisory Services and General Medical Council. A Boolean internet search was then conducted to search for providers of non-surgical and surgical cosmetic procedures.

Results: Overall 120 websites were reviewed (108 local and 12 national with 19 websites associated with cosmetic surgeons). 25% of websites failed to adhere to regulations.

Failure was related to advertising of POM on the homepage (6.7%) or dropdown menu (15%), offering enticements inappropriately (5.8%) or inflated claims (5%). 26.6% of websites did not display qualifications of the practitioners. Only 16.6% of websites described the specific and the non-specific side effects of anti-wrinkle injections and only 12.5% mentioned alternative treatments.

Conclusions: The majority of websites reviewed adhered to current advertising standards. Plastic surgeons provide a small percentage of cosmetic procedures. Greater regulation at the point of product entry and of all aesthetic practitioners is required.

13:07 **Questions**

13:10 **Does hair colour influence scar repigmentation?**
Miss S Chadwick, Dr L Zeef, Professor M Ferguson, Dr M Shah (Manchester)

Introduction and Aims: Abnormally pigmented cutaneous scars are highly noticeable, distressing for patients and the mechanisms through which scars repigment remain elusive. We hypothesised that skin and hair colour in the area of wounding would have an influence on repigmentation of the resulting scars.

Materials and Methods: Excisional wounds of varying depths were created along the stripe of twenty-six black-and-white Hampshire pigs. Wounds were allowed to heal secondarily and were harvested at varying

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time points post-wounding. Scars were macroscopically assessed using a visual analogue scale and microscopically analysed using histo- and immunohistochemistry (TYRP1, TYRP2, HMB45). Scars from 98 days post-wounding were subjected to microarray investigation.

Results: We observed a complete lack of melanocytes and pigment in wounded and unwounded white skin. In regions of black skin covered with white hair ('grey' skin) there was a delay in scar repigmentation compared with similar scars in black skin covered with black hair ($p<0.05$). Between skin types, melanocyte morphology differed; black skin contained larger and more dendritic melanocytes. Within all scars there was disruption of the canonical pigment pathway, with significant downregulation of key melanogenic genes, compared with unwounded black skin ($p<0.001$).

Conclusions: Hair colour is a contributing factor to scar repigmentation, indicating the hair follicle melanocyte population is key to successful scar repigmentation.

Acknowledgements: Mrs A Thomlinson, Dr A Sattar, Mr B Landamore

13:17 **Questions**

13:20 **Lunch**

13:35 **PLASTA meeting**

Guest lectures: Research
Chair: Mr J Kelly

14:35 **Adipose-derived stem cells; selecting for translational success**
Mr K S Johal, Professor V C Lees, Mr A J Reid (Manchester)

Introduction: Adipose-derived stem cells (ASCs) are purported to improve transplanted autologous fat survival. We studied the in-vitro proliferative and adipogenic ability of two ASC sub-populations defined by the markers CD24 and CD34, in both standard bovine-supplemented and serum-free media.

Methods: The stromal vascular fraction (SVF) was extracted from human adipose tissue, characterised for CD marker expression using flow cytometry and sorted via magnetic activated cell sorting (MACS) for CD24 and CD34. Subpopulations were characterised further prior to assessing adipogenic differentiation and proliferation, the latter in both αMEM and serum-free media.

Results: Mean prevalence of CD34 was 54.8% and CD24 13.7% in the SVF, with decreasing expression over multiple passage. CD34+ cells

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showed improved proliferation versus unsorted populations ($p<0.001$) and adipogenic preference as shown by PCR (PPARγ, FABP4) and ELISA (leptin), however the reverse was seen for CD24. Furthermore, we confirmed comparable proliferation of ASCs in serum-free media versus standard αMEM.

Conclusion: We have demonstrated that CD34-expressing cells are abundant in the SVF and show classical mesenchymal stem cell characteristics with improved proliferation and adipogenic differentiation compared to unsorted populations. Demonstrated ease of culture in serum-free media will be critical to potential future clinical translation.

14:45 Delivering targeted therapies through free flaps: to boldly go where no flap has gone before
Mr A Khan

Free tissue transfer is the reconstructive technique of choice for resurfacing a variety of extirpative, and traumatic, defects. Although free flaps currently provide no direct therapeutic benefit to the underlying disease process, advances in gene-delivery techniques offer the possibility to genetically modify flaps to produce potent targeted treatments with greater anatomical control. Several promising therapeutic strategies, including virus-directed enzyme prodrug therapy and free-flap radioprotection, have the potential to extend the role of the free flap beyond its immediate goal of restoring form and function to patients, but challenges exist. This lecture will provide an overview of the therapeutic free flap concept and will discuss specific therapeutic strategies that could be delivered by free flaps and the challenges faced in successfully translating this pre-clinical concept into the clinic.

15:00 The application of tissue engineering in plastic surgical practice
Mr J Kelly

Chronic disease accounts for 70% of all deaths and in many cases the cause is due to lack of replacement body parts. The ability to replace defective or missing parts includes the generation of new tissues inside or outside the body. Tissue engineering incorporates the triple approach of a matrix, tissue-specific cells and tissue-inducing agents.

Embryonic and mesenchymal stem cells can differentiate into many tissue-specific types and newer de-differentiated or pleuripotent stem cells are increasingly being investigated in this regard. Nanotechnology can facilitate prolonged release of tissue-inducing agents in-vivo and natural and synthetic biomaterials provide physical protection and facilitate the delivery of cells and signaling systems.

We describe the methods used to modify a natural biomaterial for use as a template in abdominal wall reconstruction. The necessary in-vitro

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15:15 – 15:22

and in-vivo steps in preparation are highlighted. Progression to in-vivo trials in a large animal model are outlined and comparison is made with commercially available biomaterials.

Free papers: President's Prize
Chairs: Miss P Eadie and Mr A G B Perks

15:15 Unraveling the signaling pathways promoting fibrosis in Dupuytren's disease reveals TNF as a therapeutic target

Mr L Suleman Verjee, Miss J Verhoekx, Mr D Izadi, Mr J Chan, Dr T Krausgruber, Dr V Nicolaidou, Ms D Davidson, Professor M Feldmann, Dr K Midwood, Professor J Nanchahal (Oxford)

Introduction: The cell responsible for matrix deposition and contraction in Dupuytren's disease is the myofibroblast. Therefore, we sought to unravel the signaling pathways leading to myofibroblast development in Dupuytren's disease.

Methods: We characterised cells from Dupuytren's tissue and measured pro-inflammatory cytokine levels. We compared the effects of these cytokines on contraction and pro-fibrotic signaling pathways in Dupuytren's palmar and non-palmar fibroblasts, and non-Dupuytren's palmar fibroblasts. Finally, we examined the effects of cytokine inhibition on myofibroblasts.

Results: Dupuytren's tissue contained myofibroblasts (87%), and immune cells including macrophages (8%) that secreted pro-inflammatory cytokines. Of these cytokines, only TNF (not IL-6 or IL-1ß ²) promoted differentiation specifically of Dupuytren's palmar fibroblasts into myofibroblasts ($p<0.0001$), via activation of the Wnt signaling pathway. In contrast, TGF-ß²1 converted all fibroblasts into myofibroblasts, irrespective of site of origin. Anti-TNF inhibited contractility of Dupuytren's myofibroblasts ($p<0.0001$), and led to reduced ß±-smooth muscle actin mRNA and protein expression and disassembly of stress fibres.

Conclusion: We have shown that Dupuytren's disease is a localised inflammatory disorder and TNF contributes to myofibroblast development. There is currently no treatment for early disease or preventing recurrence following surgery. Based on our findings, injecting anti-TNF for these indications is ready to test in clinical trials.

15:22 Questions

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15:25 – 15:35

15:25 Managing melanoma in the era of personalised therapy: more than one disease

Mr M Rughani, Professor C Goding, Professor M Middleton (Oxford)

Introduction: Melanoma is the most aggressive form of skin cancer and its incidence has risen more than any other cancer in the United Kingdom. Surgery is the mainstay of treatment for localised and regional disease. Recent developments have highlighted the heterogeneous nature of melanoma and provided a basis for personalised therapy.

Aims and Methods: To describe the natural history of distinct subgroups in metastatic melanoma according to molecular classification, and to further understand the role of the Phosphatidylinositol-3-kinase (PI3K) pathway in melanoma cells in relation to senescence.

Results: Screening 250 tumours for BRAF and NRAS mutation in patients with metastatic melanoma demonstrated associations between clinical and genetic characteristics, and differences in clinical outcomes. Using PI3K inhibitors in melanoma cell lines as pro-senescence therapy showed an increased in DNA damage with 53BP1 in a 3D immunoflouresence model. The PI3K pathway was shown to regulate the anti-senescent factors TBX2 and TBX3 in real-time PCR. Evaluation of transcriptional activity with luciferease assays indicated cooperation between the T-box and Forkhead factors, raising the prospect of combination therapy in metastatic melanoma.

Conclusion: In an era of targeted therapies, it should not be assumed that all melanomas respond or progress in a similar manner. Personalised investigations and therapies should be offered to melanoma patients in order to improve clinical outcomes.

15:32 Questions

15:35 Validation of an in-vivo rabbit model for the assessment of biomaterials for abdominal wall reconstruction

Mr J Chan, Dr K Burugapalli, Professor A Pandit, Mr J Kelly (Galway)

Surgical meshes in abdominal wall reconstruction such as synthetic non-degradable meshes can stimulate strong fibrous reaction and foreign body response leading to implant contracture. In contrast, degradable allogenic/xenogenic biomaterials are associated with implants stretching over time. Current existing animal models assess performance of scaffolds without scrutinising scaffold behaviors. An ideal scaffold with regenerative potential must prevent contracture or stretching while allowing normal growth. In this study, we validated a rabbit model capable of predicting scaffold behaviors (contracture, stretching or regenerative) in-vivo.

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15:42 – 15:45

Left rectus abdominis muscles of New Zealand White rabbits (*n*=15) were excised to create full thickness defects. Polypropylene, bovine pericardium (glutaraldehyde-crosslinked) and small intestinal submucosa (SIS) were selected as model scafolds to elicit implant contracture, implant permanence and implant stretching, respectively. An interpositional repair technique was used to bridge the surgically created defects (*n*=5 each group). The rabbits were euthanised for histomorphological assessment at eight weeks.

Polypropylene fibres were surrounded by collagen, fibroblasts and macrophages. Bovine pericardia were not degraded and cells surrounded implant margins. SIS degradation was evident, with fibroblasts and cells penetrating its entire thickness. Compared to the right rectus muscle in each rabbit, polypropylene were associated with 16.1±1% contracture at eight weeks, while SIS explants stretched significantly by 30.5±20% ($p<0.05$, ANOVA). Bovine pericardium explants contracted by 10.6±7% (versus SIS, $p<0.05$). The contracture/stretching occurred in the lateral/transverse direction only (no changes in the longitudinal direction). This preferred directional stretching is clinically pertinent and hence this model is relevant for testing scaffold/mesh behavior in the abdominal wall.

15:42 **Questions**

15:45 **Live imaging of human keratinocytes reveals two modes of cell proliferation**

Mr A Roshan, Professor B Simons, Dr K Murai, Dr P Jones (Cambridge)

Despite the frequent use of keratinocytes to resurface skin deficits, little is known how individual cells repopulate such areas. Understanding these processes is crucial for developing informed strategies for regeneration.

We analysed 2335 keratinocyte divisions in-vitro using single-cell resolution timelapse imaging over 83 colonies and seven days to identify two patterns. Cells in Type 1 colonies divided in a balanced manner to produce two dividing daughters (38±3%), two non-dividing daughters (34±2%) or one daughter of each type (28±3%). In contrast, keratinocytes in Type 2 colonies divided predominantly to produce two dividing daughters (88±3%). Paired cell analysis (*n*=3221) showed that cell fate choices are independent, without influence from neighbours. These two dynamics predict the entire population colony distribution in bulk culture (*n*=2321colonies).

Individual colonies responded to growth factor stimulus or inhibition (Epidermal Growth Factor/R-Spondin), adjusting the balance of

15:52 – 16:02

proliferative daughters, and providing an insight into growth modulation by drugs.

We also identified early transcriptional differences between the two growth types using microarrays of eight-cell colonies (*n*=11). These signatures combined with known differentiation markers (eg Keratin1) provided molecular targets to manipulate keratinocyte proliferation.

This is the first direct study of individual human keratinocyte division, revealing two patterns that can be statistically modelled, respond to drug manipulation, and reveals early transcriptional targets for therapeutic exploration.

15:52 Questions

15:55 Enhancing calvarial regeneration through inhibition of TGF-ß²¹ signaling

Dr K Senarath-Yapa, Dr S Li, Mr A McArdle, Dr N Quarto, Dr M Longaker (Stanford, USA)

Introduction and Aims: Given the biomedical burden posed by calvarial defects and limitations of contemporary techniques, a need exists to understand the biology of calvarial osteoblasts to guide bone regeneration. The dual embryonic origin of calvarial osteoblasts is established. Frontal neural crest-derived osteoblasts possess greater osteogenic potential relative to parietal bone osteoblasts of mesodermal origin. This is, in part, due to increased TGF-ß²1 signaling, in parietal osteoblasts, known to promote apoptosis. We investigate whether modulation of TGF-ß²1 signaling could enhance regeneration.

Materials and Methods: 2mm calvarial defects were created in parietal bones of wild-type mice. TGF-ß²1 or the TGF-ß² signaling inhibitor, SB431542 (26 mM), was delivered into defects with a collagen sponge. Micro-CT and immunohistochemistry was performed to monitor calvarial healing and establish the effectiveness of SB431542 in-vivo.

Key results: TGF-ß²1 significantly reduces percentage healing of parietal defects relative to non-treated defects (*p<0.05, Students T test). SB431542 effectively inhibits TGF-ß²1 signaling in-vivo. Inhibition of TGF-ß²1 signaling significantly enhances bone regeneration (*p<0.05).

Conclusion: Inhibition of TGF-ß²1 pathway promotes bone regeneration, potentially through inhibition of apoptotic activity. Small molecule inhibitors of TGF-ß² signaling could provide a novel therapeutic approach to tackle craniofacial skeletal defects.

16:02 Questions

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16:05 – 16:15

16:05 **Endothelial cell production of SDF-1 promotes progenitor cell recruitment and wound healing**

Mr Z Maan, Dr R Rennert, Dr M Sorkin, Dr M Rodrigues, Dr D Duscher, Dr M Findlay, Professor M T Longaker, Professor G Gurtner (Stanford, USA)

Introduction and Aims: Chronic, poorly healing wounds, largely due to poor neovascularization, remain a significant problem in clinical practice. Stromal-derived factor-1 (SDF-1), a chemokine involved in neovascularisation and trafficking progenitor cells, is reduced in diabetics and the elderly, suggesting a possible mechanism for their poor wound healing. We studied the effect of global (gKO) and endothelial cell-specific SDF-1 knockout (eKO) on wound healing, utilising newly developed murine models.

Methods: A humanised excisional wound was created on the dorsum of gKO, eKO and wild type (WT) mice. Wounds were photographed and assessed at regular intervals. The excisional wound model was repeated in eKO and WT mice parabiosed to GFP+ reporter mice to assess recruitment of circulating progenitor cells.

Key Results: The eKO and gKO groups similarly demonstrated decreased neovascularisation ($p<0.05$) and slower wound healing, 15 days compared with 11.75 in the controls ($p=0.006$), evident by day eight (control = 27%; gKO = 59%, $p<0.05$; eKO = 55%, $p<0.05$). WT mice demonstrated increased recruitment of circulating progenitor cells (GFP+, Lin-, CD64-) to wounds compared to eKO mice ($p<0.001$).

Conclusions: Endothelial cell produced SDF-1 plays a pivotal role in neovascularisation and wound healing, potentially related to recruitment of circulating progenitor cells.

16:12 **Questions**

16:15 **Molecular approaches to improve outcomes following peripheral nerve repair**

Miss S Thomson, Mr T Dejardin, Dr M Riehle, Professor A Hart (Aberdeen)

Peripheral nerve injury is common (1/1000) and can be functionally devastating. Despite advances in microsurgical repair, axonal regrowth across the repair site, and as such functional outcome, remain unsatisfactory. The neurobiology of nerve healing must be unraveled in order to identify therapeutic targets. Nerve repair has previously been shown to respond to both intrinsic and extrinsic factors and the directionality and rate of axonal regrowth following injury can be enhanced in-vitro by growing cells on a nanopatterned surface. This study utilised rt-PCR to demonstrate the downstream genetic effects of this extrinsic mechanical cue. Gene expression was measured at day 0, 1, 2, 5 and 10

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16:22 – 16:32

following injury, of nerves grown on either the nanopatterned surface or a smooth control, using the Sprague-Dawley in-vivo model. Altering the topographical substrate on which nerves were grown resulted in a significant alteration in expression of the genes studied (MTOR, CRAT, MAP3KKK). Expression of all three genes was downregulated when cells were cultured on the nanopatterned surface (x 80 - 180 fold less expression compared to growth on smooth surface, $p<0.05$). Expression timelines are presented and the molecular pathways are discussed. This study further characterises a useful in-vivo model and provides more detail on the complex interactions underlying nerve repair. It highlights some of the downstream molecular effects of nanopatterning, that could be harnessed in the surgical setting by using patterned nerve conduits and provides further evidence for potential pharmaceutical targets for future clinical translation.

16:22 **Questions**

16:25 **Human adipose derived stem cells promote regeneration in a biodegradable trimethylene-caprolactone-glycolide scaffold with guidance microfilaments in the injured rat spinal cord**
Mr M Kolar, Dr L Novikova, Dr P Kingham, Dr A Ullrich, Dr S Oberhoffner, Dr M Renardy, Dr M Doser, Dr E Muller, Dr M Hoss, Professor M Wiberg, Dr L Novikov (Umeå, Sweden)

Pre-ganglionic brachial plexus injury often leads to spinal root avulsion, neuronal degeneration and scarring in the spinal cord. Bridging strategies, following scar resection, are essential to re-connect the denervated spinal cord with its peripheral targets. We evaluated the effects of a biodegradable tubular conduit (ßμ-caprolactone, trimethylene carbonate and glycolide) containing microfilaments (Poly-p-dioxanone), supplemented with human adipose derived stem cells (hASC) on axonal regeneration after cervical spinal cord injury in rats.

In-vitro studies demonstrated that hASC, Schwann cells, fibroblasts and astrocytes can grow on the materials, and importantly, the astrocytes remained quiescent. Rat DRG neurons were also found to extend their neurites on the filaments. In-vivo, a spinal cord cavity created unilaterally at the C3-C4 level was filled with the conduit either empty or seeded with hASC. The conduit did not affect the astroglial reaction and supported migration of cells and promoted ingrowth of axons. Addition of hASC further stimulated regeneration and migration of astrocytes into the graft, possibly due to enhanced neurotrophic factor support.

These results suggest that this conduit together with hASC can promote axonal regeneration in a spinal cord gap injury, thereby improving regeneration following spinal root replantation.

16:32 **Questions**

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16:35 – 17:10

16:35 **Identification of a skeletal stem cell and the mechanisms responsible for its functional decline with age**
Dr A McArdle, Dr C Chan, Dr K Senarath-Yapa, Dr R Tevlin, Dr M Hu, Dr I Weissman, Dr M Longaker (Stanford, USA)

Introduction and Aims: Several mechanisms are potentially responsible for the age-related decline in tissue regenerative potential. In this study, we investigated the role of age-related changes in a highly purified population of skeletal stem cells that are capable of forming all of the components of bone, cartilage, stroma and marrow at the clonal level. We identified significant genetic changes that could potentially be targeted to rejuvenate aged skeletal stem cells.

Materials and Methods: We isolated highly purified skeletal stem cells (SSCs) using defined cell surface markers and fluorescence-activated cell sorting (FACS).

To identify cell-intrinsic effects of aging on SSCs, we transplanted these SSCs harvested from different ages of mice sub-renal capsule to evaluate their ability to form bone, cartilage and stroma. Cells were isolated from young and old mice and transplanted into mice of the same age (isochronic transplantation) or different ages (heterochronic transplantation).

To identify systemic factors in SSC aging, we surgically paired mice together in a parabiosis model. We carried out isochronic and heterochronic parabioses and evaluated bone parameters and healing in these mice.

Results: Preliminary results suggest that both cell-intrinsic and cell-extrinsic mechanisms underlie the functional decline that occurs in aged skeletal stem cells.

16:42 **Questions**

16:45 **Refreshments**

Guest lectures: Charitable works
Chair: Mr N Kirkpatrick

17:10 **NGO work for a cleft surgeon**
Professor M Earley
The author outlines the problem of the global cleft lip and palate burden and its impact on communities.

The problems that need to be overcome and the dangers of misguided attempts to manage them are discussed.

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Operation Smile's core principles of capacity building and sustainability rather than the uncritical use of large isolated parachute missions is stressed.

Teaching, outcome measures, personal development, student programmes, and some aspects of fundraising are topics also mentioned in this short presentation

17:20 **BFIRST**
Miss B Jemec

17:30 **Operation Childlife**
Miss P Eadie

17:40 **The role of the plastic surgeon in disaster situations: an individual response**
Mr K Khan
In the hazardous and dangerous world of today, the role of a plastic surgeon in a major disaster following the initial emergency phase is vital. On individual basis, small medical teams can encounter certain obstacles and challenges. A pre-trip knowledge of the region of disaster and local contacts are essential. A brief account of personal experience is presented.

17:50 **Questions and discussion**

18:00 **Close and drinks reception**

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THURSDAY 28 NOVEMBER 2013

07:30 – 08:40

07:30 **Facial palsy special interest group meeting (Liffey B)**
07:30 **Hypospadias special interest group meeting (Liffey meeting room 3)**

08:00 **Registration and refreshments**

Free papers: Craniofacial
Chairs: Mr D Murray and Mr D Johnson

08:30 **Use of the island inversion flap for single-stage ala nasi reconstruction: a report of 103 consecutive cases**
Mr S Gore, Mr A Tregaskiss, Mr J Allan, Mr R Aldred (Oxford/ Sydney, Australia)

Introduction: Few methods of ala nasi reconstruction achieve aesthetically sensitive results in a single stage using local flaps. We describe the use of an islanded skin flap based on the superior nasal artery and secondary cheek advancement to recreate this area whilst preserving the alar groove.

Methods: We performed a retrospective review of medical notes and photographs of 103 consecutive patients undergoing alar reconstruction with this technique. Patient demographics and complications were recorded. Post-operative photos were rated by three plastic surgeons, using a Likert scale to determine the aesthetic outcome.

Results: Between 1998 and 2012 we performed 103 island inversion flaps. Mean patient age was 59 years (range 23–85 years). 18/103 (17%) of patients had defects extending beyond the ala.

There were no flap losses and seven cases of superficial epidermolysis. Revision surgery was performed in three cases. In 48/103 cases post-operative photos (>2 months post-operative) were available for aesthetic assessment. The aesthetic results were rated as 'Good' to 'Excellent' in over 70% of cases (range 73–85%) by the three plastic surgeons.

Conclusions: The island inversion flap is a reliable and versatile flap for alar reconstruction that can consistently produce good to excellent aesthetic results in a single-stage operation.

08:37 **Questions**

08:40 **Midline frontonasal dermoids: a review of 55 cases and a protocol for treatment**
Mr B Green, Mr M Moses, Mr N Bulstrode, Mr O Jeelani, Mr D Dunaway (London)

Introduction: The incidence of midline frontonasal dermoid cysts is 1 in 20,000–40,000. These lesions may have intracranial extension. Skin

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involvement can be extensive, with punctums and hair-containing tracks located on the dorsum of the nose. Incomplete excision leads to recurrence in 50–100% of cases.

We have developed a patient pathway to investigate and manage midline frontonasal dermoids.

Methods and Aims: Our surgical databases were searched to identify patients who had undergone excision of a midline or frontonasal dermoid cyst.

Pre-operative imaging and indications for surgery were reviewed. Cases were grouped according to surgical approach, outcomes and complications.

Results: Over 15 years, 55 patients were treated. All patients had pre-operative imaging (CT/MRI). Surgical excision was expedited if there was history of infection or if hairs were present at the sinus opening. Twelve were treated endoscopically. Eleven required transcranial approaches for intracranial extension (20%). One lesion involved the dura. Thirty-two patients had dermoids excised with an open approach. There was one infection and one recurrence in the transcranial group.

Conclusion: Midline dermoid cysts are relatively uncommon. However, with increasing experience it is possible to develop a safe and predictable approach to their management, resulting in low incidence of complications and recurrence.

08:47 **Questions**

08:50 **Quantitative three-dimensional study of the surface anatomy of the facial nerve with neurostimulation: a re-evaluation of commonly described landmarks**

Mr A Fattah, Mr J Davies, Dr M Ravichandiran, Professor A Agur, (Toronto, Canada)

Introduction: The facial nerve is vulnerable to damage. Surface landmarks are used: Pitanguy's line for the frontal,' Zuker's Point' for the zygomatic and 'finger's breadth below the mandible' for the mandibular. In Pitanguy's description and the 'finger-breadth rule' quantitative analysis was not used. Neurostimulation was not used to determine if the branch at Zuker's point actually produced a smile.

Method: In ten specimens, independent raters were used to plot landmarks using pins. The facial nerve was dissected under the microscope, digitised (Microscribe® G2X) and the data modelled in Autodesk Maya® allowing for highly accurate measurements. In cross face nerve graft surgeries, neurostimulation was used to determine if the branch elicited a smile.

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Results:
Frontal branch: Using fixed bony landmarks, the nerve occupied a triangle behind the lateral orbital wall. Pitanguy's line describes the course but not the distribution.

Mandibular branch: In all cases, two finger's breadth is safe; in 20% one finger's breadth was inadequate. Zuker's point was useful in determining a smile branch, confirmed by neurostimulation.

Discussion: Common surface guides based on soft tissue landmarks are reasonably accurate but bony landmarks are more consistent. Common rules plot the course, but do not reflect the arborisation of the facial nerve. Modified landmarks are presented.

08:57 **Questions**

09:00 **Cephalometric outcomes of orthognathic surgery in hemifacial microsomia using a novel analysis**
Mr A Fattah, Dr C Caro, Dr D Khechoyan, Dr B Tompson, Dr C Forrest, Dr J Phillips (Toronto, Canada)

Introduction: Hemifacial microsomia is a hypoplastic disorder that significantly impacts on jaw development leading to malocclusion and facial asymmetry. There is little literature regarding the application of orthodontic/orthognathic approaches to the correction of these deformities and the stability of the results.

Methods: A retrospective review of ten complete orthodontic records with greater than one-year follow up was performed. PA cephalograms were assessed by our modified Grummons analysis to determine mandibular offset and occlusal cant. Measurements were performed at three time points (T1: pre-operative, T2: immediate post-operative, T3: follow up) to elucidate the surgical movement (T2-T1), the post-operative relapse (T3-T2) and the net gain movement (T3-T1).

Maxillary movements were quantified and occlusal cant was expressed as a ratio between vertical heights of the maxilla at the first molar on each side.

Results: Mean age at surgery was 17.8 years with mean follow of 3.1 years. T-test demonstrated statistically significant surgical movement and net gain. Relapse was statistically insignificant. Repeated measures ANOVA demonstrated similar results for chin point position.

Discussion: Our results suggest that a combined orthodontic/orthognathic approach at skeletal maturity delivers improved long-term occlusal outcomes. We advocate limiting surgery to skeletal maturity to achieve stable long-term results.

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09:07 – 09:20

09:07 **Questions**

09:10 **MEin3D: the search for a normal face**
Mr A Ponniah, Dr J Booth, Dr S Zafeiriou, Dr C Ruff, Mr D Dunaway (London)

Introduction: Some of the challenges of craniofacial surgery revolve around the perception that patients with facial deformity want to look normal. In order to identify what normal is, it first needs to be defined. This study aimed to quantify the perception of a normal face in four different groups.

Method: 12000 3D photographs were collected of volunteers from all age groups, ethnicities and both sexes. Subgroups were analysed using landmarking and dense surface model based processing. Five volunteers from each of the following groups were recruited into the study: surgeons, patients, parents the general public.

Results: The subgroups were analysed with principal component analysis. This allowed the creation of eigenvectors within populations. Each volunteer was shown a video animation of a morph from the mean face along a series of eingenvectors. When the face no longer looked normal the volunteer stopped the video. This loci along the eigenvector was recorded. Correlation was identified between all groups.

Conclusion: The concept of a normal face can be quantified using advanced mathematical modelling techniques. This technology can be used to understand a patient and their parents' understanding of what a normal face is. This is important in both planning surgery and managing expectations.

09:17 **Questions**

09:20 **The aesthetic outcome of surgical correction for sagittal synostosis can be reliable scored from pre and post-operative visual assessment**
Miss C Bendon, Miss H Johnson, Dr A Judge, Mr S Wall, Mr D Johnson (Oxford)

Introduction: Multiple surgical techniques exist to correct sagittal synostosis, however reliable assessment of aesthetic outcomes is poorly documented. A visual analogue scale was designed to grade skull shape in patients who had total or subtotal calvarial remodelling for sagittal synostosis.

Methods: Twenty-two assessors graded pre- and post-operative photographs presented at random from 42 consecutive cases of sagittal synostosis under a single surgeon. Five aspects of skull shape were graded (frontal bossing, narrow elongated skull, occipital bullet, temporal

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pinching and overall shape) from 0 (normal) to 100 (severe). Predictors of outcome were determined by linear regression.

Results: Surgery improved outcome dramatically across all aspects of skull shape, decreasing severity scores by over 70%. Improvement in severity score was greater following total calvarial remodelling, and type of calvarial remodelling (subtotal versus total) was an independent predictor of outcome in all aspects of skull shape ($p<0.001$). Temporal pinching was improved in a subset of patients who also had onlay bone grafting in this region.

Conclusions: A panel of assessors can detect gross and subtle improvements in the surgical correction of sagittal synostosis using a visual analogue scale, with moderate inter- and intra-assessor agreement. This provides a tool for future outcome assessment in craniosynostosis.

09:27 **Questions**

09:30 **Orthognathic surgery outcomes and quality of life study: a single unit experience**

Miss J Dorairaj, Miss M Byrne, Dr M Ryder, Mr D Murray (Dublin)

We sought to evaluate clinical outcomes, patient satisfaction and quality of life post-orthognathic surgery performed by a single plastic surgeon in our unit.

All patients who underwent orthognathic surgery from September 2009-March 2013 were included. Data was collected through review of medical notes in addition to a questionnaire evaluating perceived benefits, outcome of treatment, complications and post-operative satisfaction.

Data was available on 64 of 69 patients, 43 of which were female. Mean age at treatment was 23 years with a mean follow-up of 17 months. Twenty-six mandibular procedures, 23 bimaxillary osteotomies, 14 maxillary procedures and one surgically assisted rapid palate expansion were performed. Forty-four ancillary plastic surgery procedures were performed- 20 genioplasties, 7 lip-lowering surgeries, 4 Medpor implants, 1 fat transfer and 13 intra-operative dental extractions. Post-operative infection was 9% and unfavourable fractures documented in 3%. Ancillary procedures did not increase complication rates. The questionnaire yielded a 54% response rate. The mean visual analogue score demonstrating patients' satisfaction was 92%. Low scores were achieved in an orthognathic quality of life questionnaire implying good post-operative quality of life.

This was a comprehensive review of orthognathic surgery outcomes with complication rates comparable to international standards, good post-operative satisfaction rates and quality of life.

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09:37 **Questions**

09:40 **Towards predictable aesthetic change in hypertelorism surgery: a radiological study in 18 patients and 30 controls**

Miss T Karunakaran, Mr J Syme Grant, Mr D Dunaway, Mr R Evans, Mr J Britto (London)

Introduction: Hypertelorism correction must meet patient expectation for appearance change. Can quantified orbital translocation reliably predict soft tissue change to provide a predictive formula for surgical success?

Methods: CT data in 18 hypertelorc patients (m=11.2 years, r= 5–20) were entered into Osirix software. Various skeletal and soft tissue parameters from pre- and post-operative scans were analysed by two independent observers.

Correlated measurements were assessed against osteotomy technique, canthopexy details, and 30 neurosurgical controls.

Results: Palpebral fissure width (PFW) is unchanged post-operatively, independent of surgeon/technique, providing a constant reference.

Mean pre-operative ratio of inter-dacryon distance (IDD):PFW is 1.41 reducing to 0.94 post-operatively but not reaching control (0.64).

Pre-operative ratio intercanthal distance (ICD):PFW of 1.89 reduces to 1.53 (control = 1.16).

The correlation of ratios IDD:PFW with ICD:PFW is 0.89 reducing to 0.77 post-operatively, suggesting that the medial canthus and dacryon move imperfectly together.

Further correlation of paired parameters suggests that orbital translocation predictably translocates the globe, and is a function of medial rather than lateral wall movement.

Conclusion: Comparison of HPT results to matched control radiology provides an assessment of surgical outcome. Furthermore, an 'ideal' post-operative IDD:PFW is 0.64 - providing a novel, prospective, directly measurable target in HPT surgical planning.

09:47 **Questions**

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THURSDAY 28 NOVEMBER 2013

09:50 – 10:00

09:50 **Age-related effect of monobloc fronto-facial distraction on orbital volume, morphology, and clinical outcome in 29 Crouzon-Pfeiffer cases: a controlled study**

Mr B Way, Dr R Khonsari, Dr T Karunakaran, Miss S Ashraff, Dr J Nysjö, Professor I Nyström, Mr D Dunaway, Mr R Evans, Mr J Britto (London)

Introduction: Monobloc frontofacial advancement by distraction (MBD) is valuable in the management of Crouzon-Pfeiffer syndrome (CPS) for functional and aesthetic gain. We ask whether MBD undertaken at infancy to adolescence achieves stable orbital volume expansion in the treatment of symptomatic oculo-orbital disproportion.

Methods: CT radiologic data of 29 CPS patients (58 orbits, R= 3 months-17 years), were assessed against 40 age-matched controls. Globe volume, orbital volume, orbital morphology and globe position in the orbit were determined by manual segmentation, verified by a mesh-based semi-automatic technique (Nyström et al).

Results: CPS orbits were more symmetrical of volume than shape. CPS globe volume approximated control, but globe protrusion significantly exceeded control ($p<0.05$).

Monobloc advancement expanded CPS orbital volume by a mean of 84.5% at 6 weeks ($p<0.05$) to approximate age-matched control. Globe protrusion reduced to control value. Orbital expansion and shape change was mostly maintained at 8–18 months and correlated with symptomatic relief. Delayed volume relapse, where it occurred, was a mean of 0.49cm^3 in <10 years, and 0.26 cm^3 in >10 years, and is neither clinically nor statistically significant.

Discussion: Monobloc frontofacial advancement relieves syndromic oculo-orbital disproportion and globe protrusion approximating normal. Surgical relapse characterises younger patients, nonetheless for whom functional necessity is paramount.

09:57 **Questions**

10:00 **Clinical outcomes in the management of severe orbito-temporal neurofibromatosis**

Mr C Abela, Ms P Shams, Ms L Nelson, Professor R Ferner, Mr J Collier, Mr W Grant, Mr S Eccles, Mr R Young, Mr N Joshi, Mr N Kirkpatrick (London)

Introduction and Aims: Presentation morphology in orbito-temporal type 1 neurofibromatosis is variable, ranging from cutaneous palpebral disease, through to orbital displacement and in the extreme, destruction of the cranial base. It is our unit's philosophy that left untreated, only

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10:07 – 10:10

progressive infiltration, distortion and dysfunction of structures occurs, ultimately making reconstruction more difficult and outcomes worse.

Materials and Methods: A retrospective review was conducted. Twenty consecutive patients who had undergone surgery for large orbito-temporal neurofibromatosis over a 10-year period were reviewed, looking at severity of aesthetic and functional presentation, timing and type of interventions, outcomes and complications.

Results: The majority had soft tissue involvement only. Multiple concomitant surgeries through a variety of access incisions were necessary to facilitate:

1. Debulking
2. Correction of lid-length discrepancy
3. Ptosis correction
4. Reconstruction of the conjunctival fornices
5. Tissue resuspension
6. Restoration of facial symmetry.

The average number of surgeries required was 1.9 with an average hospital stay of 8 nights and a complication rate of 40%. Over 80% recorded better than moderate aesthetic and functional improvement.

Conclusions: We advocate early surgical intervention and radical resection under the care of a specialist multidisciplinary team.

10:07 Questions

10:10 Masseteric nerve and cross face nerve grafting for dual innervation of free muscle neurovascular transfer for facial reanimation
Mrs K Tzafetta (Chelmsford)

Background: The gold standard technique for facial reanimation has been dual staged with cross face nerve graft (CFNG) followed by free muscle transfer. Symmetry and coordinated movement is achieved with however sometimes weaker muscle contractions than the desired. The masseteric nerve has been used as a donor nerve with more powerful contractions being obtained although more rehabilitation is needed to achieve spontaneity of the smile. The aim of our prospective study was to assess the results following the use of both nerves to combine the benefits they provide; coordination and power.

Methods and patients: Four patients, two from each gender, were operated from August 2012 to April 2013. The surgical technique is demonstrated along with the results. These were compared with the ones achieved on patients with the use of single innervation with either masseteric nerve or CFNG.

10:17 – 10:27

Results: Improvement on the resting tone was noted within two months of surgery. Clinical muscle contractions were seen at three months (an average of four months earlier than with the CFNG) and were more powerful. Spontaneity of the smile was observed at around ten months.

Conclusion: Combined use of the CFNG and masseteric nerve can enhance the power of a coordinated smile.

10:17 Questions

10:20 Posterior auricular muscle: is it an answer to facial nerve rehabilitation?

Miss C Lipede, Dr L Kishikova, Ms A Thomas,Ms C Neville,
Ms V Venables, Mr C Nduka (Tyne and Wear)

Introduction: Following Bell's palsy, 25% of sufferers are left with chronic involuntary muscle spasms (synkinesis) which are difficult to treat. Surface electromyography (sEMG) biofeedback has an established role in improving muscular coordination. However, placing adhesive electrodes on the face makes it impractical for everyday use. As the vestigial posterior auricular muscle (PAM) is the first re-innervated by the facial nerve, we investigated the electrical activity of this muscle during a range of facial expressions.

Methods: The action of PAM was recorded using sEMG in 41 healthy volunteers whilst performing a routine of facial expressions. The sEMG signal increase from the baseline was measured and analysed.

Results: There was considerable increase above baseline in EMG signal in response to smiling (110.98%) compared to other facial expressions including closing eyes (7.85%), blowing out cheeks (39.35%), whistling (11.84%), and showing bottom teeth (38.24%). The increase in signal was proportional to the smile intensity: lips together (55.18%), showing teeth (111.98%), grimacing (130.07%) and laughing (269.42%).

Conclusion: This is the first study to demonstrate that the intensity of a smile can be assessed by PAM sEMG. We present the prototype of a novel glasses-mounted, wireless facial nerve assessment and biofeedback device utilising these findings.

10:27 Questions

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10:30 – 10:45

Guest lectures: Craniofacial

10:30 Modifications of the Nagata 3D framework: autologous ear reconstruction in a single stage
Dr D Fisher

Background: We have been utilising the Nagata technique since 2002. In this review of 100 consecutive ear reconstructions, we present technique modifications that have evolved over this time period which have contributed to improved auricular contour and which now allow for auricular reconstruction in a single-stage.

Methods: This study is a retrospective review of a prospectively acquired database. The series is restricted to primary reconstructions performed for congenital microtia. Surgical complication rates are discussed.

Results: One hundred ear reconstructions were performed in 96 patients. There were 75 primary cases of congenital microtia. Twenty-four ears underwent a two-stage reconstruction, while 51 ears were reconstructed with a Nagata stage I procedure or a single stage reconstruction. There was a gradual shift in technique, with a trend to perform fewer Nagata stage II outsetting procedures and more single stage reconstructions. In patients that underwent an ear reconstruction in two stages the early surgical complication rate was 22%. In the last 40 consecutive ear reconstructions since abandoning the two-stage approach, the early surgical complication rate is now 15%.

Conclusions: A modification of Nagata's technique of autologous ear reconstruction for microtia is described. Modifications of the 3D framework address the contour of the inferior crus, and control tragal projection and position. Inclusion of a projection block and recruitment of retroauricular skin allow for symmetric projection of the ear in a single stage.

10:45 Management of secondary cleft lip and nasal deformities
Dr D Fisher

Backgrounds: Secondary cleft lip repairs result from incompletely corrected primary deformities and additional iatrogenic insult.

Methods: The technique for the surgical correction of secondary cleft lip deformities varies with the degree of deformity. Analysis and management of selected cases from a series of 158 cases are used to demonstrate principles of secondary chelioplasty.

Conclusions: Secondary cleft lip repairs result from incompletely corrected primary deformities and additional iatrogenic insult. The technique for the surgical correction of secondary cleft lip deformities

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varies with the degree of deformity. It is hoped that lessons learned from the analysis of secondary deformities will translate into reduced rates of iatrogenic secondary deformities in the future.

11:05 **Lessons learned in three decades of paediatric tissue expansion in the head and neck**
Professor B Bauer

This presentation, based on more than three decades of experience with more than 3500 expanders, will review aspects of tissue expansion in the paediatric population. Cases are selected in all body regions, and for both congenital and acquired deformities (including large and giant congenital melanocytic nevi, vascular lesions, craniofacial anomalies, and acquired defects) to review case selection, surgical planning, management of expansion (both in clinic and home), flap design, staging of surgery in serial expansion, and both management and avoidance of complications. Points reviewed will be directed at both novice and experienced surgeon.

11:25 **Refreshments**

Guest lectures: Fat grafting
Chair: Mr J Scott

11:45 **Fat grafting: the Finnish experience**
Dr O Kaarela

12:10 **How did we manage without fat grafting?**
Mr M F T Fatah

12:35 **Successful mega-volume fat grafting: basics, chances and limits**
Dr K Ueberreiter

Introduction: Mega volume fat grafting for breast augmentation has become a standard technique in plastic and reconstructive surgery. However, there are few evaluated methods for harvesting and transferring of larger quantities of autologous fat tissue, requiring short procedure times.

With the results of a prospective clinical study the authors present reproducible method for easy and reliable harvesting and transferring of larger volumes of transplantable fat. In this study a precise volumetric quantification of the exact volume gain after fat transfer has been done by comparative MRI investigations. The authors named this method "BEAULI" (Berlin Autologous Lipotransfer).

Methods: The prospective clinical study was carried out in two centers in Germany, including 85 patients with soft tissue deficits in the breast,

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treated with autologous fat grafting since 2007 to October 2010. Meanwhile, the number of procedures has been grown to more than 1000 in more than 400 patients.

For quantification of the results, MRIs of the breasts were taken pre-operatively and 6 months post-operatively. Clinical examinations were done pre-operatively, and on day 1, after 1 week, 3 months and 6 months post-operatively. Follow-up examinations were continued on a yearly basis. The longest observation period now is 36 months. In about 2% of cases pressure-sensitive indurations were observed which regressed on its own after one year at the latest.

Results: The operating time in the study was 1.5 hours including liposuction and has meanwhile been reduced to 45-60 minutes. In all patients, a significant increase of subcutaneous fat tissue was achieved. The volume gain after comparative MRI volumetry was 76 ± 11 % of the transplanted fat.

In another investigation the volume gain in the pectoral muscles and the breast tissue including periglandular fat was compared by MRI volumetry before and 6 months after fat grafting in 10 patients. The comparison of the volumes calculated with MRI volumetry pre-operatively and post-operatively revealed a mean volume persistence of 64% (± 13%) within the pectoral muscle and of 81% (± 8%) within the periglandular fat. Thus it can be concluded that in fat transplantation to the breast the periglandular plane is superior to the intramuscular plane in terms of volume persistence.

In aesthetic breast augmentation the average number of fat grafts amounted to two transplantations resulting in one cup size, according to ½ cup size or 100–150 ml of grafted fat per single transplantation. For a complete breast reconstruction "de novo" (after ablation), four to five transplantations are required.

Patients treated with autologous fat grafting after removal of silicone implants due to capsular contracture, generally desired no more than one transplantation although the transplanted fat volumes were considerably below the volumes of the removed silicone implants.

An additional observation was the pronounced improvement of scar quality and a continuous expansion of the skin envelope.

From 2013 the patients participating in the study are being reinvestigated; the first five year results are very promising.

13:00 Questions and discussion

13:15 Lunch

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13:30 **Sponsored Symposium (Roche)**
Erivedge (vismodegib) in advanced basal cell carcinoma inappropriate for surgery or radiotherapy – a surgeon's friend or foe?

Free papers: Upper Limb (session 1)
Chairs: Mr S Carroll and Dr R Murphy

14:35 **Thumb CMCJ replacement versus trapeziectomy: is recovery following replacement quicker? Early results of a prospective non-randomised consecutive case series**
Mr A Siddiqui, Ms L Hare, Mr M Sood (Chelmsford)

Introduction: We report early results of a non-randomised prospective case series of consecutive patients operated upon by a single surgeon to determine whether post-operative recovery is quicker in CMCJ replacement compared to trapeziectomy.

Materials and Methods: This study compared 14 consecutive patients of CMCJ replacement with 12 patients who underwent trapeziectomy and APL sling. Both groups had an identical mobilisation protocol.

Patients were administered DASH and Michigan Hand questionnaires and underwent measurements of pinch, grip and AROM in the thumb pre-operatively, at six weeks and at three months.

Results: Following trapeziectomy at six weeks the average DASH score reduced from 57.5 to 48.3 (16%) and the Michigan score increased from 39.3 to 50 (21.4 %).

Following replacements at six weeks the average DASH score reduced from 57.8 to 16.7 (71%) and the Michigan score increased from 37.7 to 61 (38.2 %). The improvement between six weeks and three months was:

- DASH 34.6% and Michigan 21.6% in trapeziectomies
- DASH 1.82% and Michigan 11.6% in CMCJ replacement.

Conclusions: Patients with CMCJ replacements recover quicker than those with trapeziectomies. The majority of improvement occurs by six weeks in replacements with little change between six weeks and three months.

14:42 **Questions**

14:45 **ARPE arthroplasty for CMCJ arthritis: a review of cases over five years**
Mr A Siddiqui, Dr L Onwordi, Mr G Packer (Southend on Sea)

Introduction: Osteoarthritis of the thumb basal joint is the most common presentation for degenerative joint disease of the hand. CMCJ arthritis of thumb has been treated surgically using a variety of techniques.

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We reviewed our surgical outcomes following 241 ARPE prosthetic arthroplasty procedures over five years.

Methods: We used a cementless total prosthetic arthroplasty using ARPE prosthesis in our series. A retrospective study of case notes was undertaken with outcome measure using DASH questionnaire. The follow-up period ranges from 18 to 66 months.

Results: In our series patients had APRE prosthetic arthroplasty and 92% patients went on to have pain free hand function. There was a 6.2% (*n*=15) dislocation rate. 1.2% (*n*=3) patients needed revision surgery. 1.6% (*n*=4) patients presented with post-operative periprosthetic fractures of which three were managed conservatively. One patient developed CRPS and 1.6% (*n*=4) had hypertrophic scars. There was an infection rate of 2.9% (*n*=6) all managed conservatively with antibiotics. Mean DASH score was 23.4.

Conclusion: In our series, ARPE total joint arthroplasty of the thumb has proven to be an effective treatment with good range of motion, strength and a high degree of pain relief. We report a low complication rate and a low revision rate.

14:52 **Questions**

14:55 **Outcomes of pyrocarbon arthroplasty for the proximal interphalangeal joint with a minimum five year follow-up**
Miss P Gill, Mr A Wilmshurst (Dundee)

Introduction and Aims: Outcomes of proximal interphalangeal joint (PIPJ) arthroplasty have been reported over a minimum two-year follow-up period. We present our outcomes for a minimum five-year follow-up period.

Materials and Methods: We retrospectively evaluated twelve patients with mixed aetiology who underwent thirteen PIPJ arthroplasty procedures from October 2004-November 2007. Data collected included follow-up, pre-operative and follow-up range of movement, grip strength, pain scores, appearance, function, QuickDASH score and radiological appearance.

Results: Mean follow-up was 79 months (60–96). The pre-operative range of movement improved from 40 degrees (0–80) to 57 degrees (15–100) on follow-up. Average recorded QuickDASH scores were 25 (11–44), with 83% of patients recommending the procedure. Appearance and function were rated at four (0–5), with average pain score at one (0–5). X-ray assessment was generally favourable with an average score of one (1–3). Eight re-operations were performed in six joints, with no true revisions.

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Conclusions: We found revision surgery related to soft tissue not prosthetic problems. Poor radiological appearance didn't correlate with poor function or appearance. We present a minimum follow-up period for PIPJ arthroplasty at 5 years supporting the use of this prosthesis.

15:02 Questions

15:05 Four strand 'adelaide' zone II flexor tendon repairs: a tertiary centre's ten year review
Mr E Francis, Ms C Bossut, Ms M O'Donnell, Dr P Eadie (Dublin)

Multi-strand core suture techniques combined with early active mobilisation regimens have demonstrated improved functional outcomes in zone II flexor tendon injuries. This study evaluated the integrity of the 'Adelaide' four strand repair and assessed its outcome on function.

All zone II flexor tendon repairs were identified from a prospectively collected database from 2003–2013. Patient demographics, number and type of fingers injured, neurological deficits, length to surgery and rupture rates were recorded. Strickland and Modified Strickland measurements assessed the functional outcome. Follow up ranged from six weeks to two years ten months.

A total of 167 patients and 197 fingers were identified, of which 111 and 125 respectively had complete data for analysis. Patient demographics included 93 males and 18 females with a mean age of 28.6 years (15–68). The most common finger injured was index 41/125 (35%), 98/111 (88%) had surgery within three days, 69/125 (55%) had an associated digital nerve injury. 44/111 (40%) were smokers. Strickland and Modified Strickland calculations demonstrated 85/125 (68%) patients had a good/excellent result, 28/125 (23%) fair and 12/125 (9%) had a poor result. Rupture rate was 5/125 (4%).

The 'Adelaide' repair combined with early active mobilisation achieves an excellent functional outcome with low rupture rates.

15:12 Questions

15:15 A quick and simple four-strand barbed suture repair technique for flexor tendons: a comparison to a traditional four-strand monofilament repair
Mr C Joyce, Mr C Sugrue, Mr J Chan, Dr D Zeugolis, Mr S Carroll, Mr J Kelly (Galway)

Background: Barbed sutures have shown promise in flexor tendon repairs due to even load distribution without the requirement of a knot. We propose that our novel quick and simple, barbed technique, without

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exposed barbs on the tendon surface, has comparable strength and a smaller cross-sectional area (CSA) than traditional repair methods.

Methods: Forty porcine flexor tendons were randomised to polybutester four-strand barbed repair or to four-strand Adelaide monofilament repair. CSA was measured pre and post-repair. Biomechanical testing was performed and 2mm gap formation force, ultimate strength and failure method were recorded.

Results: The mean ultimate strength of the barbed repairs was 54.51 ±17.9 whilst that of the Adelaide repairs was 53.17 ±16.35. The mean 2mm gap formation force for the barbed group was 44.71 ±17.86 whereas that of the Adelaide group was 20.25 ±4.99. The post-repair percentage change in CSA at the repair site for the Adelaide group and barbed group was 12.0 ±2.3 and 4.6 ±2.8 respectively.

Conclusions: Our four-strand knotless, barbed method attained comparable strength to the traditional Adelaide repair. The barbed method had a significantly reduced CSA at the repair site. Furthermore, the 2mm gap formation force was less in the barbed group than the Adelaide group. Unlike other barbed repairs described, our method had no exposed barbs on the tendon surface, thus eliminating the risk of pulley damage in-vivo. Barbed repairs show promise for flexor repairs and this simple, quick method warrants further study in an animal model.

15:22 **Questions**

15:25 **Long term functional outcomes of pollicised index fingers associated with primarily shortened long flexor tendons in children. The Melbourne experience**

Miss S E Atkins, Miss T Cole, Mr D McCombe, Professor B Johnstone, Professor C Coombs (Melbourne, Australia)

Introduction: Pollicisation outcome studies show good functional results but weaker, less dextrous digits. Shortening the long flexor tendon primarily, may improve this situation.

Method: Nineteen patients had 28 index fingers pollicisations (bilateral in nine), between 10 and 54 months. Radial dysplasia was seen in 21 hands. The long flexor was shortened in 26 procedures.

Patients were assessed post-operatively (average follow up eight years), using:

- Range of movement
- Grip and pinch strengths
- Object usage
- Timed activity test

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- Children's Hand use Experience Questionnaire (CHEQ)
- Assisting Hand Assessment (AHA) (unilateral only, *n*=8)

Results: There were no major complications; seven additional procedures were required in five hands. We present our results and compare to Manske's outcomes (non-shortened long flexor) to show less movement in the pollicised joints, but significantly better grip and 'normal' object use. AHA demonstrated 'effective' hand use, mean logit based scores 75. CHEQ results correlated, with mean 'grasp' scores of 3.2 (out of 4), and mean 'time to perform' tasks 3.1 (out of 4). Children were 'not at all' bothered by their performance, with a mean score 4 (out of 4).

Conclusion: We present our series of 28 pollicisations and the effect primary shortening of the long flexor has functionally.

15:32 **Questions**

15:35 **An anatomical study of radial polydactyly: is the Wassel classification useful in clinical practice?**

Miss S Stevenson, Mr M Alrawi, Mr P Kalu, Mr J Littler, Miss J Ahmad, Miss B Crowley (Newcastle upon Tyne)

Introduction: Radial polydactyly encompasses a spectrum of anatomical anomalies. Commonly used classification systems, eg Wassel, based on the radiographically visible skeleton, may underestimate the variability and complexity of anatomy.

Methods: A prospective anatomical study of 50 radial polydactyly in 46 patients undergoing primary surgery was undertaken. The same surgeon undertook all procedures. Operation records were standardised by anatomical headings: skin, skeleton, joints, extensor mechanism, flexor mechanism, intrinsic muscles and neurovascular. Anatomical findings were collated into Wassel groups.

Results: Anatomical variability was observed between and within individual Wassel groups. Flexor and extensor mechanisms displayed the greatest variability. First web tightness was prevalent at proximal levels of duplication. Pre-operative X-rays did not always truly reflect intra-operative skeletal findings. Skeletal misalignment was not specific to particular Wassel groups. Operative procedures undertaken were determined by detailed anatomical exploration rather than by Wassel group.

Discussion: This study highlights the anatomical complexity in radial polydactyly. The Wassel classification does not adequately convey this, placing disparate cases into the same group. It does not reliably assist with surgical planning or with comparison of cases. Although popular we question its usefulness in clinical practice. A customised anatomical

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approach to treatment optimises primary management. It is also a useful prognostic aid.

15:42 Questions

Guest lectures: Hands

15:45 Bilateral hypoplastic thumbs Blauth type 3b: case report
Professor D Schaefer

16:00 Dilemmas in the hypoplastic thumb
Professor S Kay

16:15 The triphalangeal thumb
Miss B Crowley

This presentation will include a description of types of triphalangeal thumb, classification systems and their limitations, anatomical anomalies and functional implications of triphalangeal thumb. Aims of treatment, treatment options and pitfalls of treatment will be discussed.

16:30 Discussion

16:45 Refreshments

(Parallel) Free papers: Paediatric plastic surgery (Liffey meeting room 3)
Chairs: Professor M Earley and Mr Peter Budny

14:35 The "conservative" radical muscle dissection: a new approach in cleft palate repair
Dr M McKelvie, Mr T Ahmad (Cambridge)

Introduction: Sommerlad Radical Muscle Dissection (RMD) is considered the gold standard in trying to achieve optimal speech outcomes. We demonstrate a novel approach to palate repair, incorporating hydrodissection and a 'parting of planes' technique, developed in Cambridge since 2007. We will show how this technique highlights palatal structures more clearly and reveals hitherto unseen anatomy.

Materials and Methods: We reviewed digital videos of palate repairs to assess how often these new anatomical structures were seen and able to be preserved, in particular looking at junction of the hard and soft palate with respect to the 3-dimensional anatomy of the bone, soft palate fascial planes and the tensor aponeurosis.

Results: Video and illustrations will be presented to outline this new approach and we will highlight the new anatomy, relationships and incidence.

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Conclusion and Clinical Application: The demonstrated dissection technique clearly visualises important structures and new anatomy which can be better preserved. Neurovascular filaments, the detailed structure of the tensor aponeurosis in cleft, and a new associated muscle is demonstrated. This conserving approach retains the essential elements of RMD but may provide additional benefit to improve outcomes. A separate instructional video of the technique has also been created for educational purposes.

14:42 Questions

14:45 A retrospective analysis of the functional outcomes of the hybrid palatoplasty technique: a twenty-year experience

Mr M Swan, Dr D Fisher, Mrs P Klaiman, Mrs S Fischbach, Dr H Clarke (Toronto, Canada)

Introduction: The hybrid palatoplasty technique for complete unilateral (or mixed bilateral) cleft palate repair consists of a Veau flap on the lesser segment and a Von Langenbeck flap on the greater segment. The alveolar cleft is left intentionally unrepaired. The functional results of the hybrid technique have hitherto not been reported.

Methods: A retrospective review of all hybrid palatoplasties performed at SickKids, Toronto, between 1989 and 2009 was performed. Follow-up was for a minimum of five years. The primary outcome measures were the post-operative fistula rate and the incidence of VPI.

Results: A total 203 hybrid palatoplasties were performed; records were obtained in 202 patients. Fifty-nine patients (29%) were female. The majority (94%) had a Veau type III cleft. Eighteen patients (8.9%) were syndromic. Four post-operative fistulae (2.0%) were recorded.

The mean age at follow-up was 11.7 years (SD 5.0). Normal velopharyngeal function was recorded in 146 patients (72.3%). VPI was documented in 56 patients (27.7%): 17 had a secondary Furlow procedure (with two scheduled) and 36 had a pharyngeal flap (with one scheduled).

Conclusions: The hybrid technique is associated with a low risk of fistula formation and preliminary data suggests a VPI rate of 27.7%.

14:52 Questions

14:55 Radical muscle dissection in cleft palate repair: what about the lesser palatine nerves?

Dr J W Mortimer, Miss F V Mehendale, Dr S H Parson (Edinburgh)

Introduction: The lesser palatine nerves (LPNs) are overlooked in radical muscle dissection techniques for cleft palate repair. As well as

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supplying sensation, taste and glandular secretion to the velum, reports suggest they carry facial nerve motor fibres to levator veli palatini (LVP). This study explores LPN anatomy with reference to a leading repair technique.

Methods: LPNs and LVP were dissected under magnification in three cadavers. Sihler nerve staining was carried out for the first time in the velopharyngeal region. A literature review was also undertaken to identify trends in the reported inconsistencies of LVP innervation.

Results: LPN branches ran oral to the tensor aponeurosis, terminating within the glandular layer oral to the muscular velum. No LPN fibres entered LVP. The main LVP nerve emerged from the lateral pharyngeal wall. Evidence refuting LPN facial nerve motor contribution to LVP seems only found in non-primate studies.

Conclusions: Radical muscle dissection severs LPNs, which carry fibres of sensation, taste and glandular secretion to the velum, potentially affecting speech development. Awareness and protection of LPNs when dissecting around the hamulus and velar/hard palate junction may improve outcome. Post-cleft palate repair studies of non-motor velar function should be undertaken, possibly informing modifications in technique and timing of surgery.

15:02 **Questions**

15:05 **Finger sucking: a significant cause of palatal fistulae**
Dr A Collins, Ms C Healy, Ms A McGillivary, Professor M Earley (Dublin)

Introduction and Aims: A number of factors have been implicated in the formation of fistulae post-palatoplasty. The aim of the study was to evaluate the association between pacifying behaviour and the development of a post-operative fistula and to determine the effect of post-operative mittens on fistula incidence.

Methods: A retrospective case-control study was performed involving patients who underwent a primary cleft palate repair between 2005 and 2011. The wearing of mittens for three consecutive weeks post-operatively was introduced at the midpoint of the study timeline. Chi Square tests (CS) were used to evaluate the associations between pacifying behavior, mitten wearing and the development of a post-operative fistula.

Key results: The senior author performed 265 cleft palate repairs using the von Langenbeck and Sommerlad method. 20% of participants were finger suckers, 14% were thumb suckers and 35% used a pacifier. Mittens were worn by 61% of the study group and the compliance rate was 97%. The overall fistula rate was 11.7%. Analysis confirmed a significant association between finger sucking and fistula formation

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(Ï‡2(1) = 61.787, *p*=0.000, CS). The fistula rate fell from 15.8% to 8.5% following the introduction of mittens and a significant association was demonstrated between the absence of mittens and the development of a post-operative fistula (Ï‡2(1) = 4.269, *p*=0.039, CS).

Conclusions: Finger sucking is an independent risk factor for the formation of a fistula post palatoplasty. Mittens offer a simple, well-tolerated and effective method that can reduce the likelihood of a post-operative fistula.

15:12 Questions

15:15 Experience of 1000 bleomycin sclerotherapy treatments of haemangiomata and vascular malformations

Mr N Brierley, Dr G Kessell, Dr F Hampton, Dr R Jajaraj, Mr T Muir (Middlesbrough)

Introduction: Treatment of vascular anomalies remains challenging. Rapid control of proliferation in haemangiomata and stabilization of ulceration is often problematic. We utilise bleomycin sclerotherapy successfully in complex malformations with no neural injury and minimal recurrence. Bleomycin induces rapid and irreversible arrest of endothelial proliferation with particular benefit in ulcerated hemangiomata.

Methods: Data was collected as a prospective observational study. Colour photographs were taken before and after treatment. Injection was performed percutaneously with ultrasound guidance under a short general anaesthetic or Remifentanil sedation as a day case procedure.

Results: 354 patients received treatment: 77 haemangiomas, 197 venous malformations, 59 lymphatic malformations, 17 capillary-venous malformations and 4 AVM's were treated with a 96.5% response rate. 60% of patients achieved complete resolution, 28.7% significant improvement and 7.8% mild improvement.

A total of 104 patients were referred from other centres in the UK. 47% of patients with previous unsuccessful treatments performed elsewhere were salvaged successfully. Minor complications occurred in less than 2% of patients and no lung complications were noted. After six years, a recurrence occurred in only two patients (0.57%).

Conclusions: A high success rate, very low recurrence and minimal complication rate makes bleomycin a powerful and attractive sclerosant choice in haemangiomas and vascular malformations.

15:22 Questions

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15:25 – 15:35

15:25 A new treatment pathway for propranolol use in infantile haemangiomas
Mr J May, Mr S Liew (Liverpool)

Introduction: Propranolol is now the first-line treatment for rapidly proliferating haemangiomas. It has been shown to cause rapid halt of proliferation and promote regression of problematic haemangiomas.

We have previously described a propranolol treatment protocol which required a thorough cardiovascular assessment and a 24-hour admission to hospital. There were no side-effects of treatment in this group, so we developed a new protocol that allowed treatment to be initiated on an out-patient basis.

Methods: Consecutive patients who met the inclusion criteria were enrolled into the study and commenced on propranolol treatment. Propranolol was prescribed at a dose of 0.5mg/kg three times a day for 24 hours, then increased to 1mg/kg.

Follow up phone calls were made at 24 hours after commencement of treatment. The patients were then seen at four weekly intervals, for monitoring of treatment efficacy and side effects.

Results: In total, 41 patients were recruited into the study. The average age at start of treatment was 14 weeks (range 3–25). Average treatment response time was 3.4 weeks (range 1–9). There were no side effects of treatment.

Discussion: We have demonstrated in this study that, with the good safety profile of propranolol, extensive cardiovascular screening prior to starting the drug for treatment of infantile haemangioma is unnecessary.

A streamlined and safe treatment regime, which can be initiated at home, and does not necessitate a 24-hour hospital admission, is also important in the current financial climate.

15:32 Questions

15:35 Ear reconstruction in trauma
Mr G O'Toole (London)

Introduction and Aims: Over 100 cases of ear reconstruction performed over the last three years by the senior author will be considered in this presentation. The causes, including human bites, burns and iatrogenic injuries will introduce the discussion.

Materials and Methods: More than 50 injured ears have been reconstructed using costal cartilage and these will be considered in

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more detail, with photographs and illustrations. Techniques to avoid, and an up to date, simple and logical approach to reconstruction will be presented.

Results: A selection of results will be presented with before and after photographs.

Conclusion: Surgery to reconstruct traumatic ear deformity can achieve good results, if a simple and logical approach is applied to each individual case.

15:42 Questions

15:45 Auricular reconstruction following human bite injuries: outcome analysis

Ms E Majdak-Paredes, Ms J Mennie, Mr K Clapperton, Mr K Stewart (Livingston)

Aims: To analyse risk factors, socioeconomic background, surgical techniques and outcome in auricular human bite injuries.

Material and Methods: A retrospective case notes and medical photographs analysis was performed. Patients received a PROM outcome questionnaire to assess satisfaction.

Results: A total of 25 patients (24 male and 1 female) with post-human bite auricular defects were referred to our clinic. Mean age was 30 years (range: 18–52). Secondary auricular defect from human bite comprised lack of helix, scapha and antihelix as well as subtotal or total amputation. 17/25 (68%) decided to undergo autologeous auricular reconstruction. Costal cartilage was used in all patients in stages. Two (11.5%) patients underwent postauricular tissue expansion and five (29.5%) TPF with SSG. In the remaining patients FTSG was used. Twelve patients (48%) were smokers, four (16%) drug users and three (12%) alcoholic, seven (28%) were unemployed and three (12%) were in prison. There were no major complications or reconstruction failure. Minor complications occurred in three patients (12%) and comprised seroma, haematoma and infection. Two patients underwent minor scar revision. One patient deceased due to psychiatric illness.

Conclusion: Despite physical and psychosocial co-morbidities, autologeous auricular reconstruction following human bites is a safe procedure associated with aesthetically pleasing outcome and improved quality of life.

15:52 Questions

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THURSDAY 28 NOVEMBER 2013

15:55 – 16:05

15:55 **Release of the reconstructed ear: a preliminary scoring system for technique selection**
Mr G Murphy, Mr W Sabbagh (London)

Introduction: Release of a reconstructed ear is a challenging aspect of auricular reconstruction, with no consensus on the best approach. The techniques may be divided broadly into simple (skin graft) and complex (cartilage block and fascial flap) approaches. To guide technique selection, we developed a novel scoring system for the results of auricular release.

Method: We devised a weighted score assessing six domains, giving greatest weight to projection and sulcus quality (table 1). Patients were scored six months after surgery, and rated their overall satisfaction on a VAS score.

	Projection	Sulcus	Uniformity	Graft Quality	Mobility	Donor Site	Max
Poor	0	0	0	0	0	0	
Satisfactory	4	2	1	1	1	1	
Good	8	4	2	2	2	2	
Very Good	12	6	3	3	3	3	30

Results: A total of 20 patients were assessed, of whom eight had skin grafts and 12 had complex releases. Simple techniques provided predictable scores (13–16/30) with high patient satisfaction (4/5). These had poor projection but good sulcus and mobility. Complex techniques with optimum outcome had higher scores due to better projection, but overall gave more unpredictable results and equivalent patient satisfaction.

Conclusions: Simple techniques provided reliably good results, whereas complex techniques were associated with less predictable outcomes. This may be due to both technical and patient healing factors. We suggest reserving complex reconstructions for motivated patients who desire greater projection.

16:02 **Questions**

16:05 **Guest lecture: Unilateral cleft lip repair**
Dr D Fisher

Background: A technique of unilateral cleft lip repair is presented. The repair draws from a variety of previously described repairs and adheres to a concept of anatomical subunits of the lip. Cases from within the spectrum of the deformity have been chosen from a series of 390 consecutive cases to demonstrate the applicability of the technique in all forms of unilateral cleft lip.

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Methods: Incisions cross the lip perpendicular to the cutaneous roll at the cleft side peak of Cupid's bow of the medial lip and at the base of the philtral column of the lateral lip. Above this level, incisions ascend the lip to allow for approximation along a line symmetrical with the non–cleft-side philtral column. Incisions then ascend superolaterally bordering the lip columellar crease to the point of closure in the nostril sill. A Rose-Thompson lengthening effect occurs just above the level of the cutaneous roll. If necessary, a small triangle positioned just above the cutaneous roll is often used. Any central vermilion deficiency is augmented by a laterally based triangular vermilion flap from the lateral lip element.

Details of the repair will be discussed using selected patients covering the full spectrum of cleft lip and palate.

Conclusions: A technique of unilateral cleft lip repair is described. The repair allows for a repair line that ascends the lip at the seams of anatomical subunits. (Plast. Reconstr. Surg. 116: 61, 2005)

16:35 **Session close**

16:45 **Refreshments**

16:55 **BAPRAS AGM (Open to members in all categories)**

19:20 **Association Dinner (coaches from CCD at 19:00)**

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FRIDAY 29 NOVEMBER 2013

07:30 – 08:40

07:30 **Perineal special interest group (Liffey meeting room 3)**

08:00 **Registration and refreshments**

Free papers: Breast
Chairs: Mr C Morrison and Miss A Hazari

08:30 **Audit of national compliance with OPBS guidelines for best practice**
Mr N Hamnett, Miss K Nelson, Mr R Choa, Mr A Hague, Mr R Warner (Stoke on Trent)

Aims: To assess national compliance with new OPBS guidelines six months post publication.

Methods: All 80 breast screening units in England were contacted. A telephone questionnaire was conducted with a breast care nurse. A 5-point scale was used for respondents to answer.

Results: 77% of screening units referred patients externally for consideration for free flap reconstruction. Only where the plastic surgeon was on site were they present at the MDT.

62% of units achieved the target of discussing OPBS in 100% of patients requiring a mastectomy. 55% of units discussed the oncological and reconstructive management of every patient at the MDM (target 100%).

55% of units did not have a formal departmental post-op complication database. 72% of units did not use a standardised assessment tool for patient satisfaction at three and 18 months.

Conclusion: The audit identified variable compliance with the guidelines. Recommendations include plastic surgeons taking an active role in the breast MDT.

08:37 **Questions**

08:40 **The theories of perfusion zones of deep inferior epigastric perforator free flap: a clinical assessment using tissue oximetry method**
Mr R Arya, Mr M Shafighi, Mr R Parker, Mr M Griffiths, Mr M Constantinescu, Mr V Ramakrishnan (Chelmsford)

Introduction: The perfusion of various zones of deep inferier epigastric perforator (DIEP) flap has been the subject of extensive debate. The classic Hartrampf zones 2 and 3 were shown by Holm to be reversed. There is a paucity of clinical studies on comparison of continuous in-vivo perfusion of these zones in the post-operative period. We assessed the perfusion of the zones and their post-operative changes using tissue oximetry method.

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Patients and Methods: Fifteen DIEP flaps were assessed for perfusion of the three zones of Holm using three oximeter probes over the first 48 hours after the operation. Nine flaps were raised on medial and six on lateral row perforator(s). For statistical analysis a linear mixed effects model was applied to the perfusion data with time and zone as fixed and location of the perforator as random effect.

Results: Zone 3 had lower PtiO2 (partial pressure of tissue oxygen) than zones 1 and 2 in lateral perforator group (Z1=Z2). In medial perforator group, zone 1 had greater PtiO2 than zones 2 and 3 (Z2=Z3). Perfusion rates and their differences do not appear to change significantly over 48 hours across the zones.

Conclusion: In-vivo perfusion of the three zones of DIEP flap do not follow the previously proposed models strictly. Authors believe that the zonal perfusion is mainly affected by the calibre of the perforator vessel and the distance from the vessel as determined by Poiseuille's law rather than mere location of the perforator.

08:47 **Questions**

08:50 **Predicting venous congestion before DIEP breast reconstruction: a double-blind randomised controlled trial**
Mr C Davis, Dr L Jones, Miss R Tillett, Mr S Wilson (Bristol)

Background: Venous congestion jeopardises DIEP flap survival. We hypothesise pre-operative computed tomography angiography (CTA) may identify patients 'at risk' of venous congestion due to absent communication between deep and superficial venous systems.

Methods: Patients undergoing pre-operative CTA and DIEP breast reconstruction by a single surgeon were prospectively entered into a database between August 2009 and May 2013. Post-operative venous congestion was identified. Pre-operative CTAs of patients with subsequently congested flaps were re-interpreted by a consultant radiologist blinded to the clinical outcome ('Congested Group'). CTAs of uneventful DIEP flaps were re-interpreted ('Non-Congested Group'). Anatomical features from CTA were compared between groups before blinded analyses.

Results: A total of 221 DIEP flaps were performed in 183 patients during the four year study period. Venous congestion occurred in 18 flaps (8.1%). Perforator diameter, SIEV size (1.6mm; 1.5mm) and absent connections between deep and superficial systems (11.1%; 12%) were similar (Congested Group; Non-Congested Group). However, despite frequent connections, the majority of connections from the Congested Group were abnormal by size (small = 31.3%), course (tortuous = 18.8%) or position (superficial, high or lateral = 31.3%).

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Conclusion: Pre-operative CTA identified abnormal venous connections in DIEP flaps that may assist future surgical planning to predict patients at risk of venous congestion.

08:57 **Questions**

09:00 **The superficial outside-flap shunt technique for free deep inferior epigastric perforator flap salvage**
Mr A Davies, Miss J O'Neill, Mr S Wilson (Bristol)

Introduction: A preventable cause for loss of a deep inferior epigastric perforator flap is venous congestion secondary to inadequate outflow via the deep perforating vessels. Further anastomosis of the superficial venous system provides effective outflow and salvage of the congested DIEP. Methods have been described requiring dissection of additional recipient venous systems or around the perforating vessels in order to provide a vein onto which the superficial system may be anastomosed. These are associated with increased morbidity or risk of damage to the pedicle. We describe an alternative technique.

Technique: An additional length of deep inferior epigastric vein cranial to the perforator is raised with the flap. Should congestion occur the superficial epigastric vein is anastomosed onto this additional length of DIEV, thus providing a shunt outside of the flap perforator but intrinsic to the flap vasculature. We present a flow chart for methods of salvage of congested flaps as well as the incidence in our series of almost 500 flaps.

Conclusion: This technique avoids the need for additional dissection of recipient vessels extrinsic to the flap or further handling of the perforator, its venae commitantes or the main pedicle of the flap thus reducing the risk of damage.

09:07 **Questions**

09:10 **Total rib-sparing technique for internal mammary vessel exposure for free flap breast reconstruction: a five-year experience**
Miss A Rosich-Medina, Dr S Bouloumpasis, Miss A Khoo, Miss Z Jessop, Dr M DiCandia, Mr M Moses, Mr C Malata (Cambridge)

Introduction: Total rib preservation during internal mammary vessel (IMV) dissection aims to reduce morbidity at the recipient site during autologous microvascular breast reconstruction. This technique was adopted by the senior author in Cambridge in June 2008, and has been used exclusively in all free flap breast reconstructions since.

Methods: Prospectively collected free flap data was analysed to determine the indications, surgical details and outcomes for this technique in breast reconstruction.

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Results: 178 breast free flaps (156 unilateral:22 bilateral; 133 immediate:45 delayed) were performed by the senior author over five years. Patient ages ranged from 28 to 71. There were 154 DIEP flaps, 14 SIEA flaps, seven muscle-sparing free TRAM, two IGAP flap and one free LD flap. The mean inter-costal space distance was 21.1mm (range 13–29). The mean length of time taken to prepare the IMV's was 56 minutes (range 17–192). The mean ischemia time was 95 minutes (range 38–190). Free flap survival was 100%, although 3% (1.7%) required a return to theatre for exploration and flap salvage. There were no complaints of localised chest wall pain and no contour deformity was observed.

Conclusion: Total rib sparing technique for IMV exposure is safe, reliable and versatile.

09:17 Questions

09:20 Evolution from the TUG to PAP flap for breast reconstruction; comparison and refinements of technique
Miss J Hunter, Miss A Lardi, Mr J Farhadi (London)

Introduction: The transverse upper gracilis (TUG) flap is an alternative autologous breast reconstruction. Limitations include: short pedicle, modest volume, muscle sacrifice and problematic donor site. The profunda artery Perforator (PAP) flap utilises large perforators posterior to gracilis, harvesting posterior thigh adipose. We describe our preliminary experience of its use compared to our series of TUGs.

Method: We obtained imaging prior to all PAP flaps. We raised the flap in the 'frog-leg' position, from anterior to posterior, negating patient turning and preserving inferior gluteal artery perforators (IGAP) as a bail out. A prospective database (2010–2013) allowed comparison of TUG and PAP flaps undertaken.

Results: 52 TUG and 10 PAP flaps were performed. Three PAP flaps were converted to IGAP flaps. 98.4% flaps were successful. PAPs allowed greater flexibility of inset compared to TUGs. Mean flap weight= 295g (TUG) and 298g (PAP). TUG donor site complications included four seromas, two neuropraxias and three scar revisions compared to zero PAP donor site complications.

Conclusion: Our preliminary experience of PAPs has been favourable to TUGs. Although it is more challenging to raise, it does have benefits of a longer pedicle, with no muscle sacrifice. The perforators should have a more defined and larger perfusion zone, with greater potential adipose harvest, better hidden scar and fewer issues with seroma.

09:27 Questions

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09:30 **Capsular contracture in implant-based breast reconstruction: the effect of porcine acellular dermal matrix**
Mrs A Lardi, Mr M Ho-Asjoe, Mrs P Mohanna, Mr J Farhadi (London)

Introduction: Irradiation is known to increase capsular contracture (CC) rates from 10–20% to 30–50%. The use of acellular dermal matrix reduced CC rates to 2–3% in non-irradiated breast reconstruction. The aim of the study was to evaluate the effect of porcine ADM (PADM) on CC rates in irradiated breast reconstructions.

Methodology: A multi-centre retrospective cohort study was performed from December 2008 to October 2012. Two hundred immediate implant-based breast reconstructions were performed using PADM for inferior pole coverage. Exclusion criteria were a follow-up less than six months after the last procedure, less than one year post radiation therapy and intra- and pre-operative irradiation. The Spear-Baker classification for irradiated breast reconstruction was used for CC grading.

Results: 122 breast reconstructions were included (84 non-irradiated, 38 irradiated). 6% showed clinically significant CC in non-irradiated breast reconstructions (1.9% in one stage, 13.3% in two stage) and 13% in irradiated breast reconstructions (0% in one stage, 18.5% in two stage).

Conclusion: The study shows a remarkable reduction in CC rates in irradiated and non-irradiated breast reconstructions when PADM is used. CC rates were significant higher in two stage procedures. The results suggest a protective effect of PADM against CC in non- and irradiated breast reconstructions and suspect expansion to trigger CC.

09:37 **Questions**

09:40 **Scar wars: patient preferences in breast surgery**
Mr C Joyce, Mr S Murphy, Ms S Murphy, Mr J Kelly, Mr C Morrison (Dublin)

Introduction: In an era of patient empowerment and internet access, increasing demands are being placed on the surgical and aesthetic outcomes in breast surgery. Excisional patterns frequently do not take into account the subsequent need for completion mastectomy.

Newer techniques such as reduction pattern-based oncoplastic tumour excision coupled with scientific evidence showing the safety of the skin sparing mastectomy are improving our armamentarium in breast reconstruction.

Method: We designed a three-page questionnaire ranking of four sets of images showing various excisional and reconstructive techniques. 500 patients from two large Irish centres were surveyed. All variables

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were eliminated except the scar pattern to ascertain which scars were visually most acceptable to patients of both sexes.

Results: A total of 500 questionnaires were completed and analysed. Opinions on scars and visual scar preference were studied. Preference for breast scarring is distinctly limited to the lateral component of the breast; abdominal scarring is the least preferable as a donor scar when looked at as an independent variable.

Conclusion: Scarring of the breast is an important component for women as it is a lifelong reminder of their treatment. Mutli-disciplinary pre-operative planning coupled with a joint patient-surgeon decision making process can achieve optimal results in breast surgery.

09:47 **Questions**

09:50 **A three year review of chimeric vascularised groin lymph node flap and DIEP flap for the management of upper limb lymphoedema**
Dr M Nassimizadeh, Dr A Nassimizadeh, Miss R Waters, Miss A Dancey (Birmingham)

Introduction: Post-mastectomy upper extremity oedema is a debilitating condition which is estimated to occur in 16 to 39% of breast cancer patients. Most patients are managed conservatively and should this fail, a variety of surgical techniques have been described which pays testament to the lack of satisfactory long term results

We have developed a technique for breast reconstruction and improvement of post-mastectomy lymphedema using a chimeric vascularised groin node and deep inferior epigastric perforator (DIEP) flap, negating the need for microlymphatic anastomosis

Method: LYMQOLARM (lymphoedema quality of life tool) scoring questionnaire, identifying four domains pre and post-operatively: function, appearance, symptoms and emotions, and overall quality of life, was sent to 15 patients who had undergone transfer.

Results: Eleven patients (73% reply rate) completed the questionnaire. All patients showed improvement post-operatively across all categories. Average improvement in the areas was: function 16%; appearance 28%; symptoms 25%; emotion 20%; quality of life 32% (average improvement was 3.2 on a scale of 1 to 10). All patients would recommend the procedure and improvements were seen immediately in eight cases.

Conclusion: A chimeric vascularised groin node and DIEP flap can significantly improve post-mastectomy lymphoedema and could potentially become the gold standard in management.

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09:57 Questions

(Parallel) Free papers: Lower limb, chest and pelvis (Liffey meeting room 3)
Chairs: Mr A Jain and Mr B Kneafsey

08:30 Can we BOAST about open fracture management?
Mr M Wordsworth, Mr G Lawton, Mr A Jain, Mr J Simmons, Mr S Hettiaratchy (London)

Introduction: The standards of care for open tibial fractures set out in 2009 aimed to deliver better clinical outcomes. We analysed a cohort of patients managed within the standards to see if this occurred.

Methods: Data collected prospectively on all open lower limb fractures treated in 2011 and 2012 identified 137 patients.

Results: 84% of patients were debrided within 24 hours. The median time to first debridement from time of injury was 12 hours for direct admissions compared with 18 hours for transferred patients. 89% of debridements were joint orthopaedic and plastic surgical consultant cases. The median time to soft tissue coverage was 2.5 days. Soft tissue closure required 23 free flaps, 30 local flaps, and 25 split skin grafts. There were nine amputations, a rate of 6.4%. Those patients with an ILLC injury had a 56% amputation rate and patients >70yrs the amputation rate was 31%. At ten months follow up only two patients have had proven deep bone infection (1.5% infection rate).

Conclusions: Application of the BOAST4 standards has led to an improvement in deep infection rate (8.4% pre-BOAST, 1.5% post-BOAST) one of the most important outcomes in open fracture management. This systemised approach has led to better early outcomes.

08:37 Questions

08:40 Closing time: does it matter in the soft tissue reconstruction of open tibial fractures?
Mr M Wordsworth, Mr G Lawton, Mr A Jain, Mr J Simmons, Mr S Hettiaratchy (London)

Introduction: BOAST4 standards recommend open fracture soft tissue closure ideally within 72 hours and certainly not exceeding seven days. This can be challenging in the setting of a major trauma centre, with additional clinical and logistic constraints. We reviewed all patients with 3b open tibia fractures to check compliance and whether timing of closure affected outcomes.

Methods: There were 76 patients were identified prospectively over 24 months.

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Results:

Time to Closure	Number of patients	Polytrauma patients	No. procedures (median)	Free Flap required	Amputation	Length of stay d (median)	Wound infection requiring re-admission	Deep bone infection
⩽72h	31 (41%)	13 %	2	3 %	0	15.5	0	1 (3.2 %)
4–7 days	27 (35%)	19 %	3	19 %	11%	23	3 (11%)	0
>7 days	18 (24%)	33 %	4	61 %	6%	35	0	0

Conclusions: 24% of patients were definitively closed in greater than seven days. These were more likely to be multiply injured and require a free flap. Whilst this correlated with an increased number of surgeries and longer length of stay there was no increase in superficial or deep bone infections. This suggests that BOAST4 may be harder to apply to polytrauma patients but good outcomes can still be achieved.

08:47 **Questions**

08:50 **The use of vascularised bone/epiphyseal transfer in paediatric limb amputation (including the first microsurgical transfer of the proximal tibia)**

Miss S E Atkins, Mr D Thomas, Mr I Torode, Professor C Coombs (Melbourne, Australia)

Introduction: Bone overgrowth is a common sequela in paediatric amputations, resulting in stump breakdown. Capping the amputated bone end with non-vascularised bone has shown some benefit in prevention. If vascularised, the bone should improve union and the inclusion of a viable epiphysis enable continued growth.

Method: Six children had vascularised bone transfer for primary amputation (*n*=5) or stump revision (*n*=1). Two female and four male patients, aged 7 to 13 years old (average 9) were reviewed. (1–16 years post-operatively)

The leg was amputated (*n*=5), for trauma (*n*=3), sarcoma (*n*=1) or acute ischaemia (*n*=1) and a forearm for a complex lymphatic-venous malformation (*n*=1). Bone/epiphysis flaps were from the amputated part in those operated on primarily and a latissimus dorsi/scapular flap was used for secondary surgery.

Results: All flaps survived with good bony union, no major complications or bony overgrowth. We discuss the use of the proximal tibia, with epiphysis transferred microsurgically for a patient requiring femoral diaphyseal amputation.

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Conclusion: We present optimising outcomes in paediatric amputations using vascularised bone (and epiphysis) transfer, and the first description of a free proximal tibia transfer.

08:57 **Questions**

09:00 **The role of plastic surgeons in frontline combat operations: a three year evaluation**

Mr S Hettiaratchy, Lt L Maitland, Maj G Lawton, Lt Col J Baden, Lt Col T Cubison, Surg Cdr R Rickard, Col A Kay (London)

Introduction: Consultant plastic surgeons have been deployed to Afghanistan since 2008. The aim of this study was to analyse their activity objectively.

Methods: Data was gathered prospectively from five operational tours between 2009 and 2012. This coincided with different surgeons, different types of kinetic activity, different wounding patterns and different mission emphasis for the hospital. Various metrics were measured.

Results: Plastic surgeons were involved in 41% of all surgical cases undertaken (645/1592). This was consistent despite changes in the predominant wounding mechanism and casualty population. One third of cases involved the plastic surgeon as the lead or sole surgeon and two thirds involved working with other surgeons. Case breakdown was: head and neck 21%; upper limb 28%; lower limb 20%; torso 9%; multiple sites 22%. All data were consistent between tours despite changes in injury patterns.

Discussion: This data supports the concept of deploying plastic surgeons to the field hospital as part of the surgical team. They contribute to a large number of cases and complement the skill mix of the other deployed surgeons. Their level of activity is independent of specific wounding patterns, suggesting that the deployment of plastic surgeons to warzones may be the future standard of care.

09:07 **Questions**

09:10 **Traumatic lower limb amputation from resuscitation to reconstruction: comparing the military and civilian experience at QEHB**

Miss P Jackson, Capt R Staruch, Mr J Hodson, Captain G Yim, Lt Col T Cubison, Major M Foster, Professor S Jeffery (Birmingham)

Introduction: The aim of this study was to compare the demographics, treatment and reconstruction of military and civilian patients suffering from traumatic limb amputations.

Methods: Patients sustaining traumatic amputation were identified using the Joint Theatre Trauma Registry and INFORMATICS database. Variables were: age, length of stay, days on ITU, ventilator days,

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mechanism of injury, ISS, NISS, blood products used, injuries, systolic blood pressure on presentation, GCS, timing of amputation, level of amputation on discharge, number of operations, discharge destination, mobility on discharge and reconstruction. Statistical analysis used Fishers Exact and Mann-Whitney test.

Results: A total of 46 military and 24 civilian patients were identified. There was a significant difference in age ($p<0.001$), ITU LOS ($p<0.001$), ITU ventilator days ($p=0.034$), ISS ($p<0.001$), NISS ($p<0.001$), number of blood products ($p<0.001$), mean systolic BP ($p<0.005$), number of surgical procedures ($p<0.001$), timing of amputation ($p<0.001$), associated injuries ($p<0.001$) and requirement for a more proximal amputation ($p=0.007$). Analysis showed no difference between time to stump closure ($p=0.325$), length of stay ($p=0.430$) and discharge mobility ($p=0.576$).

Conclusion: This is the first study to compare the outcomes of these groups at the same centre. We highlight that military patients suffer more significant injuries but have similar recovery times to civilians.

09:17 **Questions**

09:20 **Perfusion dynamics in lower limb reconstruction: an investigation of free flap training using combined white light tissue spectroscopy and laser doppler (O2C)**

Mr J Henton, Mr J Simmons, Mr S Hettiaratchy, Mr A Jain (London)

Introduction: Subjecting lower limb free flaps to cycles of dependency and elevation in the post-operative period (flap training) is widely practiced, despite a lack of evidence for its use.

Methods: Ethical approval was granted for a human study. After a five-day rest period, perfusion during a three-day training regime was assessed using tissue photospectroscopy and laser Doppler (O2C, LEA, Germany) in eight lower limb ALT free flaps. Oxygen saturation (SO2), haemoglobin concentration (rHb) and flow measurements over three days were compared to pre-training control measurements.

Results: Five minutes of leg dependency resulted in mean decreases in SO2 of 45% on day 1 ($p=0.05$) and 56% on day 2 ($p=0.02$). Haemoglobin concentrations increased by 20% on day 1 ($p=0.01$) and 26% on day 2 ($p=0.02$). Flow decreased by 67% on day 1 ($p=0.19$) and 78% day 2 ($p=0.03$). On day 3 changes were observed to a lesser degree and only rHb increases remained statistically significant ($p=0.01$).

Conclusion: Initially, dependency causes reduced oxygenation, increased venous pooling and decreased flow, consistent with venous congestion. However by day 3, flap perfusion has accommodated for these changes.

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This provides a rationale for flap training, although further work is required to explain the mechanisms.

09:27 **Questions**

09:30 **A sixteen year review of 26 instep flaps: single surgeon experience**
Ms L Damkat-Thomas, Miss C Harris, Mr H Lewis, Mr K Herbert (Belfast)

Introduction: The instep flap is well described in the literature and can be based on the medial plantar artery as the medial plantar flap, or as the medialis pedis flap based on the deep branch of the medial plantar artery. The islanded instep flap is frequently used in weight bearing plantar reconstruction. The free instep flap is used in the reconstruction of hand defects and contralateral foot defects. We present our unit's experience with both free and islanded instep flaps.

Method: All instep flaps performed between 1998 and 2013 were included.

Results: Twenty-seven patients were identified. Eight free flaps were performed, six for hand defects and two for contralateral foot defects, with one flap failure. Nineteen pedicled flaps were performed, all for defects of the foot/heel following oncological clearance and no flap failures. All patients returned to normal weight bearing post-operatively. Further patient demographics will be presented.

Discussion: The instep flap provides a versatile option both as a free flap and as a pedicled flap for heel defects. In our unit it is raised as the medialis pedis flap and in the supra-fascial plane as this reduces donor site morbidity. The surgical technique and post-operative management will be presented.

09:37 **Questions**

09:40 **The free sartorius flap: clinical cases and anatomical study**
Mr D Ng, Mr M Vesely (London)

The sartorius flap is an easily harvested flap that can be raised with the leg in the anatomically extended position without rotation. The cutaneous landmarks are readily identified and so the relevant perforators can be quickly found. Pedicle dissection is quick and easy, allowing the flap to be raised in a short time.

We report our experience of using this flap both as a free muscle-only flap and as a free fasciocutaneous perforator flap for soft-tissue reconstruction in the lower limb. An anatomical study was also carried

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out to examine the vascular anatomy of the sartorius muscle flap and the cutaneous perforator flap.

Twenty limbs from soft fixed adult cadavers were dissected and the position, length, diameter and cutaneous extension of all segmental pedicles were measured. Fourteen out of 20 (70%) sartorius muscles had at least one musculocutaneous perforator and, of these muscles, 13 (93%) had at least one musculocutaneous perforator that was found at 20±3cm from the ASIS.

The free sartorius flap is a useful addition to flap choice from the thigh and carries a predictable cutaneous perforator in the majority of cases, allowing a fasciocutaneous perforator flap to be quickly and reliably raised with minimal donor-site morbidity.

09:47 **Questions**

09:50 **Perineal reconstruction in a regional plastic surgery centre**
Mr J Cubitt, Mr P Drew (Swansea)

Demand for reconstruction of perineal defects has increased in South Wales and now represents a significant use of plastic surgical resources. The following is a review of patients undergoing flap reconstruction between February 2007 and April 2013 (six years, three months). All data were retrieved from a prospectively maintained database.

A total of 163 patients were included. Reconstruction was immediate in 143 cases (88%) and delayed in 20 (12%). Indications for immediate reconstruction included neo-adjuvant radiotherapy, control of pelvic dead space, or pelvic floor or vaginal reconstruction. In the delayed group, indications included chronic perineal wounds, restrictive scarring and perineal hernias.

The primary disease process was malignant in 136 patients, with locally advanced rectal adenocarcinomas representing the largest group (98). Twenty-seven patients had benign disease, the majority having Crohn's disease (19).

One hundred and seventy-five flap procedures were performed. Five patients required more than one flap at the same operation, while seven required a second flap procedure. One hundred and twenty-nine myocutaneous flaps and 46 fasciocutaneous flaps were used. An extended fascia-sparing VRAM flap was used in 88 cases (50% flaps) following pelvic exenteration, while gluteal fold flaps were used in 38 cases following vulvectomy.

09:57 **Questions**

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10:00 Major and minor post-operative complications of various methods of perineal closure following abdominoperineal resection
Dr P Arnold, Dr C Lahr, Mr R Farouk, (Jackson, MS, USA)

Introduction and Aims: Obtaining a healed perineal wound following abdominoperineal resection (APR) is challenging for both surgeon and patients. This study critically evaluates post-operative complications associated with various methods of perineal closure following APR.

Material and Methods: Outcomes from a series of patients who underwent APR from April 2008-February 2013 were analysed for major/minor post-operative complications. Primary closure was compared to flap closure which included vertical rectus abdominis myocutaneous (VRAM), unilateral inferior gluteal artery perforator fasciocutaneous (IGAP), and bilateral inferior gluteal artery perforator fasciocutaneous (BIGAP) flaps.

Key Results: A total of 61 patients were identified. Forty-two patients underwent flap reconstruction: VRAM (N=8, 19%); IGAP (N=4, 9.5%); and BIGAP (N=30, 71.5%). Major/minor complication rates for all patients were 44.3% and 27.9%, respectively. Major/minor complications for flap closure were 35.7% and 33.3%, respectively. Major/minor complication rates for primary closure were 63.2% and 15.8%, respectively. Major complication rates for VRAM, IGAP, and BIGAP flaps were 62.5%, 0%, and 33%, respectively. Minor complication rates for VRAM, IGAP, and BIGAP flaps were 0%, 25%, and 43.3%, respectively.

Conclusions: Flap reconstruction of the perineum is superior to primary closure. BIGAP flaps are an excellent choice for reconstruction due to ease of elevation and low donor site morbidity and complications.

10:07 Questions

Guest lectures: Lower limb

10:10 Foot and ankle reconstruction
Professor D Schaefer

10:35 The diabetic foot
Professor V B Narayanamurthy

Plastic surgery heals ulcers but keeping them healed is a real challenge in insensate diabetic neuropathy feet.

Increased pressure at high-risk areas of the foot is the precursor to ulceration. Power Ratio (PR), an advanced pressure parameter was developed to measure pressures in the feet. Footwear to relieve pressure areas was developed using 3D (FEA) Finite Element Analysis.

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11:00 – 11:20

A review of 560 diabetic patients showed six persons with local flaps. Surveillance using PR and use of footwear showed no re-ulceration after 6 - 15 years. However, sequel of neuropathy - Charcots feet, auto-amputations, trauma and repeated infections of toes and heel was distressing to see in these patients.

The need to reverse neuropathy was felt. Law of mobility, which states that the sensibility of a part is proportional to the degree of range of motion of the part, was used to detect gradient of sensory loss and choose patients for decompression of the nerve at the tarsal tunnel. Tarsal tunnel decompression was then used in established ulcers with excellent results in restoring sensation to the feet and help keep the ulcers healed.

Need for a new classification of diabetic feet compared to the existing ones will be discussed.

11:00 Refreshments

Free papers: Burns, wound healing and skin
Chairs: Mr O Shelley and Professor P Dziewulski

11:20 Management of mass burn casualties: a review of the Piper Alpha disaster
Miss S Vamadeva, Miss M Davies (Aberdeen)

Management of major burn incidents is a challenge. In the UK four to five incidents occur annually and the majority of incidents reported describe less than a hundred casualties. It is essential to thoroughly plan major burn incidents to ensure optimum management. In the year of its 25th anniversary our paper summarises lessons learnt from the Piper Alpha disaster.

The Piper Alpha oil platform, based in the North Sea, sustained a series of explosions on 6 July 1988 resulting in its near total destruction. Of the 226 men working there, 164 died at the scene and 21 of the 62 survivors were admitted to the Aberdeen Royal Infirmary (ARI) with major burn injuries. One in-patient died. Long-term studies found 21% of survivors continued to display signs of post-traumatic disorder ten years after the incident.

Emergency response teams had difficulty in repatriating patients due to fire intensity and disabled telecommunication and alarm systems; two rescuers died onsite. Survivors were transported to the Tharos rescue vessel and then by helicopter to the ARI Emergency Department, where they were triaged according to the major disaster plan. The following Cullen Inquiry suggested 106 recommendations for changes to North Sea safety procedures.

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11:27 – 11:40

11:27 **Questions**

11:30 **Does transfer pathway to burn centre affect mortality?**
Dr T Cassidy, Mr M Phillips, Ms F Wood, Dr D Edgar (Perth, Australia)

Introduction: The possible effect of the transfer pathway to burns centre, either by direct admission or indirect via peripheral hospital on mortality has not been thoroughly assessed. We used bi-national data from the Australia/New Zealand Burns Registry to address this issue.

Method: Data from 1 June 2009 – 31 March 2012 were included. The data was divided into those directly admitted (DA) and those indirectly admitted (IDA). Logistic regression identified indicators of increased mortality risk. Wilcoxon rank-sum tests compared risk indicator distributions between the DA and IDA groups.

Results:

Median	DA (IQR)	IDA (IQR)
Age	37 (25–52)	36 (24–50)
TBSA (%)	5 (2–10)	7 (3–13)
Time to admission (hrs)	1.8 (1.1–5.2)	7.9 (4.9–15.9)
Inhalational Injury (n, %)	153 (11.3%)	199 (13.6%)

IQR = Interquartile range
TBSA = Total Body Surface Area burned

There were 2829 patients, 1361 DA (48.1%) and 1468 IDA (51.9%) with 74 deaths (2.6%). Prolonged time to admission increased the risk of burn death in direct admissions with inhalation injury.

Conclusion: In Australia and New Zealand, our data indicates the risk of burn death is not influenced by transfer time except for direct admissions with inhalational injury.

11:37 **Questions**

11:40 **Critical care weakness in burns patients: an increasing problem**
Mr J Cubitt, Mrs M Davies, Mr G Lye, Mrs J Evans, Dr T Combellack, Mr W Dickson, Mrs D Nguyen (Morriston)

Critical care weakness is well-documented in the ITU setting but under-reported in the burns population. The diagnosis encompasses multiple pathologies including mono/poly-neuropathies, myopathies and global weakness. The aim of this study was to investigate the incidence of critical care weakness in our burns population and evaluate possible risk factors which can be identified early to optimise outcome.

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11:47 – 11:50

Patients with critical care weakness were recorded prospectively from 2008–2012. The medical, therapy and online pathology records were used to collect data on burn demographics, number of organs failing, septic episodes, ventilation, physiotherapy and occupational therapy milestones.

104 patients with resuscitation burns were admitted during the period and 22 patients (15 male, 7 female) suffered critical care weakness (incidence 21%). Mean results were calculated in the critical care weakness group: age- 40 years (18–69 years); TBSA- 47.9% (22–85%); modified Baux score- 95.6 (45.7–143); length of ventilation- 49 days (12–106); time to sitting- 37 days (22–66); standing unassisted- 86 days (36–325); walking alone- 105 days (38–437); predicted mortality 30%; all survived. Bilateral upper limb burns were recorded in 90% of patients and bilateral lower limb in 86%. 91% received continuous veno-venous haemodiafiltration for hyperpyrexia. All patients suffered multiple septic episodes and periods of multi-organ failure.

11:47 Questions

11:50 Continuous veno-venous haemodiafiltration for hyperthermia in burns patients

Mr J Cubitt, Mrs M Webb, Mr P Drew (Morriston)

Hyperthermia (>40°C) is associated with a high mortality. A burn injury results in the release of proinflammatory cytokines and catecholamines, causing a hypermetabolic state which may lead to hyperpyrexia. This risk is increased with concomitant sepsis. Continous veno-venous haemodiafiltration (CVVHDF) can be used to reduce the circulating cytokines thereby reducing the cause of the hyperpyrexia. CVVHDF use has been well documented in sepsis and SIRS in the ITU population. In our burns centre, CVVHDF is routinely used to treat patients with persistent hyperpyrexia. The aim of this study was to evaluate the role of CVVHDF in burn patients with hyperpyrexia.

A retrospective analysis was carried out of all patients admitted to the burns ITU between 2005 and 2012 who received CVVHDF. The medical notes and electronic databases were used to collect data on indication, renal function, duration and outcome.

A total of 61 patients received CVVHDF (41 males and 20 females). Average age was 44 years (14–85 years), TBSA 35% (1–90%), Modified Baux Score 91.6 (42–143). 31 patients (51%) had an associated inhalational injury. Median duration of CVVHDF was 7 days (0-57days). Eighteen patients died with a mortality of 30%.

CVVHDF can be successfully used to reduce the temperature in burns patients with hyperpyrexia by reducing the concentration of circulating cytokines.

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11:57 – 12:10

11:57 **Questions**

12:00 **Healing and scar outcomes in paediatric burn injuries to the palm: a comparison with non-palm burn injuries**
Dr L Kishikova, Mr M Smith, Mr S Booth, Miss T Cubison (East Grinstead)

Background: The approach to paediatric palm burn injury holds considerable debate as to whether a conservative or surgical approach is superior. Our study compared a cohort of children with palm burn injuries treated conservatively to a cohort with burns to other locations treated surgically to analyse scarring outcomes.

Method: A retrospective case note study was undertaken. All palm burn injuries presenting from 2010–2012 were collected and compared to a cohort of non-palm injuries presenting from May-October 2009. Statistical analysis was carried out.

Results: A total of 337 patients presented with palm injuries, in comparison to 157 patients with non-palm injuries presenting earlier. Differences were seen in TBSA and age, conducive with the nature of palm burn injuries. A significantly lower mean healing time (11.4 versus 18.4 days, $p<0.01$) was seen for palm burn cohort and significantly lower hypertrophic scarring (HTS) rates (2.5% versus 11.5%, $p<0.01$). Adjusting for healing time, significantly lower HTS rates were seen in palm burns healing between 22 and 30 days (3.3% versus 26.3%, $p<0.01$), followed by a large rise, at times >30 days not reaching significance.

Conclusion: Palm burns treated conservatively achieve outcomes superior to non-palm burns (healing time, HTS rate) treated with surgically. A large rise in HTS occurs for healing times >30 days, suggesting this is when operative intervention is appropriate.

12:03 **Questions**

12:10 **Early experience with lipofilling for burns scar contracture**
Ms M Byrne, Ms M Carter, Mr O Shelley (Dublin)

Introduction: Burn scars commonly cause impaired function, limitation of movement and disfigurement, due to the scar itself and secondary contour abnormalities. Structural fat grafting has potential dual benefits in these patients. Transferred fat may directly improve contour with potential benefits of favourable scar modulation due to the high proportion of adipose-derived stem-cells. We report our initial experience in burns patients who underwent structural fat grafting to address functional limitations and cosmetic concerns.

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Methods: Data was collected on 20 patients following lipofilling for debilitating, disfiguring burn scars of limbs and face (2001–2013). Abdominal subcutaneous fat was harvested and processed according to Coleman's technique. Pre/post-operative grip-strength, hand function, clinical photography and histology reviewed as appropriate. The modified Vancouver scar score was used to assess changes in scar outcome.

Results: 11 female, 9 males, with an average age of 45.2 years and burns scars to the hand (13) and head and neck (7) were included. Improvements were recorded in grip strength and flexion function. Notable improvement in pigmentation, vascularity, pliability and height were observed. Histologically, patterns of fat retention, and local hypervascularity were confirmed.

Conclusions: Lipofilling plays a role in scar modulation, is well tolerated, with minimal donor site morbidity and high patient satisfaction, and may have a beneficial role in improving function.

12:27 Questions

12:20 Burn contractures: possible solutions for challenging problems
Mr T Venter (Amsterdam, Netherlands)

Introduction: When proper initial medical care is not sought, not affordable or simply unavailable, serious burns can lead to severe contractures and deformities and be a challenge to the reconstructive surgeon. Careful planning of the surgery and a dedicated post-operative rehabilitation program can restore function and an acceptable aesthetic result is possible.

Method: We describe the surgical techniques for unilateral forehead flap based on the ipsi lateral temporalis vessels for total nasal reconstruction, advancement flaps in axillary and elbow contractures that help prevent recurrence of the contracture over flexor creases and the management of severe hand contractures.

Results: Pre- and post-operative results are demonstrated with up to two year follow up.

Conclusion: In West Africa where up to 60% of the population does not have access to any form of medical care extreme deformities are seen years after serious burns occurred Severe late post-burn deformities and contractures can be satisfactory managed with proper planning and, very important, a dedicated rehabilitation team consisting of dedicated physiotherapists and occupational therapists.

12:27 Questions

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Guest lectures: Burns and wound healing

Burn injury poses significant challenges to the surgeon with complex requirements in an often difficult environment. While the primary goal is wound healing, consideration must be taken to optimise function and form. Appearance is equally important and on occasion it may be possible to combine surgery to improve function with improved aesthetic appearance. We present analysis of how timing, infection and inflammation influence treatment and outcome following burn injury, and techniques which are used to achieve this including free tissue transfer, pedicled flaps and resurfacing procedures.

12:30 **Advances in burn care: the St Andrews' experience**
Professor P Dziewulski

12:55 **Challenges in burn care and reconstruction**
Mr O Shelley

13:20 **Lunch**

(Parallel) Free papers: Upper Limb (session 2) (Liffey meeting room 3)
Chairs: Mr H Lewis and Mr R H Milner

11:20 **External neuromodulation: a new non-invasive non-pharmaceutical treatment for neuromas and refractory nerve pain in the upper limb in an out-patient setting**
Mr A Siddiqui, Ms J Poel, Ms M Want, Ms A Copsey, Mr M Sood (Chelmsford)

Introduction: Painful nerves and neuromas are difficult to manage. Non-surgical management with analgesics and membrane stabilising agents and surgery in the form of neurolysis, nerve relocation, fascial wraps and flap cover have been described.

We treated 102 patients with external neuromodulation for this difficult problem and illustrate the inexpensive equipment and simple technique of treatment in an out-patient setting.

Material/Methods: A retrospective review showed that the nerves involved were:

Superficial radial	19	18.60%
Digital	38	37.20%
Lateral/medial cutaneous forearm	11	10.70%
Median	25	24.50%
Ulnar	6	5.80%
Dorsal branch of ulnar	3	2.90%

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Results:

Completely painfree / very significant reduction	31	(30.3%)
Pain relief few days to weeks	22	(21.5%)
Poor responders (few minutes to hours)	24	(23.5%)
No response	25	(24.5%)

Conclusions: External neuromodulation is a simple, effective, non-invasive out-patient technique which requires a five minute treatment session administered by a nurse or self-administered by the patient. Patients who have good results can stop opioids and membrane stabilizing agents, avoiding adverse effects of medication and can avoid surgery.

11:27 Questions

11:30 Skin involvement in Dupupytren's disease
Dr R Wade, Mr A Figus (Norwich)

Background: Dermofasciectomy is associated with the lowest recurrence rate in Dupuytren's disease. It is indicated for recurrent disease or clinically involved palmar skin. Clinical assessment for skin involvement remains debatable and its' histological correlation uncertain. We prospectively investigated the rate of dermal fibromatosis in patients undergoing fasciectomy and dermofasciectomy for Dupuytren's disease.

Methods: Over two years, biopsies of palmar skin overlying a cord or nodule, from 44 fasciectomies and 59 dermofasciectomies were histologically analysed for dermal fibromatosis. Data were compared with Chi Square tests. Odds ratios (OR) with 95% confidence intervals were generated.

Results: We found dermal fibromatosis in 22 fasciectomy (50%) and 41 dermofasciectomy (69.5%) cases, including eight patients (7.8%) who underwent fasciectomy as their skin was clinically uninvolved. Dermal fibromatosis was more common with greater degrees of deformity and dermofasciectomy showed greater improvements in range of movement (53.1 versus 92.8 degrees, $p<0.001$). Predictive factors of dermal fibromatosis included clinically involved skin (OR 2.12 [1.44, 3.11], $p<0.001$) and palpable palmar nodules (OR 1.73 [1.24, 2.40], $p=0.001$).

Conclusions: This is the first study comparing the clinical and histopathological features of skin involvement in Dupuytren's disease. Dermal fibromatosis may be a significant factor related to a higher risk of recurrence.

11:37 Questions

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11:40 – 11:50

11:40 Dupuytren's fasciectomy: is there really an increased risk of complications or recurrence if other procedures are performed simultaneously?

Mr A Jordan, Mr U Anwar (Wakefield)

Introduction: Surgery for Dupuytren's disease undertaken simultaneously with other surgical procedures on the same hand has been reported as leading to an unacceptably high complication rate, and has thus been discouraged. Although this claim has been refuted in other studies, the number of patients in these studies has been small. The purpose of this study was to examine the effect of performing simultaneous surgical procedures on the same hand at the time of Dupuytren's fasciectomy.

Methods: A retrospective case series review identified 616 patients admitted for surgical correction of Dupuytren's disease. Of these, 105 patients had simultaneous procedures performed at the time of fasciectomy. Patients were divided into two groups for analysis: those who underwent additional procedures and those who underwent fasciectomy alone.

Results: Additional procedures were performed in 16% (105) patients. These were trigger finger release (37 patients, 5.6%), carpal tunnel release (23 patients, 3.5%), ulnar nerve release (21 patients, 3.1%). The performance of additional procedures was not associated with an increased incidence of complications, flare reaction, or CRPS. The disease recurrence rate was 19% in both groups.

Conclusion: Dupuytren's fasciectomy can be safely undertaken with simultaneous procedures on the same hand when necessary, and patients should be counselled that there is no increased complication or recurrence rate.

11:47 Questions

11:50 Validating patient-reported outcome measures in Dupuytren's disease

Mr J Rodrigues, Dr W Zhang, Professor B E Scammell, Mr P Russell, Mrs D Davidson, Mr I Chakrabarti, Miss S Fullilove, Professor T R C Davis (Derby, Livingston, Nottingham, Plymouth, Rotherham)

Introduction: Different patient-reported outcome measures (PROMs) are used in Dupuytren's disease, but without a "gold" standard, validity cannot be assessed directly. Factor analysis is a standard technique for identifying the latent "gold" standard, to then assess the PROM validity.

Methods: Patients in Derby, Livingston, Nottingham, Plymouth and Rotherham were invited to participate in service evaluation. These included pre and post-operative patients. One assessor examined all

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patients. All completed DASH, EQ5D, PEM and URAM. They rated which had been most appropriate. Factor analysis was performed using SPSS.

Results: A total of 56 patients participated. Eighteen were pre-operative. EQ5D showed poorest correlations with other measures. EQ5D was excluded from factor analysis:

	TPED	DASH	URAM	PEM
DASH	0.49			
URAM	0.64	0.78		
PEM	0.67	0.81	0.89	
EQ5D	0.04	-0.53	-0.37	-0.36

One latent factor accounted for 78.7% of the variance shared by all measures. The correlations coefficients to this latent factor were:

PEM: 0.981
URAM: 0.936
DASH: 0.804
TPED: 0.664

PEM correlated best, and TPED correlated worst, suggesting PEM is the best measure of hand function impairment.

Patients' PROM preferences were: DASH 46%, URAM 32%, PEM 15%, EQ5D 7%.

Conclusions: PEM may be the best measure of hand function studied, and angles worst. DASH was most popular with patients.

11:57 **Questions**

12:00 **The relationship between systemic inflammation based prognostic scores and outcome in patients undergoing surgery for bone and soft tissue sarcoma**

Dr R Morhij, Mr A Mahendra, Mr M Jane, Ms H Findley,
Professor D McMillan (Glasgow)

Introduction: The prognostic significance of markers of the systemic inflammatory response has, to date, not been investigated in soft tissue and bone sarcomas. Therefore, a number of markers of the systemic inflammatory response and their combination (oGPS) were compared in patients undergoing surgery for primary soft tissue and bone sarcoma.

Method: Patients who underwent resection of primary soft tissue/ bone sarcoma between 2008 and 2012 and had pre-operative measurements of C reactive protein, albumin, neutrophils and platelets (oGPS) and white cells and lymphocyte. Counts were studied (*n*=111).

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Results: The majority of patients were >=50 years old (84%), were female (63%), had soft tissue sarcoma (62%), had tumours >10cm (52%) and of high grade (85%). The median follow up of survivors was 31 months. Thirty-three (30%) developed distant metastases and 28 (25%) died of their cancer. On univariate analysis, C-reactive protein (P<0.001), albumin (P<0.001), white cell and neutrophil counts (P<0.05) and oGPS (P<0.001) were significantly associated with recurrence free and cancer specific survival.

Conclusion: The systemic inflammatory response, as evidenced by the oGPS is an important independent predictor of recurrence free survival and cancer-specific survival in patients with soft tissue and bone sarcoma.

12:07 Questions

12:10 Management of the complex scaphoid non-union with the medial femoral condyle free vascularised bone graft

Ms L Uppal, Miss C Simpson, Mr M Craigen, Mr D Power, Mr S Tan (Birmingham)

Despite satisfactory management of many scaphoid fracture non-unions using simple bone grafting techniques, there remain certain fracture configurations that pose a surgical challenge. We describe our early results using the medial femoral condyle free vascularised bone graft for patients with proximal pole AVN, long-standing non-unions (>5 years), and patients with previous unsuccessful surgery.

Fourteen patients were divided into three groups.

1. Proximal pole non-unions with avascular necrosis (*n*= 5).
2. Proximal pole non-unions with delayed presentation or failed treatment (*n*= 4).
3. Waist fractures with non-unions > 5 years (*n*= 5). Operative time averaged four hours. The vascular anastomosis was performed to the dorsal carpal arch or the radial artery. The wrist was immobilised for twelve weeks.

Average time to union was ten months (2–12) in group 1, 3.75 (3–6) in group 2, and 10.7 (8–12) in group 3. One patient underwent washout of an infected knee haematoma, three patients complained of mild knee discomfort. Three cases required removal of prominent metalwork.

The medial femoral condyle free vascularised graft represents a viable alternative to attain union in challenging scaphoid non-unions. In our hands we demonstrate a high rate of union with a low incidence of donor site morbidity.

12:17 Questions

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13:20 – 15:00

(Burns guest lecture session continues in Liffey B)

13:20 **Lunch**

13:40 **Breast special interest group meeting (Liffey B)**
13:40 **Trauma (major trauma) special interest group meeting (Liffey meeting room 3)**

14:20 **Sushruta-Guha Lecture – The 90% burn: lessons learned**
Professor S Milner

Advances in initial resuscitation, control of infection, techniques of wound closure and reconstructive surgery enable patients with burns in excess of 95% not only to survive but to expect a reasonable quality of life. The care of these massive injuries is described as a series of overlapping phases, with a dedicated multidisciplinary team, supported by translational research.

Optimal care requires strategies for management of the systemic inflammatory response, transvascular fluid shifts and obligatory oedema, burn wound sepsis, resistance to broad spectrum topical antibiotics and limited donor sites. The improvement in mortality is also related to early excision and a variety of wound resurfacing techniques involving biological dressings and cultured epithelial autograft.

Prevention of dysfunction and deformity is initiated during the acute care phase and is continued throughout rehabilitation. Concerns over progressive functional limitations, and the effects of scarring and deformity on psychosocial development are paramount, with the goal of reconstruction being to enable survivors to maintain function in society.

Guest lectures: Visions for the future of breast cancer surgery in the next twenty years
Chair: Mr D Orr

15:00 **Academic viewpoint**
Professor M Reed

In an age of evidence based medicine, predictions of future developments should be based on robust research, metronalysis and evidence based guidelines. The development of evidence through double blind randomised controlled trial has always been a challenge in surgical disciplines where it is impossible to conceal the intervention. Despite this, there are a considerable number of trials in development phase, which may significantly change the surgical treatment of breast cancer over the next five to ten years and a review of some of these trials can provide insights into likely developments.

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15:15 – 15:15

- The role of axiliary node dissection in breast cancer management – POSNOC Trial
- The problem of over diagnosis and over treatment in breast screening – The LORIS Trial
- The role of breast screening in reducing mortality from breast cancer – The NHS National Breast Screening Programme Age Extension Trial
- The role of surgery following primary chemotherapy for HER2 positive breast cancer – The Pre-Nostra Trial

Whilst the above trials address difficult questions, there is the possibility that the problem of randomisation may prevent success for recruitment, as has been seen in a number of non-blinded randomised trials.

For example, the only recent randomised controlled trial in the area of breast reconstruction (QUEST) failed to recruit. Therefore, alternative methods to collect data to inform future practice are likely to be needed. Examples of this include large cohort studies, for example;

- The National Mastectomy and Breast Reconstruction Audit
- Bridging the Gap Cohort Study- Evaluating the Treatment of Breast Cancer in the Older Woman.

In addition to addressing questions of the nature of surgical treatment of breast cancer and breast reconstruction, the configuration of services is likely to change significantly over the next two decades. Increasing integration between plastic and reconstructive surgery and breast surgery, is likely to be of benefit to patients and trainees. The acquisition of skills through fellowships and interdisciplinary training, are likely to increase in future.

15:15 View from plastic surgery
Mr J O'Donoghue

Breast cancer is a heterogeneous disease. A 'magic bullet' is unlikely ever to be effective in controlling all disease types. Surgery will remain the mainstay of local disease control.

However, how we deliver that surgical care and the configuration of service provision is likely to change.

Traditionally breast cancer units were run and staffed by general surgeons. With the emergence of oncoplastic breast surgery the position of plastic surgeons in breast units is changing. Rather than just being microsurgeons who are invited to perform a reconstruction they should be integral members of the care team, able to take oncology decisions and able to perform oncological procedures, just as general surgeons have being doing with reconstructive surgery. Both specialities bring a different way of 'seeing things' to a MDT which is conducive to good

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patient care and outcomes. Providing a common curriculum for trainees from both specialities during their advanced training years would be beneficial to all. The Breast TIG has tried to help in this regard but has had limited success as far as plastic surgery is concerned. The reasons are complex.

The challenge facing plastic surgery trainees is to accept that to be a breast surgeon is to be an oncology surgeon. The challenge for our general surgery colleagues is to help us deliver our oncoplastic breast curriculum to a new generation of plastic surgeons who are willing to take up the challenge.

15:30 **View from the Association of Breast Surgery**
Mr K Horgan

15:45 **Discussion**

16:00 **Close**

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POSTERS

WEDNESDAY 27 NOVEMBER

1 – 2

1. **Fleur-de-lys abdominoplasty: techniques to reduce complication rates. Our experience**
Miss A Tan, Mr S Veeramani, Mr S Rao (Durham)

Introduction: Standard abdominoplasties inadequately address gross tissue excess and vertical laxity commonly present in massive weight loss patients. Fleur de Lys (FDL) abdominoplasty tackles supraumbilical excess, making it a suitable alternative technique. However, many surgeons hold reservations with FDL because of well-known complications.

Aims: This study illustrates an effective modification of FDL technique by a single surgeon in our unit. We aim to share our experiences and surgical techniques to reduce complications.

Methodology: We describe the senior author's improvised FDL technique using medical illustrations outlining pre-operative assessment, markings, and intra-operative techniques. We discuss selection criteria and review complications and satisfaction rates of 29 patients who underwent the FDL operation over a three year period.

Results: Patient demographics revealed M:F= 1:14, mean age= 39 years, mean pre-operative BMI 26.8 kgm^2 and mean tissue weight excised was 1669g. Five had wound breakdown, 2 developed infection and 2 developed seroma. Only three patients required revision operation. None developed haematoma. 27/29 patients had a positive satisfaction response.

Discussion: The senior author's improvisation 'pinch and reduce by an inch' pre-operative skin marking along with a 'no undermining' principle reduces wound edge tension, minimises skin flap necrosis risk and reduces potential dead space for seroma. In our experience, this technique is safe and yields satisfactory results.

2. **Predictive signs for psychological distress following revision pinnaplasty surgery**
Mr G O'Toole, Miss E Mure (London)

Introduction and Aims: Psychological distress following aesthetic surgery is well recognised. The consequences of extreme reactions following a revision pinnaplasty can be severe. Being able to predict which patients might react poorly to good surgery is not easy but certain pre-operative behavioural patterns can help the surgeon. It is vital to offer psychological counselling rather than surgery to the most psychologically vulnerable patients. The authors of the paper are a consultant plastic surgeon and a psychologist.

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Materials and methods: The senior author has performed over 100 revision otoplasties to date. Three patients have experienced severe psychological distress following successful surgery.

Key results: Despite good results the patients reacted in a manner consistent with a severe anxiety disorder. The surgical results are shown. A notes review revealed certain consistent features between the three patients. These danger signs are presented in order that surgeons may protect their patients and themselves.

Conclusions: These danger signs should persuade the surgeon to offer their most vulnerable patient psychological counselling rather than surgery.

3. **Imaging of human adipose-derived stem cells with atomic force microscopy: assessing morphology and surface topography of differentiated adipocytes**

Miss N Naderi, Miss C Wilde, Dr W Francis, Miss T Haque, Dr L Francis, Dr Z Xia, Dr C A Thornton, Professor A M Seifalian, Professor I S Whitaker (Swansea)

Introduction: Adipose-derived stem cells (ADSC) are readily obtained from adipose tissue, which contains 100–1000 times more stem cells per cm^3 than bone marrow. Therapeutic use of ADSC has been shown to promote tissue regeneration. In this study we assessed the surface topography and morphology of ADSC compared to differentiated adipocytes using atomic force microscopy (AFM). AFM is a high-resolution scanning probe microscope with a demonstrated resolution on the order of fractions of a nanometer. It consists of a cantilever with a nanometre size probe that scans the sample surface.

Methods: Human adipose tissue was processed with collagenase to yield ADSC. Cells were characterised by flow cytometry and differentiated into adipocytes using appropriately conditioned media. Tapping mode AFM was used to assess surface topography and morphology of differentiated adipocytes and ADSC controls (n=5).

Results: After isolation and expansion in culture only one population (ADSC) remained throughout the passages, which was CD34+/CD73+/CD90+/CD105+/CD19-/CD14-/CD45. AFM analysis showed that lipid droplet formation in adipocytes significantly increased the height of the cells (4 Î¼m versus 1 Î¼m) and changed their surface topography compared to ADSC controls.

Conclusion: Atomic force microscopy is a useful tool for quantifying the surface topography and nanoscale features of ADSC and differentiated adipocytes.

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POSTERS

WEDNESDAY 27 NOVEMBER

4 – 5

4. Microsurgical training: a large centre experience

Mr D B Saleh, Mr R Pinder, Mr M Liddington (Leeds)

Introduction: Microsurgery is no longer a sub-specialty within plastics and reconstructive surgery; it is a key skill.

Experienced practitioners enjoy high rates of microvascular success. This study assesses the outcomes of an authentic training model, in comparison to the trainer surgeons.

Methods: We performed a retrospective database review between 1995 and 2010 of all trainer and trainee cases. A trainee case involved both flap raising and the microvascular anastomoses. Key outcomes compared between trainer (consultant) and trainee cases were recorded.

Results: The trainees performed 11% (188/1709) of the total case-load between 1995 and 2010. There was no significant ($p>0.05$) difference between mean warm ischaemic time (WIT), re-exploration of the anastomosis, intra-operative anastomotic revision or flap failure.

Conclusion: Simulation exists for microsurgery but lacks the potential stresses of a real surgical environment. This study shows training with close mentorship is reproducible and high standards are not adversely affected.

In the consultant series trainees did perform parts of microsurgical procedures. This was a source of observer bias; true consultant re-exploration and flap failure may have been lower.

In an era where operative exposure is reduced, targeted training in high volume centres is desirable. In microsurgery this seems feasible without detriment to patient outcomes.

5. Pinnaplasty: a novel porcine training module

Dr C Loh, Mr T Athanassopoulos, Mr P Lim (Dundee)

Introduction: With the introduction of the European Working Time Directive, surgical training has been greatly limited and complementary learning alternatives must be explored.

Achieving the confidence through the practice of cartilage plication or scoring and its final outcome with a skin envelope can be difficult as a trainee and hence we present a novel training model that allows practising at home with the use of porcine pinnas.

Methods: Porcine ears were obtained from the local butchers and were trimmed to simulate the human ear. Our porcine pinnaplasty training protocol involved practising the excision of conchal cartilage to simulate

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a cartilage excision with a single incision without the formation of spicules. The next module was raising an adipofascial flap superiorly without buttonholing the cartilage or posterior skin. The creation of the antihelical fold was next in the module with the use of dyed sutures. This ensured easy identification that the sutures were not placed too deeply and that they crossed the anterior pinna skin. The final module was the scoring of cartilage and practise of cartilage moulding.

Discussion: We found an immense satisfaction amongst trainees of the porcine model in simulating the human pinnaplasty. The similarity of the cartilage moulding properties on the porcine model and humans allows for the success of this alternative training module.

6. **Microsurgery training: a home DIY model**

Dr C Loh, Mr T Athanassopoulos, Mr S Waterston, Mr P Lim (Dundee)

Introduction: Microsurgery training comes in many forms and for the beginner can be difficult starting out or finding the right avenue to obtain adequate practice. Courses and demonstrations can only allow one to achieve a certain level of familiarity with techniques but practise in the form of a home DIY kit would allow one to hone and gain the confidence in putting these techniques to use.

We present a novel DIY microsurgery kit that can be set up by the trainee at home with equipment purchased over the internet for less than £200.

Methods: With a table-top microscope purchased on eBay for £110 with X5-40 magnification and internal or external lighting, microsurgery instruments (needle holders, scissors and forceps) bought on eBay as well for less than £50 and vessels in chicken thighs bought from the Tesco value range costing £5, this total kit allows us to perform microsurgical techniques simulating the actual vessels and steps when performing an anastomosis on a patient. Various other training modules have been created to complement the home setting to simulate intra-operative techniques.

Discussion: We present intraprocedural images of clarity and similarity to a human model and other methods of simulating microsurgery as a complement to microsurgical training in this era of the European Working Time Directive where efficacy of learning is paramount. This model of training is effective and easily reproducible and hence should be made known to fellow trainees.

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7. Awareness of UK plastic surgery trainees of legislation surrounding reportable injuries and national reporting protocols

Mr R Silk, Mr S Cairns, Mr S Al-Benna, Mr C P O'Boyle (Nottingham)

In the UK, several mechanisms of injury are reportable to the police. Many doctors are aware that gunshot wounds are reportable injuries, however, knife injuries and those where the doctor assesses that there may be on-going risk to the general public, are also classified as reportable under current GMC guidelines. We felt that this important legislation was incompletely understood by trainees and rarely acted upon. As a specialty at the forefront of managing many knife injuries, we feel that this represents an important educational need.

We contacted forty-seven plastic surgery units in the UK, and using a composite questionnaire assessed understanding and enactment of the legislation and guidelines.

Under 50% of respondents were aware of the current legislation, and the majority of plastic surgery units had no protocol in place for the reporting of injuries such as knife wounds. 100% of respondents were aware that gunshot injuries were reportable, but very few had experience of this.

Recognising where there is an on-going risk to the general public is a crucial aspect of managing knife injuries and a mandatory part of the GMC guidelines. We present the outcomes of our study and an update of the current UK legislation.

8. An evaluation of patient awareness of their diagnosis following excision of basal cell carcinoma

Miss C McDermott, Dr C de Blacam, Dr C Sugrue, Mr J Kelly (Galway)

Introduction: Basal cell carcinoma (BCC) is the most common skin cancer worldwide. Despite its high incidence, patients tend to have a lack of understanding of their lesion, even after surgical excision.

Aim: To investigate patients' understanding of their diagnosis of a BCC and to assess their sun protection behaviour.

Methods: A telephone questionnaire was administered to 100 patients who had BCCs excised between January 2011 and December 2012. Questions regarding their understanding of the diagnosis and their sun protection habits were asked.

Results: Ninety patients completed the questionnaire.35.6% of patients understood that the lesion which they had excised was a BCC, with only 15.6% believing there was a significant chance of developing another within the next 3 years. Most patients knew ultraviolet radiation's effect

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on skin was harmful and employed some form of sun protection (66.7% avoid midday sun, 70.0% wore a hat, 72.2% wore sunscreen).

Conclusion: Patients who had a BCC excised were poorly informed about their diagnosis. Sun protection knowledge was reasonably good. Greater effort should be made to explain the diagnosis of a BCC to patients and encourage regular sun protection.

9. An audit of human bite post-exposure management
Mr G Lye, Mr T Longworth, Ms S Hemington-Gorse (Swansea)

Introduction: Hepatitis (Hep) B,C, and Human Immunodeficiency Virus (HIV) transmission through human bites have been reported. The Health Protection Agency (HPA) guidance on human bite management recommends: 1. Initial blood-testing of the biter and patient for blood-borne viruses; 2. Hep B vaccination where necessary; 3. repeat screening at six weeks, three months and six months.

Methods: To establish local practice, a case-note review of human bite admissions to our department during a 12-month period was performed.

Results: Thirty-four patients were identified with 94% (*n*=32) being reviewed. 84.5% (*n*=27) sustained their injury while fighting with 34% (*n*=11) being intoxicated. Hep B status was recorded in 9% (*n*=3) of cases, and Hep B vaccination was given on 12.5% (*n*=4) of occasions. No documented requests for GP follow-up screening, nor attempt to identify the biter's infection status were identified.

Conclusion: The usual circumstances of human bites preclude reducing the incidence. Improved management may limit the consequences of these events. A proforma detailing the recommended management and follow-up blood testing schedule has been produced for these cases. We hope this will improve guideline compliance, reduce transmission risk and provide early diagnosis for those infected. A re-audit of our practice will soon commence.

10. Audit and re-audit of VTE compliance in NHS plastic surgical unit
Mr A Mandal, Mr A Gilmour (Preston)

Introduction: VTE assessment with compliance has been detected as a performance and quality indicator in NHS. The current study presents an audit and re-audit with implementation of changes to achieve the desired standard in a single NHS plastic surgical unit.

Methods: A full week snapshot of all ward and theatre patients was audited with the surgical or cohort option of VTE assessment in Quadramed (electronic patient record system) according to NICE and

hospital guidelines. Time was allowed for initial recommendations including an admission checklist to be implemented. Re-audit was undertaken after 2 months using the same criteria.

Results: VTE assessment at admission was 26% at initial audit and 95.2% at re-audit and at 24 hours was 10% at initial audit and 80% at re-audit respectively ($p<0.001$). Low molecular weight heparin and TEDS prescribed were 90.5% and 80% at initial audit and 100% at re-audit respectively ($p=0.1$). Average VTE risk factors were 1.3 at initial audit and 1.9 at re-audit respectively.

Conclusion: Significant improvement was noted following the implementation of the admission checklist and audit cycle was complete with positive effect on departmental compliance.

11. Improving patient care in plastic surgery with structured documentation

Dr J Stallard, Mr W Bhat, Miss V Teoh, Mr I Smith (Leeds)

Background: Many recent reports have highlighted increased patient morbidity and mortality as a consequence of poor hand-over and clinical documentation. Documentation is often too vague or abbreviated, which in addition to affecting patient care, impacts on any future legal action or inquiry.

Aims:

1. Identify areas of weakness in clinical documentation.
2. Implement an acronym for documentation.

Method: Patient notes were analysed over a two month period, to identify areas of poor documentation. Notes were further analysed after an acronym had been introduced.

Acronym implemented:

P- Procedure
L- Length post operation
A- Antibiotics
S- Staph. Aureus (MRSA STATUS)
T- Tinzaparin (VTE STATUS)
I- Investigations
C- Cannula/catheter
S- Surgical site

Results: The results identify an improvement in clarity and content of documentation. 100% of notes documented the patient's procedure and length of hospital stay and antibiotics, tinzaparin, invasive lines and surgical sites were reviewed on a daily basis.

Conclusion: The European Working Time Directive leads to a high turnover of staff with varied shift patterns. Clear documentation and handover prevents compromise of patient care. We have highlighted how an acronym for documentation can improve patient care on a day-to-day basis, which also allows for quick, accurate review of patient notes prospectively.

12. **A review of the management of nasal cutaneous lesions**
Miss A Tan, Miss S Tadiparthi, Mr P Rubin (Durham)

Introduction: The nose is a common source of basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). However, benign pathology can also originate on the nose, mimicking skin malignancy. This study aims to determine incidence, distribution and surgical management of suspicious nasal cutaneous lesions, and whether there might an advantage to offering punch biopsies where clinical diagnosis is ambiguous.

Methods: We retrospectively reviewed surgical management of 194 patients with suspicious nasal skin lesions. Data was collected from hospital case notes and histopathology reports.

Results: BCCs constituted 59% and SCC accounted for 6% of all excised lesions. BCCs occurred predominantly on the sidewall. Nodular BCC was commonest subtype. 33% were benign lesions and occurred most frequently on the nasal sidewall and lower third of the nose. Intradermal naevus and sebaceous hyperplasia were commonest lesions. 43/64 benign lesions underwent excision biopsy. Approximately 47% benign lesions excised were misdiagnosed as skin malignancies. Fifteen benign nasal lesions excised required reconstruction.

Conclusions: Significant proportions of benign lesions excised were misdiagnosed as skin malignancies, resulting in patients undergoing unnecessary surgery and significant scarring. Offering diagnostic biopsy of nasal lesions prior to excision is recommended where clinical diagnosis is ambiguous, to avoid unnecessary surgery, permanent scarring and cosmetic deformity.

13. **A left-sided excess of lentigo maligna may be influenced by factors other than sunlight**
Mr M Gorman, Miss K Davies (Glasgow)

Lentigo maligna (LM) is a pre-malignant lesion, with progression to melanoma estimated at 5–15%. Previous work has shown an incidence higher on the right side for men and left side for women. This was attributed to cumulative UV light exposure and driving habits. Recent studies across six different populations have shown differing patterns. We have re-visited the question of LM laterality.

Methods: All cases of LM (110) from 2000–2011 were identified from a UK histopathology department. Eleven cases were excluded as pathology reports had either omitted information or the side was not specified, most commonly when the lesion was on the nose (eight cases). We noted patient gender, age and the anatomical site/side for each lesion.

Results: The vast majority of lesions presented in the head and neck region (>95%) and of these 58% were on the left side and 39% on the right. LM was significantly more likely to be on the left side for both men (58%) and women (60%) ($p<0.05$; X2= 0.391, df= 1, P= 0.843). Regarding the other patient characteristics, 87% of cases presented in those aged over 55 and slightly more men presented with LM than women (52%).

Conclusion: The pattern of left sided LM excess for both genders shown by our study indicates a different pattern distribution than previously evidenced.

14. Recognising melanoma: a study of lay and medical personnel.

Mr J Cubitt, Mr N Bakti, Mrs C Bradshaw, Dr T Pennington, Mr P Budny (Ayelsbury)

Melanoma incidence is increasing faster than any other cancer. The aim of this study was to investigate the ability of lay and medical personnel in the UK to diagnose melanoma and to subsequently compare the UK lay public with Australia and USA.

Twenty pigmented lesions (ten melanoma and ten benign) were chosen from the Stoke Mandeville medical imaging database. These images were incorporated into a surveymonkey questionnaire asking the subject whether the lesion was melanoma or not. The survey was distributed electronically amongst the lay and medical personnel.

A total of 137 participants took part: 97 lay public (47 UK, 32 Australia, 17 USA); 16 plastic surgeons, 12 dermatologists and 13 GPs. The mean probabilities of correctly identifying a melanoma were calculated for each group (lay 0.69, plastic surgeons 0.79, dermatologists 0.84 and general practitioners 0.72) and these were compared using t-tests. There was a significant difference between the dermatologists and plastic surgeons and the lay public (p=0.0003 and 0.0077 respectively) and dermatologists and GPs (p=0.0067) but no significant difference between plastic surgeons and dermatologists (p=0.1061), plastic surgeons and GPs (p=0.1049) or lay pubic and GPs (p=0.5084). There was no significant difference between the lay public groups in UK, Australia or USA.

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15. The use of marker sutures in elliptical excision biopsies: are we wasting money?

Mr J Barnes, Dr T Micklewright, Mr H Tehrani (Liverpool)

Introduction: The use of marker sutures in orientating cutaneous specimens for histological analysis is common practice. This would seem beneficial for lesions excised as a circle or irregular shape in guiding future further excision, but seems unlikely to affect practice in the case of elliptical excision biopsies (EEBs) where re-excision would simply be by a wider margin ellipse. We aimed to investigate the use of marker sutures in our unit and the potential cost savings of avoiding unnecessary markers.

Methods: A retrospective analysis of 677 consecutive day-case excision biopsies was performed and assessed for nature of excision (circle, ellipse etc), use of marker stitch, method of wider excision and costs incurred in placing marker sutures.

Results: Marker sutures were used in 47% of EEBs with a re-excision rate of 1.9%. Incompletely excised EEBs were all re-excised as uniform ellipses around the previous scar. A cost analysis showed a potential saving of £900-£1250 per year by not using marker sutures to orientate EEBs.

Conclusion: The use of a marker suture has not been shown to affect the management of incomplete excisions in EEBs and in a service carrying out around 2000 excision biopsies per year adds an unnecessary cost of £900-£1250.

16. Merkel cell carcinoma in East Yorkshire: a ten-year review

Miss P Jackson, Miss K Wallis, Professor M Lind, Mrs V Allgar, Mr P Stanley (Hull)

Introduction: Merkel cell carcinoma (MCC) is a rare, aggressive neuroendocrine tumour of the skin. The incidence is rising and is associated with sun exposure. A ten-year retrospective review of MCC was performed to examine disease progression, surgical and adjuvant management, and outcomes.

Methods: A ten-year retrospective review was undertaken of patients identified through the histopathology database. Case notes and digital patient records were examined for patient demographics, disease characteristics, management and outcome. Disease stage was calculated using the 2010 AJCC TNM classification.

Results: Thirty-seven patients were included with mean age at presentation of 76.7 years. Pre-malignant or malignant skin changes were documented in 15 patients, and immunosuppression in 15

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patients. Following diagnosis, 22 patients underwent further surgery (wide local excision) including 11 sentinel lymph node biopsies. No wide excision specimen with deep margins including fascia or muscle was incompletely excised. Lymphadenopathy was palpable at presentation in eight patients. One patient had post-operative radiotherapy, and eight patients had chemotherapy. Three year survival was 40%.

Conclusion: The role of immunosuppression is greater than previously thought, affecting 41% of our population. Survival is comparable to published data despite lower routine use of post-operative radiotherapy.

17. Pyrexia in patients undergoing simultaneous electrochemotherapy and skin metastases debridement

Mr D Jordan, Mr J Coelho, Mr D Mowatt (Manchester)

Introduction and Aims: Electrochemotherapy (ECT) is gaining popularity as a therapeutic adjunct in the treatment of skin malignancy metastases. We describe our initial experiences with ECT treatment and highlight an association between concurrent debridement and post-operative pyrexia previously not documented. We noted a prolonged hospital stay and extended investigation in these patients that we feel was unnecessary.

Material and Methods: Patients who underwent ECT since its introduction at the Christie Hospital were retrospectively reviewed. in particular with a focus on any relationships between the patients who experienced a post-operative pyrexia and their in-patient management.

Key Results: Of ten ECT treatments performed, three subjects experienced a post-operative pyrexia leading to an extended length of stay in hospital for investigation. All three pyrexia cases had simultaneous debridement of their skin metastases at the same time as ECT, compared to the ECT only group, of whom zero patients developed a pyrexia. Patient demographics, primary malignancy and ECT pulses shared no such association with this phenomenon.

Conclusion: A transient post-operative pyrexia of unknown origin in all patients who underwent simultaneous ECT and debridement of skin malignancy metastases has been highlighted. No other association appears to be evident. We believe the pyrexia to be self-limiting and not requiring over-investigation in the well patient.

18. Regressed melanoma and the prognosis dilemma

Miss A V Giblin, Mr S Thomas (Birmingham)

Introduction: Prognostic implications of regression, the segmental replacement of melanoma by fibrosis, have long been disputed.

Aim: To investigate and further elucidate the significance of regression in melanoma prognosis; disease free (DFS) and overall survival (OS).

Methods: 371 matched cutaneous melanomata excised prospectively (269 unregressed (U) 102 regressed (R)) between 2005 and 2010 were analysed according to thickness, site, sex, ulceration, recurrence, AJCC stage and postulated thickness before regression. Matched and unmatched groups were compared.

Results: There was no statistically significant difference in DFS (P values 0.5281: 0.7285) or OS (P values 0.062: 0.3721) in similar thickness R and U cases. Slightly greater DFS and OS in group R failed to reach significance. However, when thicker U groups were compared with thinner R groups (assuming R may once have been thicker) OS was significantly different (p=0.0029), DFS approached significance (0.0610) suggesting these groups are not equivalent.

Conclusion: There appears to be no significant difference in R and U cohorts studied. In this five year prospective review any potential negative impact of regression was insufficiently powerful to upstage disease or categorically worsen DFS or OS. Regression type was not subanalysed, possibly obscuring any impact a subgroup actually had. Our continued ten year study will include detailed regression review.

19. A ten year review of aggressive fibromatosis

Miss A Tan, Mr D Sandean, Mr K Sorensen, Dr P Dildey, Mr C Gerrand, Mr M Ragbir, Mr R Milner (Newcastle upon Tyne)

Introduction: Desmoid tumours or aggressive fibromatoses are rare, can be located in difficult anatomical regions and require a considered approach prior to commencing treatment. Surgery is often the initial treatment of choice. Systemic therapy is increasingly important as the molecular genetics are elucidated. Despite different treatment modalities, there is no treatment consensus for aggressive fibromatosis.

Methods: The North of England Bone and Soft Tissue Tumour Services database identified 35 adult patients diagnosed with aggressive fibromatosis from 2002–2012. A retrospective review of case notes, imaging, correspondence and histopathological reports was performed.

Results: Twenty-eight cases were reviewed. Female:male ratio was 3.67:1 and no patients had hereditary cancer syndromes. 44% of cases were lower limb followed by neck, abdomen, trunk and upper limb. Surgery was performed in 21/28 patients. Recurrence post-surgery was 44.5%. Adjuvant therapy was radiotherapy (3), chemotherapy (1) and systemic therapy (6). All but four patients remain under follow up at various intervals.

Discussion: Due to the lack of consistency in response to treatment, treatment is best tailored to the individual and aided by multispecialty input. Surgery can be curative but confers morbidity and recurrence is common. Systemic treatment may be more important in stabilising the disease with frequent monitoring.

20. Audit of 'two week rule' referrals for suspected skin oncology

Miss F Choukairi, Mr W Jaffe (Stoke on Trent)

Introduction: Under government guidelines, patients with suspected skin cancer and should be seen within two weeks of referral. In our department it has been perceived that patients are inappropriately referred to the regional plastic surgery service using the 'two week rule' (TWR) and without counselling for suspected cancer. The aim of this audit was to evaluate the appropriateness of referrals.

Materials and Methods: All patients referred to a regional plastic surgery service by GPs with suspected skin oncology using the TWR proforma over 6 months were reviewed. Data collected included provisional diagnosis, counselling prior to referral and post-operative histology.

Results: 103 patients were included in the audit. 29% of patients did not require surgery. Of the 71% that did undergo surgery, 50% were benign on histology, 5% were MM, 20% SCC and 15% BCC. In 95% of TWR proformas the box confirming that the diagnosis of skin malignancy had been explained to the patient was ticked. Only 54% patients confirmed in clinic that this was done.

Conclusion: This audit shows that TWR pathway is a good use of services. However, there is a need for continual GP education and better communication with patients prior to referral.

21. Driving melanoma into senescence: a novel mechanism in halting cancer

Mr M Rughani, Professor C Goding, Professor M Middleton (Oxford)

Introduction: Melanoma remains a notoriously resistant cancer to conventional therapies. A new era of targeted therapies have shown promise in certain patients. However the phosphatidylinositol-3-kinase (PI3K) axis is a key pathway in cell proliferation and survival and regulation of AKT, which is overexpressed in melanoma. Senescence is a state of irreversible cellular growth arrest and is a key tumour suppressive mechanism.

Aims and Methods: We examined modulation of the PI3K pathway and its effect on the transcription factors that determine subpopulations in melanoma and their relationship to cellular senescence.

Results: By treating 501mel cell lines and using real-time PCR we showed the PI3K pathway to regulate TBX2 and BRN2. A wound-healing assay observed significant (p=0.0003) delay with PI3K inhibition. Immunofluorescence showed DNA damage with 53BP1 to be a marker of cellular senescence in a 3D model. Further luciferase assays demonstrated significant (p<0.001) synergy between FOXO and TBX factors and down regulation of AKT.

Conclusion: We have developed a novel model for modulating the PI3K pathway towards pro-senescence in melanoma that can further the treatment of advanced melanoma.

22. **Basal cell carcinoma incomplete excisions: a completed audit cycle**

Dr F Marlborough, Dr T Carter, Mr C Munson, Mr Z Sheikh (Edinburgh)

Introduction and Aims: To audit incomplete basal cell carcinoma (BCC) excisions in a regional plastic surgery unit.

Methods: A database of all lesion excisions between 1 January 2012 and 30 June 2012 was obtained with corresponding pathology results. We excluded: non BCCs punch/ incision biopsies and re-excisions. For BCCs the following was recorded: whether excision was complete histologically, surgeon grade, BCC subtype, anatomical location and follow-up. The period between 1 July 2012 and 31 December 2012 was then re-audited, following local presentation.

Results:
Cycle one: 14/176 (8%) excisions were incomplete. All were head and neck BCCs. All 14 incomplete excisions were performed by consultants. Follow up: deceased- 1, watch and wait- 2, successful re-excision- 11.

Cycle two: 20/138 (14%) were incomplete. Location: Head and neck- 19, torso- 1. Surgeon grade: consultant- 14, registrar- 2, SHO- 4. Follow up: successful re-excision- 12, watch and wait- 6, unsuccessful re-excision- 2.

Conclusion: Cycle two revealed a higher incomplete excision rate, and a higher proportion of junior operators performing excisions. Successful excision is related to surgical experience and appropriate margins. Particular care should be taken with high-risk lesions, and allocated to more experienced surgeons.

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23. Current outcomes in the surgical management of paediatric dysplastic naevi

Miss M Baker, Mr D Izadi, Miss R Exton, Miss W Chan, Miss G Priona, Mr D Camp (Plymouth)

Introduction and Aims: Dysplastic naevi (DN) have an associated risk of malignant melanoma (MM), which increases with number of DN and personal/family history of DN.

Standards:

1. Surveillance 2/year with family/personal history of MM and/or personal history of 3 DN
2. Lesions should be excised with a 2mm margin if MM cannot be ruled out
3. All patients with DN are taught self-examination

Methods: We completed a retrospective study over a ten-year period at four plastic surgery units in the South West. Patients under 16 years with a histological diagnosis of DN or MM were evaluated using an 18-point proforma.

Results: 42 lesions in 40 patients, mean age 11 years, were analysed over ten years. 86% had excision biopsy; 68% were excised with a 2mm margin. 20 patients were followed up (mean duration 9 months). 5% of all lesions excised were MM. Only 13% of patients had sun cream and self-examination discussed.

Conclusions: Benefits and costs associated with out-patient surveillance in this select patient cohort remain controversial. Suspicious lesions should be excised with a 2 mm margin. Self-examination and sun cream should be advocated and documented for patients post-operatively. National standards are required to standardise management for this rare group of patients.

24. Treatment of multiple primary eccrine porocarcinoma with topical diphencyprone: a case report

Miss F Harper, Dr V Akhras, Dr A Kutty (London)

Eccrine porocarcinoma (EPC) is a malignant tumour that develops from the acrosyringium portion of the eccrine gland (1). EPCs are rare, accounting for 0.005% of epithelial cutaneous tumours, and only 300 cases have been described in the literature since first being described in 1963 (2).

Surgical resection is the standard treatment for EPC, with cure rates of up to 80% (3) (4). Radiotherapy and chemotherapy are possible alternatives, although results are variable, and their use is typically reserved for palliative care (5). Immunotherapy is an emerging field

with studies showing promising results (6). Diphencyprone (DCP) is an immunotherapeutic agent that has recently been used to successfully treat 7 patients with cutaneous metastatic melanoma, (7), highlighting the possibility of treating other cutaneous lesions with DCP.

We describe the case of an 82-year-old female who presented with multiple, biopsy proven, primary EPC on both feet and legs. The patient declined surgical resection and it was decided to trial topical application of DCP instead. Six weeks following the start of treatment, all the treated lesions had completely resolved, with no evidence of the previous tumours, and she remains tumour free 9 months on.

To our knowledge, this is the first described case of multiple primary EPC, and also the first report of successful use DCP for this tumour.

25. Melanoma of parotid gland lymph nodes

Mr O Bassett, Dr P Chadha, Dr P Nathan (London)

Introduction: Sentinel lymph node biopsy (SLNB) in head and neck melanomas is more challenging due to the presence of variable lymphatic drainage, multiple sentinel nodes (SN) and intra-parotid SN. Although rare, intra-parotid SLNB can be complicated by facial nerve injury. We reviewed the location of primary melanomas in all patients who developed parotid nodal involvement.

Methods: We performed a retrospective clinic-pathological review of 33 patients with histologically confirmed parotid involvement of malignant melanoma.

Results: The patients consisted of 28 men and five women with a median age of 67 (range 26–84). 24 patients had an identifiable cutaneous primary with a median Breslow thickness of 3.1mm (range 0.7mm to 23mm). The median time from primary to metastasis was 11 months (range 0–20 years). There were multiple different primary sites with the commonest temple (5), cheek (5), neck (2) and ear (2). Eight patients had no identifiable primary and one patient developed a parotid metastasis from an ocular melanoma primary. Nine patients underwent an isolated parotidectomy and 19 had a parotidectomy and neck dissection.

Conclusions: This case series confirms the variable lymphatic drainage of the head and neck skin and the potential for parotid SLN from variable primary sites.

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26. **Skin cancers in Bradford South Asians: a UK perspective**

Mr J Tan, Mr Z Shariff, Mr O Tillo, Professor A Wright, Mr S Al-Ghazal (Bradford)

Aims: Basal cell carcinomas (BCCs) and squamous cell carcinomas (SCCs) are uncommon skin tumours among Asian populations and those with coloured skin. There is little report of the incidence or features of BCCs and SCCs amongst immigrant populations from the Indian subcontinent within the United Kingdom. We describe our unit's ten year experience of treating Asian patients from the Indian subcontinent.

Methods and Materials: All patients coded for 'non melanoma skin cancers' and ethnicity other than Caucasian were retrieved and filtered to those from the Indian subcontinent. Patient demographics, details of presentation, treatments received and the nature of the tumours were analysed.

Results: From 2002 to 2012, 12 BCCs were excised in 12 patients and 7 SCCs excised in 7 patients. In the BCC group, all but one patient had a BCC on the face. The one patient who did not have a facial BCC developed a BCC on his back in an area of previous radiotherapy for a medullablastoma. Seven of 12 BCCs were nodular in nature. Five of 7 SCCs were moderate to poorly differentiated. Two patients developed metastatic disease with one death from recurrence. Three of the 7 SCCs appeared to have had an underlying predisposing risk factor such as discoid lupus, epidermolysis bullosa and a possibly unidentified genetic predisposition.

Conclusion: BCCs tend to present in the face and behave in the same way as BCCs in Caucasians. SCCs in Asians seem to be moderate to poorly differentiated and behave aggressively on a background of chronic skin conditions.

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1. **Orbital roof fractures: a clinical classification and treatment algorithm**

Dr F V Connon, Dr S Austin, Associate Professor A Nastri (Parkville, Australia)

Aim: Orbital roof fractures are a relatively rare entity in craniofacial surgery but can present a management challenge due to their anatomy and potential associated injuries involving the eye, extra-ocular muscles and nerves and the brain. Currently no classification system or treatment algorithm exists, which this article aims to provide.

Methods: Literature review and retrospective review of cases at a tertiary trauma centre in Australia was performed. All facial fracture cases admitted to the Royal Melbourne Hospital between January 2011 and June 2013 were reviewed regarding patient characteristics, mechanism, imaging and management.

Results: Forty-one patients with orbital roof fractures were treated. Two of these were isolated cases. Thirty-four were male and seven were female. Assault (11) and falls (11) were the most common causes of injury. Thirty-nine patients were treated conservatively and two underwent orbital roof repairs.

Classification: On the basis of the literature and local experience, we propose a four point system, with subcategories allowing for different fracture characteristics to impact management.

Conclusion: Despite the infrequency of orbital roof fractures, their potential ophthalmological, neurological and functional sequelae can carry significant morbidity. The proposed classification and treatment algorithm can therefore be used to guide appropriate and successful management of these patients.

2. **Three-dimensional computed tomography reveals different donor site deformities in adult and growing microtia patients despite total subperichondrial costal cartilage harvest and donor site reconstruction**

Mr C G Wallace, Dr H Mao, Dr C Wang, Dr Y Chen, Professor P Chen, Dr Z Chen (Tao-Yuan, Taiwan)

Introduction: Donor site deformity may complicate autologous costal cartilage (CC) harvest for microtia reconstruction. This is reportedly prevented by total subperichondrial CC harvest, costochondral growth centre preservation, donor site reconstitution with leftover CC, and perichondrial repair (Kawanabe-Nagata method). However, no quantitative assessment of donor site morphology exists following use of this method.

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Methods: Twenty-five (11 adult, 14 growing) consecutive patients who underwent thoracic three-dimensional computed tomography (3D-CT) pre-operatively and six months post-operatively for donor site evaluation for autologous unilateral primary microtia reconstruction were studied. We quantified: 1) donor site deformation with respect to 6th-to-9th costochondral junctions (CCJs); 2) distortions in thoracic/ hemithoracic proportions (Haller Indices). The patients' unoperated hemithoraces provided control data.

Results: Statistically significant deformations occurred in sagittal and transverse planes in growing patients, and the transverse plane in adults, with respect to most 6th-to-9th CCJs on operated versus unoperated sides. Importantly, in growing patients, the 6th-to-9th CCJs on operated sides failed to descend post-operatively with growth, unlike on unoperated sides. No gross distortions in Haller Indices occurred.

Conclusions: Despite meticulous donor site management according to the Kawanabe-Nagata method, patients sustained significant localised skeletal deformations, which differed in configuration according to whether patients were adult or growing when operated.

3. **Simplifying the art of autologous cartilage carving for partial ear reconstruction: a technical variation**
Mr S Sofos, Mr K Shokrollahi, Mr A Iqbal (Prescot)

Introduction and Aims: The complexity of reconstructing the ear has for years posed a challenge to plastic and reconstructive surgeons. This very complexity has been the source of many innovative techniques and devices in order to create the most natural appearance of an otherwise "unnatural" looking ear. We present our step-by-step approach to reconstructing a partially amputated ear using autologous cartilage by combining a series of techniques that simplify the process.

Material and Methods: We also introduce the use of a disposable ring curette in the use of carving the harvested cartilage. Our patients have been mainly those with traumatic amputations following human bites. They include upper and mid third defects and the principles and steps in the reconstruction are identical.

Key Results: Our results show good anatomical symmetry and minimal post-operative morbidity. In addition, the use of the disposable currette to carve the cartilage has proven a financially viable alternative to the expensive carving kits.

Conclusion: We have found our approach to be effective and both time and financially efficient.

4. **Withdrawn**

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5. The use of combined radial forearm cutaneous flap and radial forearm fascial flap with vascularised palmaris longus tendon for full thickness cheek reconstruction and simultaneous static lift of the oral commissure

Dr O J Smith, Mr J Coelho, Miss F Riley, Mr K Senarath-Yapa, Mr G Ross (Manchester)

Introduction: When the radial forearm flap is raised subfascially to include the palmaris tendon, the orientation of the tendon and the vector of its pull is determined by the orientation of the cutaneous paddle, which itself is determined by the orientation of the vascular pedicle and therefore the relationship of the recipient vessels to the defect. We describe raising the tendon solely on a fascial flap with a separate cutaneous paddle allowing greater versatility.

Methods: A patient with BCC invading the zygoma underwent cheek excision and sacrifice of facial nerve branches.

The cutaneous flap was raised suprafascially in the distal forearm with the pedicle. The fascial flap and tendon were raised together more proximally. The tendon was tunnelled under the modiolus and attached to the zygomatic periosteum under tension to lift the oral commissure. The cutaneous paddle was inset.

Results: Satisfactory symmetry of the oral commissures was achieved post-operatively.

Conclusions: This technique allows the tendon orientation to be dissociated from the cutaneous paddle and pedicle orientation. This versatility allows satisfactory repositioning of the oral commissure using the tendinous sling without compromising the positioning of the cutaneous flap which was inset to allow the most advantageous orientation of the vascular pedicle.

6. The gracilis myocutaneous flap: an analysis of in-vivo and cadaveric studies and discussion of current limitations and clinical implications

Mr S George, Miss M Karavias, Dr M Le Roux, Dr W Rozen, Professor I Whitaker, Professor M Ashton (Melbourne, Australia/Swansea)

Background: The gracilis myocutaneous flap is favoured for its donor site profile and versatility. That being said, the reliability of the cutaneous skin paddle has often been questioned in the literature. The aim of this review was to analyse its vascular supply, review the clinical implications and suggest avenues for further study.

Methods: All anatomical studies and case reports pertaining to the neurovascular anatomy, safety and clinical implications of the gracilis myocutaneous flap during the period 1990–2012 were assessed. Forty

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studies met our inclusion criteria and were analysed. Results were presented in tables, diagrams and radiographic images.

Results: From its pubic insertion, the gracilis muscle receives a 2 ±0.5mm calibre dominant vascular pedicle at 10 ±2cm and between one and five distal pedicles with the first entering at 20 ±5cm. Musculocutaneous perforators were more numerous and dominant in the proximal third of the flap with cutaneous vascular territory of the main pedicle ranging from 88cm^2 up to 399cm^2. This area was increased if one or more distal pedicles are included in the flap.

Conclusion: The gracilis myocutaneous flap is versatile as a pedicled, free or free-functioning flap with minimal donor site morbidity. Its highly consistent vascular anatomy makes for a reliable option in reconstructive surgery.

7. Medical management of osteoradionecrosis of the mandible

Mr G Price, Mr E Qudairat, Dr C Semple, Mrs L Symington, Mr D Lannon (Belfast)

Background: Radiotherapy plays a vital role in the treatment of head and neck cancer. Fifty percent of patients will receive radiotherapy, half of whom will be long term survivors. Reported rates of osteoradionecrosis (ORN) of the mandible vary from 2.6–22%. The exact pathophysiology of ORN remains a matter of debate and has resulted in the development of several treatment strategies. One strategy is the antioxidant approach in which a pentoxifylline, tocopheryl, doxycycline and chlorhexidine mouthwash has been prescribed to patients with established ORN.

Aims: To determine the clinical outcomes of combination therapy with pentoxifylline, tocopheryl, doxycycline and chlorhexidine mouthwash in a cohort of patients treated within our unit in the past four years.

Methods: A retrospective analysis of the charts of patients started on the combination therapy was performed. The Notani grade was determined both pre and post therapy along with time following radiotherapy, duration of treatment and smoking status.

Results: Ten patients with clinical and radiologically diagnosed ORN were identified. The mean time of ORN onset was 37 months (5–139). Half of the patients improved, two with complete healing. Three patients' disease remained static and two were unable to tolerate the therapy due to side effects. Two thirds of patients with persistent disease continued to smoke.

Conclusions: ORN of the mandible remains a challenging condition to treat. It has uncertain and evolving theories of pathogenesis. Our small study has shown that there may be an important role for antioxidant medication in managing ORN.

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8. The DOT flap for nasal sidewall reconstruction

Mr K Asaad, Mr S Mashhadi (London)

Background: Reconstruction of the nasal sidewall presents unique challenges to the plastic surgeon. Several factors must be considered including subunits, contours, skin laxity and anatomic limitations of neighbouring structures. We present our DOT (double opposing transposition) flap technique for reconstruction of this area.

Methods: Three patients with nasal sidewall basal cell carcinomas underwent primary excision with 4mm lateral margins and deep tissue margins to muscle. DOT flaps were raised, with donor sites in the glabellar region superiorly and the nasolabial area inferiorly and transposed to reconstruct the defect.

Results: The patients were successfully treated with no complications. Prospective follow-up showed good aesthetic results with excellent match in terms of tissue thickness, skin colour, texture and actinic damage. The donor scars are camouflaged at the boundaries of aesthetic subunits. The patients were very satisfied with the outcomes.

Conclusion: Our technique does not sacrifice the entire subunit and still obtains an aesthetically satisfactory result. We present a simple, easily reproducible, robust local reconstructive option for nasal sidewall defects, allowing good aesthetic and functional outcomes.

9. Use of the microvascular coupler device for end-to-side venous anastomosis in free tissue transfer for head and neck reconstruction

Miss J Maraka, Mr O Hausien, Mr N Abreo, Mr N Patel, Mr A Durrani (Cambridge)

Aims: To determine venous patency rate and free flap success rate using a microvascular coupling device, a polyethylene 12 pin ring device, for end to side (E-S) anastomosis in head and neck reconstruction

Methods: A retrospective review of 25 consecutive head and neck free flap reconstructions where an E-S anastomosis was performed using a coupler device, by the senior author over a three year period (1 January 2010–24 April 2013) was undertaken. Case notes and free flap records were reviewed.

Results: There were no reported complications attributable to the end to side coupler anastomosis. The most common indication for free flap reconstruction was squamous cell carcinoma. The most common donor flaps used where the fibular free flap and anterolateral thigh flap. One patient had bilateral E-S coupler devices used for anastomosis with two free flaps. The most common venous calibre used was 3mm. Venous patency rate and free flap survival was 100%.

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Discussion: E-S anastomosis onto the internal jugular vein appears safe as a critical anastomosis. It is the practise of the senior author to anastomose all veins available. Factors such as old age, previous irradiation and multiple free flaps at the same site do not appear to be contraindications.

Conclusion: E-S venous coupler can be used safely, effectively and efficiently. The reduction in time versus conventional suturing results in reduced free flap warm ischaemic time.

10. A new ethical frontier: hand transplant surgery

Dr M Nassimizadeh, Dr A Nassimizadeh, Mr D Power (Birmingham)

In September 1998, the world's first hand transplant was performed in Lyon, France. A new era in reconstructive surgery had begun. This case highlighted the potential for composite tissue allotransplantation (CTA). While CTA is not a new technique, it unifies the principles of reconstructive microsurgery and transplant surgery, achieving the goals of absolute correction of a defect with anatomically and physiologically identical tissue with none of the issues of donor site morbidity associated with autologous tissue transfer. The adoption of this technique for non-life-threatening conditions to improve quality of life has generated a number of new ethical considerations, debating core concepts of beneficience and non-maleficence versus autonomy. Additionally, the prominence of transplanted hands has led to much discussion around the issue of body identity and psychological assessment of potential recipients. With the recent advent of this procedure on UK shores we look at the ethical challenges. On the one hand, excuse the pun, there are functional and psychological benefits of the operation, while the other is counterbalanced by the potential hazards of immunosuppression and unknown long term outcomes. Our poster looks to summarise the current ethical debates and look at how this will change with advancement in immunosuppression and prosthesis.

11. Surgical closure of nasoseptal defects: post-operative patient satisfaction

Dr F Bast, Priv-Doz Dr T Schrom (London/Berlin, Germany)

Background: Nasoseptal defects are rather rare. The current therapy of choice is surgical closure. Objective clinical factors prove the efficacy of surgical intervention, however to establish the quality of the procedure, patients' subjective quality of life assessments must also be considered.

Methods: 45 patients participated in the study. The operation was always carried out according to the superior and inferior bi-pedicle bridge flap technique according to Schultz-Coulon. The patient survey was performed retrospectively, and patient satisfaction was evaluated using two different questionnaires: the Sino-Nasal Outcome Test 20 German

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Adapted Version (SNOT-20 GAV SDT) expanded by Neumann, and the Glasgow Benefit Inventory (GBI).

Results: Evaluation of the GBI revealed significant improvements in the total score and the sub score 'general health' and therefore an improved quality of life. Evaluation of the SNOT-20 GAV SDT showed a significant reduction in the total score and a significant reduction in the primary nasal symptoms as well as in the items typical of septum defects and therefore less discomfort caused by the nasoseptal defect.

Conclusion: As the gold standard for treatment of septum perforation, successful surgical closure leads to an improvement in subjective quality of life.

12. **Inadequate imaging and premature referrals: potential pitfalls in the management of closed hand fractures?**
Miss A Tan, Dr B Prince, Mr A Yousif, Mr G S Rao (Durham)

Background: Closed hand fractures are the commonest upper extremity fractures. Good clinical management begins at point of presentation to the emergency department. Adequate imaging is imperative to avoid misdiagnosis, aid decision making and reduce waiting times for patients when seen at plastic trauma clinic.

The study aims were to:
1. Determine adequacy of assessment and imaging pre-referral to a specialist care
2. Determine whether these aspects of care could be potential pitfalls in the management of closed hand fractures

Methodology: We retrospectively reviewed 73 referrals made to our trauma unit over a three month period.

Results: Of the total referrals with closed hand fractures, 11% did not have fractures. 41% of referrals had inadequate imaging. 92% patients had AP views, only 63% had true lateral views. Inadequate views resulted in one missed diagnosis. However, this was managed appropriately with early clinic review and repeated imaging at trauma clinic.

Conclusion: With access to imaging facilities on site, there is no excuse for inadequate imaging for suspected hand fractures. Our findings reflect an overall shortfall in pre-referral imaging for suspected hand fractures. We advocate implementation of local policies outlining compulsory imaging requirements for suspected hand fractures in all units dealing with such injuries.

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13. **Reducing inpatient stay for hand trauma: analysis of four audit cycles at a Scottish regional plastic surgery unit**

Dr P Hutchison, Dr S Conlin, Dr T Carter, Mr S Hamilton, Miss P Rust (Livingston)

Introduction: BSSH guidelines (2007) recommend increased day-case management and dedicated theatre time to maximise treatment of hand trauma. We report the results of four audit cycles at a regional plastic surgery unit and assess the improvement in management of hand trauma.

Methods: This audit numbers four cycles (2009–2013), each ranging from 2–3 months' duration and 80–190 patients. Data was collected on all hand trauma day surgery and ward inpatients during each audit period.

Results: Since the first cycle, institution of three hand trauma lists per week and an additional consultant hand surgeon has led to consistent improvement in in-patient stay (80% of in-patients undergoing surgery on day of admission in 2013 compared to 51% in 2009, $p<0.01$). Use of DOSA in managing hand trauma has increased from 0% to 33% over this period. The dataset in the final audit cycle of 2013 shows a unimodal age distribution, in contrast to the bimodal distribution usually seen in trauma.

Conclusions: Regular audit over four years has shown a significant improvement in the day surgery rate for hand trauma patients. Further improvement involves increased utilisation of DOSA facilities, five hand theatre lists per week and a hand unit coordinator to provide consistency with rapid turnover of trainees.

14. **Improving current carpal tunnel services and patient experiences**

Miss A Tan, Mr M Coutinho (Newcastle upon Tyne)

Introduction: NHS reforms calls for patient-focused care with efficient service provision. We improvised our carpal tunnel syndrome (CTS) service in response to government's 18 week rule, by providing rapid access to electrophysiology studies without additional funding.

Methodology: We reviewed our outpatient service for 112 referrals over two years and analysed patient satisfaction using standardised questionnaires.

Results: Male to female ratio= 1:3, mean age= 54.8 years. Of the 112 referrals, 36 already had investigations and 76 were suspected CTS. Patients with suspected CTS had rapid access to electrophysiology studies. 74/75 received results within same day. 1 patient requested to reschedule investigation.

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Sixty-nine patients were added to a waiting list, 28 underwent observation, 12 were discharged, two did not attend and one was referred to neurology. Sixty-one patients were listed on waiting list at initial consult.

A total of 108 patient surveys were posted. 56 responded. 92% responders were either very satisfied or satisfied, with the overall outpatient experience.

Conclusion: The patient survey revealed high satisfaction rates of rapid succession of services. This ultimately enhances patient care by enabling a comprehensive consultation with an outcome within single appointment, reducing delays from investigations and reducing overall waiting times.

15. Do plastic surgeons 'like' social media? A cross-sectional study of the presence of plastic surgeons on social media in the United Kingdom

Mr N Mabvuure, Mr J Rodrigues, Mr S Klimach, Mr C Nduka (Brighton)

Introduction and Aims: Plastic surgery has a history of innovation. We studied uptake and usage of electronic communication media including social media by consultant surgeons.

Methods: All 323 full BAPRAS members were searched on Facebook, Twitter, LinkedIn, RealSelf, YouTube, ResearchGate, and Google in May 2013. Further consultant plastic surgeons were identified from the follower lists of @BAPRASvoice and @BAAPSMedia. Only professional accounts were included. All searches were repeated three times.

Results: Fifty-seven (18%) surgeons had no account on any platform whereas 266 (82%) were on at least one platform. 164 (51%) had personal websites whilst 37 (24%) of the remainder had profiles on partnership websites. 116 (36%) had no website presence. Social media search results are summarised in the table:

Social media platform	Proportion of surgeons with an account	Mean number of subscribers ('followers' / 'friends' / 'likes') per surgeon
Twitter	72 (22%)	126 (0 - 3270)
Facebook business/fan pages	12 (4%)	368 (7 - 3786)
YouTube	50 (15%)	n/a
RealSelf	19 (6%)	n/a
ResearchGate	39 (12%)	8 (0 – 21)
LinkedIn	168 (52%)	106 (0 - 500)

Conclusions: Consultant surgeons favour the professional network LinkedIn more than other networks. Although there is a smaller presence

on Facebook and Twitter, the most popular websites, surgeons are well connected providing opportunities for mass education. Surgeons are encouraged to access the numerous guidelines now published on fair usage of social media to ensure a positive online experience is maintained.

16. The uptake of NICE's Fellows and Scholars programme by plastic surgeons

Mr J Rodrigues, Mr G Lawton (Nottingham/London)

Introduction: The National Institute for Health and Clinical Excellence (NICE) is central to UK healthcare. Its roles are expanding, and becoming even more important. NICE's Fellows and Scholars (F&S) programme launched in 2010, aiming to provide educational support for trainees and consultants. In return, fellows and scholars act as local ambassadors for NICE.

Methods and Results: The opportunities and relevance of the scheme, and the demographics of fellows and scholars, were analysed.

Ten scholarships per year are available to trainees undertaking a project of relevance to NICE involving 7.5 hours/week for the year, via open competition. Of forty current and previous scholarships, plastics registrars have held only two. Ten fellowships per year are available to consultants, and last 3 years. They involve an ambassadorial role. Of forty current and previous fellowships, none have been held by plastic surgeons.

The presenters' scholarships have facilitated attendance at NICE's annual meeting, NICE advisory committee meetings, and NICE accreditation workshops. They have provided education surrounding outcome measures, cost effectiveness analysis and guideline design.

Conclusions: Obtaining these awards provides analytical support with projects, education about the evolving NHS architecture and opens new avenues for collaboration, but to date few have been secured by plastic surgeons.

17. Successful outcome of capitate non-union with free vascularised iliac crest bone graft: case report

Mr V Itte, Mr A Siddique, Mr N Niranjan, Mr G Packer (Essex)

Introduction: Capitate fractures are rare with a reported incidence of 1.3% of all carpal fractures and isolated capitates fractures account for only 0.3% among this group[1]. There is often delay in the diagnosis and treatment of these isolated injuries, and this is associated with a higher incidence of non-union, avascular necrosis and post traumatic arthritis.

Material and Methods: A 36-year-old male right hand dominant engineer fell on his outstretched hand and sustained isolated left capitate fracture. He initially underwent open reduction and internal fixation but continued to have discomfort and persistent wrist pain. Further imaging revealed capitate non-union. The patient underwent surgical reconstruction with a free vascularised iliac crest bone graft.

Results: At 16 months follow-up after surgery the patient reported no wrist pain. He had a good range of movement at the wrist joint. Imaging demonstrated bony union of the capitate. DASH and Mayo scores were used for objective assessment.

Conclusion: We report the first case to date of free vascularised iliac crest bone grafting used in the treatment of symptomatic non-union in capitate fracture. We propose this surgical technique can be utilised for the successful treatment with good functional outcome in such injuries.

References:

1) Vigler M, Alberto A, Lee SK. Carpal Fractures Excluding the Scaphoid. Hand Clinics 2006; 22: 501–516

18. Radiographical assessment of hand dressings in children

Dr A Dobbs, Miss N Blucher, Mrs R Chawla, Mr S Hindocha, Professor P McArthur (Liverpool)

Introduction and Aims: Dressings have the potential to interfere with the interpretation of bony detail on radiographs, especially in the context of requiring repeated radiological assessment post-operatively. Our aim was to determine the ideal dressing with the least potential to impede radiographic assessment of bony detail. Our aim was to evaluate the radiolucency of commonly used hand dressings.

Materials and Methods: Fourteen different dressings were applied separately to the index finger of a bone model. Standard exposure radiographs were taken of each applied dressing. Grey-scale analysis was performed to assess the radiolucency of each dressing using a software package.

Results: We found that grey scale analysis revealed that the most radiolucent dressings were wool roll (0.5%) followed by vaseline impregnated mesh (1.1%). A conforming foam dressing was the most radio-opaque dressing (40.1%). Images will be displayed with analysis of each dressing type.

Conclusions: Dressings vary in radiolucency and this is an important factor to take in to account when choosing a dressing in hand surgery. This is especially important in children when dressing changes can have implications for both pain and psychological trauma.

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19. Timothy Syndrome: a fatal association of syndactyly. Case report and review of the topic

Mr D Williams, Dr W McFadzean, Mr D Boyce (Swansea)

Aim: To remind the hand surgery community of a potentially fatal association of bilateral syndactyly.

Method: We present a tragic case of Timothy Syndrome in a 13-month-old boy. The patient suffered cardiac arrest during operative release of bilateral simple syndactyly. Subsequent ECG analysis showed long QT syndrome and post mortem showed patent ductus arteriosus and a myocardial bridge over the right coronary artery. These are manifestations of this rare syndrome. Analysis of the literature shows less than 20 previously reported cases. We discuss the manifestations and management of this rare condition which may present primarily to hand surgeons.

Conclusion: Timothy syndrome is a rare, potentially fatal association of bilateral syndactyly. Hand surgeons need to be aware of its existence. Our practice has changed in that all children with congenital hand disease now undergo pre-operative 12 lead ECG. We hope that this will identify any further cases and commend this practice to surgeons performing congenital hand surgery. Pre-operative knowledge of this diagnosis may lead to life-saving intervention, thus preventing tragedy.

20. A rare, catastrophic cause of limb pain

Miss C Rivers, Mr D Taylor, Mr S Wilton (Manchester)

Group A streptococcal (GAS) necrotizing myositis is a rare soft tissue infection with a reported mortality rate of 50–100%. Due to the difficulties faced with clinical identification, diagnosis is often delayed, contributing to the high morbidity. Though rare, there are limited published reports, and lack of knowledge may mean the condition is under-represented. We present a case of GAS necrotizing myositis, demonstrating the typical clinical presentation and outcomes.

A fit and healthy 34-year-old male presented with a four day history of non-specific flu-like symptoms and later, right forearm pain and erythema. Treatment was commenced for a suspected DVT. He rapidly deteriorated with profound sepsis and increasing limb pain over hours. Following an ultrasound scan and MRI, his deterioration prompted emergency surgical exploration. Intra-operatively, the subcutaneous tissue and deep fascia were reasonably unremarkable but with frank pus and muscle necrosis in the deep extensor compartment. Necrotizing myositis was diagnosed and wound swabs confirmed GAS. The patient survived with little functional loss.

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A high index of suspicion is required when presented with rapidly developing compartment syndrome with no history of trauma in the presence of progressing sepsis. Prompt identification can be limb and life-saving in this potentially catastrophic condition.

21. Perceptions regarding correct pre-operative storage and transfer of amputated digits: a national experience

Dr A Oomman, Mr E Azzopardi, Mrs E Azzopardi, Mr M Javed, Mr J Yarrow, Mr T Tickunas, Professor I Whitaker (Swansea)

Background: Replantation of amputated body parts is a highly specialised, cost-intensive procedure and can offer significantly increased quality of life in selected cases. To optimise chances of successful replantation, appropriate preparation and transfer to the replantation centre is critical. In the absence of custom made devices for storage of the amputated part, pre-hospital preparation is often determined by the referring practitioner, prior to contact with the referring department.

This study has re-explored the perceptions of referring practitioners regarding correct pre-operative storage and transfer of amputated tissue to the Welsh Centre for Plastic Surgery, following an earlier national audit (2008).

Methods: A telephonic semi-structured survey of all referring units was conducted between November 2012 and February 2013, against Advanced Trauma Life Support guidelines as gold standard.

Results: A 78% response rate (n=68) was obtained from 90% of referring centres (n=16). Only 18% of respondents described the procedure correctly. Major concerns were storage directly on ice (10%) and abrasive trimming/cleaning solutions (56%).

Conclusion: This study not only underscores the importance of education and engagement of referring physicians, but also demonstrates that if applied alone, educational engagement reported in previous centres may be ineffective. A procedural chart, pre-mailed to all referring departments and made available to fax on demand is recommended as a simple and low-cost intervention. The results of the study also affirm the onus on plastic surgeons to engage in innovative and effective educational tools to improve microvascular and replantation service delivery.

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22. Case study: vascularised medial femoral corticoperiosteal flap for thumb reconstruction

Dr J Ruston, Mr K Amin, Miss N Darhouse, Mr B Sivakumar, Mr D Floyd (London)

Introduction: Fracture non-unions present a reconstructive challenge, with complications often resulting from poor vascularity. We present an illustrated technical description of the use of a vascularised medial femoral condyle corticoperiosteal flap for reconstruction of a phalangeal fracture non-union.

Case: A 33-year-old male was referred with a hypertrophic non-union of a fractured proximal phalanx of the dominant thumb. This resulted in significant deformity and limited function of the hand. Excision of the affected bone left a 25mm defect. A medial femoral condyle corticoperiosteal flap was harvested, based on the superomedial genicular pedicle. The flap was sculpted into a prism shaped 'phalanx' and inserted into the defect. The pedicle was anastamosed to the princeps pollicis artery and a superficial tributary of the cephalic vein.

Result: The patient continues to make progress with hand therapy. An improvement in function was noted from the first clinic review.

Conclusion: The medial femoral condyle is useful for reconstruction of bony defects, with minimal donor sacrifice. The vascularised periosteum, with or without cortical bone, is a versatile flap that can be tailored to required shapes and is useful for small defects in the hand.

23. Congenital trigger digits: a case series

Miss L Homer, Miss R Chawla, Mrs M Kelly, Mr A Mishra, Professor P McArthur (Liverpool)

Introduction: Trigger thumb is ten times more common than trigger finger. While incidence remains unknown, bilateral occurrence occurs in 25–30% children. The aim of this work was to provide a more detailed clinical description of the congenital condition.

Methods: A case series of all patients with trigger digits that presented to Alder Hey Children's Hospital was complied between 2003 and 2012. Data was then described.

Results: Thirty-nine patients (19 male, 20 female) were identified. Thirty-three had thumb (16 left, 11 right and 6 bilateral) involvement while three had trigger finger only. Three had no location recorded (including suture material and pulley release). Of the group, 34 (87.18%) had surgical release with more specific details discussed. The median age at first operation was 31 (range 16–69) months. There were four complications of surgery; five children had no intervention. Three

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children had reoccurrences (median age 15 months (11–30 months)). Median follow up was two (0–70) weeks. Twenty-five children were managed by orthopaedic surgeons while 12 were managed by plastic surgeons. One child was managed by both teams and one unknown.

Conclusion: From our results left trigger thumb was most common deformity. The median age at operation was 31 months while bilateral thumb involvement occurred in 18.2%.

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1. **Delayed-immediate breast reconstruction leads to improved patient satisfaction**

Miss H Staley, Ms A Townend, Dr T Zamoyski, Mr R Kasaraneni, Mr S R Aspinall, Mrs M P Serra (North Shields)

Introduction: Immediate breast reconstruction (IBR) offers the best psychological outcome and in the absence of post mastectomy radiotherapy (PMRT), IBR also offers the best aesthetic outcome. If PMRT is required, delayed reconstruction is preferable. The need for PMRT cannot be reliably determined pre-operatively, making it challenging to identify those who would benefit from IBR. Delayed-immediate breast reconstruction (DIBR) is a two-stage approach: (1) Skin-sparing mastectomy with insertion of a tissue expander, and (2) definitive reconstruction, as a second stage procedure, following PMRT if required. We present our DIBR experience and the results of a patient satisfaction survey.

Methods: All DIBR between December 2009 and November 2012 were reviewed retrospectively. From January 2011 satisfaction surveys approved by the Royal College of Surgeons of England were sent to DIBR patients following their stage 1 and stage 2 procedures, and patients undergoing simple mastectomy in our unit as a control group.

Results: There were 35 DIBR stage one procedures performed. 11/35 patients required PMRT. Twenty-eight patients have now completed DIBR stage 2. Definitive reconstruction was achieved by: 14 permanent implants, 5 LD/implant reconstructions and 9 DIEP flaps. Adjuvant treatment was not delayed due to complications. 8/11 DIBR stage 1, 13/15 DIBR stage 2, and 16/26 simple mastectomy satisfaction surveys were returned. Overall satisfaction was 100% in both stage 1 and 2 DIBR patients compared to 75% in the mastectomy patients.

Conclusion: DIBR optimises reconstruction in patients who may require PMRT. It has increased patient satisfaction in comparison to mastectomy alone.

2. **Breast reconstruction with DIEP flap after multiple abdominal liposuction**

Dr M Farid, Mr S Nicholson, Mr A Akali (Hull)

Introduction: Due to a perception of flap unreliability, extensive abdominal wall procedures are often considered a contraindication to perforator-based abdominal tissue flaps. We present a successful DIEP flap breast reconstruction following multiple liposuction procedures.

Case Report: A 57-year-old woman underwent mastectomy and reconstruction with latissimus dorsi and implant in 2004. She underwent exchange of implant due to capsular contracture in 2009,

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and simultaneous transfer of 240ml of abdominal fat to the breast. Two subsequent fat transfer procedures were undertaken in 2010, with 300ml harvested per session.

Sixteen months later, the patient opted for removal of implant and DIEP flap reconstruction due to recurrent capsular contracture. Pre-operative MRI demonstrated normal-looking abdominal and perforator anatomy. Intra-operatively, very minimal scarring from the liposuction was noted. The flap was successful, with no subsequent fat necrosis or delayed healing.

Discussion: We demonstrate that multiple fat graft harvests from the abdomen is not an absolute contraindication to DIEP flap, and flaps can be raised successfully without perfusion-related complications. The timing of DIEP after fat graft harvest remains debateable but success has been reported in as little as six months. We recommend pre-operative angiography of the abdominal wall in all cases of multiple previous liposuction.

3. **The influence of pre-operative magnetic resonance angiography on surgical outcomes in DIEP flap breast reconstruction: a single centre study**

Mr S Nicholson, Miss K Miyagi Mr A Kotwal, Mr A Akali (Hull)

Introduction: Imaging of the abdominal wall has benefits for raising deep inferior epigastric artery perforator (DIEP) flaps. Magnetic resonance angiography (MRA) has advantages over CT angiography, including no exposure to ionising radiation, yet CTA remains the more widespread imaging modality in DIEP surgery.

We evaluated surgical outcomes before and after the implementation of pre-operative MRA for DIEP in our unit.

Method: Data was collected prospectively for all patients who had MRA before DIEP breast reconstruction, and compared to the period before MRA was routinely undertaken.

Results: Of 34 patients who had MRA before DIEP over 22 months, there were no incidences of abdominal wall hernia. There were three incidences in the preceding 34 patients (9%) before MRA was introduced (p=0.24). The overall hernia rate since 2007 was 7%.

Mean inpatient stay was reduced from 5.4 days to 4.8 days following the introduction of MRA (p=0.118). Mean operative time was reduced from 528 to 493 minutes (p=0.26).

Discussion: MRA allows selection of perforators based on their intramuscular course; a shorter course allows the flap to be raised with

less muscle damage, and therefore a reduced risk of abdominal wall hernia. Our findings support this theory.

Similarly, less muscle damage may reduce post-operative pain and allow the patient to resume mobilising in a shorter time, accounting for the reduction in in-patient stay.

4. **V-slide superior pedicle mastopexy**
Mr A Sadri, Mr A Juma (Chester)

Introduction: Operations to counter sagging breasts and reposition the nipple areolar complex are many and varied. Each technique has its own merits and drawbacks. We present a new technique for mastopexy which is easy to perform, with a short learning curve.

Technique: The skin markings for de-epithelialisation are the same as for the Lejour mastopexy. The dermoglandular pedicle is superiorly based with a V shape, the apex pointing to the inframammary fold. The V of the dermoglandular pedicle can be slide superiorly to auto-augment or a submammary pocket used for an implant.

Results: The V-slide mastopexy has been performed in 45 patients. Patient reported satisfaction has been good to excellent on two year follow-up. There were no NAC complications with two cases of superficial wound infection.

Conclusion: The technique presented is suitable for breasts with minor to moderate skin excess and ptosis. It is a safe technique which is easy to learn and perform and allows implant or auto-augmentation. Its also prevents kinking at the superior aspect of the nipple just preventing vascular compromise.

5. **Herceptin cardiotoxity and breast reconstruction: literature review and recommendations**
Mr A Allouni, Mr T Collin (Durham)

Introduction and Aims: Herceptin is given to breast cancer patients expressing the HER2 gene, which accounts for 20–30% of breast cancer patients. With cardiotoxicity a significant risk, we carried out a literature review and raised some recommendations on managing patients on Herceptin when referred for breast reconstruction.

Materials and Methods: A literature review was carried out by searching through the electronic database.

Key Results: The risk of cardiotoxicity is 2–7% if Herceptin used alone but increases up to 27% if adjuvant chemotherapy is added. This included LV dysfunction, heart failure, LBBB and negative T-waves. Progressive

decline in EF was noted in all patients having Herceptin but is more enhanced in the symptomatic patients. Several studies reported that 19% to 40% of patients who showed reduced EF did not show significant improvement in 6 months follow up while 9% developed a further decline. A single study has reported that the reduction in EF persisted for at least 4 years.

Conclusion: A recovery period of 6–12 months is recommended after Herceptin therapy before offering surgery for symptomatic patients. This period is longer if free flap is considered. Our recommendations cover the pathway of these patients and can form the guidelines that standardise the UK practice.

6. **Predicting fat necrosis: peri-operative risk factors in DIEP flap breast reconstruction**

Ms K Lindsay, Mr S Hindocha, Ms R Chawla, Mr H Shaaban, Mr K Graham, Mr O Koshy (Liverpool)

Autologous free flap reconstructions of the breast have become commonplace in many plastic surgery units. DIEP flaps generally have higher survival rates than pedicled TRAM flaps. Many local and systemic factors may influence the incidence of fat necrosis in free flaps.

We carried out a five-year retrospective review of DIEP cases within a single unit to establish predictive factors in fat necrosis. The case notes were reviewed according to a standardised proforma. A linear regression analysis was performed with odds ratios compiled for each respective risk factor.

There were 220 breasts reconstructed using DIEP flaps; 15% of patients developed fat necrosis. The results were obtained from three surgical teams. The superior and inferior gluteal flaps performed during the same time period were excluded. Our paper analyses peri-operative risk factors associated with fat necrosis, including flap weight, donor and recipient vessel characteristics, previous chemo-radiotherapy, age, body mass index, smoking status, other co-morbid features, as well as post-operative blood pressure and urine output measurements.

Fat necrosis is a significant cause of post-operative morbidity in patients undergoing DIEP flap reconstruction. This study identifies various modifiable risk factors for surgeons and patients alike, thus highlighting areas for continuing improvement in our standards of care.

7. **The use of novel inferomedial fasciocutaneous breast flaps to reconstruct a sternal dehiscence with concomitant soft tissue loss in a patient with gigantomastia**

Miss L Cooper, Mr K El'Ali, Miss C Payne (London)

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Introduction: Sternal dehiscence occurs in up to 5% of median sternotomy wounds. Treatment includes targeting any infection present with antimicrobial therapy (empirical and then targeted), and planning definitive closure. The commonest forms of closure utilise the pectoralis major muscle as an advancement or turnover flap, the rectus abdominis muscle, or omentum. The use of a local fasciocutaneous flap with partial de-epitheliasation harvested from the breast region has not previously been reported to cover this particular deficit.

Patient and Method: A patient with gigantomastia (cup size 44JJ), a previous CABG harvesting both internal mammary arteries and diabetes mellitus required definitive reconstruction of a sternal dehiscence with soft tissue loss. Bilateral flaps were raised from the breast to successfully reconstruct a sternal dehiscence with surrounding soft tissue loss after cardiothoracic surgery, performed in conjunction with a bilateral breast reduction. The technique is described in detail.

Results: The flaps healed, with excellent results. There was no dehiscence or infection post-operatively.

Conclusion: This novel technique offers an approach for definitive cover of sternal and soft tissue defects in patients with gigantomastia, using tissue that would otherwise be disposed of, and concurrently reducing the distracting forces on the sternotomy wound.

8. **A UK case report of anaplastic large cell lymphoma in a reconstructed breast using a silicone implant**

Mr K Soerensen, Mr J Murphy, Dr A Lennard, Dr V Wadehra, Dr G Menon, Mr N Collis (Newcastle upon Tyne)

Introduction: We present an incidental finding of anaplastic large cell lymphoma (ALCL) in a 56-year-old female, whilst revising an implant-based reconstruction, who had previously undergone risk reduction mastectomies. A presumed seroma was present but had a 'milky' colour and was sent off for cytology which suggested ALCL. Histological examination of nodules on its surface confirmed this. Treatment consisted of implant removal and excision of the affected capsule. PET-CT scan initially confirmed increased uptake but repeat scan and clinical examination is consistent with remission.

Methods: Ovid Medline, PubMed and Embase database search using 'breast implant' and 'ALCL'. This revealed 49 cases of ALCL associated with breast implants.

Results: Cases reported show median age at diagnosis was 54 years and median time of diagnosis was nine years post op. The commonest presentation is a late effusion.

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Discussion: Breast implant-associated ALCL is a rare form of Non-Hodgkin's Lymphoma. Management of these cases is not uniform and conservative management with implant removal may be the only treatment required. Close follow up is mandatory to monitor outcomes.

9. Prevalence and aetiology of gynaecomastia in men presenting to a rapid diagnostic breast clinic

Mr R Stevens, Miss J Rusby (Sutton)

Introduction: Although breast cancer in men is rare, benign breast problems such as gynaecomastia are more common. We audited the incidence and aetiology of gynaecomastia in men attending breast clinic.

Methods: A retrospective review of diagnosis and aetiology for 140 men attending breast clinic during the calendar year 2012 was undertaken.

Results: The median age (range) was 53.7 (16.3–87.8) years. 105 (75.0%) had gynaecomastia [85 (81.0%) unilateral, 20 (19.0%) bilateral]. Aetiology is summarised in the table. The commonest prescribed drugs were anti-androgens, anti-reflux agents, cardiac drugs and statins. The illicit drugs were anabolic steroids, cannabis and heroin. Only eight (7.5%) were advised to seek a referral to plastic surgery, suggesting that the cohort referred to breast clinic differs from those referred to plastic surgery clinics.

Aetiology	Number (%)
Physiological	16 (15.2%)
Senility	12
Puberty	4
Pathological	4 (3.8%)
Liver disease	2
Renal failure	1
Cryptorchidism	1
Pharmacological	52 (49.5%)
Prescribed drugs	42
Illicit drug use	9
Alcohol	1
Idiopathic	33 (31.4%)
Total	**105**

Conclusions: Seventy-five percent of men attending our rapid diagnostic breast clinic were diagnosed with gynaecomastia and the aetiology was known in 69%. It is important that reversible causes, such as prescribed and illicit drugs, are considered prior to surgical intervention.

10. **The use of cephalic vein diversion in DIEP breast reconstruction: a case series**

Miss K Lyndsay, Miss P Gill, Mr S Hindocha, Mr K Graham, Mr O Koshy (Liverpool)

Introduction: Venous congestion is the most common type of vascular compromise seen after deep inferior epigastric perforator (DIEP) flap microsurgical reconstruction. There are several techniques in the armamentarium of a plastic surgeon to correct this problem, one such method is cephalic vein diversion.

Methods: A total of 220 breasts were reconstructed using DIEP tissue transfers over a five-year period. Of the patients that developed venous congestion, four displayed inadequate drainage via the internal mammary vein upon exploration. The arterial input was satisfactory in all cases but the internal mammary vein both proximal and distal was inadequate. In these patients, a cephalic vein from the ipsilateral arm extending from the elbow to the deltopectoral groove was transposed and anastomosed to deep inferior epigastric vein.

Results: All four cases were successfully salvaged and there was full recovery with no further complications.

Conclusions: Cephalic vein diversion in DIEP tissue transfer is a potential means of correcting flap congestion and thus preventing flap necrosis or failure. We recommend the use of cephalic vein diversion when the internal mammary vessels are not viable and adjacent vessels such as the Thoracodorsal vein are not conveniently located.

11. **Literature review: what is the evidence to guide the discontinuation of Tamoxifen pre-operatively?**

Dr J Ruston, Miss M Dempsey (London)

Introduction: Tamoxifen has been associated with an increased risk of peri-operative thromboembolic events. Some surgeons therefore stop Tamoxifen prior to surgery, but this practice is varied.

Method: A literature review was conducted, using the PubMed database, to examine the evidence behind the timeframe of Tamoxifen cessation pre-operatively.

Results: Multiple studies demonstrate increased thromboembolic events (deep vein thrombosis and pulmonary embolism) in women taking Tamoxifen at the time of surgery, although the results are not universal. Tamoxifen use is associated with microvascular free flap reconstruction failure, due to both arterial and venous thrombotic complications. The prothrombotic effect is multifactorial. The risk of DVT and PE in surgical patients can be addressed by early mobilisation, anticoagulation therapy

and compression stockings. However, these precautions do not prevent microvascular thrombosis. Many authors recommend Tamoxifen cessation pre-operatively, but very few provide evidence or guidance on duration.

Conclusion: There is insufficient evidence in the literature to suggest a definitive duration for which to stop Tamoxifen pre-operatively, for general or for microvascular surgery. Twenty-eight days is currently considered to be a sufficient and safe period to stop Tamoxifen before surgery until further studies are conducted looking at shorter durations of cessation.

12. **Complication rates of DIEP flap donor site versus elective abdominoplasty: a single plastic surgery unit experience**
Mr F Sheil, Mr A Pabari, Miss H Lloyd-Hughes, Mr A Mosahebi (London)

Introduction and Aims: The DIEP flap has emerged as one of the preferred choices for autologous breast reconstruction. The donor site closure is similar to the standard abdominoplasty technique. The aim of this study was to compare complication rates between DIEP donor-site and elective abdominoplasty.

Materials and Methods: All patients undergoing either a DIEP flap breast reconstruction (n = 92) or elective abdominoplasty (n = 109) between March 2011 and March 2012 were included in this study. Case notes of all patients were reviewed and patient demographics, co-morbidities and complications were recorded.

Results: Seroma rate was three times higher in abdominoplasty group compared to the DIEP group. There was no significant difference in the rates of infection, wound dehiscence or umbilical necrosis between the groups.

Conclusions: There is no significant difference in complication rates of the donor site between abdominoplasty and DIEP flaps. The rate of seroma is lower in DIEP patients and patients undergoing DIEP flaps should be informed of this comparison.

13. **Social media and the burns service: #new challenges**
Mr J Cubitt, Mr J Williams, Dr T Combellack, Mr W Dickson, Mr P Drew (Swansea)

An important part of adolescence is taking risks, pushing boundaries and learning limitations. Peer pressure is often implicated in risk taking behaviour and the inevitable injuries. Playground challenges and small group antics have flourished with the availability of social networking and internet based video sharing and peer pressure has spread beyond

immediate social groups. Internet based endurance challenges have led to several patients presenting to our burns service with cryogenic burns. This poster presentation describes the results of the "Salt and Ice Challenge" and the "Lynx Challenge" and aims to highlight the public health risks associated with unregulated internet-based endurance challenges. Improved knowledge though education of children, parents, schools and healthcare professionals is the key to prevention of such injuries.

14. Contact burns: prevention is better than cure in epilepsy patients
Mr N Vetharajan, Mr K G Srinivasan, Mr N Moiemen (Birmingham)

Background: A contact burn is burn injury occuring as the result of a prolonged transfer of heat from an object to the skin. An iBID report of 2008 states that the incidence of contact burns in adults is 18% and in the elderly is 21%. Often these burns are due to accidental contact from household appliances or in patients with comorbid conditions such as epilepsy.

Materials and Methods: We conducted a retrospective review of contact burns seen and treated in our unit in the year 2011. Data were collected form patients case notes and iBID data. The variables collected were demographics, cause of the contact burn, any predisposing factors that might have contributed to the contact burn, total burn surface, depth of burn and type of management.

Results: There were 376 patients seen and treated for burns in 2011 in our unit. Thirty-two patients were treated for contact burns. The male:female ratio was 1:2.6 with age at presentation ranging from 17 to 91 years. Contact burns from radiators were the commonest. Twelve patients had pre-existing comorbid conditions which contributed to their contact burn. The total burn surface area ranged from 0.01% to 9.5%. Seventy percent of the patients were managed surgically. Epilepsy was a contributing factor in eight patients and heating radiator burns was the causative factor in seven patients.

Conclusion: Contact burns in epileptic patients are preventable. Patient education and safety measures such as installation and use of safety devices that limit exposure to heat sources (for example radiator and heating pipes covers, fireplace enclosures) should be encouraged.

15. 'Salt ice dare'. A case report of a previously un-described mechanism of rapid frostbite injury
Dr M Sohatee, Mr N Brierly, Mr T Muir (Middlesbrough)

Introduction and Aims: This report describes the case of a 13 year old girl who suffered a 0.25% total body surface area deep dermal burn to

the palmar aspect of her left hand overlying the metacarpal head of the index finger.

Methods: The patient described was seen following presentation to the accident and emergency department at her local hospital. Her injury was sustained taking part in a dare with school friends, which involved holding an ice cube, covered in sodium chloride, in the form of table salt, directly against her skin.

Key results: Cold exposure causes tissue injury either by direct cellular damage or progressive dermal ischaemia. The addition of salt to the ice significantly reduces its melting point. This increases the entropy of an already endothermic reaction, cooling the surroundings further, resulting in increased tissue injury when compared with ice alone.

Conclusions: A description of this type of injury, or similar case, cannot be found when undertaking a literature search and this specific type of iatrogenic cold burn injury has surfaced only recently, we therefore feel it is important that awareness of these types of injuries is essential to those working within the field of plastic surgery and burns.

16. Perineal wound complications following extralevator abdomino-perineal excision of the rectum

Miss A E Sayers, Mr R Patel, Mr I Hunter (Hull)

Introduction: The extralevator abdomino-perineal excision (ELAPE) has become popular in the management of rectal cancer due to its superior oncological outcomes, but is associated with a higher incidence of perineal wound complications. We present a case series of patients with perineal complications following ELAPE.

Methods: The case notes of patients over a 55-month period were reviewed. The perineal closure technique was recorded, along with subsequent perineal complications and management.

Results: A total of 54 patients underwent ELAPE, of which 24 (44%) presented with a perineal wound complication. The most common complication was perineal herniation (26%), followed by poor healing/sinus formation (13%). Fifteen of the 24 (62.5%) patients with perineal complications were managed conservatively. The remaining nine required secondary perineal reconstruction with a biological mesh or myocutaneous flap. Ten patients underwent primary perineal reconstruction with either biological mesh or myocutaneous flap and perineal complications were observed in four of these patients.

Conclusions: In our limited series, ELAPE resulted in a high rate of perineal wound complications. This would support current theories that the increased perineal defect leads to this higher incidence. We suggest

that the management of patients undergoing ELAPE should include the surgical input of a plastic surgeon.

17. Perineal hernias following extralevator abdominoperineal excision

Miss A E Sayers, Mr R Patel, Mr I Hunter (Hull)

Introduction: With the advent of the extralevator abdominoperineal excision of the rectum (ELAPE), perineal hernias are believed to occur more commonly. We present a series of patients with perineal hernias following ELAPE.

Methods: The case notes of patients that had undergone ELAPE over a 55-month period were reviewed, with the method of perineal reconstruction, subsequent perineal hernia formation and management recorded.

Results: Of the 54 patients that underwent ELAPE, 8 underwent primary perineal reconstruction (2 with biological mesh, 6 with myocutaneous flap).

Fourteen patients (26%) were diagnosed with perineal hernias during follow-up. Eight of these patients required secondary perineal reconstruction with a biological mesh or myocutaneous flap.

Of the patients that had undergone primary perineal reconstruction, all patients with mesh reconstruction developed a perineal hernia, however no hernias were noted in the primary myocutaneous flap group.

Conclusions: Debate exists regarding the optimal management of these patients. In our limited series, perineal hernias post-ELAPE occurred more commonly than literature suggests, with 15% of patients requiring secondary perineal reconstruction. Primary myocutanous flap reconstruction appears effective in hernia prevention post-ELAPE. We suggest that the management of patients undergoing ELAPE should be multidisciplinary and include the surgical input of plastic surgeons.

18. Superior epigastric perforator flap salvage reconstruction of deep sternal wound infection

Mr D B Saleh, Dr D Marinceu, Mr A Allouni, Mr M Loubani, Mr P Stanley (Hull)

Introduction: Deep sternal wound infection (DSWI), defined as soft and bony tissue infection, is uncommon following cardiothoracic surgery. DSWI carries significant morbidity and mortality. Caudal DSWI defects present a specific challenge following failed reconstruction, as they cannot be adequately addressed with pectoralis major flaps.

Methods: Three consecutive patients with DSWI had failed previous reconstruction(s). Radical debridement was followed by salvage using superior epigastric artery perforator (SEAP) flap reconstructions. We raised this flap as an 'agnostic' perforator flap, including incisions in the rectus sheath. Doppler confirmation of the perforator presence was essential in case of proximal pedicle injury during previous debridement.

Results: All three reconstructions were successful. A mean of six days suction drainage was required. No complete or partial flap loss was observed. No recalcitrant osteomyelitis or cutaneous sinus formation has been observed during a mean of nine months follow-up.

Conclusion: Free flaps and vertical rectus flaps can address caudal defects, yet carry potential significant general and donor site morbidity in this difficult cohort of patients. In this unique, very early experience, the SEAP appears to provide tissue bulk to obliterate dead space, and a reliable integument that requires a short anaesthetic without significant donor or patient morbidity.

19. **Paediatric lipomatous hamartoma: clinical presentation, management and outcomes of ten cases and literature review**

Miss C Malic, Dr T Law, Dr R Petersen, Dr D Courtemanche (Bristol)

Introduction: Lipofibromatous hamartoma (LHM) is an uncommon, rare and poorly characterised disorder, which presents as a benign tumour arising from nerve connective tissue. Sometimes it is associated with macrodactyly. Numerous case reports are available in the literature, but very few case series. Conflicting descriptions in the literature lead to poor understanding of the disease, management and prognosis.

Methods: A retrospective review was carried out at BC Children's Hospital, Vancouver over an 18 year period (January 1993-December 2010). The hospital histopathology database was searched for "macrodactyly", "lipoma", "lipohamartoma". The medical notes were pulled and only patients with lipofibromatous hamartoma of the extremities were included in the study. Clinical characteristics, operative care, outcomes, radiological and histological findings were reviewed.

Results: Of 43 histopathology records, only ten patients were treated for lipohamartoma of the extremities. Patients presented with functional concerns regarding limb use, requiring at least two surgical procedures (60%). Debulking, epiphyodesis and amputation were the most common procedures. The primary pathology was of lipohamartoma. Imaging and immunohistochemistry (CD34,S100) reveal evidence of nerve involvement in some patients. In all patients with palliative operative care, the residual disease showed clinical progression.

Conclusion: We propose a new classification of lipomatous hamartoma differentiating those with and without nerve involvement in order to help clarify the possible clinical manifestations.

20. Management of open lower limb injuries: a regional experience

Mr N Marsden, Mr J Yarrow, Mr S Rahman, Mr N Wilson-Jones, Professor I Pallister, Miss S Hemington-Gorse (Swansea)

Introduction: The BOA/BAPRAS guidelines were most recently updated in 2009 to become the standards for the management of open fractures of the lower limb. Where the guidelines were a way of advising best management, standards are the agreed level of attainment to which we should be meeting. Our aim was to audit whether we were meeting these standards in our region.

Methods: We undertook a six month prospective audit over six centres across the South-West region (Swansea/Bristol/Salisbury/Exeter/Plymouth/Portsmouth) from 1 October 2012 - 31 March 2013, looking at all open fractures of the lower limb.

Results: There were a total of 86 patients, of which 48% presented directly to our units. Adherence to correct antibiotic therapy was 87% at admission, 66% at both primary and defintive surgery. 37% of patients correctly underwent immediate surgery within six hours. All patients had primary surgery in under 24 hours, although 17% incorrectly were out-of-hours without any immediate need. Sixty percent of primary surgery was performed with combined senior orthopaedic and plastic surgeons. Overall 77% had soft tissue coverage in less than 7days.

Conclusion: There is varied experience in managing these complex injuries across our region, most likely due to the centralisation of trauma services. Standards were more likely to be met in those centres seeing higher numbers of injuries. These patients require a combined approach by dedicated ortho-plastic teams in order to provide best management.

21. Antibiotic use in lower limb trauma: completing the audit cycle

Mr N Marsden, Mr J Y, Mr S Rahman, Mr N Wilson-Jones, Professor I Pallister, Miss S Hemington-Gorse (Swansea)

Introduction: The standards for lower limb management in the UK were updated in 2009. One of the main complications is these complex patients is infection of the bone and soft tissue, which is why correct antibiotic use is a vital component of the standards.

Methods: All patients admitted to our unit with open lower limb injuries were studied prospectively over two 6-month periods (Oct 2010- March 2012 and Oct 2012- March 2013). After the first period between we implemented a regular educational session to the junior doctors at

induction, and also produced a summary poster for all clinical areas (ward/anaesthetic room/theatre). Clinical notes and transfer documents were used to gather information on antibiotic use at presentation, primary debridement and definitive surgery.

Results: In the first study period, there were 21 patients. Correct antibiotic use at presentation was 86%, at primary debridement was 52% and at definitive surgery was 24%. In the second study period after the transition time, there were 28 patients. Correct antibiotic use improved to 100%, 70% and 83% respectively.

Conclusion: Implementation of a simple summary poster and education of junior doctors can have a significant effect on maintaining standards and improving patient outcome in the management of lower limb trauma.

22. **Gluteal compartment syndrome with severe rhabdomyolysis**
Ms N Narayan, Ms H Patel (London)

Background: Gluteal compartment syndrome is a rare entity but a recognised complication of prolonged immobilisation. It can present as renal failure as a result of severe rhabdomyolysis and can lead to sepsis and death.

Case Presentation: We report a case of gluteal compartment syndrome in a 25-year-old gentleman who was found unconscious following intoxication with alcohol and cocaine of an unknown duration. He presented with tense tight left buttock swelling, right thigh swelling, cold immobile extremities and acute renal failure.

Management: Diagnosis was made clinically, supported by investigations which revealed a potassium of 8.6, pH 7.0, and creatine kinase of 380,000 with myoglobinuria. Immediate resuscitation was commenced and patient was taken to theatre for fasciotomy and debridment of necrotic gluteus maximus.

Conclusion: Our patient was promptly diagnosed and treated successfully by immediate decompression. Gluteal compartment syndrome poses a great diagnostic challenge and is associated with a high morbidity. Therefore, it is important to have a high degree of suspicion in individuals at risk so that it can be diagnosed at an early stage to avoid any complications.

23. **Comparing types of anaesthesia in complex lower limb osteomyelitis surgery with free flap reconstruction: an analysis of the impact of anaesthetic technique on surgical and patient outcomes**
Mr J Kendall, Mr C Taylor, Mr A Ramsden, Mr M McNally, Dr S Galitzine (Oxford)

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Introduction and Aims: Since 2007, both general anaesthetic with epidural and sedation with epidural have been used for anaesthesia of patients undergoing complex lower limb osteomyelitis surgery with free flap reconstruction at our centre. We present our experience of the impact of different anaesthetic techniques on surgical and patient outcomes at one national referral centre.

Material and Methods: We retrospectively analysed 82 patients who underwent lower limb osteomyelitis excision and free flap reconstruction with flaps harvested from the lower limbs since 2006. They were aged between 18 and 84 years and had ASA grades of between 1 and 3.

Key Results: We investigated whether type of anaesthetic had any impact on length of operation, complications, post-operative recovery and overall patient outcome.

Conclusion: Whilst epidural with sedation may be more labour-intensive for the anaesthetist, it confers significant surgical, anaesthetic and recovery advantages over general anaesthesia with epidural in complex lower limb osteomyelitis surgery.

24. **The 'Honda heel': a series of distinctly Vietnamese lower limb injuries reconstructed successfully using a myocutaneous, reversed sural artery flap**

Mr C Bain, Ms E Murphy, Mr S Eccles, Dr X A Pham Tran (Danang, Vietnam)

Introduction: It is important to recognise local patterns of trauma and to develop reliable treatments, utilising resources available locally which give good functional results. We present a series of patients encountered during the authors' charity surgical missions to central Vietnam. Each patient sustained a severe degloving injury to the posterior ankle and heel as a result of riding pillion on a moped: the 'Honda heel'. The defects resulted in extensive soft tissue loss and bony exposure around the ankle.

Methods: All patients were treated successfully by the senior author, a Vietnamese surgeon in a government hospital, using a variant of the reversed sural artery flap raised with underlying gastrocnemius muscle.

Results: All patients recovered well, with no demonstrable donor site morbidity. Patients demonstrated excellent active range of ankle movement and full weight bearing status at between three months and one year of follow-up.

Conclusion: 'Honda heel' is seen frequently in central Vietnam, where microsurgical reconstruction is less readily available. The myocutaneous

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reversed sural artery flap is a reliable local flap option for reconstruction of this degloving heel injury.

25. Undermining 'dog ears' in the closure of small circular cutaneous defects: a point of technique

Mr S Nicholson, Dr R Bowden, Mr P Stanley (Hull)

Background: Standing cone deformities, referred to as dog-ears, occur when closing a circular, short elliptical or irregular wound. Although many methods for correcting dog-ears have been described, most involve excision of additional tissue and wound extension. We present a technique to reduce the appearance of dog-ears after excision of small cutaneous lesions, maintaining the shortest possible scar.

Technique: A lesion is excised 'in the round' with minimal margin to the appropriate depth.

Assessment of the defect demonstrates a slight obliquity to the original incision: the optimal orientation for closure presents itself as the wound adjusts according to relaxed skin tension lines.

A number 15 scalpel blade is inserted parallel to the skin in the subdermal plane at the apices of the new short elliptical wound.

This undermining allows the skin at the apices to re-drape in a tension-free fashion. The appearance of dog-ears is minimised such that primary closure can be achieved with the shortest possible scar.

Discussion: Previous attempts to manage dog-ears surgically have involved differential suture placement in unequal wound lengths, and extension of the wound in a straight, curved, right-angled or other orientation.

This technique allows minimal tissue to be excised, and is especially useful in cosmetically sensitive areas such as the face, wherein a shorter scar is particularly important.

26. Surgical and microbiological approach to the management of pyomyositis secondary to Panton-Valentine leucocidin positive methicillin-sensitive Staphylococcus aureus

Dr S Al-Himdani, Mr K Tan, Mr A Reid, Mr K Chakrabarty (Manchester)

Introduction: Pyomyositis is a purulent infection of skeletal muscle that is commonly seen in the tropics, but has been reported in immunocompromised patients in the UK. Panton-Valentine leucocidin positive Staphylococcus aureus (PVL-SA) is a virulent organism that releases cytotoxins leading to significant abscess formation, muscle

damage and necrotising pneumonia, which is rapidly fatal. We report our approach to managing PVL-SA pyomyositis.

Case Report: A 50-year-old type-2 diabetic presented with pyrexia, tachycardia and painful swellings of his right thigh, right forearm, and left cheek. He had raised inflammatory markers and a hypoechoic collection in his right adductor muscle on ultrasonography. The abscesses were incised and drained. Microbiological specimens confirmed PVL-SA infection. The patient underwent further surgical irrigation and a 10-day course of intravenous flucloxacillin and clindamycin. A chest radiograph showed no signs of necrotising pneumonia.

Result: The patient made a good recovery following treatment with no recurrence.

Conclusion: This case illustrates that a relatively innocuous lesion may lead to a surgical emergency due to an embolic phenomenon and systemic spread. Thorough examination for involvement of additional sites is key, as well as sending microbiological samples for the PVL cytotoxin gene and undertaking a chest radiograph to rule out necrotising pneumonia.

27. A review of necrotising fasciitis management in Stoke Mandeville Hospital

Mr J Cubitt, Mr P Poynter-Smith, Mr M Tyler (Ayesbury)

The incidence of necrotising fasciitis appears to be increasing. Early diagnosis, prompt debridement and appropriate antibiotics has meant that many patients are now surviving. The aim of this study was to investigate the numbers of patients presenting with necrotising fasciitis, the causative organism, co-morbidities, outcome and prognostic scoring systems (LRINEC).

A retrospective analysis of all patients admitted with a diagnosis of necrotising fasciitis between 2007 and 2011 was carried out. The medical and pathology records were used to collect data on patient factors, surgical and antibiotic intervention, microbiology and outcome.

Twenty-seven patients were admitted during the study period (16 male and 11 female). Mean age was 62 years (37–87 years). Leg 44%, arm 22%, thorax 19% and perineum 15%. Type 1 (polymicrobial) 15% and type 2 (monomicrobial) 59%, Streptococcus A 30% Escherichia Coli 15%, Streptococcus B 7%, Streptococcus G 7%. No organism was grown in 24%. Median LRINEC at presentation 8 (0–10) and at surgery 9 (3–11). 33% had a LRINEC <8 at time of surgery. 33% were diabetic, 15% obese, 4% peripheral vascular disease and 7% smokers. Six patients died with an overall mortality of 22%. Mean length of symptoms to presentation

was three days (0–14 days) and presentation to surgery was 1.7 days (0–6 days).

28. Antimicrobial prophylaxis for dog bites in UK plastic surgery units: a nationwide survey

Dr S Al-Himdani, Mr K Tan, Dr S Lavarello, Mr C Duff (Manchester)

Introduction: Dog bites account for 250,000 minor injuries and emergency department attendances per year in the UK. Infections occur in a fifth of dog bites and these are often polymicrobial. Current consensus opinion is that antibiotics should be considered for 'high-risk' dog bites. Co-amoxiclav is the first-line antibiotic recommended by NICE. This study aimed to compare the practice of antibiotic prophylaxis for dog bites across plastic surgery units in the UK.

Methods: We conducted a nationwide telephone survey of all 53 plastic surgery units in the UK using a structured questionnaire.

Results: A response rate of 94% (*n*=50) was obtained. Protocols for the management of dog bites were present in 28% of plastic surgery units. Antibiotics were given on admission at all units. 86% of units prescribed co-amoxiclav first-line, 10% co-amoxiclav with metronidazole, and 4% co-amoxiclav with either clindamycin or ciprofloxacin. Fifty-two percent of departments gave intravenous antibiotics to every patient admitted and 58% gave at least 48 hours of intravenous antibiotics.

Conclusion: Large variations exist in the antimicrobial management of dog bites in plastic surgery units across the country. Co-amoxiclav is the most commonly administered antibiotic, as recommended by NICE. We propose a guideline for the management of dog bites.

29. Not just burning calories: experience of treadmill friction burn injuries at a district general hospital

Dr M Lo, Mr A Duncan, Mr F Schreuder (Stevenage)

Introduction: A recognised safety concern exists with home treadmills that remains overlooked in the UK. We report our experience of friction burn injuries caused by home treadmills in children at a district general hospital.

Method: A retrospective review of all paediatric patients referred for upper limb friction burns caused by treadmills was conducted. Pertinent information was collected including percentage total burn surface area, anatomical distribution and thickness of burn injury, structural damage sustained, wound care and surgical procedures required.

Results: Five patients were referred with upper limb friction burns caused by treadmills. Four suffered injuries when their hands were

caught under the treadmill conveyor belt when it was in use by an adult. One child fell onto the conveyor belt whilst using the treadmill unsupervised and sustained burns to her wrist. All patients sustained <1% TBSA. No significant structural damage was sustained, however one patient required surgical debridement and full-thickness skin graft.

Conclusion: This pattern of injury correlates with other case series of treadmill friction burns and suggests the need for greater awareness to the potential hazard presented by treadmills. We recommend public awareness is raised through the media and safety leaflets included with all treadmill purchases.

30. Belgium score better than ABSI score at predicting burn mortality: a ten year study in a regional burns centre

Dr A Beaven, Miss L MacLennan, Mr A Farroha, Mr N Moeimen (Birmingham)

Background: Severity scoring systems estimating the odds for death following acute burn injury provide a basis for clinical decision-making, quality control and risk stratification. This study compares the abbreviated burns severity index (ABSI) which was published in 1982 by Tobiasen, to the Belgium score which was developed in 2008.

Methods: Data were gathered from the burns network database in our centre and analysed in Excel. ABSI and Belgium scores for all patients between 2008 and 2013 were calculated.

Results: There were 1317 adult patients. Mean age was 43, there were 387 females and 930 males. Mean ABSI score was 4.7, mean Belgium score was 1. ABSI scoring predicted 216 deaths, Belgium scoring predicted 46 deaths, and there were actually 40 deaths.

Conclusion: Belgium scoring better predicts deaths in our regional burns centre than ABSI scoring.

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BAPRAS The Royal College of Surgeons of England
35–43 Lincoln's Inn Fields, London WC2A 3PE
Tel: 020 7831 5161 Fax: 020 7831 4041
Email: secretariat@bapras.org.uk
www.bapras.org.uk