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01

POST-OPERATIVE RADIATION AFFECTS DEEP INFERIOR EPIGASTRIC PERFORATOR FLAP BREAST RECONSTRUCTION

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PURPOSE: Previous reports on DIEP or TRAM flap breast reconstruction and post-reconstructive radiation therapy (RT) lead to recommendations that reconstructive surgery should be delayed until RT is complete. This recommendation leads to many patients being offered delayed reconstruction. We reviewed our series of DIEP breast reconstructions that subsequently received RT.

METHODS: Retrospective review was performed using the University of Manitoba's Database. Patients who underwent DIEP breast reconstruction and postoperative RT were included.

RESULTS: 455 patients underwent a DIEP flap reconstruction over a two-year period. 14 patients met our criteria. Average age was 45 (30-65). Cancer types were invasive ductal (n=12), inflammatory and infiltrating papillary (n=1). Average BMI was 24.3 (20-34). Average follow up time post radiation therapy was 12 months (3-24 months). Eight women had RT to the right breast and six had RT to the left. Two women had bilateral reconstruction. There was no documentation of fat necrosis by the two surgeons. One patient had mild volume loss. One patient had revision surgery post RT. Two women who had SLN biopsy scars revisions had minor infections, requiring dressing changes and oral antibiotics. One patient had repeat nipple reconstruction due to loss of projection.

CONCLUSIONS: Women undergoing immediate breast reconstruction with a free DIEP showed no evidence of significant fat necrosis due to RT. We suggest that the degree of fat necrosis is determined by the initial perfusion characteristics of the flap and postoperative RT is not an independent variable for determining significant fat necrosis rates. The potential for post-operative RT should not relegate the patient to a delayed reconstruction.

LEARNING OBJECTIVES: To learn about effects of RT on DIEP flaps, and show its viability as a treatment option.

02

PARTIAL BREAST RECONSTRUCTION WITH FREE AUTOLOGOUS TISSUE TRANSFERS

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PURPOSE: Lumpectomy and radiation therapy is the standard of care for treatment of early stage breast cancer. Cosmetic results vary significantly depending on the lumpectomy size, location and the development of a significant seroma pre-radiation. Cosmetic results on many of these patients are suboptimal resulting in the patient requesting reconstruction surgery to obtain better symmetry and individual breast shape. We present our initial experience with perforator flap reconstruction of partial breast defects post lumpectomy and radiation treatment.

METHODS: A retrospective chart review was completed on all patients undergoing a partial breast reconstruction using autologous tissue transfers.

RESULTS: Ten patients underwent partial breast reconstruction. Seven

were completed using the Deep Inferior Epigastric artery Perforator flap while the remaining three were completed using the Superficial Inferior Epigastric Artery flap. There were no flap failures. Three patients required secondary revisions for flap debulking and one patient needed revision of the nipple and areola complex.

CONCLUSIONS: Partial breast defects are common problems facing patients post lumpectomy and radiation therapy. Typically, symmetry was obtained by reducing the contralateral breast combined with a variety of tissue rearrangements of the affected breast. Implant reconstructions have also been completed with varying degrees of success. The use of free perforator flap transfers allows the reconstructive surgeon to replace lost or scarred skin, while filling the irradiated lumpectomy defect with healthy autologous tissue. A high flap success rate can be expected with limited donor site morbidity.

LEARNING OBJECTIVES: Review the reconstructive option for partial breast reconstruction. Highlight the technique of autologous tissue transfer for partial breast defects.

03

MICROVASCULAR BREAST RECONSTRUCTION USING INTERNAL MAMMARY RECIPIENT VESSELS

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PURPOSE: Microvascular Breast Reconstruction has traditionally used Thoracodorsal recipient vessels. While more centers are using the Internal Mammary (IM) vessels, recent articles have suggested that the IM vessels may not be usable in significant portion of patients. We propose that IM vessels should be the first choice for recipient vessels and can be used successfully in >99% of all breast reconstruction cases.

METHODS: Retrospective review of all free flap breast reconstruction between 2003-2006. 562 flaps were completed. No patients were excluded from the review.

RESULTS: All flaps were anastomosed to the IM vessels. The third intercostal space was preferentially used for the anastomosis in 484 (86.1%) of cases. In the remainder we used the fourth intercostal space in 57 (10.1%) and the fifth in 6 (1.07%) and the six in 4 (0.71%). We used the IM perforator in 11 (1.95%) of cases. The take back rate was 4.45%, thrombosis rate 3.11% and total failure of 1.6%.

CONCLUSION: The IM vessels should be considered the first choice for recipient vessels in all microvascular breast reconstruction. They are easy to expose, adequate in size in all cases, protected from prior surgery, medially placed on the chest wall, and a privileged site against atherosclerosis. Pre-operative radiation did not affect the use of these vessels or the complication rates. We feel that there should be little reason to consider any other recipient vessel as the first choice in Free Breast Reconstruction.

LEARNING OBJECTIVES: Demonstrate the utility of the IM vessels for microvascular breast reconstruction. Demonstrate the IM vessels can be used in nearly all cases of microvascular breast reconstruction.

04

MICROVASCULAR VENOUS COUPLER REDUCES THE RATE OF VENOUS ANASTOMOSIS FAILURE**M Choi, EW Buchel, T Hayakawa****University of Manitoba, Winnipeg, MB****PURPOSE:** To compare venous anastomosis complication rates between hand sewn anastomoses and those using a venous coupler device.**METHODS:** We retrospectively reviewed a single surgeon experience using Deep Inferior Epigastric artery Perforator flap (DIEP) and Superficial Inferior Epigastric Artery (SIEA) free flaps for breast reconstruction. The surgeon performed hand-sewn venous anastomoses exclusively in his practice before changing his technique to using a venous coupler exclusively. The consecutive series of hand-sewn cases was then compared to a consecutive series where the venous coupling device was used. Only DIEP and SIEA free flaps were considered for this analysis.**RESULTS:** A total of 141 cases of DIEP and SIEA free flaps were performed with the hand-sewn technique. Bilateral surgeries were performed in 60 cases totaling 201 flaps. Nine (4.5%) patients were taken back to the operating room for venous congestion. A total of 81 cases of DIEP and SIEA free flaps were performed using a venous coupler. Bilateral surgeries were performed in 29 cases totaling 110 flaps. One (0.9%) patient was taken back to the operating room for venous congestion requiring a re-anastomosis with the venous coupler.**CONCLUSIONS:** The use of a venous coupler reduces the complication rate associated with the venous anastomosis.**LEARNING OBJECTIVES:** 1. Describe the use of a venous coupling device in microsurgical anastomoses of vessels. 2. Compare the complication rates of hand-sewn venous anastomoses and anastomoses with a venous coupler device.

05

USE OF NITINOL U-CLIPS FOR MICROSURGICAL ANASTOMOSIS**RC Mahabir, RC Baynosa, R Stutman, KT Khiabani****University of Nevada at Las Vegas, Las Vegas, NV****PURPOSE:** Nitinol is a nickel titanium alloy with the unique characteristics of superelasticity and shape memory. Nitinol U-clips (Medtronic, Minn., MN) are penetrating clips applied in an interrupted fashion without the need for knot tying that decrease operative time and have a preset closing tension. We present three cases of successful microvascular anastomoses using this technology.**METHODS:** Two patients had traumatic radial artery lacerations requiring repair and the third patient underwent a free rectus muscle transfer for a lower extremity defect. The U-clip consists of a curved microsurgery needle swedged to a flexible suture-like structure with a release mechanism and self-closing clip distally (Figure 1). Application of the U-clip was performed similar to conventional suture placement using a standard needle driver to drive the needle through the vessel walls and pulling the flexible suture-like structure through the tissue to seat the clip. Once in position, the release mechanism was activated and the U-clip approximated the vessel walls by returning to its preferred closed configuration.**RESULTS:** All patients had successful microvascular anastomoses documented by Doppler signal and clinical exam. There were no complications and long-term follow-up demonstrated patent anastomoses at six months.**CONCLUSION:** We have successfully performed three consecutive microvascular anastomoses using U-clips. The clips hold the promise of rapid, reproducible microvascular anastomoses.**LEARNING OBJECTIVE:** At the end of this presentation, the participant should be able to recognize the Nitinol U-Clips and their potential role in microsurgery.

Figure 1

06

EXPANDING YOUR HORIZONS WHEN CHOOSING RECIPIENT VESSELS IN MICROSURGERY**T Hayakawa, E Buchel****University of Manitoba, Winnipeg, MB****PURPOSE:** Recipient vessel selection in microsurgery has historically involved the dissection of larger named vessels for free flap anastomosis. Utilizing these vessels can become less desirable in the face of previous surgery and scarring, a long distance to these vessels from the defect that would necessitate vein grafting, or longer additional scars that would be required for access (e.g. in the face). We routinely use smaller local vessels as our first choice for recipient vessels.**METHODS:** Our microsurgical database identified 20 patients in which small local vessels (<1.5mm) were used as the sole recipient vessels for microvascular free tissue transfer.**RESULTS:** 20 flaps were performed in 20 patients. Recipient vessels were as follows: Supratrochlear vessels (1), Pectoral branches of Thoracoacromial trunk (2), Intramuscular peri-alar angular artery and midfacial vein (5), Posterior radial collateral vessels (1), Descending branch of lateral femoral circumflex (1), Septal perforator and venae comitantes of radial artery (1), Periumbilical perforating artery and vein (1), Descending genicular vessels within substance of Vastus Medialis (2), Saphenous artery and venae (1), Superior genicular vessels (1), Para-aortic intercostal vessels (3), Digital artery and dorsal vein (1). All flaps survived; there was one minor partial flap necrosis.**CONCLUSION:** Local recipient vessel utilization requires less flap pedicle length which allows for a faster flap harvest with less donor site morbidity and avoids the need for vein grafts. Flap selection is less restricted by pedicle and overall flap length. These vessels are smaller but are often situated more superficially making exposure for anastomosis more convenient; particularly in flaps around the knee. Their smaller size does not appear to affect outcomes.**LEARNING OBJECTIVES:** The physician will be able to list the advantages and potential technical challenges faced when using small local recipient vessels for microsurgical anastomosis.

07

LUMBAR PERFORATOR-BASED FLAPS FOR IMMEDIATE CLOSURE OF EXTENDED POSTERIOR TRUNK DEFECTS**W Daghistani, A Gagnon, L Bergeron, A Bourget, C Guertin, A Chollet****University of Montreal, Montreal, QC****PURPOSE:** Large defects of the posterior trunk can result in significant reconstructive challenge due to limited local flap options. The purpose of this study is to investigate the adequacy of lumbar perforator-based flaps for reconstruction of these defects.**METHOD:** Following oncologic resection of large trunk tumors, the size and location of the resulting defect was evaluated. A primary local flap of sufficient size was used to reconstruct the resection defect. When primary closure of the flap donor site was not possible and skin grafting not desirable, the presence of lumbar perforating arteries was investigated with the use of a hand-held Doppler. The vessels were then assessed by careful dissection and direct vision. A fasciocutaneous flap was designed along the angiosome of the selected perforator and transposed to close the primary flap donor site.**RESULTS:** Lumbar perforator-based flaps were used in two cases of large posterior trunk defects in which primary closure was not achievable. The first patient presented a 45 x 30 cm defect in the left upper thoracic region that was reconstructed using an extended supercharged parascapular flap. After partial primary closure of the donor site, the resulting defect measured 12 x 20 cm and was covered using a propeller flap based on a large lumbar artery. The second patient underwent resection of a sarcoma of the upper back region which was reconstructed using a 25 x 20 cm posterior intercostal artery perforator flap. The secondary defect was closed with a lumbar perforator-based flap. Both lumbar artery perforator flaps healed uneventfully and their donor sites were closed primarily.**CONCLUSIONS:** Local flaps based on lumbar perforating vessels are

useful for the reconstruction of extensive posterior trunk defects. They can provide direct donor site closure of large concomitant flaps thus avoiding skin grafting of the dorsal area. The propeller design allows additional freedom in flap inseting.

LEARNING OBJECTIVE: The participants will be able to appreciate the value of lumbar artery perforator flaps in the reconstruction of posterior trunk defects.

08

THE USE OF FASCIOCUTANEOUS FLAPS FOR LOWER EXTREMITY BONY FRACTURES AND OSTEOMYELITIS

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PURPOSE: Traditional treatment of open fractures of the lower extremity consists of debridement of devitalized bone and soft tissue, immediate bony stabilization and early muscle flap coverage. More recently fasciocutaneous perforator flaps have been used with the goal of reducing donor site morbidity. The purpose is to determine whether they are as effective as muscle flaps in providing adequate vascularity for bony healing and preventing infection.

METHODS: Thirteen patients with open lower extremity fractures (Gustilo IIIB/C-type) and one case of osteomyelitis, all treated with perforator fasciocutaneous flaps, were reviewed.

RESULTS: There were 11 Gustilo IIIB injuries (10 - tibial; 1 - femoral); 1 Gustilo IIIC, 1 calcaneal osteomyelitis; and 1 established calcaneal non-union with an unstable skin graft over the site. The average size of the defect was 289.1cm². Following debridement and ORIF of the fracture site, 13 were treated with an Anterolateral thigh flap (ALT) and one with a Thoracodorsal perforator flap (TAP). Average follow-up was 9.8 months (range 2-21months). There were no flap failures, infections or non-unions. The average time to full weight bearing and ambulation was 3 months. To avoid non-union, 3 patients underwent prophylactic bone grafting 2 months following their initial procedure. These patients had either large bony gaps or minimal callous formation on early follow-up radiographs. Three patients required crutches for longer than three months post-operatively secondary to pain arising from joint stiffness.

CONCLUSIONS: Perforator fasciocutaneous flaps appear to provide adequate soft tissue coverage for adequately debrided Gustilo III B/C injuries, and osteomyelitis while avoiding the donor site morbidity of a muscle flap.

LEARNING OBJECTIVES: The physician will be able to identify the advantages and potential disadvantages when considering the use of fasciocutaneous flaps when treating open fractures and osteomyelitis of the lower extremity.

09

EARLY LIMB LENGTH DISCREPANCY IN OBSTETRICAL BRACHIAL PLEXUS INJURIES

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INTRODUCTION: Obstetrical brachial plexus injury has a variable natural history depending upon severity of nerve trauma. Approximately 50 % of children will completely recover; many will be left with a functional but short, impaired arm.

PURPOSE: To determine if OBPI results in differences in limb length comparing the affected to unaffected limbs.

METHODS: A prospective database of OBPI patients from 1998-2007 has been reviewed. Limb lengths were manually measured by the same investigator at standard times in new patients and at 3 and 12-month follow-up. Arm length was measured from the acromion to the olecranon and forearm length from the olecranon to the ulnar styloid. Inclusion criteria included those with full records and early presentation to our clinic. Comparisons were made between affected and unaffected limbs, and results correlated with total active motion scale scores (AMS) using SAS statistical software.

RESULTS: Twenty-four children had complete scores at 3 months and there was a significant reduction in the limb length of the affected side ($p < 0.05$). These results were still significant at 12 months. There was a significant correlation between amount of limb length difference and total AMS score at 12 months ($p < 0.05$, Pearson's correlation).

CONCLUSION: Obstetrical brachial plexus injuries result in growth disturbance of the affected limb, which is measurable at 3 months, and correlates with severity of injury. Predictive use of this measure requires further investigation.

LEARNING OBJECTIVE: To understand the impact of OBPI on growth of the infants limb.

10

VERSATILITY AND LIMITATIONS OF THE PEDICLED ANTEROLATERAL THIGH FLAP AND LESSONS LEARNED FROM ITS USE IN COMPLEX ABDOMINAL AND PELVIC RECONSTRUCTION

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PURPOSE: In this study we reviewed our use of the pedicled anterolateral thigh (ALT) flap in complex abdominal and pelvic reconstruction. We identified the arcs of rotation achieved, the types of defects reconstructed, and points of surgical technique that enhanced our results. In addition we identified the limitations of the pedicled ALT flap and its potential pitfalls.

METHOD: A retrospective review of 27 flaps performed in 26 patients was performed along with a review of photographic archives. Parameters reviewed included age, diagnosis, past medical history, anatomical sites and components requiring reconstruction, dimensions of defects, dimensions of ALT flaps, suprafascial or subfascial harvesting, number and type of perforators, closure of donor site, complications and length of follow up.

RESULTS: Twenty-four patients had complex abdominal or pelvic defects secondary to ablative procedures for primary, recurrent or metastatic malignancy. One had cutaneous manifestations of Crohn's disease, and one had a large ventral hernia secondary to previous abdominal wall resection. The arc of rotation included the PSIS and the umbilical area. Useful points of surgical technique include the method of harvesting fascia, and its use to protect the pedicle. Pitfalls identified included the potential inadequacy of thigh fascia for reconstituting abdominal wall integrity, risk of pedicle avulsion in the morbidly obese, and risk of atherosclerotic plaque embolization in the pedicle.

CONCLUSIONS: The pedicled ALT is a versatile flap with a wide arc of rotation. Advantages and limitations of the fascia should be appreciated, as should an awareness of the various pitfalls associated with this flap.

LEARNING OBJECTIVES: 1. Appreciation of the versatility of the pedicled ALT flap with respect to its arc of rotation and coverage of prosthetic components. 2. Points of surgical technique to enhance outcome. 3. Understanding the limitations and potential pitfalls of the pedicled ALT flap.

11

A COMPARISON OF THE SUPERFICIAL INFERIOR EPIGASTRIC ARTERY FLAP AND DEEP INFERIOR EPIGASTRIC PERFORATOR FLAP IN POST-MASTECTOMY RECONSTRUCTION: A COST-UTILITY ANALYSIS

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PURPOSE: To perform a cost utility analysis comparing the superficial inferior epigastric artery (SIEA) flap and deep inferior epigastric perforator (DIEP) flap techniques in postmastectomy reconstruction.

METHOD: A decision analytic model with seven clinically significant health outcomes was used, incorporating the Ontario Ministry of Health's perspective. Direct medical costs were estimated from a university-based hospital. The utilities of each health state, converted into quality-adjusted life years (QALYs), were obtained from a prior questionnaire sent to 32 plastic surgeons across Canada. The probabilities of each health state occurring were obtained from a systematic review of the literature. The analyses yielded expected costs and QALYs for the SIEA and DIEP, allowing the calculation and interpretation of the incremental cost-utility ratio (ICUR). Several one-way sensitivity analyses were conducted.

RESULTS: 27 DIEP studies and 5 SIEA studies were included. The model's baseline expected cost for the SIEA was slightly higher than for the DIEP (\$16,107 vs. \$16,095), but the SIEA had a slightly higher QALY (33.14 years vs. 32.98 years), giving an ICUR of \$77/QALY. Sensitivity

analyses were performed under five plausible scenarios in which specific SIEA rates were assumed to be the same as those for the DIEP.

CONCLUSIONS: When it is feasible to perform, the SIEA is a cost effective procedure. However, because the marginal differences in cost and effectiveness are so small, the ICUR may be sensitive to minor changes in costs or QALYs. The truth can only be obtained by a randomized controlled trial that compares both techniques side by side, simultaneously capturing the costs of the competing interventions.

LEARNING OBJECTIVES: 1. Become familiar with the rationale and methodology for performing cost-utility analyses. 2. Be able to interpret cost-utility analysis results. 3. Learn how to apply cost-utility results in a clinical context

12

MICROVASCULAR FREE FLAP SURGERY IN PATIENTS WITH HAEMATOLOGICAL DISORDERS

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PURPOSE: Advances in microsurgery and improvements in management of complex medical disorders has increased the patient population eligible for free flap surgery. Despite these advances, microsurgery in patients with haematological disorders is met with pessimism due to an assumed increase in flap failure and/or donor site morbidity. Few case reports exist on free flap surgery in patients with bleeding tendencies and hypercoagulable states. Our study reviews and discusses peri-operative management of patients with various haematological disorders undergoing microvascular surgery.

METHODS: A retrospective chart review of all patients with pre-operatively diagnosed hematologic disorders who underwent free flap surgery between 2004 and 2006 was performed.

RESULTS: Five patients were identified. All patients were female and ranged in age from 40-55 years. Patients demonstrated disorders with bleeding tendencies: von Willebrand's disease (vWF) and idiopathic thrombocytopenia (ITP); and those with clotting tendencies: antiphospholipid antibody syndrome, activated protein C resistance, and factor V leiden deficiency. Seven free flaps were performed: 1 latissimus dorsi free flap for scalp reconstruction, and 6 DIEP free flaps for breast reconstruction in four patients. Patients with hypercoagulable states received post-operative treatment with Toradol 30 mg IV q 6h x 72 hrs, ASA 81 mg od, or heparin 5000 SC bid. No pre-operative or intra-operative therapies were utilized. Patients with bleeding tendencies received IVIG and prednisone (ITP) or DDAVP (vWF) pre-operatively. TED/SCDs were placed on all patients throughout the peri-operative period. No re-explorations or flap failures occurred. All patients were discharged from hospital within 4 days of the operation.

CONCLUSION: Inherited or acquired hematological disorders are not a contraindication for free flap reconstructive surgery. Peri-operative medical management in close consultation with haematological specialists and meticulous surgical technique allows this patient population to undergo successful free flap surgery.

LEARNING OBJECTIVES: The learner/audience will be able to consider management of patients with various haematological disorders undergoing microvascular free flap surgery.

P-1

ETIOLOGY AND TREATMENT OF FACIAL PARALYSIS IN CHILDREN

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PURPOSE: Moebius syndrome is a congenital abducens and facial nerve paralysis usually bilateral. Cross face nerve grafting and gracilis muscle transplantation have made a substantial contribution in the treatment of facial paralysis.

METHODS: The records from the Division of Plastic Surgery at the Hospital for Sick Children were searched for all cases of congenital and acquired facial paralysis between January 1982 and July 2006. The records were reviewed to determine sex, cause of paralysis, affected side, associated cranial nerves palsies, age at initial surgery and type of surgical approach.

RESULTS: A total of 178 cases of facial paralysis that underwent surgical repair were identified. Moebius syndrome was identified in 90 patients. Of the 88 patients with other causes of facial paralysis the most common were tumor (33), congenital non-Moebius (32) and trauma (5). Facial paralysis was bilateral in 93% of Moebius cases. Of the 90 patients with Moebius 61% presented involvement of the abducens nerve and 29% of the hypoglossal nerve. Of the Moebius patients 57% underwent first to gracilis muscle transplant to the right side of the face, 34% to gracilis muscle transplant to the left side and only 9% to cross face nerve grafting. The average of time between the first and second surgery was 240 days in the Moebius group. In total, 162 gracilis muscle transplant reinnervated by motor branch of masseter nerve were performed in patients with Moebius syndrome and 83 in patients with other causes of facial palsy.

CONCLUSION: According to our review, Moebius Syndrome represents more than half of the cases of facial paralysis in childhood. Segmental gracilis muscle transplantation was the first choice in almost all cases of Moebius Syndrome.

LEARNING OBJECTIVES: At the end of this lecture, the learner will be able to diagnose Moebius syndrome and support the early treatment.

P-2

FREE AUTOLOGOUS TISSUE RECONSTRUCTION OF COMPLEX THORACOABDOMINAL DEFECTS INCLUDING THE DIAPHRAGM

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PURPOSE: Reconstruction of a large thoracoabdominal defect is a complex problem that needs to be managed by a multi-disciplinary team. This reconstructive problem includes reconstructing the chest, diaphragm and abdomen. Skeletal stabilization may be achieved with synthetic material, but still carries the risk of infection and extrusion. Autogenous tissue reconstruction provides an excellent choice for reconstruction of these defects. The purpose of this article is to highlight the technical challenges associated with free tissue reconstruction of thoraco-abdominal defects, and their potential benefits.

METHODS: A retrospective review of all patients undergoing reconstruction of thoracoabdominal defects exclusively with autologous tissue was conducted. Defect size, flap utilization and complications were recorded. Final outcome with wound healing rates and complete separation of the thorax from abdomen was recorded.

RESULTS: Three patients in the past three years underwent oncologic resections for sarcomas of the chest and abdominal walls. Two of the three received pre-operative or intra-operative radiation. All had defects including the chest, abdomen and diaphragm. All reconstructions included at least a chimeric ALT-TFL with one person needing two separate chimeric flaps. Complete healing occurred in all patients with separation of the thorax and abdomen compartments. No intra-thoracic or abdominal infections developed. No delay in post-operative radiation or chemotherapy occurred.

CONCLUSIONS: Complex thoracoabdominal defects frequently require the use of both prosthetic materials and free tissue transfers for reconstruction. Complications associated with the use of foreign materials in large, irradiated, contaminated wounds are inevitable. By using chimeric fasciocutaneous free flaps, these defects can be reconstructed with decreased complications, thus limiting the potential delay in adjuvant chemotherapy. **LEARNING OBJECTIVES:** Review the treatment options of thoracoabdominal defects including the diaphragm. Review the free flap options for these defects with potential local donor vessels options.

P-3

DEEP INFERIOR EPIGASTRIC PERFORATOR (DIEP) FLAP: ALTERNATIVE USES

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PURPOSE: To broadly and superficially review documented experience with deep inferior epigastric perforator (DIEP) tissue flaps when employed for purposes unrelated to breast reconstruction. This project aimed to feature applications of the flap type that might not otherwise be considered.

METHOD: All journal articles released prior to the year 2007 were sought. Medline and EMBASE databases were initially consulted to obtain relevant publications. Searches were performed using Ovid Web Gateway, directed towards articles relating to the non-MeSH keywords “diep not breast” using the multi-purpose search tool. Searches were also conducted within each database involving the keyword term “perforator”, in combination with the term “flap not breast.”

RESULTS: Results are incomplete at the time of abstract submission. In total, without accounting for overlap, 473 and 581 titles were retrieved from the Medline and EMBASE databases respectively. Authors have discussed numerous uses of the DIEP flap, including repairs near to and far from the donor sight. Flap placements have been attempted in areas ranging from the perineum to the foot, among others.

CONCLUSIONS: Conclusions are unformed at the time of abstract submission, however DIEP flaps clearly represent a versatile method for repairing defects in diverse regions of the body.

LEARNING OBJECTIVES: At the end of this presentation, the learner will be able to identify several applications of the DIEP flap. The learner will also be aware, in general terms, of the relative success experienced in using this technique for purposes other than breast reconstruction.

P-4

USE OF A DOUBLE-BARRELED VASCULARIZED FIBULAR FREE FLAP FOR ANTERIOR SPINE FUSION IN OSTEOMYELITIS

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PURPOSE: Reconstruction of the anterior spine following osteomyelitis by vascularized free fibula flap has been described in the literature. Such flaps were found advantageous owing to their vascularity in the context of chronic infected tissue. Excellent fusion has been previously reported. The “Double-Barreled” fibular free flap has been used in mandibular, tibial, and pelvic reconstruction where mechanical stress tolerance is required. Our objective was to assess the use of a vascularized flap in anterior cervico-thoraco-lumbar spine fusion for osteomyelitis.

METHODS AND RESULTS: Three cases of vascularized fibular free flaps were performed during 2006 for anterior spine fusion following osteomyelitis. Two Double-Barreled free fibular flaps were used for the thoracolumbar spine arthrodesis and a single barrel flap for the cervical spine. The three free fibular flaps were transferred successfully. Anastomoses to the thoracolumbar segmental vessels and cervical vessels were carried out. Posterior instrumentation was performed with the remaining fibular fragment as a bone

graft, two weeks later. Radiographic bone consolidation was confirmed within 3 months.

CONCLUSION: The use of a vascularized fibular free flap including the Double-Barreled flap could be successfully used as a salvage procedure in thoracolumbar spine osteomyelitis, where vascular bone and great stress tolerance are needed.

LEARNING OBJECTIVES: Familiarization of free fibula flaps for anterior spine fusion following osteomyelitis: in particular, the double-barreled fibular free flap.

P-5

FREE TISSUE TRANSFER IN ONCOLOGIC FOOT DEFECTS

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PURPOSE: Free tissue transfer to the foot allows otherwise unreconstructible defects to be reconstructed and thereby facilitate limb-sparing resection of neoplasms. While many of these defects have traditionally been reconstructed with skin grafts or local flaps, free tissue transfer allows greater versatility and potentially more durable reconstruction. The purpose of this study was to examine the success of free tissue transfer in restoring ambulation in patients as well to examine the impact of the salvage procedure on oncologic surveillance.

METHODS: To achieve this objective, patient database analysis and a retrospective chart review were performed on all patients who underwent free tissue transfer to oncologic foot defects at Memorial Sloan – Kettering Cancer Center between 1995 and 2006. 14 patients were identified and the details of their reconstructive procedures and outcomes were analyzed.

RESULTS: Free tissue transfer was successful in all patients, and allowed all patients to return to ambulation at an average of 8 weeks post-operatively. Muscle flaps with split thickness skin grafts were used as frequently as fasciocutaneous flaps. Three of the skin grafts used to cover the transferred muscle suffered partial breakdown. Five patients had their disease recur, 4 of whom presented with metastatic disease and one of whom presented with a recurrence at the original tumor site. Of these patients, one died of recurrent synovial sarcoma 5 years following reconstruction, and one patient died from metastatic liposarcoma 2 years after reconstruction.

CONCLUSION: In summary, this review demonstrates that free tissue transfer to the foot enables limb sparing oncologic resection, facilitates ambulation, and does not interfere with oncologic surveillance.

LEARNING OBJECTIVES: 1. To demonstrate applicability of free tissue transfer for oncologic foot defect. 2. To demonstrate recovery of ambulation. 3. To demonstrate oncologic surveillance in face of reconstruction

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