

BP1 DIEP FREE FLAP BREAST RECONSTRUCTION: REVIEW OF IMPACT OF SURGICAL PROCEDURE ON DONOR SITE MORBIDITY

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Introduction: The use of abdominal tissue in post-mastectomy autologous breast reconstruction is a popular choice among reconstructive surgeons. This is the first study to evaluate donor complications based on the type of Deep Inferior Epigastric Artery Perforator (DIEP) surgical procedure and compares unilateral, bilateral and bipediced reconstructions.

Method: A retrospective review was conducted of all women undergoing rib-preserving abdominal free flap breast reconstruction at a University Hospital between 2008-2015 by a single surgeon. Patients who underwent Superficial Inferior Epigastric Artery (SIEA) flaps (n=20) or had incomplete information (n=27) were excluded.

Result: Of 177 patients identified, a total of 130 patients (73.4%) were included in this study and divided into three groups for comparison: unilateral (n=93), bilateral (n=19) and bipediced (n=18). Age, smoking history, radiotherapy and chemotherapy exposure were similar across the three groups and did not influence complication risk. In univariate analyses and relative to the unipediced, unilateral group, the overall odds of complication was approximately two-fold higher in the bilateral group (Odds ratio (95% CI): 2.16 (0.66, 7.04)), and almost halved in the bipediced group (Odds ratio (95% CI): 0.46 (0.17, 1.28)); however these associations had wide confidence intervals and attenuated upon further adjustment. Complications were managed conservatively without recourse to surgery in 68.8%.

Conclusion: DIEP flap breast reconstruction is fraught with donor site morbidity although most complications are minor and comprise predominantly seroma, delayed healing and fat necrosis. These are often managed conservatively. Our study suggests that the type of DIEP flap does not impact donor site morbidity.

Take-home message:

Donor site morbidity is not influenced by the type of DIEP flap used and is similar in unilateral, bilateral and bipediced breast reconstructions.

BP2 A COMPARISON OF GEOMETRIC MORPHOMETRICS TO LINEAR MORPHOMETRICS IN CRANIOFACIAL SURGICAL PLANNING FOR APERT SYNDROME

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Introduction: Congenital Craniofacial abnormalities are characterised by a large degree of Cranial and facial deformity requiring complex surgical correction. Apert syndrome is one such craniofacial abnormality. Surgical treatment aims to restore function and provide individuals with a more normal appearance. Geometric Morphometrics (GM) and the Linear Morphometrics (LM) are two methods used to plan and assess outcomes following craniofacial surgery, our study aims to compare the two.

Method: Retrospective analysis of 3D CT scans of 21 Aperts patients (pre and post-op patients) and 90 control scans (normal individuals). Landmarking of each scan was carried out using LM landmarks, six key landmarks were analysed calculating mean values and standard deviations. Each scan was marked using the GM landmarks and average Dense Surface Correspondence (DSC) models created. Six key landmarks were measured on the DSC models and compared to the mean measurements of the LM group. A Wilcoxon test was used to analyse the data.

Result: Our results demonstrated no significant difference in landmark measurements between the two groups (Wilcoxon test $p > 0.05$). However, the Geometric Morphometric methodology allowed for more scope in planning by producing three-dimensional models allowing better visualisation of facial structure.

Conclusion: The GM method was found to be compatible with Linear Morphometrics in this study. In addition, the Geometric Morphometric method is able to provide more information on the contour and shape of face and hence more useful in planning for craniofacial surgery.

Take-home message:

Geometric morphometrics was found to be compatible with Linear Morphometrics in this study but more work is needed to perfect the production of the Dense Surface Correspondence Model.

BP3 THE REPORTING QUALITY OF SYSTEMATIC REVIEWS IN PLASTIC SURGERY NEEDS IMPROVEMENT: A SYSTEMATIC REVIEW

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Introduction: Systematic reviews attempt to answer research questions by synthesising the data within primary papers. They are an increasingly important tool within evidence-based medicine, guiding both clinical practice, future research and healthcare policy. We sought to determine the reporting quality of

recent systematic reviews in plastic surgery.

Method: This systematic review was conducted in line with the Cochrane handbook, reported in line with the PRISMA statement and registered at the ResearchRegistry (UIN: reviewregistry18). MEDLINE and EMBASE databases were searched in 2013 and 2014 for systematic reviews by five major plastic surgery journals. Screening, identification and data extraction was performed independently by two teams.

Result: From an initial set of 163 articles, 79 met the inclusion criteria. The median PRISMA score was 16 out of 27 items (59.3%; range 6-26, 95% CI 14-17). Compliance between individual PRISMA items showed high variability. It was poorest for items related to the use of review protocol (item 5; 5%) and presentation of data on risk of bias of each study (item 19; 18%), while being the highest for description of rationale (item 3; 99%) and sources of funding and other support (item 27; 95%), and for structured summary in the abstract (item 2; 95%).

Conclusion: The reporting quality of systematic reviews in plastic surgery requires improvement. 'Hard-wiring' of compliance through journal submission systems, as well as improved education, awareness and a cohesive strategy among all stakeholders is called for.

Take-home message:

The reporting quality of systematic reviews in plastic surgery requires improvement. 'Hard-wiring' of compliance through journal submission systems, as well as improved education, awareness and a cohesive strategy among all stakeholders is called for.

BP4 PROCEDURE TYPE, POST-OPERATIVE PAIN, RECOVERY AND CLINICAL OUTCOMES IN DIEP FLAP BREAST RECONSTRUCTION

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Introduction: Reduced post-operative pain has been shown to decrease complications, accelerate discharge and improve patient experience. There has hitherto been no study of the pain associated with different perforator flap types. We reviewed Deep Inferior Epigastric Artery Perforator (DIEP) flaps used for post-mastectomy breast reconstruction and compared pain and clinical outcomes based on procedure type: unilateral, bilateral and bipedicled reconstructions.

Method: A 7-year retrospective study (2008-2015) was conducted at a University Hospital of all women who underwent rib-sparing post-mastectomy DIEP breast reconstruction by a single surgeon. Data were collected on patient demographics, operative details, patient pain scores, analgesia requirements, postoperative course and complications.

Result: The 177 patients (207 flaps) included in the study were categorized into four DIEP groups: unilateral unipedicled (n=85 flaps), unilateral bipedicled (n=26 flaps), total unilateral (n=147) and bilateral (n=60 flaps) reconstructions. There were no significant differences in morphine patient controlled analgesic (PCA) requirements over 24 and 48 hours, PCA duration, patient reported pain scores and time to catheter removal across all four groups. Bilateral reconstructions had an increased hospital stay by 2 days (P<0.01). 86% of patients reported their maximum pain scores in the first 24 hours.

Conclusion: This is the first study to compare the clinical outcomes and immediate postoperative morbidity of unipedicled, bipedicled and bilateral DIEP breast reconstructions. PCA requirements, time to catheter removal and pain scores were comparable across the subgroups. Our study showed that there were no significant differences in outcomes between the DIEP flap types attributable to differences in post-operative pain.

Take-home message:

There are no significant differences in outcomes between unipedicled, bipedicled and bilateral DIEP flaps attributable to differences in post-operative pain.

BP5 THE USE OF STUDY REGISTRATION AND PROTOCOLS IN PLASTIC SURGERY

RESEARCH: A SYSTEMATIC REVIEW

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Introduction: In 2013, the Declaration of Helsinki mandated that every research study involving human subjects must have its protocol registered in a publicly accessible database prior to the enrolment of the first patient. This systematic review assessed the number of studies published in leading journals of plastic surgery that had either published or registered a protocol with a publicly accessible database.

Method: We examined all research articles involving human participants published in Plastic and Reconstructive Surgery, The Journal of Plastic Reconstructive and Aesthetic Surgery and The Annals of Plastic Surgery from 1st April 2014 - 31st March 2015. The primary outcome measure was whether each study had registered or published a protocol with any mainstream registry database. ClinicalTrials.gov, International Standard Randomised Control Trial Number (ISRCTN), WHO (World Health Organisation) International Clinical Trials Registry Platform, The Cochrane Collaboration, the Research Registry, PROSPERO and PubMed were all reviewed.

Result: Of 595 included articles, the most common study designs were case series (n=185, 31.1%). There were 24 randomised controlled trials (RCTs, 4.0%). A total of 24 studies had a protocol registered (4.0%), although no studies had published a protocol in a journal. The most common database to register a protocol was ClinicalTrials.gov (n=17). The study design that most commonly had a registered protocol was the RCT (n=8 of 24, 33.3% of RCTs).

Conclusion: Publication or registration of protocols for recent studies involving human participants in major plastic surgery journals is low. There is considerable scope to improve this and we provide relevant guidance.

Take-home message:

Publication or registration of protocols for recent studies involving human participants in major plastic surgery journals is low. There is considerable scope to improve this and we provide relevant guidance.

BP6 RECURRENCE OF MALIGNANT MELANOMA WITHIN A FREE FLAP RECONSTRUCTION

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Introduction: Free flaps are commonly used to reconstruct large defects following tumour excision with various advantages. Cutaneous tumour recurrence within free flap tissue reconstruction is rare and the pathophysiology is not well understood. Case presentation: A 69-year-old female with a primary nevoid malignant melanoma of her left shin with a 4.2mm Breslow thickness was treated with wide local excision and split thickness skin graft resurfacing. One year following this surgical clearance, she developed recurrence around but not within the split skin graft. This was treated with further excision and again reconstructed with a split thickness skin graft. Five months later she however developed in-transit metastases requiring further excision around the graft and reconstruction with a free anterolateral thigh flap. Three years post reconstruction she developed metastases within her free flap and palpable left groin lymph nodes for which she had a lymphadenectomy. Her lower limb locoregional recurrence is currently managed with laser therapy.

Result: Melanoma recurrence in the lower limb is usually via dermal lymphatic infiltration. Soft tissue reconstructions however lose their lymphatic supply with a delayed recovery. This may also explain the delay in tumour recurrence within the flap. Various other mechanisms have been proposed including de novo tumour arising from donor skin; recurrence from the underlying deep margin; and the Koebner phenomenon, which is the development of new skin lesions on areas of injury in otherwise healthy skin.

Conclusion: This is a rare complication but illustrates that tumours can occur within free flaps.

Take-home message:

Recurrence of malignant melanoma within a free flap reconstruction is possible but a rare complication.

BP7 THE HYPERTENSIVE PATIENTS IN MINOR OUTPATIENT LOCAL ANAESTHESIA PROCEDURES (OPLA)

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Introduction: Surgical patients with preoperative hypertension are 1.31-fold at higher risk of cardiac complications. Current guidelines suggest that patients with class III hypertension (SBP>180mmHg and DBP>110mmHg) should delay elective surgery until improved medical control. This guideline is not referenced for patients undergoing minor OPLA procedures. We conducted an observational study to evaluate their blood pressure changes before, during and after minor surgery in order to establish safe cut-off blood pressure for OPLA patients.

Method: Patients attending OPLA surgery in 2 months were included. Data collected: patient demographic, operation details, pre-existing hypertension, pre-, intra- and post-operative HR, SBP and DBP. MAP was calculated. Comparisons were made between pre-, intra- and post-operative measurements and statistically tested using single factor ANOVA and paired T-test.

Result: 114 patients: 47 female (mean age 61; range 14-89) and 67 male (mean age 67; range 28-96) had 150 skin lesions excised under LA. 55 patients had pre-existing hypertension. A total of 14 patients experienced Class III hypertension although majority (12/14) were transient. Intra-operative measurements reflected an increase in HR, SBP (p=0.004), DBP (p=0.002) and MAP (p<0.001), which were statistically significant. Post-operation, all three parameters (SBP, DBP, MAP) largely returned to pre-operative baseline. None of these 114 patients suffered from any adverse cardiac events 30 days

after their OPLA procedures.

Conclusion: A transient intra-operative increase in blood pressure in our OPLA patients was likely to be anxiety related and did not contribute to adverse morbidity and mortality among this cohort. SBP=systole blood pressure DBP=diastole blood pressure HR=heart rate MAP=mean arterial blood pressure

Take-home message:

A transient intra-operative increase in blood pressure in our OPLA patients was likely to be anxiety related, unrelated to morbidity or mortality.

BP8 NOT PRESENTING

BP9 POST-OPERATIVE NSAIDS IN PLASTIC AND RECONSTRUCTIVE SURGERY: A META-ANALYSIS.

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Introduction: Potential risks of NSAID-induced haemorrhage have raised concerns regarding use of these drugs in the perioperative period. Due to the apparent lack consensus regarding impact of NSAID use in plastic surgery, a meta-analysis was undertaken to provide a combined measure of complications.

Method: A literature search (undertaken via PubMed) was completed by the principal investigator (M.F) for all publications up to August 2015, using the following MeSH terms: haematoma OR hematoma AND Hemorrhage OR postoperative haemorrhage OR postoperative haemorrhage OR postoperative AND haemorrhage OR postoperative haemorrhage AND anti-inflammatory agents, non-steroidal OR anti-inflammatory agents, non-steroidal OR anti-inflammatory AND agents AND non-steroidal OR non-steroidal anti-inflammatory agents OR non AND steroidal AND anti AND inflammatory AND agents OR non steroidal anti inflammatory agents AND surgical flaps OR surgical AND flaps OR surgical flaps OR flap. There were no limitations on publication date, status or language. The reference lists of relevant trials were examined for further suitable publications.

Result: Using this method a total of 17 papers were identified, representing 11882 patients (of which 2527 received some form of NSAID, and 9355 were controls). From the assembled data, it was observed that patients receiving aspirin or NSAIDs were more than twice as likely to experience a moderate to severe complication than the controls (RR 2.83, 95% CI, 2.16-3.72), a statistically significant difference ($p < 0.001$).

Conclusion: Based on the assembled data and results of analysis, the authors conclude that the use of perioperative NSAIDs in plastic surgical procedures increases the risk of post-operative bleeding complications.

Take-home message:

The use of NSAIDs in plastic surgery procedures increases the risk of post operative complications.

BP10 BURNS TEACHING IN UK MEDICAL SCHOOLS: IS IT ENOUGH?

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Introduction: In the UK burn injuries are frequently seen and managed in non-specialist settings. The crowding of the UK medical undergraduate curriculum may have resulted in the reduction of teaching on burns. The aim of this study was to determine the burns education experience and the level of competence among UK final year medical students in assessing and acutely managing patients with burns.

Method: An online questionnaire was circulated among UK final year medical students.

Result: There was a total of 348 respondents. The majority of the students (70%) have not received any specific teaching on burns management. Nearly two-thirds of the respondents (66%) have never seen a patient being managed for burn injuries. More than a half of the students (59%) were not confident in estimating the percentage area of a burn. Over 90% were not confident in initially managing a burn in the emergency department. The majority of students (57%) have not heard of the criteria for referring a burns patient for further specialist management, and only 7% knew them. Students with a career intention in plastic surgery or emergency medicine had more exposure to patients with burn injuries throughout their training and showed higher levels of competence in managing burn injuries. There was almost universal agreement about the importance of knowing how to manage a burn initially among the respondents.

Conclusion: There is a lack of consistent undergraduate training in burns management and final year students lack the experience and knowledge required to initially manage burn injuries.

Take-home message:

There is a lack of consistent undergraduate training in burns management and final year students lack the experience and knowledge required to initially manage burn injuries.

BP11 CORRELATING WOUND SWAB WITH TISSUE BIOPSY FROM BURN EXCISION

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Introduction: Burn wound monitoring is important to pre-empt impending infection. Wound surveillance consists of a variety of clinical assessments. In the United Kingdom, it is routine practice to obtain burn wound swabs at admission and tissue biopsy cultures during wound excision. The aim of this study was to assess the microbiologic correlation between wound swabs and biopsies, and correlate wound infection with swab/tissue cultures.

Method: A retrospective study was conducted over a 3-month period. Data was collected from case notes and microbiology lab reports.

Result: 68 swabs/biopsies from 48 patients were collected. Mean patients age was 38 years (range: 1 to 87). Mean TBSA= 7% (0.1% to 82%). There was an average of 5 days between swab and biopsy (range: 0-16). Two patients developed infection during the hospital stay. They had tissue biopsy done 8 days and 16 days following admission swab, respectively. Gram-positive organisms were most frequently found on both samples. Using Pearson coefficient, there was no significant correlation between swabs and biopsies ($r = 0.09$). We noted no correlation between swab results and infected wounds ($r = 0.14$), or between biopsy cultures and infected wounds ($r = 0.18$). Discussion: Infection remains a major threat among burn patients. It impedes wound-healing, prolonging hospital stay and subsequently increases health care costs. Regarding our results, admission swabs do not correlate with tissue biopsies suggesting its role in wound monitoring may be obsolete. Furthermore, they are costly (£12/swab) bringing into question the cost benefit of admission burn wound swabs in patient care.

Take-home message:

Results show that admission swabs are not useful in burn wound surveillance.

BP12 PATHERGY IN PYODERMA GANGRENOSUM: A BURNING DILEMMA

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Introduction: Pyoderma Gangrenosum (PG) is a non-infective dermatological pathology. PG is typically characterised by rapidly progressive, painful ulcerative skin lesions and gangrene of the affected site. The overall incidence of PG is 3-10 cases/million/year and typically affects those aged between 24-54 years of age. The lower limb is the most often affected site although other sites including the upper limb, face and mucous membranes have been described. In 25% of cases, PG may occur as a result of the pathergy phenomenon. This is a process of tissue hyperactivity in response to minor trauma. The aetiology of PG is still unknown. PG is typically a diagnosis of exclusion with supportive (not diagnostic) histopathologic features of neutrophilic dermatoses. This includes dense perivascular invasion of neutrophils to the dermis at the affected site. Neutrophilic dermatoses may occur in other dermatological disorders such as Behcet Disease, Sweet's Disease and erythema elevatum diutinum. Burns and plastic surgeons ought to be aware of this rare condition when evaluating a non-healing wound. As the literature demonstrates, misdiagnosis can result in costly and ineffective management that may be detrimental to the patient. We illustrate a case report when a patient was treated as a burn complication and a diagnosis of pyoderma gangrenosum was later established and the patient benefited from treatment with steroids.

Take-home message:

Burns and plastic surgeons ought to be aware of this rare condition when evaluating a non-healing wound. As the literature demonstrates, misdiagnosis can result in costly and ineffective management that may be detrimental to the patient.

BP13 A 10-YEAR DETAILED REVIEW ON THE PATIENT DEMOGRAPHICS OF SELF-INFLICTED BURNS PRESENTING TO A REGIONAL BURN CENTRE IN THE UNITED KINGDOM – IDENTIFYING HIGH-RISK GROUPS FOR TARGETED PREVENTION STRATEGIES.

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Introduction: Self-inflicted burns (SIB) are associated with a larger burn surface area, a higher morbidity and mortality rate. Whilst great emphasis is placed on the burn management, we seldom acknowledge that SIB is a unique cohort of patients with surrounding psychosocial complexities pre-injury. This study aimed to present detailed epidemiology to define characteristics that may be useful for identifying high-risk groups.

Method: A retrospective review of the demographics of 118 patients who presented with self-inflicted burn injuries was conducted over a 10-year period.

Result: Mean age = 40 years (range 15 - 82 years). Male to female ratio = 64:54. Patients' ethnicity included Caucasians (100), Asians (12), African (3), Hispanic (2) and Middle Eastern (1). Unemployment was twice the amount of those employed. 29% of patients had a history of substance abuse. 26 patients lived alone. 11 were current inpatients in a psychiatric facility. Although 45% of patients had a formal psychiatric diagnosis, only 38% of patients were known to psychiatric services. 54 patients were on psychiatric medication at time of presentation. 38% of patients had prior deliberate self-harm (DSH) injuries. 14 patients had previous suicide attempt.

Conclusion: These patients have complex psychosocial issues pre-dating their burn injury. A significant proportion has low socioeconomic status and poor social support network, compounding any existing ineffective coping strategies. A previous suicide attempt predisposes individuals to self-immolation.

Further studies to identify high-risk individuals are needed to help structure management strategies and prevention programs.

Take-home message:

Management of self-inflicted burn patients requires an understanding of the epidemiology and the surrounding psychosocial complexities, not least because many require long term psychosocial support, but also because the medical mantra of "prevention is better than cure" is particularly true in these cases.

BP14 A MULTICENTRE PROSPECTIVE OBSERVATIONAL COHORT STUDY INTO THE PHYSIOLOGICAL RESPONSE TO BURN INJURY AND POST-BURN ILLNESS IN PRE-SCHOOL CHILDREN

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Introduction: Burns of less than 10% total body surface area (TBSA) in children under 5 years old represent 70% of paediatric burn injuries seen in England and Wales. Though these injuries are considered small, children can become systemically unwell whilst the burn is healing. It is often difficult to determine whether this is caused by an inflammatory response, a viral illness, burn-related infection or toxic shock syndrome. This study aims to identify the typical physiological inflammatory response, and to identify prognostic and diagnostic factors for post-burn illness, in this group.

Method: 696 children were recruited at three hospitals between January 2014 and July 2015. Data was collected prospectively from the medical records including; demographics, aetiology, burn type, and post injury recovery, with additional information sourced from parental questionnaires and daily parentally recorded temperature readings. Medical ethics committee approval was obtained.

Result: Follow-up was achieved for 76% of participants. A sub-set analysis of the first 300 children showed that those with burns of $\geq 1\%$ TBSA showed a 0.4°C temperature rise on days 3 and 4 post injury compared to smaller burns. A systemic illness within two weeks of injury was experienced by 25% of children, and 10% required re-admission to hospital. Post-burn illness was associated with larger burn size (2.65 vs 1.33 %TBSA, $p < 0.001$) and younger age (1.51 vs 2.18 years, $p = 0.001$).

Conclusion: We present the demographics, injury profiles of our study cohort, and illustrate the physiological response to small burn injury through fluctuations in body temperature post-burn.

Take-home message:

A physiological response to burn injury can be seen in young children with relatively small sized burns. A systemic illness is seen in up to 25% of children after these injuries and clinicians should be aware of the potential diagnoses.