

PLASTIC & RECONSTRUCTIVE SURGERY

**PR01
“A PICTURE SPEAKS A THOUSAND WORDS” – THE USE OF
DIGITAL PHOTOGRAPHY AND THE INTERNET IN
MONITORING FREE TISSUE TRANSFER**

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Purpose Post operative monitoring is crucial for the success of microsurgical free tissue transfer. Sophisticated and expensive methods are available for monitoring. We propose a novel technique using digital photography and the internet as a reliable and cost effective method to monitor free tissue transfers.

Methods 163 micro-vascular procedures were monitored using this technique over 8 months. Serial photographs taken to show flap color. Capillary refill time, pin prick- bleed time and color and hand held Doppler signal was recorded in the movie mode of a standard 5 mega pixel camera with duration of 15 seconds. Data was sent to the surgeon at regular intervals and or as deemed necessary.

Results Analysis of the 67 cases is presented. 5 re-explorations were done. The early diagnosis of venous congestion was possible using this technique. Timely intervention contributed to the success of the re-explorations and these flaps could be salvaged. The file size of images was in the range of 1 MB–6 MB. The file size of an entire set of images ranged about 7 MB–9 MB. These were sent across the ADSL internet lines.

Conclusion The use of the digital images and the internet allow reconstructive surgeons to have a reliable picture of the state of their free tissue transfers. This permits decrease in observer error and saves valuable time which otherwise needs to be spent to verify situations of doubt and offers an ideal solution to the logistic problem of having to visit the patient in case of doubt.

**PR02
THE SPLIT THICKNESS SKIN GRAFT DONOR SITE;
HAVE WE FOUND THE PERFECT DRESSING?**

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Calcium Alginate dressings have been used for many years as the standard dressing for donor sites. They require a secondary absorbent dressing which is not waterproof, will frequently leak blood and are difficult to remove and heal. Polyurethane film dressings have also been used routinely with excellent healing rates, are waterproof, but highly prone to leakage.

We present the results of a prospective randomized controlled trial using a new dressing, Tegaderm Absorbent, which provides all the regular benefits of a Polyurethane film dressing but with absorptive capacity. Tegaderm Absorbent (TA) consists of a conformable acrylic pad enclosed between 2 layers of transparent film. The film in contact with the wound surface is perforated to allow uptake of the wound fluid by the absorptive acrylic pad.

Forty patients were randomized to receive either Tegaderm Absorbent (3M) or Kaltostat Alginate dressing (Convatec)/gauze/combine/Mefix dressing.

Twenty females and 16 men, with a mean age of 72 years (11–94 years), 19 with TA and 17 with Kaltostat, completed the trial. TA dressings were significantly easier to apply (89% vs. 31% very easy to apply), less painful on the first two days postoperatively (mean pain score 0.3 vs. 1.9 at Day 1 and 0.2 vs 2.7 Day 2), were easier and less painful to remove (mean pain score 0.5 vs. 2.9), healed quicker (99.7% vs. 58.9% healed at 10–16 days) and were more convenient for the patients to manage. Eight dressings leaked in the Kaltostat group and 5 in the TA group. To avoid this a dressing change may be required.

**PR03
AN ALTERNATE MODEL FOR LEARNING
MICROSURGICAL SKILLS**

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Purpose To highlight a suitable option in training and optimizing microsurgical skills in situations without access to an animal laboratory. The rat model has been the standard model but stringent laws on experimental animals and rising cost of this model necessitate alternative models.

Methods Tissues obtained from the operating room which would otherwise be discarded We practiced microsurgical anastomosis of vessels and nerves using the operating microscope. Over a one year period, 86 anastomosis were done on various vessels of different caliber. The patency was evaluated using colored colloidal solution to flow through from a height creating a pressure gradient. Transecting the vessel beyond the anastomosis was subsequently done to examine the anastomosis in greater detail.

Results 86 anastomosis performed were evaluated. The anastomosis performed are summarized: Upper limb-Radial artery-10; Cephalic vein-10. Lower limb-Peroneal artery-6. Dorsalis pedis-3; Vena commitantes-5; Digital vessels on toes 3 arteries 3 veins; Umbilical cord-artery-12; Umbilical vein-12; Lymphedematous tissue-vein-4; Derma-lipectomy specimen-Unnamed veins-5, arteries-5; Intestine-Mesenteric vessels veins-4; arteries-4.

Conclusion The use of tissue which would otherwise be discarded proved to be a suitable alternative in training basic microsurgical skills with specific advantages of allowing for practice of all steps including adventectomy which is not possible on synthetic models. It offered the novice a first hand experience with vessels of various characteristic attributes and enables the trainee to get the life like experience of the feel of the vessel and its specific characters as one would encounter.

**PR04
ANALYSIS OF COMPLICATIONS OF THE FIRST 75 FREE FLAPS –
LESSONS FROM A BEGINNER**

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Purpose Complications of free tissue transfer often are mentioned only in passing, be it in a forum or published literature. Minor details as discussed in this presentation are often are not emphasized and occasionally neglected.

Materials and methods Of the 75 consecutive cases, majority were for head and neck reconstruction. Specific factors that are discussed are 1. Pedicle twist and precautions on perforator flaps 2. Pedicle in a tunnel- how wide is safe. 3. One vein versus two veins – when to choose 4. Could the beginner initiate his microsurgery on the second comitant vein? Are there alternatives to a safer teaching model? 5. Precautions in choosing recipient vessels in traumatic limbs with disuse atrophy 6. “Distal run off” – distance of freeing the recipient vessels. Other issues discussed are, prevention of vessel desiccation, precautions with hemoclips; pharmacotherapy versus re exploration, and rare causes of failure such as drug hit phenomenon.

Results Among 75 free flaps, the ALT flap was the workhorse. Others included the radial forearm, fibula, Latissimus dorsi and gracilis. Of the 7 re-explorations 3 had pharmacotherapy as the first intervention. There were 4 complete failures, 2-partial failures, 1-complete salvage. Overall success rate was 90%.

Conclusions Success comes with good decisions; good decisions come with experience, though experience come with bad decisions. The factors discussed here aim to share the bad experiences that could be diligently avoided to obtain higher success rates.

**PR05
POST-OPERATIVE HAEMATOMAS IN MICROVASCULAR FREE
FLAP RECONSTRUCTION OF THE HEAD AND NECK: THE
INCIDENCE, AETIOLOGY AND OUTCOME MODIFICATIONS**

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Background Free tissue transfer using microvascular surgery has become a safe a reliable means to repair soft tissue and/or bony defects of the head and neck. Operative success reaches 98%, however the incidence of significant post-operative complication is also relatively high (32%). One common and often severe complication is haematoma formation at either donor or recipient sites. The incidence of recipient site haematoma is reported at 6%, however the causes and outcomes of haematomas have not been well investigated. A retrospective historical analysis of both donor and recipient site wound haematoma was performed to identify causative factors and the effect on patient outcome.

Methodology A five year review was conducted for microvascular free tissue transfer to defects in the head and neck at The Royal Melbourne Hospital, for the period from February 2001 until February 2006. The medical records of these 150 patients were reviewed for donor and recipient site wound haematoma and outcomes.

Results Significant factors for the development of post-operative haematomas included lood pressure control during the first post-operative, correlating with the likelihood of developing either a donor or recipient site haematoma (p value < 0.001), drain-tube outputs (both high and low), smoking and the use of pre-operative NSAIDs.

Conclusion There are significant reversible factors that contribute to the development of post-operative haematomas in head and neck surgery. Close monitoring of patient blood pressure by theatre and recovery nursing staff, close monitoring of drain outputs, and pre-operative counselling on the use of NSAIDs and smoking may all be useful in the prevention of haematoma formation.

**PR06
NECROTISING FASCIITIS OR PYODERMA GANGRENOSUM –
AN INTERESTING CASE**

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Purpose Using a case study, to raise awareness of the diagnosis of Pyoderma gangrenosum in the clinically septic patient with a rapidly deteriorating wound. To support the use of VAC dressings in patients with pyoderma gangrenosum.

Methodology Case Study – Mr DL is a 30 yo man who presented 7 days after an angle grinder injury to his left thigh. He was clinically septic with a rapidly expanding area of necrosis over the injury site. His other presenting problem was a platelet count of $14 \times 10^9/L$, which was later diagnosed as myelodysplasia.

Cultures grew coagulase negative staphylococcus, and initial biopsies showed extensive necrotic tissue and suppurative inflammation. Despite multiple wound debridements and appropriate intravenous antibiotics, the patient was still clinically septic with a deteriorating wound. It was only on the second biopsy that pyoderma gangrenosum was diagnosed. He was then treated with steroids and a vacuum assisted dressing.

Results Mr DL responded well to treatment. The VAC dressing was very successful in promoting healthy granulation tissue. This granulation tissue was later skin grafted with good success.

Conclusion Pyoderma gangrenosum is an important differential diagnosis in wounds that do not seem to improve after debridement, even if the patient appears clinically septic. It is often not easy to diagnose even on histopathological grounds. The Vac dressing is a useful adjunct in the treatment of pyoderma gangrenosum.

**PR07
A SYSTEM FOR QUANTIFYING LYMPHATIC VESSEL
ABNORMALITIES IN LYMPHEDEMA MODELS, AND
LOCO-SYSTEMIC EFFECTS OF PRO-LYMPHATIC
TUMOR GROWTH FACTORS**

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Purpose Lymphatic vessels are critical in interstitial fluid balance, and congenital or acquired derangements lead to accumulation of lymph fluid (lymphedema). Further, when induced by pro-lymphatic growth factors in tumors, they facilitate lymph node metastasis(1). While histological vessel density is counted on tissue sections, there is no method for quantifying lymphatic morphology and patterning in 3-D; key elements in fluid dynamics and cellular interactions that underlie lymphatic function and diseases resulting from alterations to them. We have developed a method to quantify important biological and functional parameters in lymphatics, to help distinguish subtle phenotypic differences and patterning defects.

Methods Apical images were taken of whole-mounted mouse ears that were immunofluorescently stained for the lymphatic marker LYVE-1. Key lymphatic parameters were quantified using a computer program we developed.

Results Mice with gross lymphedema were found to have significant derangements of many of the key morphological and patterning characteristics assessed. Subtle yet statistically significant lymphatic abnormalities were also identified in less obviously lymphedematous animals. We were also able to assess loco-systemic effects of the pro-lymphatic growth factors.

Conclusions Increasing emphasis on lymphatics in disease demands quantification methods that assess key biological and functional parameters. Our method allows comparison and identification of abnormal lymphatic phenotypes and allows assessment of the effects induced by pro-lymphatic growth factors.

1. Shayan, R., M. G. Achen and S. A. Stacker. 2006. Lymphatic vessels in cancer metastasis: bridging the gaps. *Carcinogenesis* 27:1729–1738.

**PR08
LYMPHATIC MALFORMATIONS AND THE MOLECULAR BASIS
OF LYMPHANGIOGENESIS**

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This paper reviews the clinical features of lymphatic malformations and the molecular basis of embryonic lymphangiogenesis.

Lymphatic malformations are classified as microcystic, macrocystic, or combined. Most commonly found in the axilla/chest and cervicofacial region, they can be localised or diffuse. The commonest complications are intraleisional bleeding and infection. Other significant complications are due mainly to their mass effect on nearby anatomic structures including the airway and eyeball, and soft tissue and skeletal overgrowth including macrocheilia, macroglossia, macrotia, macromala and mandibular prognathism, resulting in functional problems in feeding, speech, occlusion, oral hygiene, and disfigurement. The characteristic radiological finding of a LM on gadolinium-enhanced T1-weighted MRI is a low-density lesion with septation or rim enhancement. Histologically, LMs are cystic lesions that contain eosinophilic proteinaceous fluid whose walls are composed of smooth and skeletal muscle fibres, collagen and lymphocytes. Management options range from observation, comfort cares, empirical antibiotic treatment for LM cellulitis to sclerotherapy, surgical excision and Nd:YAG laser for selected cases.

Lymphangiogenesis is believed to occur in four sequential but overlapping stages: lymphatic endothelial cell competence, bias and specification, and finally lymphatic vessel terminal differentiation and maturation. Multiple genes are involved in this process including Lyve1, Nrp2, podoplanin, Prox1, VEGFR3, VEGFC and Ang2. Developmental defects during embryonic lymphangiogenesis result in lymphatic malformations.

PR09 INFECTION RATES IN IMPLANT BASED BREAST RECONSTRUCTION

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Infection is a potentially devastating complication of Breast Reconstruction Surgery.

We retrospectively reviewed primary implant based breast reconstruction cases over a six year period at a tertiary Plastic Surgery Unit in Perth to determine both infection and explantation rates, as well as patient and operative factors which may contribute to this risk.

First and subsequent reconstructive stages were included in the study with the majority of patients having had their second stage procedure. All cases were followed up for a minimum of six months post operatively.

185 implants were placed into 88 patients with an overall infection rate of 7.6% and an explantation rate of 4.3%. Most (86%) of these infections occurred following the first staged procedure.

Factors which may impart a greater risk of infection included smoking, increased Body Mass Index, shorter duration of wound drains and larger implant size.

Multiple antibiotic regimes of varying duration were noted, however there was no significant difference between the infected and non-infected groups.

Of note, documentation was found to be poor, particularly regarding implant and pocket preparation, drain sites and their subsequent daily drainage and time of removal.

Formal protocol and/or a dedicated Breast Reconstruction database may prove useful in further audit and surveillance with the aims of identifying and decreasing patient and operative risks.

PR10 DUAL PLANE BREAST AUGMENTATION FOR TUBEROUS BREAST DEFORMITY

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The tuberous breast deformity is an uncommon congenital breast anomaly which affects young women unilaterally or bilaterally. It is associated with usually a constriction in the lower pole of the breast as a result of the constricting fibrous ring with hypoplasia of the breast gland and pseudo-herniation of breast tissue into an enlarged areola.

Several methods have been suggested to correct this deformity. A retrospective analysis has been undertaken of six consecutive patients with tuberous breast deformity using a dual plane breast augmentation via an inferior peri-areolar approach creating a dual plane pocket and using Marionette sutures to control the lower pectoralis major edge. Surgical release of the constricting lower pole glandular tissue was undertaken with excellent aesthetic results. Either immediate or delayed areolar reduction was carried out if required.

Results show excellent expansion of the lower pole with good soft tissue coverage of the implant by the pectoralis major in the supero-medial aspect of the breast. The dual plane pocket combined with lower pole release assists lower pole expansion in a one stage procedure without requiring two stage tissue expansion.

The results have been uniformly acceptable and compare favourably with those presented in the literature where other methods were used. The dual plane breast augmentation technique is a simple and reliable way to treat tuberous breast deformity.

PR11 PREOPERATIVE IMAGING FOR DIEA PERFORATOR FLAPS: A COMPARATIVE STUDY OF CT ANGIOGRAPHY AND DOPPLER ULTRASOUND

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Background Abdominal donor site flaps, including the Transverse Rectus Abdominis Musculocutaneous (TRAM) and Deep Inferior Epigastric Artery

(DIEA) perforator flaps, are the standard in autologous breast reconstruction. With variation in the vascular anatomy of the abdominal wall, preoperative imaging is essential for preoperative planning and reducing intraoperative error. Ultrasound has been used previously with varying results, and the quest continues for optimal preoperative assessment. Computerised Tomography Angiography (CTA) has been recently proposed as a non-invasive modality for this purpose. This is the first study to formally compare preoperative Doppler ultrasound with CTA for imaging the DIEA.

Methodology Eight consecutive patients undergoing DIEA perforator flaps for breast reconstruction undertook both CTA and Doppler ultrasound preoperatively. All investigations and procedures were undertaken at the same institution with the same surgeon and radiology team.

Results CTA was superior at identifying the course of the DIEA, its branching pattern and in visualizing its perforators than Doppler ultrasound. Preoperative CTA was highly specific (100%) and more sensitive in mapping and visualising perforators ($p < 0.001$). CTA was also proficient at identifying the superficial epigastric arterial system and for effectively displaying the results intraoperatively. CTA was substantially quicker and removed the inter-observer error associated with Doppler ultrasonography. The study was ceased after eight patients due to the overwhelming benefit of CTA over Doppler.

Conclusions CTA is a valuable imaging modality for the preoperative assessment of the donor site vascular supply for TRAM and DIEA perforator flaps.

PR12 A RETROSPECTIVE REVIEW OF SEROMA COMPLICATIONS FOLLOWING LATISSIMUS DORSI MUSCLE HARVEST

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Purpose Seroma following latissimus dorsi muscle flap operations cause considerable patient morbidity and healthcare costs. We present a retrospective review of patient and surgical variables leading to seroma over five years at the Christchurch Hospital Plastic Surgery Department.

Method Patient data were collated by ICD-10 code searches through the Christchurch Hospital patient information database under the categories of:

- muscular flaps
- mastectomies
- seroma.

These patients were filtered for any pedicled or free latissimus dorsi flap harvested. Each patient's files were then scrutinised for demographics, inpatient progress, and outpatient follow-ups relating to seroma. Seroma prevention techniques and seroma complications up to the data end point were documented. (Data endpoint was the perceived resolution of a seroma by either patient's subjective or clinician's objective impression.) Multivariate statistical analyses were performed.

Results We present relevant patient demographics, surgical, postoperative, and follow-up statistics. Results and significance of multivariate analyses will be discussed.

Conclusion Despite efforts in careful wound closure, postoperative seroma persists as a significant surgical complication. We have identified several variables relating to seroma incidence. Management of these variables may help reduce post-operative morbidity and seroma related healthcare cost. This data will be used as a pilot project to help design a prospective study evaluating the use of fibrin tissue glue in preventing donor site seroma.

1. Agrawal A, Ayantunde AA, Cheung KL. Concepts of seroma formation and prevention in breast cancer surgery. ANZ J. Surg. 2006; 76: 1088–1095.

PR13 THE USE OF PEDICLED LATISSIMUS DORSI FLAPS IN LARGE CHEST WALL RECONSTRUCTION

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Purpose to report a challenging case of reconstructing a massive chest wall defect. To demonstrate the usefulness of the pedicled latissimus dorsi flap to reconstruct massive sternal wounds.

Methodology Case Report – A 35 year old man presented 2 weeks after a chest wall resection for a primary amyloidoma and reconstruction using a combination of a titanium mesh and Gore-tex soft tissue patch with primary skin closure. He was clinically septic, with the primary focus being the chest wound. The infected Gore-tex and titanium mesh were removed, and the cavity debrided, resulting in a chest wall defect measuring 30 cm (subcutaneous width) × 20 cm (height) and a bony defect measuring 15 cm (width) × 18 cm (height). An initial attempt of reconstructing this with a free latissimus dorsi flap was abandoned prior to raising of the flap because of difficulty in finding a recipient vessel. The defect was finally reconstructed using a pedicled latissimus dorsi flap.

Result We describe a single stage technique for reconstructing a massive sternal defect. The use of a pedicled latissimus dorsi flap provided a reliable reconstruction in what can be a traditionally difficult reconstructive site.

Conclusion A pedicled latissimus dorsi flap is useful even in the reconstruction of large chest wall defects.

**PR14
LATISSIMUS DORSI MYOCUTANEOUS FLAP WITH ANATOMICAL EXPANDER-IMPLANTS FOR SINGLE STAGE BREAST RECONSTRUCTION – AN ACHIEVABLE GOAL?**

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Introduction Implant-based breast reconstruction has evolved from two-stage methods using round smooth expanders to single-stage using definitive textured biodimensional anatomical expander-prostheses. The aim of this study was to assess if single-stage reconstruction is achievable using McGhan 150 expander-implants with latissimus dorsi (LD) myocutaneous flaps and if so, at what cost.

Methods Data was collected retrospectively on all women who underwent this type of breast reconstruction, between 1997–2005, with a minimum of 6 months follow-up.

Results 147 patients had 164 reconstructions (17 bilateral cases). Mean age 48 ± 9 years. The indications for reconstruction were mastectomy, breast asymmetry and Poland's syndrome. 144 patients had pedicled flaps and 3 patients had contralateral free flaps. The majority were delayed reconstructions.

Single-stage reconstruction was achieved in 81/147 patients. The number of procedures per completed reconstruction was 2.2 or 1.9 if nipple-areola reconstruction and contralateral surgery were excluded. The overall complication rate was 38%. Implants were removed for infection in 12% and exchanged for capsular contracture in 15%. LD/expander-implant reconstruction failed in 3 patients.

Conclusions Single-stage reconstruction is an achievable goal but patients should be counselled that further surgery might be required to complete the reconstruction.

**PR15
THE BRANCHING PATTERN OF THE DIEA FOR PERFORATOR FLAPS: THE IMPORTANCE OF PREOPERATIVE CT ANGIOGRAPHY**

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Purpose Abdominal donor site flaps are the standard in autologous breast reconstruction. With significant variation in the vascular anatomy of the abdominal wall, preoperative imaging is essential. Computerised Tomography Angiography (CTA) has been recently described for this purpose. Uniquely, the branching pattern of the Deep Inferior Epigastric Artery (DIEA) is demonstrated clearly on CTA. We sought to correlate the branching pattern of the DIEA to the location and course of perforators, as a tool for preoperative planning.

Methodology 45 hemi-abdominal walls from both fresh and embalmed cadavers were used for isolated injection of the DIEA with contrast and radiographic imaging, allowing analysis of the location and intramuscular course of the perforators. The branching pattern on radiography was thus correlated to individual perforators.

Results DIEA branching pattern correlated closely with the intramuscular course of perforators. A bifurcating branching pattern demonstrated a reduced

intramuscular transverse distance traversed by each perforator. A trifurcating (Type 3) branching pattern demonstrated perforators that traversed significantly greater transverse distances. The vessel type, however, displayed no correlation with the number of perforators.

Conclusions Intramuscular courses of perforators are significantly greater with a trifurcating branching pattern of the DIEA, and reduced with a bifurcating pattern. This correlates with less rectus abdominis muscle sacrificed during a DIEA perforator flap. As CTA is the optimal modality for demonstrating this pattern preoperatively, we suggest the use of CTA for preoperative assessment in TRAM and DIEA perforator flaps.

**PR16
A TRAUMA CENTRE EXPERIENCE: FLAP RECONSTRUCTION OF TRAUMATIC LOWER LIMB INJURIES**

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Purpose Decision making in the management of combined major skeletal and soft tissue trauma to the lower limb is a complex process made more difficult by the uncertainty surrounding outcomes. The aim of this study is to review and present our experience with flap reconstruction of traumatic lower limb defects, with particular reference to in-hospital complications and outcomes related to timing, choice of flap and pre-existing complications.

Methodology Retrospective review of all lower limb flap reconstructions performed by the Plastic and Reconstructive Surgery Unit at the Alfred Hospital (largest trauma centre in Australasia) from 1 July 2001 to 20 October 2005 (51 month period).

Results Sixty-four patients had 83 flap reconstructions (35 free, 48 local) of 70 separate lower limb injuries. Twenty-seven flaps (32.5%) developed soft tissue infections and 16 fixation devices (25.8%) were complicated by deep metal infection. There were 6 (12.5%) local flap partial necrosis and 4 (11.4%) free flap failures. Three patients underwent secondary amputation during their initial admission. Thorough wound debridement and internal skeletal fixation were followed by earlier soft tissue coverage and lower deep metal infection rates. Limbs in which flaps were performed after Day 5 were more likely to develop deep metal infection ($p = 0.04$) and suffer free flap failure or local flap partial necrosis ($p = 0.02$).

Conclusion The current study presented our experience with flap reconstructions of complex lower limb injuries at a major trauma centre. Thorough wound debridement, internal fixation and early soft tissue coverage (within 5 days of injury) is associated with lower infection rates and optimal outcomes.

**PR18
WHAT TYPE OF BIOPSY IS MOST USEFUL IN THE EVALUATION OF GIANT CUTANEOUS LIPOMAS? REVIEW OF THE LITERATURE AND REPORT OF FOUR CASES**

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Lipomas are benign tumours of the mesenchyme that are composed of mature lipocytes. They are the most common benign mesenchymal tumours with a prevalence rate of 2.1 per 1000 people. The malignant transformation of lipomas to liposarcoma is uncommon. A few reports suggested that large tumours (>10 cm), are more likely to contain sarcomas. Hence, the preoperative biopsy is an essential component of the workup in giant lipomas since it provides key information in determining the treatment protocol. Biopsy can be performed by fine-needle aspiration, core-needle biopsy, incisional biopsy or excisional biopsy.

We present four cases where preoperative minimally invasive biopsy techniques were utilised. In these cases, significant differences were noted between preoperative biopsies and the actual histology of the surgically resected specimen.

Open biopsies have a relatively higher risk of complication but a smaller chance of misdiagnosis, while needle biopsies are less likely to present with problems but are also frequently less accurate. Given the histological heterogeneity of these tumours, a large sample from a viable area of pathology is recommended for definitive preoperative diagnosis.

An open biopsy should be performed through a small incision, designed with consideration of the subsequent definitive operative procedure. A typical

incisional biopsy will yield a 1–2 cm³ piece of fresh tissue for the pathologist to reliably exclude the presence of sarcoma in the lesion.

PR19
THE SUPERFICIAL LYMPHATIC DRAINAGE OF THE HEAD AND NECK – AN ANATOMICAL STUDY AND CLINICAL IMPLICATIONS

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Aims

1. To re-evaluate the basic anatomy of the lymphatic vessel network in the head and neck region for diagnosis and treatment of lymphogenic cancer metastases.
2. To compare the anatomy of the lymphatic system with the venous system.
3. To investigate the possibility that extensive lymphatic-venous connections exist.

Materials and Methods The lymphatic vessels in the scalp, face and neck of 5 (ten halves) fresh human cadavers were identified by using 6% hydrogen peroxide with and without India ink, then injecting the vessels with a lead oxide, milk powder and water mixture. The specimens were photographed, radiographed and analyzed.

Results Radiographs and photographs show:

- (1) The lymphatic pathway “patterns” found were different in each specimen, even each side of the same head showed considerable variation.
- (2) The lymphatic pathways of the anterior neck lie in the tissue above the platysma and course horizontally and obliquely. This finding confirms those found using lymphoscintigraphy
- (3) The discovery of lymphatic bypass routes confirms the lymphoscintigraphy findings that lymphatic drainage does not always go directly to the first tier lymph nodes.
- (4) We were able to compare the anatomical relationship of the lymphatic and venous systems and demonstrate that a lymphatic-venous shunt does exist in the occipital region.

Conclusion This study provides an anatomical picture of the superficial lymphatic system of the head and neck and will aid surgical management in the treatment of trauma, infection, lymphoedema and cancer.

PR20
PAEDIATRIC NASAL FRACTURES: PATIENT SATISFACTION FOLLOWING CLOSED REDUCTION

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Introduction Nasal trauma in childhood is a frequent occurrence. Management of resultant fractures in the paediatric age group presents a unique diagnostic and therapeutic challenge. The immature patient is less likely to be cooperative with examination, and clinical evaluation is difficult owing to facial oedema and lack of rigidity of the nasal bones. Subsequent nasal growth and development must be considered in determining the most appropriate treatment. Closed reduction of nasal fractures is usually undertaken at the Wellington Regional Plastic, Maxillofacial & Burns Unit at Hutt Hospital. Little exists in the form of follow-up studies assessing patient satisfaction following this technique.

Methods A retrospective chart reviewed yielded 39 patients aged under seventeen years who underwent closed reduction of their nasal fracture during the two year period ending in July 2006 at Hutt Hospital. Follow-up was between three and twenty-seven months. A structured telephone interview was carried out to assess the degree of satisfaction with both functional and aesthetic outcome present in this group. Patients and their parents were invited to respond.

Results Most patients and their families are satisfied with nasal function and appearance following closed reduction. Few had subsequently sought or would consider a secondary open procedure in the form of septorhinoplasty.

Conclusion Closed reduction remains a satisfactory treatment in this age group. On the basis of patient satisfaction, it is successful in maintaining the function and appearance of the nose in most.

ROLE OF BACTERIAL BIOFILMS IN CHRONIC WOUNDS

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Purpose Bacterial biofilms are highly organised microbial communities living within a protective extracellular matrix. They are difficult to detect and highly resistant to immune or antibiotic killing. It has been suggested that biofilm presence may contribute to the intractable inflammatory processes seen in chronic wounds.

Method Twelve chronic wound samples from eight different patients were collected as part of routine debridement. These were examined for biofilm presence using light microscopy, confocal laser scanning microscopy, electron microscopy, and Fluorescent In Situ Hybridisation (FISH) technique. Microbiological profiles were established based on wound swabs.

Results Histological and microscopic evidence of bacterial biofilms were observed in 7 out of 12 wounds. These were mostly found within the necrotic upper layer of the wound. A range of organisms were identified from swabs including the commonly isolated wound bacteria *S.aureus*, *E.Coli*, *P.aeruginosa*, and mixed anaerobes.

Conclusion Bacterial biofilms were found in almost two-third of chronic wounds examined. Given the patchy nature of its occurrence and the small area sampled in each biopsy, the true incidence could be much higher. The necrotic surface layer of wounds appeared to be more conducive to biofilm formation than deeper viable tissues. Such biofilms may then serve as niduses for continual bacterial seeding that perpetuate the inflammatory process seen in these wounds.

PR22
SKULL BASE RECONSTRUCTION WITH FREE FLAPS

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Introduction & Aims Microsurgical reconstruction in skull base surgery is not universally practiced. Current evidence suggests improved outcomes allowing more aggressive management of skull base pathology. We present our experience of free flaps in skull base reconstruction.

Material & Methods 17 patients (10 male, 7 female, aged 30–72 years) required microsurgical reconstruction of skull base defects from 2004–2006. The anterior cranial fossa was involved in 10/17. Indications for surgery included malignancy (12/17) and benign neoplasia (3/17).

Results 18 free flaps included 10 rectus abdominis, 5 radial forearm and 5 latissimus dorsi. Complications included one complete flap loss, one anastomotic revision, one CSF leak, one case of meningitis and one subdural empyema. There were no deaths.

Conclusions We recommend free flap reconstruction for significant skull base defects involving both skull and dura. Important factors determining outcome include adequate pedicle length, flap thickness, use of fascia and controlled lumbar drainage.

PR23
ALTERATIONS IN THE LYMPH STRUCTURE OF THE UPPER LIMB FOLLOWING AXILLARY DISSECTION – RADIOGRAPHIC STUDY IN A HUMAN CADAVER

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Purpose There have been very few anatomical reports on the changing lymph structure of the upper limb after axillary dissection despite its clinical significance for predicting skin cancer recurrence in the limb and secondary lymphoedema. We used both upper limbs harvested from a fresh human cadaver who had undergone unilateral right radical mastectomy and radical axillary dissection for breast cancer.

Methodology Hydrogen peroxide was used to identify and inflate the lymphatic vessels. Individual channels were injected with a radio-opaque lead oxide mixture and recorded on X-ray film.

Results Results from the left normal upper limb were similar to results from our previous studies. However, the right limb from the mastectomy side showed remarkable differences as well as revealing that the lymph node

clearance in the axilla had been incomplete on that side. The major difference was the almost complete absence of the superficial lymph collecting vessels in the right arm, proximal to the elbow, due to fibrosis and blockage of the lymphatic channels. A circuitous pathway was identified that by passed the blocked lymphatics in the arm to reach the deep system. This was often facilitated by backflow through precollectors and avalvular lymph capillaries in the dermis of the forearm, to eventually reach the few remaining lymph nodes in the axilla.

Conclusions Previously undetected lymph channels connecting the superficial and the deep lymphatic system had opened up due to the blockage of superficial lymphatic vessels caused by axillary dissection. It is presumed that these channels prevented lymphoedema in this case.

PR24 EFFECTS OF COMBINED TOPICAL NEGATIVE PRESSURE (TNP) AND ANTISEPTIC INSTILLATION ON PSEUDOMONAS BIOFILM

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Purpose TNP in the form of V.A.C. dressings have been successfully used to enhance chronic wound healing. An *in vitro* model of the chronic wound biofilm was created to test the effects of TNP with and without concurrent antimicrobial drug instillation on biofilms.

Method A *Paeruginosa* biofilm model was constructed *in vitro*. Continuous TNP and TNP combined with varying frequencies of betadine instillation were tested on the biofilm model for 24 hours. Outcome parameters measured included viable bacterial count, fluorescent microscopy, confocal laser scanning microscopy, and electron microscopy. Statistical analysis was performed using ANOVA and MANOVA in SPSS 13.0.

Results Bacterial biofilms, when exposed to TNP alone, showed a 42% decrease in viable count; while exposure to betadine alone showed a reduction of up to 84%. Combined TNP and antiseptic instillation increased the bacteriocidal effect to 99.7% ($p < 0.001$).

Exposure to TNP also resulted in a decrease in biofilm thickness, and diffusion distance, with an increase in surface area-to-volume ratio ($p = 0.005$, 0.002 , and 0.009 respectively).

Conclusion TNP alone showed a modest effect on the reduction of bacterial biofilm. More importantly it appeared to compress and fragment the overall biofilm architecture. This physical deformity in turn led to more effective drug penetration into the highly resistant biofilm community. The result was an approximate 100 fold enhancement of bacteriocidal effect when betadine instillation was combined with TNP as compared to betadine alone.

PR25 SOFT TISSUE COVERAGE IN LOWER LIMB TRAUMA – ANNUAL AUDIT FROM A TERTIARY RECONSTRUCTIVE SURGERY UNIT IN INDIA

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Purpose To discuss the entire spectrum of injuries seen in lower limb trauma and choice of reconstructive options.

Methodology Retrospective review of 72 consecutive cases in one year.

Data collected from individual case records and the department photo data base. Injuries were classified and analyzed based on bone and soft tissue involvement, associated vascular injuries, mechanism of injury as in crush, degloving, and combined. Bony injuries were classified according to Gustilo's classification. Treatment options and outcome for bone and soft tissue are discussed separately.

Results Total of 72 cases. 95% of cases were two wheeler traffic accidents. Distribution of cases according to site involved: Leg-39; Foot-14; Leg and foot-16; Thigh, leg, and foot-3.

8 of them were of Gustilo's IIIB and 7 of IIIC. 42 flaps done included Gastrocnemius-4, Soleus-7, reverse sural-7, Cross leg-2, Fasciocutaneous-5 Perforator based local flaps-3 Latissimus dorsi-7, Gracilis-6 Lateral thigh-1 Intervention: Immediate: 12%. Early (less than 1 week): 36, Delayed (>1 week): 52%

Complications:Wound infection:Minor: 12; Major: 8 (3 Cases – Clostridia)

Partial flap loss: 6; Loss of SSG over flap/donor site: 5; Acute renal failure: 1 Amputations: Above knee: 4; below knee: 2

Conclusions This series represents the spectrum of high velocity injuries in an overcrowded urban locality of developing country. Significant tissue loss is most often the rule. A judicious execution of reconstructive options can optimize results. Management protocols were adopted to avoid delayed referrals. This audit served as a benchmark to put together a dedicated trauma team in our hospital.

PR26 FACIAL RE-ANIMATION

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The author will cover the various methods he has had experience with in facial re-animation over the years including free vascularised muscle transfers, cross face nerve grafting and temporalis and masseter transfers. The long term results of some of these techniques and the pitfalls associated with them and the lessons learned by the author over the years will be discussed.

In summary, free vascularised transfers have now been abandoned in favour of temporalis and masseter muscle transfers using a modified technique to avoid facial scars.

PR27 FRICTION AND CEMENT: CASE REPORT AND LITERATURE REVIEW OF FULL-THICKNESS CEMENT BURNS

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Case Report A 40 year old policeman was referred to ED at Whangarei Base Hospital with a circumferential full-thickness burn to the distal third of his right leg. He sustained this whilst helping a friend 'cut concrete' despite wearing gumboots. Because the experience was largely non-irritating, he did not notice water and concrete filling his gumboot as he worked.

The wound became increasingly red and painful, and his GP prescribed augmentin for a cellulitic burn. Ten days later, a green exudate developed over the area, prompting further consultation which resulted in a referral to the Base hospital for 'debridement of slough'.

On examination there was an almost circumferential full thickness alkali-friction burn wound, 3cm in width around the distal third of his right leg. A 2 cm bridge of normal skin remained posteriorly.

In theatre, the eschar was debrided to healthy bleeding fat and fascia and grafted with a meshed 1 : 2 SSG and a suction dressing placed. Placed on bedrest with wallsuction, prophylactic oral augmentin and subcutaneous clexane for 5 days. It was reviewed 5 days later with 100% graft take. Discharged home on day 7 with a graduated compression stocking for mobilisation.

Discussion Wet cement remains a poorly recognised cause of full-thickness skin burns amongst the general population. The alkalinity of cement causes liquefactive necrosis in tissue, which initially may go unrecognised. Most burns affect the lower limb, and only half of those involved professional users. It is thought that more education and awareness of the potential hazards of cement should be publicised amongst the labouring, and DIY communities of NZ.

PR28 TRACING THE FLUID MANAGEMENT OF BURNS PATIENTS IN THE FIRST TWENTY-FOUR HOURS FOLLOWING THEIR ADMISSION

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Patients with major burns are prescribed fluids at the time of their admission in accordance with the Parkland formula. It was the intention of this audit to compare the fluid prescribed versus the actual fluid received by these patients in the first 24 hours post burn. Overloaded patients run the risk of extending their burn amongst other complications of fluid overload. Under-hydrated

patients will likewise be receiving suboptimal treatment. This study serves as an informative audit of fluid management of burns patients admitted to Christchurch Public Hospital that were subsequently admitted to Intensive Care. Patients with major burns that required admission to the Intensive Care Unit over five years from 2000 to 2005 were audited. The results of this audit are to be presented.

PR29 MASSETERIC-FACIAL NERVE COAPTATION – AN ALTERNATIVE TECHNIQUE FOR FACIAL NERVE REINNERVATION

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Introduction Facial nerve paralysis can be a disabling condition functionally, psychologically and aesthetically. When there has been an acquired proximal injury to the facial nerve in the presence of previously functional facial musculature, such as in acoustic neuroma surgery, neurotisation of the distal facial nerve is an appropriate choice of management. The hypoglossal nerve is most commonly used. However this is not without its limitations, notably subsequent hemilippling atrophy and facial synkinesis. We present an alternative technique of facial reinnervation utilising a motor branch of the trigeminal nerve, the nerve to masseter. We believe this technique has the potential to overcome problems encountered with use of other extra-facial nerves.

Methods Three patients with acquired facial nerve palsy following tumour resection underwent transfer of the ipsilateral masseteric nerve to facial nerve. In two patients the nerve was directly coapted to the trunk of the facial nerve while the third patient had transfer to the buccal branch.

Results By twelve months postoperatively all three patients demonstrated significant improvement in facial muscle tone and symmetry at rest. All patients were able to produce a symmetrical smile with minimal synkinesis. Two of the three patients also had evidence of occasional spontaneous movements.

Conclusion Use of the ipsilateral motor nerve to masseter offers an alternative technique for neurotisation of the facial nerve. The advantages of this technique include ease of dissection, constant and reliable anatomy, powerful innervation of the facial muscles, minimal donor site morbidity and the potential for return of spontaneous facial movements.

PR30 ASSESSMENT OF MELAN-A STAINING IN SENTINEL NODES OF PATIENTS WITHOUT A DIAGNOSIS OF MELANOMA

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Sentinel lymph node biopsy is now an accepted standard of care for specific patients with malignant melanoma. With this comes an increase in sensitivity of diagnosis of melanoma metastases but also possible false positive results. Proceeding to a formal lymphadenectomy in sentinel node positive patients is accompanied by a large amount of morbidity and should not be undertaken lightly. Melan-A is one of the stains used to identify melanoma metastases in sentinel node biopsies. The dilemma arises when there is a small number of Melan-A positive cells or even a single Melan-A positive cell in the entire examined sentinel node. Do we proceed to formal lymphadenectomy or "watch & wait". The purpose of this projected study is to examine the sentinel nodes of patients without a diagnosis of melanoma. We aim to perform a Melan-A stain on these nodes and identify the incidence of Melan-A positive staining nodes in presumed melanoma free patients. These nodes will be taken from sentinel nodes of breast cancer patients.

PR31 A LITTLE GIRL WITH A GIANT NAEVUS. A CASE REPORT

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Purpose The treatment of congenital giant hairy naevi remains controversial and it can present a challenge for the reconstructive surgeon. Recent

publications promote the use of curettage and laser treatment, however they show incomplete clearance. In this atmosphere we present a case of surgical resection involving serial excision, skin grafts and tissue expansion with early good cosmetic results.

Methodology Now aged 2 year old girl was born with extensive congenital melanocytic naevi of her face, involving lower forehead, glabella, medial eyelids, nasal bridge and medial cheeks bilaterally. Lower back and right calf were also involved. No associated anomalies were recorded. At one week of age she had curettage of the facial naevus, when the surface naevus containing most of pigment and naevus cells was removed in London. She was left with the left eye ectropion due to a small scar. She moved to NZ and underwent further treatment. There was no role for laser treatment so surgical excision at the age of 12 months was performed, followed by insertion of tissue expanders, bilateral cheek and forehead advancement and full thickness graft to defects post serial excisions. A literature review was performed and our findings compared with historical results from other centres.

Results Multiple treatment techniques have been used over the last few decades. Surgical approach provides stable long term results in terms of cosmesis and function and early good results are shown in our case. We will continue further reconstructions in the future to achieve the best appearance and function.

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PR32 WHAT I'VE LEARNED IN HEAD & NECK SURGERY

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Over a long career in both ablative and reconstructive surgery in the head and neck, the author has identified certain factors which help in the management of these patients and has learned many lessons.

Such lessons include the importance of multi-disciplinary management, excellence in anaesthesia, the importance of anatomy, concepts of ablative surgery such as marginal mandibular resection, and many of the concepts of reconstructive surgery which have enabled rapid one stage reconstructions, such that palliative surgery for massive tumours can be sometimes worthwhile.

These and other experiences will be discussed.

PR33 MERKEL CELL CARCINOMA: REPORT OF 19 CASES AND REVIEW OF THE LITERATURE

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Purpose Merkel cell carcinoma (MCC) is an aggressive primary neuroendocrine tumour of the skin. It has a propensity for dermal-lymphatic invasion, and nodal and haematogenous spread. There is no consensus regarding management. The aim of this study is to describe a provincial hospital's experience with merkel cell, and to analyse the role of therapeutic options based upon current literature.

Methodology A retrospective study was undertaken using Northland Pathology database during Dec 2002–2006. Demographics, tumour morphology and behaviour together with treatment modalities were documented.

Results There were nine males and 10 females with an average age of 71 years (40–94 yrs). In 13 cases the primary lesion was nodular (68%), presenting amongst various sites, mostly head/neck 37%, and lower limb 32%. Relevant associated comorbidities included; multiple SCCs (1), melanoma (1), immunosuppression (1), and CLL (1).

At presentation, nine patients (47%) had regional lymphadenopathy and six patients (55%) underwent RLND. Distant metastases occurred in 31%* of patients within 21 months (1–58 months). Nine patients (50%) underwent radiotherapy, and four (29%) had chemotherapy. Six patients died of MCC and one from an unrelated cause.

The incidence of MCC in Northland seems to be the highest in published series, with 4.75 cases/yr, in comparison with Australian studies (up to 3.9/yr), UK studies (0.87/yr) and USA studies (up to 4.1/yr).

Conclusion MCC seems to be increasing in incidence in an aging population. Early surgical intervention, coupled with adjuvant radiotherapy may improve outcome. This aggressive tumour is likely to become more of a focus amongst the field of Plastic Surgery.

PR35
THE INCIDENCE OF NON-MELANOMA SKIN CANCER IN NEW ZEALAND

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Background It is estimated that skin cancers cost \$33 million per annum to the New Zealand healthcare system. Basal cell carcinoma and squamous cell carcinoma are the commonest types of non melanoma skin cancers (NMSCs). Anecdotal evidence indicates that there has been a doubling in the incidence of NMSCs in New Zealand over the last decade. Because of the high incidence mandatory reporting of NMSCs to the National Cancer Registry is not required. This lack of accurate data has led to poor health care policies and strategies including funding and workforce planning.

Aims The aims of this study are to (1) present the latest statistics on NMSCs in New Zealand, including the incidence across different regions over the last decade, patient demographics, anatomic distribution of NMSCs, incidence and sites of metastasis, and disease-specific survival; to (2) the histopathology of NMSCs, including surgical margins, histologic grade, and perineural, lymphatic, and vascular invasion; and (3) the relative role of different faculties treating NMSCs.

Method This project has been approved by the multi-centre ethics committee. A retrospective review was conducted from patients' histology records from public and private pathology laboratories within defined catchment areas. Criterion for analysis is a confirmed diagnosis of NMSC treated surgically. A Microsoft Access database is created that will facilitate subsequent data retrieval and analysis.

Results and Conclusion It is hoped that this up-to-date data will form the framework for the development of sound and sustainable healthcare policies of management of NMSCs including management strategies and workforce planning, and research direction on this common disease.

PR36
WHAT I'VE LEARNT IN CRANIOFACIAL SURGERY

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In a long career in the area of craniofacial surgery the author has learned many lessons, often the hard way. These will be discussed and some strategies presented to avoid problems which can be disastrous in craniofacial surgery such as massive haemorrhage, infection and airway obstructions. Protocols for safe practice will be discussed.

PR37
EVOLUTION OF SURGERY FOR CRANIOSYNOSTOSIS IN CHRISTCHURCH – A REVIEW OF 67 CHILDREN

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Purpose The treatment of craniosynostosis has continued to evolve over the last few decades. Techniques from linear strip craniectomies through osteotomies, orbital bandeau fashioning, craniotomies and immediate calvarial remodelling to the latest spring-mediated dynamic reshaping have been used to achieve ongoing improvements in facial and skull shape. This paper discusses the timing, long-term results and recent advances of surgical techniques based on our experience. We also aim to identify factors which could affect the outcome.

Methodology We performed a retrospective analysis of 67 patients surgically treated for craniosynostosis over a 24 year period in Christchurch Hospital. The craniofacial team consisted of a Plastic Surgeon and a Neurosurgeon. We analyzed results based on type of sutural involvement, cosmetic outcome, complications, blood transfusions and surgical technique.

Results There were 20 females and 47 males. 62 had a non-syndromic craniosynostosis and 5 had a syndromic craniosynostosis. The non-syndromic cases comprised: sagittal (n = 30), metopic (n = 17), unilateral coronal (n = 9), bicoronal (n = 2) and multiple (N = 4). The 5 syndromic cases comprised: Crouzon's/bilat coronal (n = 2), Apert's (n = 2, 1 bilateral coronal, 1 unilateral coronal) and Klippel-Feil/unilateral lambdoid (n = 1). The median age at first operation was 8 months. Complications and outcomes will be presented and our conclusions will highlight the evolving surgical techniques and that a multidisciplinary approach (including neurosurgeon, plastic surgeons and paediatric team) provides the best outcome for children with craniosynostosis.

PR38
PTERYGIUM SYNDROME: A SPECTRUM OF FEATURES

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Pterygium Syndrome is an extremely rare and complex congenital disorder consisting of severe contractures involving multiple flexural surfaces and associated craniofacial abnormalities, including mandibular hypoplasia and epicanthic folds. It is also often associated with other congenital abnormalities of the cardiovascular, respiratory and genitourinary systems. It may present in different forms including multiple Pterygium Syndrome of Escobar, lethal multiple Pterygium Syndrome, Popliteal Pterygium Syndrome and Arthrogyrosis Multiplex Congenita. The incidence is unknown, a mutation in the IRF6 gene has been found in the Popliteal variant and it is postulated that the pterygia result from the embryonic onset of foetal akinesia. The clinical presentation, multidisciplinary management and longterm outcome of three patients with this condition, managed in the Australian CranioFacial Unit will be presented.

PR39P
TREATMENT OF MITTEN HAND DEFORMITY IN A LONG TERM SURVIVOR OF EPIDERMOLYSIS BULLOSA

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EB is a recessive condition caused by a defect in collagen 7 production, such that epithelial cells do not adhere adequately to the underlying basement membranes. Minor mechanical trauma and stress forces will cause recurrent blistering of the skin and mucosal surfaces, which heal by scarring.

The hand suffers particularly badly, and a characteristic mitten deformity of scar tissue is a common stigmata of the disease.

We report a 51 year old survivor of EB with a bilateral mitten hand deformity that had been present since the age of 6 years.

Extensive surgical release of the dominant left hand was undertaken, resurfacing the created defects with split skin grafts under regional anaesthesia. Fingers that had been buried for 45 years were straightened and held in place with k wires whilst the grafts were vascularising.

Extensive post operative physiotherapy and splinting were undertaken, with functional improvement to the extent that the patient was able to hold a pen and write. Skin graft donor sites healed uneventfully.

Extensive release of mitten hand deformity in long term survivors of EB is a worthwhile surgical procedure with good functional results. The problems of surgery and anaesthesia in this condition are discussed. Release of the second hand is planned.

PR40P
METASTATIC CHONDROID SYRINGOMA

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A 51 year old man presented in 1975 at the age of 19 with a right hallux mass and underwent wide local excision, pathology revealing a chondroid syringoma. This was complicated by local recurrence within 12 months requiring 1st ray excision and a transposition flap. He was symptom free for 12 years and represented with pain on weight bearing. There was a 1 year delay in

management as he refused amputation, and underwent "natural treatment by diet". Subsequent above knee amputation was performed with radiographic evidence of chest metastasis. He represented in 2004 with an abdominal mass and had a nephrectomy for metastasis, and in 2006 with proximal femoral metastasis requiring allograft reconstruction of the hip.

33 years from initial diagnosis with a documented 13 year history of thoracic metastases we review the literature on chondroid syringoma.

PR41P EMPTY DRUM . . . THE WELDER'S BOMB?

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Welding accidents have resulted in over 50 admissions to the Royal Adelaide Hospital in the last 5 years. Our attention was drawn to the significance of workplace welding accidents when a patient died from 80% burns sustained while welding an empty 44 gallon drum in 2006. Our study performed in conjunction with Workcover and Safework SA revealed that welding empty drums has caused many similar accidents resulting in significant morbidity and mortality throughout Australia each year. To date there is only one report in the literature referring to this issue. Welding accidents result in significant time lost to work and financial cost to society. We describe our audit of burns sustained while welding and pay particular attention to oil, petrol and diesel drum explosions. Given their potentially avoidable nature, greater public and workplace awareness must be raised to reduce the tragic consequences of these accidents.

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PR42P RISK FACTORS AND SAFETY OF IMMEDIATE BREAST RECONSTRUCTION

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Purpose Indications for immediate breast reconstruction (IBR) vary depending on many factors, including clinical stage of carcinoma, age, diabetes, hypertension, obesity and smoking. This paper seeks to assess the risk factors and complications in patients undergoing immediate breast reconstruction and define selection criteria for IBR based on the local population.

Methodology A retrospective review of 94 immediate breast reconstructions over a 5-year period was carried out. Patients were divided into sub-groups based on the type of reconstruction: TRAM (n = 36), latissimus dorsi myocutaneous flap with implant (n = 28), autologous latissimus dorsi myocutaneous flap (n = 3), subpectoral saline implant (n = 8) and tissue expander (n = 19). Review of risk factors and complications in all groups was performed and our findings compared with results from other centres.

Results Results including complications and outcomes will be presented and the conclusions used to provide recommendations for patient selection for immediate breast reconstruction. Statistical analysis will be performed to compare the rate of complications with respect to the surgical procedure and risk factors.

PR43P USE OF PERMANENT EXPANDER/IMPLANTS IN BREAST RECONSTRUCTION SURGERY

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Combined expander/implants are designed to allow single stage breast reconstruction. This study was designed to assess whether single stage reconstruction is achieved using these devices.

A retrospective study was performed of 88 consecutive patients undergoing breast reconstruction with implants at Sir Charles Gairdner Hospital over a six year period. A small subset of patients had reconstruction with combined

expander/implants. These cases were reviewed to determine the overall explantation rate.

A total of nine patients (13 implants) had reconstruction with combined expander/implants (Mentor Becker or Mcghan 150). 10 out of 13 implants were removed at subsequent operations. 2 (15%) were explanted due to infection. 8(62%) were removed for aesthetic reasons including asymmetry, poor shape or poor projection. All were replaced with permanent textured gel implants.

The results of this study suggest that in the majority of cases single stage reconstruction is not achieved using these devices. This is in contrast to the results from two recently published studies using these devices. (1,2)

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PR44P MONITORING BURIED FREE FLAPS – NEW ZEALAND'S FIRST FOUR CLINICAL CASES OF FREE FLAP MONITORING WITH IMPLANTABLE 20 MHZ ULTRASONIC DOPPLER PROBE

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Purpose Monitoring buried free flaps is difficult. Currently in NZ only standard methods of clinical examination and surface doppler are used. We review the first four cases of the Cook Swartz Doppler (CSD) blood flow monitoring system in monitoring free flaps.

Method Retrospective review of the first four clinical applications of the CSD in NZ between October 2006 to January 2007. The doppler was used by 3 different surgeons and interpreted by nursing and medical staff with no prior experience with the device. There were two cases of buried free flaps and two cases where a small skin monitor was utilised to allow clinical correlation with doppler signals.

Discussions were held with respective surgeons and other relevant medical and nursing staff.

Results In the two buried flaps (vascularised fibula flap for femur reconstruction and an ALT flap for pharyngeal reconstruction) the probe was inserted downstream of the arterial anastomosis. In the two non-buried flaps (latissimus dorsi to reconstruct a scalp defect and a free TRAM for breast reconstruction) the probe was inserted upstream of the venous anastomosis. There can be difficulty in interpreting the audible signal when the probe is attached to the vein. All surgeons found the technical aspects of inserting and securing the probe to be straightforward. It provided peri- and post-operative assurance of flap viability. All four flaps were viable at one week at the time of probe wire removal.

Conclusion The CSD system is easily applicable to our clinical practice and requires minimal training for both the clinical and nursing staff. It provided peri- and post-operative assurance of flap viability.

PR45P AN IMPROVED ALTERNATIVE TO VACUUM-ASSISTED CLOSURE (VAC) ASA NEGATIVE PRESSURE DRESSING IN LOWER LIMB SPLIT SKIN GRAFTING: A CLINICAL TRIAL

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Background The use of negative pressure in the dressing of split skin grafts has been shown to promote healing by a variety of mechanisms, including a decrease in interstitial oedema, an increase in perfusion and a decrease in bacterial colonisation. Vacuum-assisted closure (VAC) dressings have, until now, been used as the archetype for negative pressure dressings and have been reflected as such in the literature. However, patient mobility and cost are still an issue with these dressings, and alternatives have been keenly sought. We describe an alternative method of negative pressure dressing, which we have found to be a safe and successful alternative, in the setting of lower limb split skin grafts.

Method and Materials A prospective cohort investigation was performed at a Melbourne major metropolitan teaching hospital on 9 consecutive patients

undergoing split-skin grafting for a lower limb soft tissue defect. The dressing comprised a single cut foam sheet, a conventional disposable closed-system suction drain and an adhesive dressing.

Results In all 9 patients, there was a 100% take of the graft, with no partial or complete loss. There were no complications encountered. Cost analysis demonstrated a minimum treatment cost of \$577 over 5 days compared to \$3180 for commercial VAC dressed wounds: a net saving of \$2603 per patient.

Conclusions The use of a simple suction drain is a cheap and safe alternative to commercial VAC dressings for the treatment of lower limb split skin grafts. Length of hospital stay and cost are superior to VAC, with no diminished clinical outcome.

PR46P

A CASE REVIEW OF PATIENTS PRESENTING TO ROYAL NORTH SHORE HOSPITAL, WITH HAIR REMOVAL WAX BURNS BETWEEN JANUARY AND NOVEMBER 2006

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To date there has been no published literature on the dangers of hair removal wax burns. This case review illustrates the steady influx of patients presenting to Royal North Shore Hospital (RNSH) with hair removal wax burns. Between January and December 2006 ten patients out of 395 with burns (2.5%) presented to our dressing clinic with hair removal wax burns. All sustained burns under 5% Total Body Surface Area (TBSA) and two required debriding and split skin grafting (SSG). The mechanism of the burns was re-heating the hair removal wax in the microwave for too long.

PR47

COMPREHENSIVE EYELID RECONSTRUCTION

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Introduction The central focus of eyelid reconstruct is the reconstitution of a dynamic protective covering for the cornea. The key to successful eyelid reconstruction is to properly assess the size of the defect and to separate the complex defect down into component parts or subunits. Since eyelid tissues retract in the presence of discontinuity, the residual lid margin has to be distracted under normal tension in order to assess the true size of the defect. In surgical planning, one must also assess the amount and location of inner and outer lamellar tissue absent. The inner lamella represents the conjunctiva, the tarsal plate, and the tarsoligamentous sling. The primary function is to provide lining and support to the lid. The most important region to reconstruct the inner lamella, the conjunctiva in particular, is centrally over the cornea in the upper lid. The outer lamella is represented by the skin and orbicularis oculi muscle. In the upper lid, the outer lamella has functional importance by enabling the dynamic blink to protect the cornea and prevent exposure. Small reconstructions may be carried out as a single stage, larger ones may require more than one stage. The fundamental principle is to utilize the following techniques for defects of increasing complexity and/or size 1) primary closure, 2) adjacent tissue, 3) lid sharing, and 4) regional or distant flap.

Methods/Technique Depending on the size of the defect, direct closure may be possible. Upper lids with a defect of 1/3 or less of the horizontal length can be closed directly. The criteria for lower lid direct closure is 1/4 to 1/3 of the horizontal length. Closure under too much tension will cause mechanical ptosis in the upper lid and lid retraction in the lower lid due to the close line effect. A selective (upper or lower) canthotomy will provide an additional 3–4 mm of length through tissue recruitment. The next order of reconstruction is the semicircular Tenzel skin muscle flap. This option is for subtotal defects greater than 1/3. Depending on the design, this flap can be used for upper or lower lid defects. By recruiting lateral tissue, end-to-end closure of the wound is achieved centrally, while the original defect undergoes lateralization. The absence of lashes laterally is better tolerated than centrally. The next order of reconstruction involves lid sharing. Upper lid tissue used for lower lid reconstruction includes the Hughes flap which shares a part of the upper lid tarsal plate and conjunctiva. Total upper lid reconstruction uses the lower lid Cutler-Beard flap with ear cartilage to replace missing tarsal plate. Both the Hughes procedure and the Cutler Beard Bridge Flap are two-stage procedures that are divided 2 weeks after the initial lid sharing. The visual axis is obstructed for

two weeks until the bridge is divided. The Hewes' flap is a single stage reconstruction lid sharing for lower lateral defects. It is based on the superior vascular arcade. Distant flaps such as the Tripier, Fricke, and forehead or glabellar flaps are used for large defects when other options are not possible.

Results Over the past 12 years 218 eyelid reconstructions were performed. 75% were cancer related and 25% were trauma related. 50% were secondary reconstructions referred from other surgeons. The average age of the patients was 60 evenly distributed between males and females. 90% of the cancer related defects were created by a Moh's surgeon. Upper lid defects represented 25% and lower lid defects represented 75%. The distribution of procedures used is as follows: 25% direct closure (selective canthotomy was often employed for direct closure), 40% Tenzel flap, 15% lid sharing flaps, 10% Hewes flaps, and 10% distant flaps. Mucosal grafts were required for secondary cases of the upper lid. 10% of patients required a revision surgery (other than planned bridge division). The most frequent complications were lid malposition, excess lateral orbital skin, and need for lacrimal reconstruction with DCR, Jones' tubes or Crawford tubes. Permanent corneal damage or rupture was prevented in all cases.

Conclusion Eyelid reconstruction simplified by breaking complex defects into their component parts. Algorithmic linkage of reconstructive method to shape and size of defect also assist with consistent successful results. Eyelid reconstruction balances the functional result of the reconstructive procedures as well as the aesthetic result in order to minimize morbidity.

PR48

UPPER BLEPHAROPLASTY

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Introduction Upper blepharoplasty is performed in order to correct age-related upper lid changes including dermatochalasis and irregular contours due to bulging post-septal fat pads. Additionally, upper lid ptosis can be repaired in an anterior approach through the blepharoplasty incisions when indicated. These procedures are gratifying and have relatively low associated morbidity.

Methods/Techniques Pre-operative assessment includes observation of excess upper eyelid skin, bulging fat pads, lid position, and location of the supratarsal crease. Most excess skin is located centrally and laterally. The most common bulging fat pad is the nasal fat pad, however the central fat pad also frequently requires excision. If a combination of procedures is being performed, upper blepharoplasty follows browlifts and facelifts but precedes lower lid blepharoplasty. Surgical markings are made with the patient prone, under general anesthesia. Local anesthesia is also administered for hemostasis. The lower location of the incision is marked 8–10 mm above the lid margin centrally and 6 mm above the lateral canthus. The upper incision is identified by assessing the amount of excess skin by pinch testing. The upper incision is marked and calipers are used to confirm at least 10 mm of skin will still be present between the upper incision and the lower border of the eyebrow at the mid pupil location. A scalpel is used to make the incisions. A Bovie is used to cut through the orbicularis oculi muscle on cutting current. Westcott scissors are used to excise the skin and muscle. Hemostasis is achieved Gentle pressure is applied to the globe to reveal the excess nasal fat pad. The septum is opened focally and the excess portion of the fat pad is excised using coagulation current with the bovie. The central fat pad is reduced if needed. If ptosis exists, it is repaired using a tarso-levator advancement technique. Often in cases of senile acquired ptosis, a high supratarsal fold exists. While the ptosis repair will partially resolve this cosmetic deformity, the septum is opened and the central fat pad is freed and advanced to further fill the sulcus. A supratarsal fixation stitch using 6-0 vicryl is placed in a mid pupil location to prevent postoperative ptosis. The wound is then closed with 6-0 nylon using interrupted sutures lateral to the lateral canthus and running sutures medial to the canthus.

Results 527 patients underwent upper blepharoplasty with the technique described over a 12 year period. 10% underwent ptosis repair at the same time and all other patients underwent supratarsal fixation. 90% were satisfied with their procedure. Acute re-operation for bleeding occurred in less than 1% of patients. The most common acute complication was chemosis occurring in 12% of patients which was far more likely to occur if a upper blepharoplasty was performed in conjunction with lower lid blepharoplasty. All cases of chemosis resolved with non-surgical management including liberal use of ointment and taping the lid shut, and occasionally incision and drainage of the chemosis. The most common indication for re-operation was residual excess skin.

Conclusion Upper lid blepharoplasty is a very gratifying procedure whether performed alone or in conjunction with other procedures for facial rejuvenation. Complications are infrequent and generally minor. Satisfaction is generally very high. The open sky technique was used which includes removal of the skin, muscle, and septal flap with conservative fat removal.

PR49 LOWER LID BLEPHAROPLASTY

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Introduction Lower lid blepharoplasty traditionally is considered a more complex procedure than upper lid blepharoplasty. More factors effect the success of the procedure and complications are more frequent. In lower lid blepharoplasty the following anatomic features are observed pre-operatively and are often modified surgically: Lateral canthus position, interpalpebral slant, lower lid position, size and shape of the lateral scleral triangle, lower lid fat pad buldes, lower lid tone, lid-cheek junction, and tear trough deformity. The following findings significantly effect surgical execution but are not modified surgically: presence of dry eyes/tear quality and the presence of relative enophthalmos or exophthalmos.

Methods/Techniques Lower lid blepharoplasty is performed with the patient in a supine position and with conscious sedation or general anesthesia. Corneal protection lenses are placed. Local anethesia is injected for hemostasis in the lower lid, along the infraorbital rim, and at the lateral orbital rim. A scalpel is used to make an incision from the lateral canthus in a lateral direction one cm long. The angel in changed infero-obliquely to travel in a subciliary location for one cm. The bovie is used to incise to that lateral orbital rim taking care to preserve the periosteum. Scissors are used to create a plane in the subciliary location between the muscle and the skin. A subciliary skin incision is made with the scissors. An incision is then made in the orbicularis oculi muscle inferior to the skin incision in order to preserve at least 4 mm of pre-tarsal muscle. A skin muscle flap is then raised in the pre-septal plane. The orbito-malar ligament released and small portion of the lateral superior cheek is raised in a pre-periosteal plane. Scissors are used to perform a septectomy. If the preoperative inspection demonstrated fat bulges and an absent tear trough, a conservative amount of fat is resected at the level of the orbital rim. If a prominent lid cheek junction is present and if a medial tear trough is present the fat is reposition over the infra-orbital rim. In the case of medial tear trough correction, the medial origin of the levator labii superioris alaque nasae is elevated. Fat pads are repositioned beneath the tear trough and sutured in place to the periosteum of the superior maxilla using 6-0 vicryl.

Attention is then turned to the lateral canthus. A canthopexy or lateral canthoplasty is performed in almost every lower lid blepharoplasty in order to shape the lower lid margin and the lateral scleral triangle. If the lower lid has minimal laxity defined by less than 6 mm of lid distraction from the globe with forcep retraction, a canthopexy is attempted in order to avoid a lateral canthotomy and the potential associated morbidity. If there is significant lower lid laxity, a lateral canthotomy and lateral canthoplasty is performed. 4-0 mersiline suture is used to the suture the lateral canthus to the lateral orbital rim. If lid tightening does not occur sufficiently, the lower lid is too long. In this case a lower cantholysis is performed and the lid is shortened laterally using scissors. 4-0 mersiline is used to re-construct the lateral canthus by suturing the lower lid lateral cut margin to the lateral orbital rim in a posterior position. The vertical position and the depth of the canthoplasty or canthopexy suture placement is determined by the preoperative assessment of globe prominence using a Hertel exophthalmometer.

Subsequent to management of the lateral canthus, skin-muscle flap is draped, trimmed and fixed in place at and lateral to the lateral orbital rim. Conservative resection of skin in important for the avoidance of complications.

Results 485 patients underwent lower blepharoplasty with the technique described. The average age of the patient was 52 years. 90% patients were women and 10% were men. 73% underwent canthopexy and 27% underwent canthoplasty. 185 were secondary lower blepharoplasties. Satisfaction rates were high. Minor complications included chemosis, lateral canthal webbing, and excess skin requiring revision. Major complications included hematoma, lid malposition or ectropion. 3% required re-operation for lower lid retraction.

Conclusions Lower lid belpharoplasty is an important procedure in order to achieve a balanced natural appearance. Complications, while more common than those in upper lid belpahroplasty, occur at relatively low rates. Satisfaction rates are generally high. The keys to success are proper canthal position-

ing for lid shape and support bolstered by an orbicularis flap properly placed and firmly fixed to the lateral orbital periosteum in order to correct lower lid laxity.

PR50 TRANSAXILLARY ENDOSCOPIC BREAST AUGMENTATION

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Transaxillary endoscopic breast augmentation is a very attractive option for women who desire increased mammary volume and projection but do not want a scar on their breasts. For primary augmentations, the procedure offers advantages over the traditional blunt axillary technique due to direct visualization and precise pectoralis muscle dissection and hemostatis. While the technique has been performed for submuscular and subglandular placement, the procedure has been most commonly used over the past decade with saline implants in the submuscular position. Smooth and textured silicone implants can also be used via transaxillary access into a subpectoral location. The results have been satisfactory with improved placement and a reduction in complications associated with traditional transaxillary augmentation including hematoma, capsular contracture and implants which are positioned too high.

Methods Transaxillary endoscopic breast augmentation was performed under general anesthesia with the patient in a prone position with arms abducted to ninety degrees. Local anesthesia with epinephrine was injected into the axillary incision and in the soft tissue overlying the anterior axillary fold for hemostasis. A 2-3 cm incision (4-5 cm when silicone implants are used) was placed in the axilla in one of the natural folds within the hair-baring zone. Dissection was carried out infero-medially until the lateral edge of the pectoralis major was identified. Under direct visualizaion, the pectoralis fascia was divided with scissors and the subpectoral space entered. The subpectoral pocket was initially created bluntly with an Agris Dingman retractor to create a bloodless optical cavity without avulsing any muscle. The endoscope and retractor were inserted and the undersurface of the pectoralis muscle was divided with the Bovie electrocautery. The infero-medial quadrant of pectoralis muscle was partially released from the chest wall. The prepectoral fascia, however was preserved to prevent symmastia, inferior implant migration and palpability. Pocket irrigation and hemostasis were performed. When saline implants were used, the device was rolled, inserted and inflated to the desired volume. When silicone devices were used, the tunnel was bluntly widened with Ashe forceps. A marcaine pain pump can be placed in the pocket for postoperative pain control.

Results Over 12 years 384 primary breast augmentations have been performed using this method by the senior author. Over 90% of the implants were Mentor smooth round saline implants. The average patient age was 30. High or excellent levels of patient and surgeon satisfaction was present in over 95%. Complications requiring re-operation were present in less than 2% of patients. The rate of long-term revision was capsular contracture in 5%. The most common cause of revision was asymmetry or desire to be larger.

Conclusions Transaxillary Endoscopic breast augmentation is an attractive option for the primary breast augmentation patient which avoids placement of a scar directly on the breast. The advantages are for patients with no ptosis or inframammary fold within which to hide the scar or breasts with a small areolar diameter. Additional advantages include controlled and precise surgical dissection and hemostatis which have reduced the complications associated with traditional blunt transaxillary techniques. Potential disadvantages may include the need for a second inframammary scar if reoperative surgery is required, theoretical interference with sentinel lymph node dissection if required in the future, and the additional technical equipment required to perform the procedure.

PR51 AUGMENTATION MASTOPEXY

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Introduction Augmentation-Mastopexy is a more complex procedure than either breast augmentation or mastopexy performed individually. Since the operation both increases breast size and corrects ptosis in one surgical procedure, the combination has been considered to be associated with increased

risk of complications. Complications most commonly include ischemic related complications of the breast flaps or nipple areolar complex and loss of sensibility. While some authors have suggested a staged approach with augmentation followed by mastopexy, I prefer to perform augmentation mastopexy as a single technique which is an attractive alternative to two operations. The principles include initial insertion of the implant in either the subglandular or submuscular position followed by mastopexy which can be periareolar, vertical, or inverted-T scar based on the degree of ptosis and size of the breast.

Methods/Technique Augmentation is performed first so the amount of ptosis can be evaluated after the augmentation in order to determine the type of mastopexy performed. The implant is placed through a periareolar incision or a vertical lower pole incision if one anticipates a vertical mastopexy scar. Implant placement is generally subglandular when sufficient soft tissue exists to provide adequate implant coverage. Care should be taken to preserve a dermal pedicle for blood supply to the nipple since subglandular dissection reduces the blood supply to the nipple areolar complex. When the breast soft tissue envelope is thin, submuscular placement is preferred for additional implant coverage. Since submuscular placement provides better coverage, there is generally less palpability and rippling. Furthermore, submuscular dissection preserves better blood supply exits to the NAC. A disadvantage of submuscular placement is increased risk of a high riding implant. The mastopexy should adequately elevate the breast to avoid a double bubble deformity is performed.

Results Over the past 12 years, 98 augmentation mastopexies were performed. The average pre-operative bra size was B-cup and the average degree of ptosis was Grade II. The mean patient age was 55. Smooth round gel implants were used for 90% of the patients. 80% were placed submuscular and 20% were placed subglandular. A Periareolar mastopexy was performed in 25% of patients and an inverted T mastopexy was performed 75% patients. Periareolar augmentation mastopexy was performed commonly for the correction of tubular breast deformity. Generally, most patients were satisfied with their procedure as only 5% underwent revision for aesthetic indications. 2% patients suffered acute complications including hematoma and loss of nipple sensation. 9% suffered subacute and chronic complications including delayed wound healing, loss or partial loss of the NAC, and loss of nipple sensation. 5% patients required revisions surgery to correct the sequelae of delayed wound healing or NAC tissue loss.

Conclusions Augmentation-mastopexy is one of the most complex and technically demanding procedures performed in aesthetic breast surgery. Nonetheless, there is a role for the procedure due to its ability to reduce the number of procedures and provide improved breast shape. The key to success is to be aware of the most common complications and to proceed in a step-wise in order to minimize the risk of complications and maximize patient satisfaction.

PR52 BREAST REDUCTION

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Introduction Breast reduction is one of the most gratifying procedures performed by plastic surgeons. While moderate sized breast reduction is often

considered an aesthetic surgery procedure by third party payers, all patients ultimately care about the aesthetic outcome. While the medical indications for breast reduction include neck pain, shoulder pain, back pain, and intertrigo, patients, especially those with less pronounced macromastia, are focused on breast-body disproportion, asymmetry, and excessive ptosis. The wise surgeon treats breast reduction as an aesthetic surgery case and focuses not only on the functional issues but on the aesthetic shape contour of the resultant breast. The Wise pattern/central mound technique constantly meets the aesthetic demands of reduction patients.

Technique/Methods The predominant method of breast reduction in my practice is a central mound parenchymal dissection with hand shaping of the breast mound independent of predrawn patterns. This method is preferred because it preserves the ability to breast-feed, can be free-hand optimized on the table, has a robust blood supply, permits the correction of late bottoming-out with simple skin tightening, and can be performed independent of sternal notch to nipple distance. The limitation of this technique is the inability to reduce most breasts smaller than a C or large B. The markings are made with the patient in an upright position. The new NAC position is determined with a bimanual palpation at the IMF. The remainder of the markings are made by an inverted T-shape to elevate the skin and 3–4 cm flaps off the central breast mound. The inferior vertical markings are located by the lateral/medial displacement method. The NAC is incised as a circle with a diameter of 42 mm. The central mound is then sculpted from the surrounding parenchyma. The superior tissue is raised as a flap of progressively increased thickness to preserve superior fullness and is elevated off the pectoralis major muscle to the clavicle. The majority of the parenchymal resection occurs in the inferolateral region. The central mound parenchyma and nipple are shaped like a living breast implant and sutured to the chest wall with 3-0 vicryl. Following the previously planned excision of skin, staples are used to close the wounds. Tailor tacking staples are then used to optimize shape and contour with patient in the sitting position. The distance from the inferior areola to the inframammary incision is generally 6–7 cm. The lateral infra-axillary area is reduced with SAL if indicated. The wounds are then closed in multiple layers. Drains are not used routinely.

Results The Central mound technique was performed in 162 patients over a 12 year period. Other techniques used much less frequently include: superior medial pedicles, vertical reduction, and free nipple grafts. The average age of the patients was 48 years. The average pre-operative bra size was full C or small D cup. The average reduction weight was 500 gm per side. The average time per procedure was 3 hours and the average blood loss was 150 cc with no cases requiring transfusion. The most common acute complication was hematoma which occurred in less than 2% of patients. Subacute complications included: temporary loss of nipple sensation, delayed wound healing, and seroma requiring drainage. The most common long-term complications were: failure to produce adequate reduction, asymmetry, and permanent hypesthesia of the NAC. Total loss of nipple sensation was not observed. 5% of the patients underwent revision surgery most commonly for scar revision or bottoming out.

Conclusions Central mound breast reduction reliably produces gratifying results. It is a flexible technique that can be employed in almost any patient desiring breast reduction. Complications are rare and usually minor. The only true limitation is the inability to produce breast smaller than a full B cup. The advantages include the wide application with no breast too large. The Tailor tacking method allows you to individualize the shape and no preconceived patterns are required. Nipple sensibility is preserved as well as the ability to breast feed since the breast ducts are not divided.