2018 GLOBAL PARTNERS POSTERS

Aesthetic Reconstruction of Extensive Pubic Keloids Using Bilateral Modified Keystone Flaps

Presenter: Tae Hwan Park, MD, PhD, Plastic and Reconstructive Surgery, CHA Bundang Medical Center, CHA University, Seongnam, Korea, Republic of (South)
Co-Authors: Jang Won Lee, MD, Plastic and Reconstructive Surgery, CHA bundang medical center, CHA university, Seongnam, Korea, Republic of (South), Euna Hwang, MD, PhD, Plastic and Reconstructive Surgery, CHA Bundang Medical Center, CHA University, Seongnam, Korea, Republic of (South), Chung Hun Kim, MD, PhD, Plastic and Reconstructive Surgery, CHA bundang medical center, CHA university, Seongnam, Korea, Republic of (South)

Complete excision of huge pubic keloids inevitably causes significant soft tissue defect requiring extensive wound coverage. Skin grafting after complete excision can be one of the options, but it might delay adjuvant radiation therapy timing and causes wound disruption due to its high infection rates. Free flaps can overcome many of these obstacles but keloid formation on donor site can be another significant concern to the patients and physicians. In this study, we introduce our one-stage successful reconstruction of huge perineal keloids using bilateral modified keystone flaps without any distant donor morbidity.
A 21-year-old woman visited to our clinic due to her recurrent ulceration and purulent discharge from central small pit in huge keloids of pubis. This patient also has multiple keloids on chest, shoulder, buttock, face, scalp, arm and forearm, and axilla. We conservatively dressed the wound with 2 or 3 days intervals because she did not want to get any surgery at that time. But febrile conditions repeatedly happened with continued wound problems and finally she agreed to undergo complete excision and flap reconstruction. She underwent abdominal keloid resection followed by local flap reconstruction 2 weeks ago.
We completely resected huge keloid on perineal area and encountered extensive soft tissue defect sized 15 x 16 cm requiring reliable reconstruction. After complete excision of perineal keloid, approximately 16x15 cm sized defect occurred and we decided elevated modified keystone flaps using adjacent soft tissue in inguinal and medial thigh areas. By skeletonizing medial branch of superficial circumflex iliac perforators which have been well described by several authors, we can fully mobilize upper half area of the flap. In lower half area, we harvested tissue using original keystone flap concept based on internal pudendal artery perforators.
Finally, the harvested flaps on both sides were advanced medially over the defect and they successfully covered the defect without any distant donor morbidities.
Postoperative single fraction external beam irradiation (10Gy) was performed at 48 hours postoperatively. At postoperative 6 months, no significant sign of keloid recurrence was seen and the patient was satisfied with improved quality of life and free of infection at the wound.
We can successfully resurface a huge perineal keloid using bilateral modified keystone flaps. It provides a robust blood supply without any distant donor morbidities.

New Options in Breast Reconstruction: 3D-Printed Tailor-Made Prosthesis

Presenter: Alessandro Scalise, MD, Plastic Surgery, Marche Politechnical University, Ancona, Italy
Co-Author: Giovanni Danieli, MD, Plastic Surgery, Marche Politechnical University, Ancona, Italy

Purpose: In this poster we describe a new way of prototyping custom-made 3D-printed breast implants.
The aim of this protocol is to build tailor-made prototypes of breast implants to respect some fundamental features such as clinical and pathological datas from the tumor, type of resection that will be performed, anthropometric parameters of the patientand of the contralateral breast.
Actual techniques to replace the breast include flaps, prosthesis and stem cells. This study was carried out to add to those tools another one to give better pre-operative counseling to the patients.

Methods and Materials: we selected the case of a patient with a palpable mono-focal lump, who had never been irradiated and who did never undergo breast surgery. We acquired T2-weighted NMR images without contrast agents and saved them in DICOM format (Digital Imaging and Communications in Medicine).
We imported those images in MIMICS (Materialise Interactive Medical Image Control System), a software that elaborates packs of 2D images to create 3D models, to obtain the segmentation of the planes.
Taking advantage of the intrinsic contrast in the structures we repeated the procedure to segmentate the tumor (applying a green mask) and the breast of the patient (applying a pink mask).
We then prototyped the implant, by manually drawing the resection area over the NMR images. Using the tool “Morphology operations” we drew a resection margin far 1.5 cm by the tumor area, that allowed the creation of the 3D model. Using some Smoothing filters we plained the model.
Final improvements to the model were made using the MeshLab software.

Summary of results: At the end of the procedure, we came up with five models to print: the tumor, the left and the right part of the breast, the left and the right part of the prosthesis.
We printed those models using a Ultimalker 3D-printer. The printing technology used is called “fused deposition modeling”.
The extruded material is PLA (polylactic acid): this 3-D ink allows the creation of high-resolution objectsthanks to its good surface quality, it’s easy to work with, it’s safe, it’s reliable and it comes in variety of colours. We printed in red the tumor, in orange the prosthesis and in blue the breast of the patient.

As supporting ink we used PVA (polyvinyl alcohol), used to print complex models that require supports for deep internal cavities and large overhangs.

Conclusion: once the models were printed, we reached our objective. After the first senological visit, the patient performs a NMR study and the multi-disciplinary team (following the Plastic Surgeon's directions) prototype and print the prosthesis that can be easily used to better inform the patient before surgery.
The process showed a very high accuracy, so high that in the future it could be possible to use it to directly print implantable custom-made prosthesis following the knowledge of the 3D-biopriting field. In fact, it is suitable both for printing custom-made silicon prosthesis and bioscaffolds.

Detection of Free Flap Pedicle Thrombosis by Infrared Surface Temperature Imaging: A Experimental Study

Presenter: Yu-Jen Chiu, MD, Division of Plastic and Reconstructive Surgery, Department of Surgery, Taipei Veterans General Hospital, Taipei City, Taiwan
Co-Author: Cherng-Kang Perng, MD, PhD, Taiwan, Teipei, Taiwan

Background: Reliable detection of any circulatory issues threatening flap viability after free flap surgery is essential for prompt flap salvage. Currently, gold standard of flap monitoring is clinical monitoring. However, the method presents logistical challenges to insufficient trained personnel. Auxiliary methods are becoming increasingly vital.

Methods: To investigate developed monitoring parameters and vascular thrombosis in free flap model, twelve swine pedicle myocutaneous flaps were harvested and monitored using infrared cameras.

Results: The mean flap surface temperature after vein or artery occlusion decreased significantly, but the differences were relatively small with variability. As a result, the difference between recorded (T_s) and predicted (T_{es}) flap surface temperature was used as the parameter for pedicle thrombosis: $\Delta T = T_s – T_{es}$. A $\Delta T < 0.5^oC$ was a vascular occlusion criterion; the sensitivity and specificity were 83% and 67%, respectively. The standard deviation of the surface temperature (SD_T) was another indicator of vascular occlusion; with SD_T drop more than 0.2^oC, the estimated sensitivity and specificity for arterial occlusion were 83% and 100%, and 50% and 67% for venous occlusion.

Conclusions: The advantages of the infrared thermal imaging are that it is non-invasive, contact-free, continuous, and able to detect the whole flap surface area. We established two indicators, ΔT and SD_T, for early prediction of flap pedicle thrombosis with high sensitivity and specificity. Further human studies are necessary to validate its clinical application.

References

1. Perng C-K. Recent advances in postoperative free microvascular flap monitoring. Formosan Journal of Surgery. 2013;46(5):145-148.
2. Yamamoto T, Todokoro T, Koshima I. Handheld thermography for flap monitoring. Journal of Plastic, Reconstructive & Aesthetic Surgery. 2012;65(12):1747-1748.
3. Chen Y, Shen Z, Shao Z, Yu P, Wu J. Free flap monitoring using near-infrared spectroscopy: a systemic review. Annals of plastic surgery. 2016;76(5):590-597.
4. de Weerd L, Mercer JB, Weum S. Dynamic infrared thermography. Clinics in plastic surgery. 2011;38(2):277-292.

Thoracodorsal Artery Perforator Flap in the Treatment of Radiation Ulcers Related to Percutaneous Coronary Intervention

Presenter: Dun Hao Chang, MD, Plastic and reconstructive surgery, Far Eastern Memorial Hospital, New Taipei City, Taiwan
Co-Author: Ke-Chung Chang, MD, Far Eastern Memorial Hospital, New Taipei City, Taiwan

Introduction: Chronic radiation ulcers that develop after percutaneous coronary intervention (PCI) have become common recently because of the rapid increase in the use of diagnostic and interventional cardiac catheterization procedures. Most of the lesions are located on the back or upper arm. These ulcers are usually deep and refractory to conventional wound care. Standard treatments should consist of complete resection of all nonviable irradiated tissue and reconstruction with a well-vascularized, non-irradiated soft tissue flap. Thoracodorsal artery perforator (TDAP) flap is a reliable and easily dissected flap which should be an ideal choice of reconstruction of PCI related radiation ulcers.

Methods: Between May 2016 and July 2017, we treated 4 patients with PCI related radiation ulcers. All the patients were male, and their mean age was 58.75 (44-72) years old. They all had complex and prolonged PCI procedure prior to the ulcer occurrence. The mean interval between PCI and ulcer was 4.6 (0.5-14) months. All the patients underwent radical excision and were reconstructed with TDAP flap.

Results: Among these 4 patients, three patients had right upper back lesions and one had right posteriolateral arm lesion. The average defect size after excision was 87.3 (45-130) cm^2. Two TDAP flaps were V-Y advanced flaps, one was a transposition flap and one was a pedicled island flap. All the flaps were totally survival, and the wounds were healed uneventfully.

Conclusion: For radiation ulcers related to PCI, complete resection and immediate reconstruction with flaps can improve the symptoms. TDAP flap can achieve reliable

wound coverage with minimal complications and is an ideal solution for surgical reconstruction of back or upper arm radiation ulcers.

Skin and Soft Tissue Infections in the Injection Drug Users

Presenter: Ke-Chung Chang, MD, Far Eastern Memorial Hospital, New Taipei City, Taiwan
Co-Author: Dun Hao Chang, MD, Plastic and reconstructive surgery, Far Eastern Memorial Hospital, New Taipei City, Taiwan

Introduction: Skin and soft tissue infections (SSTIs) are commonly observed among injection drug users (IDUs). The severity and extent of SSTIs in IDUs are diverse. Some patients have benign and superficial infections and some others have complex and invasive infections. The objective of this study was to retrospectively assess the epidemiologic data of IDUs admitted for SSTIs and investigate the differences between patients with superficial and invasive SSTIs.

Material and Methods: We reviewed the clinical records of IDUs with SSTIs hospitalized in the Far Eastern Memorial Hospital (FEMH) from January 2005 to the end of December 2017. The patients with septic arthritis or implant related infections were excluded. We classified all patients into superficial or invasive infection group, based on clinical, radiological, and surgical findings. The patients' demographics, underlying diseases, infection sites, laboratory and microbiological results, surgical courses, clinical outcomes and complications were collected and analyzed.

Results: Forty-seven IDU patients [36 men and 11 women, mean age, 43.6 (24–67) years] were admitted for SSTIs. There were 16 patients diagnosed with cellulitis, 3 with superficial abscess, 10 with deep abscess, 15 with necrotizing fasciitis and 3 with other necrotizing soft tissue infections. The superficial infection group comprised of 19 patients, whereas the invasive infection group comprised 28 patients. Thirteen patients had type 2 diabetes mellitus (DM) with a higher probability to have invasive infections than superficial infections (39.3% vs. 10.5%, $p = 0.046$). Among the invasive infection group, one patient died and three patients had vascular complications. The patients with invasive infections needed more debridements (2.46 ± 2.43 VS 0.95 ± 1.08 VS, $p = 0.001$), skin grafts, or flaps for wound closure (28.6% VS 5.3%, $p=0.06$) and had longer hospital stay durations (22.8 ± 17.7 VS 12.1 ± 7.2 days, $p=0.016$) than the patients in the superficial infection group.

Conclusion: IDUs with diabetes mellitus showed a higher risk of invasive infections than those without DM. The patients with invasive infection required more debridements and reconstruction procedures and had a higher rate of complications. Thus, early diagnosis and timely surgical intervention can lead to positive outcomes.

Key words: skin infection, soft tissue infection, drug abuser

Abdominoplasty with Unrestricted Liposuction, No Epigastric Flap Elevation, Transverse Plicature and Skin Graft Neoumbilicoplasty (TULUA) – Description of 100 Cases

Presenter: Francisco J. Villegas, MD, Plastic surgery, Clinica San Francisco, Tu, Valle del Cauca, Colombia

In the pursuit of safety and good results in lipoabdominoplasty several modifications have been proposed with the TULUA technique.[1-2] The experience with 100 patients operated between 2005 and 2017 is described.
Operative technique: tumescent liposuction without restrictions in the entire abdomen including the epigastrium, en-bloc dermolipectomy of the hypogastrium above the muscular aponeurosis, amputation of the umbilicus and umbilical ring closure, wide horizontal aponeurotic plication in two planes with nonabsorbable sutures from the umbilicus to the pubis and from one iliac spine to the other, suture by planes and suction drainage, finally neoumbilicoplasty with skin graft in the ideal position is performed.

Results: 97% were women, in 89% there were associated procedures such as mastopexy, gluteoplasty and belt dermolipectomy, the main indications were: umbilical hernia in 16, previous abdominoplasty in 11, postbariatric in 9, other indications were to avoid vertical scar when moderate redundancy of the epigastrium was present, obesity and other indications at the discretion of the author.
There were no fatal cases, nor pulmonary thromboembolism, there was no flap necrosis and any reoperations. Objective scoring of results in 48 was rated excellent, 50 as good and 2 bad. No epigastric bulge was noted. The scar was located 6.3 +/- 1.2 cm from the anterior vulvar commissure, and the umbilicus was placed in an ideal position when measured according to the gold standard proportion in 74%, although there was no graft integration of navel in 14%, the umbilical result was objectively measured as good in all but two cases, 8 seromas were treated by repeated punctures.

Conclusions: TULUA adds the liberal use of liposuction to the abdominoplasty demonstrating safety, which allows the flap to be molded in critical areas such as epigastrium, subcostal margins, and waist. In spite of not dissection of the flap in the epigastrium, transverse plicature corrects in an integral way the laxity of the wall.
Possible advantages: simplification of the abdominoplasty, preservation of more vessels and nerves, less suture line tension, less dead space and fewer seromas, no accumulation of skin and fat in the epigastrium, low scar location, freedom in the selection of the new umbilical position and navel of normal aesthetic appearance.
Disadvantages: does not address the diastasis recti in the epigastrium, the umbilicus can migrate up, especially in secondary cases.

TULUA incorporates several aspects of the historical evolution of abdominoplasty to expand indications, improve results, improve recovery periods and reduce costs and complications. It has widely passed the proof of concept, gaining diffusion as a logic and scientific innovation to add simplicity and safety to the plastic surgery of the abdomen.

References:

1- Villegas F. A Novel Approach to abdominoplasty: TULUA modifications (transverse plication, no undermining, full liposuction, neoumbilicoplasty, and low transverse abdominal scar). Aesthetic Plast Surg 2014; 38(3):511-20
2 - Villegas F. A paradigm shifts for abdominoplasty: transverse hypogastric plication without supraumbilical dissection, unrestricted liposuction, neoumbilicoplasty, and low placement of the scar (TULUA). In: Di Giuseppe A, Shiffman AM, editors. Aesthetic Plastic Surgery of the Abdomen. Springer. 2016: p 171-193

Free Chimeric Designed Radial Forearm Flap with a Partial Brachioradialis Muscle for Mouth Floor Obliteration in Head and Neck Cancer Reconstruction

Presenter: YiChun Chien, MD, SHIN KONG WU HO-SU MEMORIAL HOSPITAL, Taipei, Taiwan

Background: The free radial forearm flap has been a workhorse flap in reconstruction for patients with head and neck cancer for many years. The radial forearm flap has the characteristics of thinness and pliability, which make it a proper choice for reconstruction of intra-oral defect. Leakage has been a troublesome concern when dealing with defects involving the mouth floor with the radial forearm flap due to lack of bulk.

Aim and Objectives: We here present our experience using a chimeric radial forearm flap with the brachioradialis muscle in head and neck cancer reconstruction, aiming to reduce complications related to leakage.

Materials and Methods: Between 2012/12/1 to 2016/11/30, 82 patients underwent reconstructive surgery with a free radial forearm flap. Among these patients, 10 were treated with a chimeric radial forearm flap and 72 patients were treated with a non-chimeric designed radial forearm flap. Among the chimeric flap group, 1 patient with the diagnosis of hypopharyngeal cancer was excluded due to lack of mouth floor defect (the brachioradialis muscle was used as a monitor flap in this case). We reviewed patients' basic data, peri-and post-operative condition, flap survival, and post-operative course of the 9 patients treated with a chimeric radial forearm flap. We also compared the operative time of these 9 patients with those of the remaining 72 patients treated with a non-chimeric designed radial forearm free flap.

Results: In the chimeric flap group, the muscle part of the chimeric flap was used to obliterate a mouth floor defect. Total flap survival occurred in 7 patients, minimal flap edge necrosis in 1 patient, and total flap loss in 1 patient. 8 patients had an uneventful hospital course without any complication related to wound leakage. 1 patient experienced total flap loss due to vessel kinking. In the non-chimeric designed flap group, 7 patients experienced complications related to wound leakage with various extent during hospitalization. The mean operative times for chimeric and non-chimeric designed radial forearm flaps were not significantly different (chimeric: 329.9 mins, non-chimeric: 351.7 mins, P=0.1032). Morbidity of the donor site was limited.

Conclusion: The chimeric radial forearm and brachioradialis muscle flap is a practical and effective technique in head and neck cancer reconstruction with the advantage of reducing complications related to leakage.

A Reliable Soft Tissue Reconstruction Method Using Pedicled Anterolateral Thigh Flaps: From the Lower Abdomen to the Distal Lower Leg

Presenter: YuHeng Li, MD, Division of Plastic Surgery, Department of Surgery, Chi-Mei Medical center, Tainan, Taiwan, Tainan, Taiwan

Background: Soft tissue reconstruction of the lower abdomen, inguinal and perineum region, and the lower limbs is challenging (1,2). The anterolateral thigh (ALT) flap is widely used for soft tissue defect reconstruction due to its reliable anatomy and large soft tissue availability (3-6). The pedicled ALT flap can be applied for adjacent soft tissue defect coverage without vessel anastomosis.

Patients and Methods: Twelve patients who had undergone pedicled ALT flap for soft tissue reconstruction in our hospital from March 2010 to November 2017 were included. Surgical fields ranged from the lower abdomen to the distal lower third of the leg. There were 6 distally based pedicled ALT flaps with the reverse flow for lower limb reconstruction. Four cases occurred in the inguinal area, and one occurred in the scrotum due to Fournier’s gangrene. One patient underwent reconstruction for an abdominal fascia defect.

Results: No surgery-related mortality occurred, and all the flaps survived. The donor sites were primarily closed without post-operative complication. All the patients achieved satisfactory results.

Conclusion: The pedicled anterolateral thigh flap has several advantages as a locoregional flap with minimal complication. It has wide applications for the treatment of soft tissue defects occurring in the lower abdomen to lower the third portion of the leg.

References:

1. Daigeler A, Simidjiiska-Belyaeva M, Drucke D, et al. The versatility of the pedicled vertical rectus abdominis myocutaneous flap in oncologic patients. Langenbecks Arch Surg 2011; 396:1271-1279
2. McCraw JB, Fishman JH, Sharzar LA. The versatile gastrocnemius myocutaneous flap. Plast Reconstr Surg 1978; 62:15Y23
3. Wei FC, Jain V, Celik N, et al. Have we found an ideal soft-tissue flap? An experience with 672 anterolateral thigh flaps. Plast Reconstr Surg 2002;109: 2219-2226.
4. Lee YC, Chiu HY, Shieh SJ. The clinical application of anterolateral thigh flap. Plast Surg Int 2011; 2011:127353.
5. Wong CH, Lin CH, Fu B, et al. Reconstruction of complex abdominal wall defects with free flaps: indications and clinical outcome. Plast Reconstr Surg 2009; 124:500Y509
6. Kimata Y, Uchiyama K, Ebihara S, et al. Anterolateral thigh flap donor-site complications and morbidity. Plast Reconstr Surg 2000; 106:584

Usage of Subcutaneous Guide-Wide and Intra-Lesional Dyes for Radical Excision of Pilonidal Sinus: A Reliable and Adequate Method for Excision and Wound Closure

Presenter: YuHeng Li, MD, Division of Plastic Surgery, Department of Surgery, Chi-Mei Medical center, Tainan, Taiwan, Tainan, Taiwan

Background: Total excision of pilonidal sinus and wound reconstruction is challenging and no ideal therapy has jet been found(1). How to adequately excise the whole tract of pilonidal sinus without removing excessive healthy tissue is important. Various surgical methods have been described for pilonidal sinus, such as phenol application(2), open method, repaired with local flap(3-5), and repaired with fasciocutaneus flap(6). But no single method can solve the problem. We had used a consistent surgical technique to excise the whole tract of pilonidal sinus and closed the wound under tension free in our hospital.

Patients and Methods: We has collected 10 patients who has undergone pilonidal sinus excision and wound reconstruction from March 2013 to November 2017. We used the Nelaton tube for identification of subcutaneous tract and injected the blue dye into the whole tract. When excision was arranged, we could not only excise the whole tract without damage to the sinus wall but also have guideline to avoid removing excessive healthy tissue. After excision, bilateral advance flap was used for wound closured under tension free.

Results: The average follow up time was 24.6 months. No sinus recurrence was found during our follow up. Post-operative care included local wound care, antibiotics treatment, and absolute prone position were applied for 2 weeks. No remarkable post-operative complications were found. All the patients achieved satisfactory results.

Conclusion: The subcutaneous guide-wide and intra-lesional dyes for radical excision of pilonidal sinus and wound reconstruction can reduce the recurrent rate without notable morbidity.

References:

1. Biter LU, BeckGM,Mannaerts GH, et al. The use of negativepressure wound therapy in pilonidal sinus disease: a randomized controlled trial comparing negative-pressure wound therapy versus standard open wound care after surgical excision. Dis Colon Rectum 2014; 57:1406–11
2. Schneider IH, Thaler K, Kockerling F: Treatment of pilonidal sinuses by phenol injections. Int J Colorectal Dis, 1994; 9(4): 200–2
3. Berkem H, Topaloglu S, Ozel H et al: V-Y advancement flap closures for complicated pilonidal sinus disease. Int J Colorectal Dis, 2005; 20(4): 343–48
4. Arumugam PJ, Chandrasekaran TV, Morgan AR et al: The rhomboid flap for pilonidal disease. Colorectal Dis, 2003; 5(3): 218–21
5. Mentes BB, Leventoglu S, Cihan A et al: Modified Limberg transposition flap for sacrococcygeal pilonidal sinus. Surg Today, 2004; 34(5): 419–23
6. Stroosma OC: Gluteal fasciaplasty as a method of primary closure in the treatment of pilonidal sinus. Arch Chir Neerl, 1978; 30(1): 61–64

Single Stage Flexor Tendon Reconstruction with Silastic

Presenter: Ricardo Galan, MD, Cirugia Plastica y Reconstructiva, Universidad Militar Nueva Granada, Central. Bogota, Colombia
Co-Author: Diego Arango, MD, plastic surgery, universidad militar nueva granada, bogota, Colombia, Jhon Fredy Castañeda L, MD. Orthopedist. Hand Surgeon, German Hernandez, MD. Orthopedist Hand Surgeon

Background: Tendon grafts have been described in a two-stage procedure.[1,2] The first stage involves placing the Silastic tendon to form a new tendon sheath. On the second stage takes place the extraction of the Silastic tendon and placing a tendon autograft. [3,4]The idea of using a single procedure arose after a case where the extraction of the implant was declined by the patient (good result, absence of symptoms and great function). The objective of this paper was to evaluate clinical and functional results after the management with a single-stage procedure in flexor tendon after chronic injuries using an active Silastic implant and, analyzing biomechanical behavior of the Silastic implant to establish this treatment as a viable permanent option.

Methods: A descriptive cross-section study was designed. First personal evaluation was done between February and March 2010. A second evaluation with a personal interview between May and July 2017. Follow-up period of more than 10 years with a total of 38 patients included. Univariate and Bivariate Analysis were done. Statistical

significance Determination ($p<0.05$). The tendon was submitted to a series of tests to measure the deformation effort and its rupture load.

Results: A total of 38 patients were included. Average age was 35.4 years. Predominance in males (60.5%), right-handed patients (57.9%). A total of 63.2% had >10-year follow-up period, with an average of 10.8 years. The average follow-up was 8.2 years with a range between 1.2-12.8 years. Greater thumb (31.6%) and index finger (23.7%) involvement. No statistical relation with the final result ($p<0.005$). There was a modification in function in 100% of patients. Postoperative pain was minimal, average score was 1 (Visual Analogue Scale). Four patients required early removal of the graft. These patients required a second procedure with conventional technique and palmaris longus graft with great results. Minor complications were found in 7.9% of the cases. Final evaluation with the DASH scale showed a general average of 3.4.

Conclusions: This is the first Case-Series with this treatment with a follow-up period of >10 years. It's a safe procedure with excellent results in this experience (adequate mobility and Functional recovery). Improvement of 124º in thumbs and 107º other fingers. Mobility Improvement in all cases, with better results in thumbs. In general, is a Safe procedure with few complications. With the advantage of only performing a 1 stage surgery and a faster recovery.

Bibliography

1. Strickland JW. Delayed Treatment of Flexor Tendon Injuries Hand Clin 21 (2005) 219--243.
2. Strickland JW. Flexor Tendon Injuries: I. Foundations of Treatment. J Am Acad Orthop Surg 1995; 3:44-54
3. Hunter JM. Artificial tendons: early development and application. Am J Surg. 1965; 109:325Y338.
4. Hunter JM, Flexor tendon reconstruction in severely damaged hands: a two staged pdroceure using a silicon. reinforced gliding prosthesis prior to tendon grafting. J Bone Joint Surg. 1971;53A:829Y858

Three-Dimensional Analysis of Superficial Lymphatic Vessels in Patients with Lower Extremity Lymphedema Using Photoacoustic Imaging

Presenter: Shiho Watanabe, MD, Department of Plastic and Reconstructive Surgery, Yokohama Municipal Citizen's Hospital, Kanagawa, Japan

Co-Authors: Hiroki Kajita, MD, Department of Plastic and Reconstructive Surgery, Keio University School of Medicine, Tokyo, Japan, Anna Oh, MD, Department of Plastic and Reconstructive Surgery, Tachikawa Hospital, Tokyo, Japan,
Hisashi Sakuma, MD, PhD, Department of Plastic and Reconstructive Surgery, Yokohama Municipal Citizen's Hospital, Kanagawa, Japan, Keisuke Okabe, MD,

PhD, Plastic and Reconstructive Surgery, Keio University School of Medicine, Tokyo, Japan
Noriko Aramaki-Hattori, MD, PhD, Department of Plastic and Reconstructive Surgery, Keio University School of Medicine, Tokyo, Japan, Nobuko Konishi, RPT, Department of Rehabilitation Medicine, Keio University School of Medicine, Tokyo, Japan
Tetsuya Tsuji, MD, PhD, Rehabilitation Medicine, Keio University School of Medicine, Tokyo, Japan, Nobuaki Imanishi, MD, PhD, Department of Anatomy, Keio University School of Medicine, Tokyo, Japan, Moemi Urano, MS, Department of Anatomy, Keio University School of Medicine, Tokyo, Japan, Yoshifumi Takatsume, MD, Department of Anatomy, Keio University School of Medicine, Tokyo, Japan, Hiroyuki Sekiguchi, PhD, Kyoto University, Kyoto, Japan, Yasufumi Asao, PhD, Japan Science and Technology Agency, ImPACT Program, Cabinet Office, Tokyo, Japan, Takayuki Yagi, MS, Japan Science and Technology Agency, ImPACT Program, Cabinet Office, Tokyo, Japan, Sadakazu Aiso, MD, PhD , Department of Anatomy, Keio University School of Medicine, Tokyo, Japan, eKazuo Kishi, MD, PhD , Department of Plastic and Reconstructive Surgery, Keio University School of Medicine, Tokyo, Japan

Purpose: Photoacoustic imaging (PAI) technology can clearly show three-dimensional images of superficial lymphatic vessels and the venous system. This study analyzed the morphological findings of lymphatic vessels in the affected extremities of patients with lymphedema.

Materials and Methods: We used the PAI-05 system with a semi-spherical detector array, which was made by Canon Inc. (Japan), Hitachi, Ltd. (Japan), and Japan Probe Co, Ltd.(Japan). Four patients (1 male, 3 females) with lower extremity lymphedema, including one primary case and three secondary cases, underwent a PAI study. Indocyanine green (ICG), was administered subcutaneously at three sites in the dorsal aspect of the affected foot, and ICG fluorescent lymphography was performed using a near-infrared camera system, before PAI examination. In those patients in whom dermal backflow(DBF) was observed with fluorescent lymphography, lesions were also examined with PAI, if possible. 1), 2)

Results: More lymphatic collecting vessels were observed with PAI than with fluorescent lymphography. In PAI images, each lymphatic vessel in a lymphatic bundle was observed (fig. 1), which was detected as a diffuse line in fluorescent lymphography. PAI also revealed the depth of each vessel. DBF was visualized as dense interconnecting three-dimensional structures of lymphatic vessels comprising dilated precollectors or lymphatic capillaries above and collecting vessels below(fig.2).

Conclusions: PAI showed collecting lymphatic vessels that were not observed with fluorescent lymphography, as well as the three-dimensional structure of DBF. PAI is a promising imaging modality, especially for detection of morphological changes in lymphatic vessels during progression of lymphedema.

Acknowledgement: This work was funded by the ImPACT Program of the Council for Science, Technology, and Innovation (Cabinet Office, Government of Japan).

Reference:

1. Zackrisson S, van de Ven SMWY, Gambhir SS. Light In and Sound Out: Emerging Translational Strategies for Photoacoustic Imaging. Cancer Res. 2014;74(4):979-1004.
2. Forbrich A, Heinmiller A, Zemp RJ. Photoacoustic imaging of lymphatic pumping. J. Biomed. Opt. 2017;22(10), 106003. doi: 10.1117/1.JBO.22.10.106003.

Surgical Simulation with Full Scale 3D Rubber-like Model for Vascularized Fibular Transplantation

Presenter: Yutaka Nakamura, MD, Plastic and Reconstructive Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan
Co-Authors: Yuzuru Kamei, MD, PhD , Plastic and Reconstructive Surgery, Nagoya University, Nagoya, Japan, Keisuke Takanari, MD, PhD , Plastic and Recostructive Surgery, Nagoya Unievrsity, Nagoya, Japan, Masahiro Oda, PhD , Intelligent Science, Nagoya University, Nagoya, Japan, Kensaku Mori, PhD , Intelligent Science, Nagoya University, Nagoya, Japan, Kunihiro Ikuta, MD, PhD , Orthopedics Surgery, Nagoya University, Nagoya, Japan, Takafumi Uchibori, MD, PhD , Plastic and Reconstructive Surgery, Nagoya University, Nagoya, Japan, Eisuke Arai, MD, PhD , Orthopedics Surgery, Nagoya University, Nagoya, Japan

Introduction: Vascularized bone transplantation is challenging in that surgeons have to consider not only the arrangement and fixation of bone for optimal osteosynthesis, but also settings of the vascular pedicle and recipient vessels so as not to harm blood flow to the flap. Several reports exist regarding preoperative simulation with a 3D printed model made of hard material to plan the process and fixation of the bone graft. However, vascular settings is hardly evaluated with this type of model. We have developed a Full-scale 3D Rubber-Like (F3DR) model which is made of rubber like material and enables evaluation of soft tissue and vascular settings together with bone arrangement, and used the model in 2 cases of vascularized fibular transplantation after tibial osteosarcoma resection.

Materials and Methods:

1. F3DR model creation

Digital Imaging and Communications in Medicine (DICOM) of bones and vessels were segmented with an original image processing software, NewVES (Nagoya University, Nagoya, Japan). Then F3DR model of bone and vessel was created with Objet260 Connex2 (Stratasys, Eden Prairie, UN). This model was made of rubber-like polymer with a shore hardness of 27 and bony part (transparent) and vessels (black) were distinguished by its color.

2. Patients

We performed vascularized fibula osteocutaneous flap transfer combined with heat-treated bone graft in 2 patients in which wide resection was performed for proximal tibia osteosarcoma. F3DR model of the tibia, fibula and arteries of lower leg in the resected side and fibula and arteries of the lower leg in the donor site bones and vessels was created and preoperative simulation was performed to confirm settings of bone, vessels and fixation plate.

Results: F3DR model was easy for processing and had moderate flexibility (Figure 1). Both bone and vessels can be easily shaped and manipulated as in the actual operation. The model simulation suggested that retrograde setting of the graft is better in terms of natural vascular passage compared to antegrade setting in both cases (Figure 2). Also, ideal shape, size as well as setting and fixation of fibular graft was confirmed by this model simulation.

Conclusion: Using the F3DR model, setting of both bone and vessels was easily simulated while preserving their positional relationship. Required length of the vessel and shape of fibular graft can be confirmed. It enables the operator and surgical team staff to perform safe and accurate operation by planning and knowing the anatomical arrangement of the tissue preoperatively. This simulation also has great potential for anatomical education and operative training in vascularized bone transplantation.

Effect of the First Epidermal Growth Factor Motif of Coagulation Factor 9 on Capsular Formation Around Silicone Implants

Presenter: Tsutomu Kashimura, PhD, Plastic and Reconstructive Surgery, Nihon University School of Medicine, Tokyo, Japan
Co-Authors: Chiaki Hidai, PhD, Biomedical Science, Nihon University, Tokyo, Japan, Kazutaka Soejima, PhD, Plastic and Reconstructive Surgery, Nihon University, Tokyo, Japan, Yuji Kikuchi, PhD , Plastic and Reconstructive Surgery, Nihon University, Tokyo, Japan, Hiroaki Nakazawa, PhD, Plastic and Reconstructive Surgery, Nihon University, Tokyo, Japan

PURPOSE: Capsular contracture is one of the most serious complications after cosmetic breast augmentation or breast reconstruction. However, there is no effective prophylactic or treatment method for capsular contracture. In recent years, it has been found that coagulation factors have functions other than those related to coagulation activity. We have found that the epidermal growth factor (EGF) derived from coagulation factor 9 (EGF-F9) has an antifibrotic effect, among other functions. The purpose of this study was to investigate whether EGF-F9 can inhibit capsular formation in a rat implant insertion model.

METHODS: EGF-F9 was prepared from cDNA of a mouse F9 deletion mutant and AP-tag 4 vector. This study used 8 male 7-week-old Sprague Dawley rats. A 2-cm incision

was made at 2 places on the back of the rat to create a subcutaneous pocket. A 2 × 2 cm implant made from a smooth type tissue expander was inserted into the pocket. A control group (untreated) (n = 8) and a treated group (n = 8) were prepared. In the control group, 0.1 ml of phosphate buffered saline (PBS) was instilled into one pocket and 50 pM/0.1 ml of EGF-F9 was instilled into the other pocket. In both groups, PBS or EGF-F9 was injected into subcutaneous tissue overlying the implant three times a week. Tissue was collected on day 28 after surgery, and the thickness of the capsule was measured and histologically examined.

RESULTS: The mean thickness of the capsule in the control group and treated group was 95.3±47.8 μm and 48.1±12.8 μm, respectively. The capsule was significantly thinner in the treated group ($p<0.05$). In immunostaining, matrix metalloproteinase 9 (MMP 9) showed increased expression in the treated group and alpha smooth muscle actin (ASMA) showed increased expression in the control group.

CONCLUSIONS: The administration of EGF-F9 inhibited the formation of a capsule around the silicone implant. EGF is involved in the control of MMP expression and differentiation into myofibroblasts. It was suggested that administration of EGF-F9 suppressed the formation of the capsule by increasing local MMP 9 and regulating differentiation into myofibroblasts.

Direct Reprogramming of Human Fibroblasts into Schwann Cells that Facilitate Regeneration of Injured Peripheral Nerve

Presenter: Yohihiro Sowa, PhD, Departments of Plastic and Reconstructive Surgery, Kyoto Prefectural University of Medicine, Kyoto, Japan
Co-Authors: Tsunao Kishida, PhD , Departments of Immunology, Kyoto Prefectural University of Medicine, Graduate School of Medical Sciences, Kyoto, Japan, Daiki Morita, MD , Kyoto Prefectural University of Medicine, Graduate School of Medical Sciences, Kyoto, Japan, Takuya Kodama, MD , Kyoto Prefectural University of Medicine, Graduate School of Medical Sciences, Kyoto, Japan, .Toshiaki Numajiri, PhD , Departments of Plastic and Reconstructive Surgery, Kyoto Prefectural University of Medicine, Graduate School of Medical Sciences, Kyoto, Japan, Osamu Mazda, PhD , Departments of Immunology, Kyoto Prefectural University of Medicine, Graduate School of Medical Sciences, Kyoto, Japan

Purpose: Schwann cells (SCs) play pivotal roles in the maintenance and regeneration of the peripheral nervous system. Although transplantation of SCs enhances repair of experimentally damaged peripheral and central nerve tissues, it is difficult to prepare a sufficient number of functional SCs for transplantation therapy without causing adverse events for the donor.

Methods: Here, we generated functional SCs by somatic cell reprogramming procedures and demonstrated their capability to promote peripheral nerve regeneration. Normal human fibroblasts were phenotypically converted into SCs by transducing SOX10 and Krox20genes followed by culturing for 10 days resulting in approximately 43% directly converted Schwann cells (dSCs).

Results: The dSCs expressed SC-specific proteins, secreted neurotrophic factors, and induced neuronal cells to extend neurites. The dSCs also displayed myelin-forming capability both in vitro and in vivo. Moreover, transplantation of the dSCs into the transected sciatic nerve in mice resulted in significantly accelerated regeneration of the nerve and in improved motor function at a level comparable to that with transplantation of the SCs obtained from a peripheral nerve.

Discussion: Cell reprogramming technologies have great potential to provide a variety of tissue-specific cells for transplantation without causing severe adverse events to the donors from whom fibroblasts can be used for autografts or allografts.

Conclusion: The dSCs induced by our procedure may be applicable for novel regeneration therapy for not only peripheral nerve injury but also for central nerve damage and for neurodegenerative disorders related to SC dysfunction.

Current Status and Trends in Breast Reconstruction in Argentina

Presenter: Horacio F. Mayer, MD, FACS, Cirugia Plastica, Hospital Italiano de Buenos Aires, Ciudad de Buenos Aires, Argentina
Co-Author: Ignacio T Piedra Buena, MD, Cirugia Plastica, Hospital Italiano de Buenos Aires, Ciudad Autonoma de Buenos Aires, Argentina

Over the last decades, there has been an exponential increase in implant-based breast reconstruction (BR) in the US. The aim of this study is to determine what are the current trends in BR in Argentina.
We conducted an anonymous survey among Plastic Surgeons in our country consisting of 11 multiple-choice questions sent by e-mail to each participant. Questionnaire made emphasis on preferred reconstructive timing, technique and work setting(Table 1). A statistical analysis was performed using Student t-test. A p value of <0.05 was set for statistical significance.

From a total of 725 surgeons invited to participate, 222 confirmed to perform BR surgeries on their regular practice and participated in the survey. Most of them performed less than 25 breast reconstructions per year. Seventy one percent of them work in a private non-academic setting($p<0.05$), while those who execute between 75-100 or >100 BR surgeries per-year work in an academic either public or private setting.

Most respondents(79.3%) reported performing implant-based reconstructions as the most frequent technique. Autologous reconstruction was performed considerably more often in public hospitals. Pedicled latissimus dorsi flap was reported as the most commonly performed autologous breast reconstruction technique, followed in frequency by pedicled TRAM flap. Just 5.95% of the surgeons reported performing DIEP flap as their preferred autologous reconstruction technique. When asked which was the most common type of flap performed during autologous breast reconstruction, most surgeons responded that they only performed pedicled flaps.

Delayed BR was the most common scenario reported by the participants. Immediate implant-based reconstruction was reported to be the dominant set-up in 26% of the reconstructions while immediate autologous BR was reported in 6.76% of them. Nearly 90% of the survey respondents use lipofilling as a complement to implant-based BR. Only 11.5% of the surgeons performing prosthetic reconstructions use a mesh during the reconstruction, with polypropylene most commonly used than polyglactin. In conclusion we can observe a clear predominance of implant-based reconstruction. This tendency seems to have several explanations. First of all there has been a rise in the detection of early stage breast cancer in young women, many of whom don't have enough adipose tissue deposits to be candidates for an autologous BR. Secondly, many women prefer to avoid long recovery and morbidity of the donor site required for autologous reconstruction, preferring to rapidly return to their daily activities. Moreover, the rise in genetic testing to detect BRCA mutations has raised the implementation of bilateral risk-reducing mastectomies and patients demand on implant based reconstruction. Cultural reasons may also explain this phenomenon; in Argentina many middle-aged women with ptotic breast prefer implant-based reconstruction to achieve a firmer and fuller breast.

The availability of operating rooms is another critical factor in preferring implant-based over autologous BR that usually involves a longer surgery.

The small number of microsurgical reconstructions may be explained by the lack of microsurgery training programs in Argentina and Latin America. On the other hand the need of expensive surgical instruments, like microscopes, hinders the application of these reconstructive resources in our country.

A Unified Protocol for Whole Lymphatic Imaging of the Lower Extremities Based on the Classification of Lymphatic Pathways and Their Origins: A Fresh Multi-Cadaver Study with Indocyanine Green Fluorescence Lymphography

Presenter: Akira Shinaoka, MD, PhD, Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan
Co-Authors: Seijiro Koshimune, MD , Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan, Kiyoshi Yamada, MD, PhD , Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan, Kanae Kumagishi, Ph.D , Human

Morphology, Okayama University, Okayama, Japan, Hiroo Suami, MD, PhD , Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia, Aiji Ohtsuka, MD, PhD , Okayama University, Okayama, Japan, Yoshihiro Kimata, MD, PhD , Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan

Purpose: The purpose of this study is to reveal anatomical information of lymphatics in lower extremity using fresh human cadavers with indocyanine green (ICG) fluorescence lymphography (Figure 1: Shinaoka, et al, 2018, PRS), especially classification of lymphatic groups and origins of each group, and finally to establish protocol of injection sites in lymphography.

Material and methods: One hundred lower extremities from fifty-three fresh human cadavers were used for this study. We injected indocyanine green fluorescence (ICG) solution subcutaneously at totally 19 points on border line between dorsum and planta. Injection points were designed according to anatomical landmarks of foot. Immediately after the ICG injection, gentle hand massage was applied on injection points. Fluorescent images were obtained using a near infrared ray (NIR) camera system.

Results: Lymphatic system in lower extremity were classified to the four lymphatic groups according to anatomical features (Figure 2); anteromedial (blue), anterolateral(green), posterolateral(red), and posteromedial group (purple). Anteromedial, anterolateral, and posteromedial groups accompany with trunk and branch of great saphenous vein and posterolateral route accompany with small saphenous vein. Mapping of origins of these four groups was made and show the points which can selectivity visualize each group.

Conclusion: We investigated the anatomy of lymphatics in the lower extremity using 100 cadaveric lower extremities and classified the lymphatic anatomy into four groups. We elucidated correlation between each group and its original sites in the foot. According to these anatomical findings, the refined new protocol was proposed including four proper injection sites for comprehensive assessment of the lymphatic system in the lower extremity in clinical settings.

The Effect of Baby-Sitter Procedure for Facial Nerve Paralysis in Rat

Presenter: Kazuki Hashimoto, MD, Plastic & Reconstructive Surgery, Tokyo Women's Medical University, Tokyo, Japan

Purpose: In order to prevent atrophy of facial muscles, the “baby-sitter” procedure, which is a reconstruction technique for facial nerve complete paralysis, first the affected facial nerve to the same side hypoglossal nerve end to side neurorrhaphy or the like, the affected facial nerve to the nerve re-dominate the facial muscle, It is a method to change the movement source to the healthy facial nerve by using Cross-nerve graft in

the beginning. Despite several reports of good clinical results of this procedure, histological and physiological demonstration using animal experiments has not been done yet. This study tried to establish a rat model of “baby-sitter” procedure for facial nerve complete paralysis.

Method: The facial nerve trunk of 8-week-old Lewis rats was ligated and detached to prepare a facial nerve complete paralysis model. The affected side marginal mandibular branch was sutured end to side hypoglossal nerve. And Cross-nerve graft from healthy-side was transferred to affected side. 5 weeks later, Cross-nerve graft was sutured marginal mandibular branch end to end (Baby-sitter group). After 13 weeks from the first operation, physiological function evaluation was performed using retrograde tracer, induced electromyogram (CMAP), and mimic muscle and facial nerve branch were collected, and a histologic comparison study with intact group and non treatment group was conducted went.

Result: The staining of facial nucleus by retrograde tracer proved re-innervation of affected facial muscle by babysitter method. In CMAP, Babysitter group was also significantly higher than Amplitude, Duration, and Latency compared to non - treatment group. In the histological examination, the number of myelinated fibers, axon diameter and myelin sheath thickness were significantly higher in the Intact group than in the Baby-sitter group.

Discussion: In this study, the “baby-sitter” procedure for rat facial nerve palsy was established. Compared to the non-treated group histologically and physiologically, the Baby-sitter group could confirm the effect of shortening the denervation period using the affected hypoglossal nerve prevention effect of mimic muscle atrophy.

Maxillary Reconstruction with Iliac Crest Free Flap, Using Vascular Loops and Intraoral Anastomosis

Presenter: Luis Eduardo Bermudez, MD, FACS, Plastic Surgery / Microsurgery, Military Hospital, Hospital San Ignacio, Fundacion Santafe de Bogota, Clinica Rivas, Bogota, Colombia

According to the principle of replacing “like with like”, our preferred choice for reconstruction for complex upper palatal-maxillary defects is the iliac crest free flap. This flap provides an ideal shape, thickness and vertical high for Osseo-Integrated implant-based rehabilitation. Furthermore, the internal oblique muscle included in the flap gives support to the cheek and nose and minimizes dead space. Fibula flap is used for this kind of recontruction by most of microsurgeons because it is easier to perform, however the shape of the transplanted bone is far from ideal.

Iliac crest free flap has a relatively short pedicle that makes its positioning challenging. This is even more difficult when the pedicle has to be placed posteriorly. To overcome these challenges, we create a temporary arteriovenous loop using a venous graft that is anastomosed to de facial vessels (in most of the cases). This loop is then passed thought the cheek and its distal end is placed in the posterior vestibule. Finally this loop is divided and the distal end is anastomosed with iliac crest vessels.
Materials and Methods: We present a series of seven cases of maxillary reconstruction with iliac crest free flap, using vein grafts and intraoral anastomosis.

Results: Adequate oral diet was achieved by all of the patients after 3 weeks postoperative. The average follow-up period was 13 months. There was no evidence of arterial or venous thrombosis. No major complications were encountered.
Conclusion: Although Iliac crest free flap is an excellent flap choice for complex maxillary reconstruction, this flap has a small pedicle, though a tension-free anastomosis is difficult to perform, especially when flap vessels are placed towards the posterior
vestibule. Using vascular loops and intraoral anastomosis represent useful strategies to overcome these challenges and to achieve adequate results with consistent flap survival.

Effect of Early Mobilization Program on Postoperative Complications after Head and Neck Reconstruction

Presenter: Minoru Sakuraba, MD, PhD, Plastic and Reconstructive Surgery, Iwate Medical University, Morioka, Japan
Co-Authors: Takayuki Honda, MD, PhD, Plastic and Reconstructive Surgery, Iwate Medical University, Morioka, Japan, Aya Goto, MD, Plastic and Reconstrucitve Surgery, Iwate Medical University, Morioka, Japan, Shuchi Azuma, MD, Plastic and Reconstructive Surgery, Iwate Medical University, Morioka, Japan, Kiyoto Shiga, MD, PhD, Head and Neck Surgery, Iwate Medical University, Morioka, Japan

Postoperative bed rest is prescribed to prevent vascular compromise in some patients who undergo free flap head and neck reconstruction. However, the effectiveness of bed rest for the prevention of vascular compromise is controversial, and longer rest increases the risk of postoperative delirium and pneumonia. Recently, we instituted an early mobilization program in the rehabilitation unit to shorten the hospital stay and reduce systemic complications. This study retrospectively evaluated the effects of an early mobilization program.

This study enrolled 44 patients who underwent free flap head and neck reconstruction between January 2016 and August 2017, and included 32 men and 12 women, with an average age of 65 years. Patients were divided into two groups, to compare the results before and after introduction of the early mobilization program. Postoperative

complications, time to tracheal stoma closure, time to resume oral feeding, and postoperative hospital stay were compared between the two groups.

Thirty-one patients were evaluated before the early mobilization program and 13 were evaluated after the program. Patient background, postoperative complication rate, time to tracheal stoma closure, and time to resume oral feeding were not significantly different between the two groups. However, the average postoperative hospital stay was significantly shorter in patients enrolled in the early mobilization program (50 vs. 37 days, p=0.043).

Postoperative local complications were not increased after the introduction of the early mobilization program. The development of postoperative systemic complications was not affected by the program. However, patients who were enrolled in the early mobilization program had a shorter postoperative hospital stay.

Foot Reconstruction with the Superficial Circumflex Iliac Artery Perforator Flap Under Local Anesthesia

Presenter: Kenji Hayashida, MD, PhD, Plastic and Reconstructive Surgery, Faculty of Medicine, Shimane University, Izumo, Japan
Co-Author: Sho Yamakawa, MD, Plastic and Reconstructive Surgery, Faculty of Medicine, Shimane University, Izumo, Japan, Hiroto Saijo, MD, Graduate School of Biomedical Sciences, Nagasaki University, Nagaasaki, Japan, Masaki Fujioka, MD, PhD, Plastic and Reconstructive Surgery, National Nagasaki Mecical Center, Ohmura, Japan

Background: The superficial circumflex iliac artery perforator (SCIP) free flap is a popular method used in foot reconstruction. Although the SCIP flap has a relatively short pedicle and does not require intramuscular dissection, general anesthesia is largely preferred for SCIP flap reconstruction. However, with general anesthesia, there are risks depending on the patient's age and general condition, including preexisting health problems. On the other hand, local anesthesia and peripheral nerve block are safe and effective methods to perform surgery on the extremities. In this report, we present the use of the free SCIP flap for skin and soft tissue reconstruction of the foot under local anesthesia for patients unable to receive general anesthesia and local tissue coverage.

Methods: Between January 2015 and December 2017, 5 (1 female, 4 males) patients with tissue defects on their feet were treated with SCIP flaps under local anesthesia. Patients with chronic diseases, such as asthma, were included in this study and actively wished for this specific procedure with knowledge of the possible risks and complications. The average age was 41.4 years (29 to 61). The causes of injury were trauma (3 patients) and diabetic foot infection (2 patients). Defect measurements

ranged from 4 x 5 cm to 8 x 9 cm. Fifteen mL of 0.5% bupivacaine was injected for ankle block under ultrasound guidance. SCIP flaps were harvested after injecting 10 to 15 mL of 1% lidocaine combined with epinephrine around the flap incisions. A total of 1.0 mL of lidocaine was used when additional anesthetic was needed. Preparation of the recipient site and the flap dissections were performed under 3.0 x loupe magnification. The flap artery and dorsalis pedis artery were anastomosed end-to-end under a microscope. The foot function index (FFI) was used to evaluate the postoperative functional outcomes.

Results: Flap sizes varied from 6 x 6 to 8 x 10 cm. The mean operative time was 4 hours 8 minutes. Approximately 38.6 mL of local anesthetic agent was used for each patient. Intraoperative vessel spasm did not occur. All flaps survived and fully took without complications, except in 1 patient who presented partial necrosis. In addition, no complications related to the use of local anesthesia developed during the operation or postoperatively. All patients were satisfied with the esthetic appearance. The average total FFI score after operation indicated good functional results.

Conclusions: With proper local anesthesia, successful foot reconstruction with a free SCIP flap was possible. The advantages of this method are the following: (1) a safe operation; (2) no complications from anesthesia; (3) no sedative or tranquilizing agent is needed; (4) short vessels of the SCIP flap allow for less extensive dissection and shortened operative time. This method can be considered a sufficient option for foot reconstruction for patients unable to receive general anesthesia.

Differences in Epigenetics and in Osteogenic Potential between Two Types of Cells Harvested from Subcutaneous Fat Tissue: Adipose-Derived Stem Cells (ASCs) and Ceiling Culture-Derived Preadiposytes (ccdPAs)

Presenter: Yoshitaka Kubota, PhD, Department of Plastic Surgery, Chiba University, Chiba, Japan
Co-Authors: Yoshitaro Sasahara, PhD , Department of Plastic Surgery, Chiba University, Chiba, Japan, Kentaro Kosaka, PhD , Plastic Surgery, Chiba University, Chiba, Kenya, Naoki Adachi, PhD , General Surgery, National Organization Hospita Mito Medical Center, Mito, Japan, Yoshihisa Yamaji, PhD , Department of Plastic Surgery, Chiba University, Chiba, Japan, Shinsuke Akita, PhD , Department of Plastic Surgery, Chiba University, Chiba, Japan, Masayuki Kuroda, PhD , Center for Advanced Medicine, Chiba Univeristy, Chiba, Japan, Hideaki Bujo, PhD , Research and Development, Toho University, Sakura, Japan, Nobuyuki Mitsukawa, PhD , Department of Plastic Surgery, Chiba University, Chiba, Japan

Background: Cells that can be harvested from subcutaneous tissues are possible candidates for use in regenerative medicine because of the safety of harvesting and the abundance of donor tissues. Two different cell types can be harvested from subcutaneous adipose tissue following collagenase treatment and fractionation by centrifugation. The first population, found in

the dense fraction, contains adipose-derived stem cells (ASCs). The other population is termed “ceiling culture-derived preadipocytes” (ccdPAs), which are cultured from the low density fraction by ceiling culture methods first reported by Sugihara et al..

Both ASCs and ccdPAs have potentials for multi-lineage differentiation. Recently, it was reported that human ceiling culture-derived cells have a higher osteogenic potential than ASCs. However, the underlying physiologic basis that determines the differences between ASCs and ccdPAs is unknown.

Epigenetics play a key role in cell differentiation. DNA methylation of CpG sites is one such type of epigenetic modification. CpG methylation in the promoter has a strong effect on silencing gene transcription. Histone modification is another type of epigenetic control. Trimethylation of histone H3 at lysine 4 (H3K4me3) within the promoter correlates with activation of gene expressions. However, little is known about the relationship between cellular phenotypes and epigenetic modifications in ASCs and ccdPAs.

Purpose: Purpose of this study was to clarify the osteogenic potential and underlying epigenetic status of ASCs and ccdPAs.

Materials and Methods: ASCs and ccdPAs were primarily cultured from abdominal subcutaneous fat tissues of metabolically healthy four lean females. After seven weeks of culture, cellular responses to osteogenic differentiation media were examined. To evaluate the osteogenic potentials of undifferentiated ASCs and ccdPAs, two types of epigenetic assessments were performed using next generation sequencing (NGS). One was DNA methylation assays with the 450K BeadChip and the other utilized chromatin immunoprecipitation assays (ChiP-Seq) for H3K4me3.

Results: Even after 7 weeks of culture, ccdPAs showed higher osteogeic differentiation than ASCs, with higher RUNX2 expression, BGLAP (osteocalcin) secretion, and alkaline phosphatase stain (ALP) stain. Focusing on the promoters of two osteogenic master regulator genes (RUNX2 P1 and RUNX2 P2), we found that CpG methylation was higher in ASCs than in ccdPAs. In RUNX2 P2, H3K4me3 levels were higher in ccdPAs than in ASCs. Those results indicated that ccdPAs were more likely to transcribe their RUNX2 genes than were ASCs. Other osteogenic related genes (SP7, ATF4 and BGLAP) also showed differences in CpG methylation or H3K4me3 that were consistent with cellular functional differences.

Conclusion: Our analyses coupled with NGS showed that ASCs and ccdPAs differed in DNA methylation and H3K4me3 levels in osteogenesis-related genes. The underlying epigenetic differences between ASCs and ccdPAs were consistent with the cellular functional differences. Both ASCs and ccdPAs are important cells in regenerative medicine. Plastic surgeons using cells harvested from subcutaneous fat tissue must characterize ASCs and ccdPAs at a fundamental level for their reliable application in regenerative medicine. Our results enhance our understanding of these cell populations and will facilitate further application of ASCs and ccdPAs in regenerative medicine.

The New Fabric for Sling Method in Expander-Implant Immediate Breast Reconstruction

Presenter: Satoko Watanabe, MD, PhD, Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan
Co-Author: Yoshihiro Kimata, MD, PhD, Plastic and Reconstructive Surgery, Okayama University, Okayama, Japan

Immediate breast reconstruction based on tissue expander (TE) and implant has been popular method and the most used reconstruction procedure. To reduce the risk of implant exposure due to poor skin perfusion following mastectomy, implant is inserted beneath pectoralis major muscle, covering especially upper pole of TE at first stage. Currently, acellular dermal matrix(ADM) or some artificial material sheet have been used in implant-based breast reconstruction, which cover lower lateral pole of TE to create larger submuscular pocket and natural breast shape.

The advantage synthetic biomaterials compared with ADM is no limits of supply and easily available and its cost is lower than ADM. Some reports about sling method using synthetic biomaterial sheet suggest its safety and cost effectiveness, but there are few studies with high evidence level. We focused on the newbioabsorbable polyglicolic acid (PGA) felt developed as a scaffold on regenerative medicine. In recent years, this material has also been used to reinforce on surgical suture stitch or prevent air leakage in thoracic surgery. In this study, we used this material for immediate breast reconstruction with TE using sling method. It differs from other biomaterials that can be expected to have superior properties as tissue regeneration with sufficient strength up to growth of soft tissue into the sheet. We report a prospective study protocol to assess the safety and usefulness of this new PGA felt for immediate breast reconstruction based on TE.

Patient Satisfaction after Blepharoptosis Surgery

Presenter: Daisuke Sato, MD, Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan
Co-Authors: Hirotaka Suga, MD , Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan, Mine Ozaki, MD, Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan, Keigo Narita, MD, Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan, Tomohiro Shiraishi, MD , Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan, Kiyonori Harii, MD , Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan, Akihiko Takushima, MD, Plastic Surgery, Kyorin University School of Medicine, Mitaka-shi, Japan

BACKGROUND: Levator aponeurosis surgery is a widely used technique for the treatment of involutional blepharoptosis. However, few studies have analyzed patient satisfaction after this surgical treatment.

METHODS: We retrospectively reviewed 448 patients who underwent levator aponeurosis surgery between January 2010 and December 2016 for bilateral involutional blepharoptosis at Kyorin University Hospital, Tokyo. We analyzed the patient satisfaction by a postal questionnaire with a five-point Likert scale. The reasons of the satisfaction were also asked.

RESULTS: The response rate of the questionnaires was 57.8% (259/448 patients). We reviewed the 259 patients (194 females and 65 males) aged 66.5 - 12.6 years. 92 patients (35.5%) scored 5 (very satisfied), 103 patients (39.8%) scored 4 (satisfied), 9 patients (3.5%) scored 3 (neutral), 44 patients (17.0%) scored 2 (dissatisfied), and 11 patients (4.2%) scored 1 (very dissatisfied). Patient with severe ptosis, defined as the marginal reflex distance < 0 mm, showed higher satisfaction score (4.13) than non-severe patients (3.71) ($p = 0.017$). Patients without reoperation showed higher satisfaction score (3.97) than those with reoperation (3.51) ($p = 0.006$). There were no significant differences among age, sex, and surgeons. Cosmetic reason' such as asymmetry, was the most common reason (67.3%) for dissatisfaction, followed by insufficient improvement of ptosis' (49.1%).

CONCLUSION: In involutional blepharoptosis, patient satisfaction was affected by preoperative severity of ptosis and reoperation. Not only good functional result but also good cosmetic result is required for patient satisfaction in blepharoptosis surgery.

Analysis of Scars and Keloids Using a Focused Ion Beam/Scanning Electron Microscope- Differentiation between Hypertrophic Scars and Keloids

Presenter: Hisashi Migita, MD, Plastic & Reconstructive Surgery and Maxillofacial Surgery, Kurume University School of Medicine, Fukuoka, Japan

Background: Histological differentiation between hypertrophic scars and keloids has been considered difficult until now. In this study, we analyzed the three-dimensional structure of hypertrophic scars and keloid cells using a focused ion beam/scanning electron microscope (FIB/SEM), distinguishing them by clarifying the differences in cytoarchitecture in three dimensions.

Methods: The subjects included five patients with normal skin, five with mature scars, five with hypertrophic scars, and five with keloids. In each case, three sites were observed by FIB/SEM, giving a number of observed sites of $3 \times 5 = 15$ sites per tissue, a total of 60 sites. We then observed if there was any contact between fibroblasts and macrophages along with the degree of contact (planar or point), and examined whether

or not there was a significant difference between the four tissues using Fisher's exact test.

Results: In normal skin, contact between fibroblasts and macrophages was observed at all 15 observation sites, and the degree of contact for all was "planar contact" (100%). In mature scars, there was contact at 13 of 15 sites (87%), including 12 sites with "planar contact" (80%), 1 site with "point contact" (7%), and 2 sites with "no contact" (13%). Regarding hypertrophic scars, there was contact at 12 of 15 sites (80%), including 3 sites with "planar contacts" (20%) and 9 sites with "point contact" (60%), and 2 sites with "no contact" (20%). In keloids, there was contact at 2 of 15 sites (15%), including 1 site with "planar contact" (7.5%), 1 site with "point contact" (7.5%), and 13 sites with "no contact" (85%). Regarding whether or not there was any contact between fibroblasts and macrophages, while no significant difference was found between the three types of tissues, including normal skin, mature scars, and hypertrophic scars, there was a significant difference between the three types of tissues and keloids. Regarding the degree of contact ("planar contact" and "point contact") of cells in these three types of tissues determined to be in contact, while no significant difference was found between normal skin and mature scars, there was a significant difference between these two types of tissues and hypertrophic scars.

Conclusion: The contact between fibroblasts and macrophages in normal skin and mature scars is "planar contact," suggesting that macrophages are able to sufficiently control the action and proliferation of fibroblasts. On the other hand, in hypertrophic scars, the contact becomes "point contact," making control unstable, while in keloids, macrophages are completely separated from the fibroblasts, with the proliferation thereof expected to be in an uncontrollable state. Therefore, keloids were suggested to be a disease in which control by macrophages is ineffective, with fibroblasts undergoing neoplastic proliferation on their own. FIB/SEM can be a useful tool for differentiating between hypertrophic scars and keloids in the future, which is considered to be an important hint in the development of therapies therefor.

To Distract or Not to Distract for Frontorbital Advancement in Craniosynostosis

Presenter: Yoshiaki Sakamoto, MD, PhD, Plastic and Reconstructive Surgery, Keio University School of Medicine, Tokyo, Japan

Background: Fronto-orbital advancement (FOA) is the standard procedure for craniosynostosis. One of the disadvantages of FOA is bony gap behind the advanced segments, especially when FOA is performed in older patients. For midface advancement including Le Fort III and Monobloc advancement, the distraction osteogenesis is more used in routine clinical practice. Recently, posterior calvarial vault expansion using distraction osteogenesis is also performed. However, to the best of our knowledge, FOA by distraction osteogenesis is not rarely performed except for Asian

countries. It seems that FOA by distraction osteogenesis is not obtained its consensus and indications. In this study, we evaluated the postoperative bone formation on the gap of the cranium retrospectively, and investigated the usefulness and indications for FOA by distraction osteogenesis.

Method: This study was carried out in patients with nonsyndromic craniosynostosis who underwent a FOA with or without distraction osteogenesis between 2010 and 2015. Normally FOA was not indicate for scaphocephaly, so scaphocephaly was excluded in this study. Under 2 years old, conventional FOA was performed. Over 2 years, FOA by distraction osteogenesis was performed. Computed tomography scans were obtained immediately after the operation and 1 year post-surgery, the reossification area was evaluated from the bone defect of the cranium. The bone defect of the cranium was measured by DICOM manager.

Results: 31 patients were included in this study. The cases under 1 years who performed without distraction obtained approximately complete reossification. However, the reossification in cases operated over 1 years were significantly lower reossification in patients under 1 years ($p<0.01$). In contrast, in cases operated over 2 years who performed FOA by distraction obtained more approximately reossification.

Conclusions: From the results who performed conventional FOA, operative age is one of the factors for influence the reossification. Previous literatures also described that higher age of the patient at surgery is associated with incomplete reossification. However, despite the operative age is older, in patients who performed FOA by distraction had more complete reossification. These results supported that FOA by distraction osteogenesis is recommended in elder patients. Of course, for younger patients under 1 years old, the conventional FOA is much suitable to consider about the disadvantages of distraction osteogenesis such as removing distractors and long-term hospitalization. One of the reason that the FOA by distraction osteogenesis is commonly performed in our country is the delay of medical reference from pediatrician. This is suggested that enlightenment for pediatricians is necessary to perform the conventional FOA in early age.

The Effect of Nerve Intervention in Spontaneous Activities and Muscle Fiber Type

Presenter: Jun Karibe, MD, Plastic Surgery, Yamanashi University, Cyuo, Japan
Co-Authors: Kazuki Ueda, PhD, Plastic Surgery, Jusendo Hospital, Fukushima, Japan

Background: Following certain types of nerve injury, denervation potential is one of the types of spontaneous activities recorded from the denervated muscle. Fibrillation potentials (Fib. P) and positive sharp waves (PSW) are the typical potentials that are thought to disappear following nerve recovery.
Histological examination revealed changes in response to surgical intervention and correlated with denervation status.

Methods: We examined whether the extent of nerve damage could be estimated using four models of femoral-nerve damaged rats (cut, half-cut, crush, cut-and-suture models), and analyzing spontaneous potentials. The number of firings of the potential and the waveform were analyzed. With respect to waveforms, in addition to Fib.P and PSW, initial negative Fib.P (waveform of inverted Fib.P, first phase negative, and second phase positive are assumed to be reverse Fib.P), three-phase waves, multiphase waves (more than four-phase), and giant potentials (amplitude over 200 μV regardless of waveform) were classified.
In addition, ATPase muscle-fiber staining was used to indicate denervation status and muscle-type grouping. ATPase-stained muscle fibers were classified into muscle types using Brooke's method. As a quantitative tissue evaluation, a microscopic photograph (magnification 100×) at the central part of each specimen was prepared, and the number of fibers of each type in the range of 400 × 400 μm was measured.

Results: In all means of surgical intervention, the frequency of firing peaked on the third day every postoperatively, and showed a decreasing trend thereafter. In the cut group, the firing frequency tended to slow with time, and ignition was observed even at eight weeks. Total firing potentials were graphed for each individual pattern Denervation potentials such as Fib. P, reversed-Fib. P, and PSW peaked on the third day following injury, and disappeared in the eighth week following injury in all groups except the cut group. On the contrary, if these symptoms had persisted for the duration of the eight weeks, it might have indicated that a dominant nerve was damaged.
In the histological examination, the stainability declined with time in the cut group, and in other groups also changed according to the surgical intervention(Figure 2). In the cut group, type Ⅱc was seen from the first week, and increased markedly up to the eighth week. Type I significantly increased in the cut and suture group from the fourth to the eighth weeks, and type I fiber presence also increased slightly.Type Ⅱc appeared at week four and decreased with the increase of type Ⅰ and Ⅱa. It was thought that reinnervation occurred due to nerve regeneration by suturing, and muscle-type grouping occurred.

Conclusion: Spontaneous activities in damaged nerves reflect the denervation status to some extent. Histological studies indicated that the degree of stainability with ATPase staining demonstrated denervation status quite well. Also,Muscle type grouping could be seen from the denervated muscle.Clinically, there is limited research focusing on spontaneous activities and muscle-type grouping in nerve-muscle grafting or nerve transplant surgery. It may useful to consider the fiber type proportion of donor musle used in nerve-muscle grafting to reduce the reinnervation time.

The Dynamic-Lymphaticovenular Anastomosis Method for Breast Cancer Treatment-Related Lymphedema: Creation of Functional Lymphaticovenular Anastomoses with Use of Preoperative Dynamic Ultrasonography

Presenter: Yukio Seki, MD, Plastic and Reconstructive Surgery, St. Marianna University School of Medicine, Kanagawa, Japan

Background: Lymphaticovenular anastomosis (LVA) is generally effective for breast cancer treatment-related upper extremity lymphedema (UEL).[1] Clinical improvement is, however, limited by the degree of sclerosis of the lymphatic vessels. Lymphatic vessels with degenerated smooth muscle are inadequate in propelling lymph into the anastomosed vein.[2-4] The author developed a reliable method, the dynamic-lymphaticovenular anastomosis (dynamic-LVA) method for detecting the incision points by preoperative dynamic ultrasonography to utilize even sclerotic lymphatic vessels, in which patient's natural hand movements theoretically propel lymphatic fluid to the site of anastomosed vein.

Methods: Thirty patients with breast cancer treatment-related lymphedema treated by 3 incisions at the forearm for creating lymphaticovenular anastomoses were assessed [5]: 15 in whom the dynamic-LVA method were used and 15 in whom the conventional method was used. Intraoperative status of lymphatic vessels and postoperative lymphedematous volume reduction were compared.

Results: Placement of incisions at a total of 90 forearm sites (3 per patient) yielded creation of 90 LVAs (32 in "linear ICG lymphography pattern incisions" and 58 in "stardust pattern incisions." Sclerotic lymphatic vessels were encountered at greater frequency in "linear pattern incisions" in the dynamic-LVA group than in the conventional LVA group (7.1% vs. 38.9%, P = 0.030). Diameters of the lymphatic vessels did not differ significantly between the conventional LVA group and dynamic LVA group (0.43 ± 0.25 mm vs. 0.47 ± 0.14 mm, respectively; P = 0.332) or in the prevalence of dynamic flow of lymph to veins without venous reflux (64.4% vs. 73.3%, respectively; P = 0.362). Postoperative volume reduction was significantly greater in the dynamic-LVA group than in the conventional LVA group; the UEL index at 1 month was 8.12 ± 3.06 vs. 3.74 ± 5.82, respectively (P = 0.018) and at 6 months was 8.74 ± 3.58 vs. 2.62 ± 10.39, respectively (P = 0.046).

Conclusions: Dynamic-LVA is clinically beneficial because the imaging guides decisions over where the incisions should be placed so that a patient's natural hand motions can be utilized to propel lymph into the anastomosis despite the presence of sclerotic lymphatic vessels. It is also beneficial because even early improvements are obtained.

References:

1. Chang DW, Masia J, Garza R 3rd, Skoracki R, Neligan PC. Lymphedema: surgical and medical therapy. Plast Reconstr Surg. 2016;138:209S–218S.
2. Koshima I, Kawada S, Moriguchi T, Kajiwara Y. Ultrastructural observations of lymphatic vessels in lymphedema in human extremities. Plast Reconstr Surg. 1996;97:397–405; discussion 406–407.

3. Mihara M, Hara H, Hayashi Y, et al. Pathological steps of cancer-related lymphedema: histological changes in the collecting lymphatic vessels after lymphadenectomy. PLoS One. 2012;7:e41126.
4. Yamamoto T, Yamamoto N, Yoshimatsu H, Narushima M, Koshima I. Factors associated with lymphosclerosis: an analysis on 962 lymphatic vessels. Plast Reconstr Surg. 2017;140:734–741.
5. Seki Y, Yamamoto T, Kajikawa A. Lymphaticovenular anastomosis for breast cancer treatment-related lymphedema: Three-line strategy for an optimal outcome. J Plast Reconstr Aesthet Surg. 2018 Jun;71(6):e13-e14.

Osteofascial Compartment Syndrome of the Leg after Fibula Flap Harvest Case Report

Presenter: Sabrina Gallego-Gonima, MD, Plastic Surgery Division, Universidad de Antioquia, Medellin, Colombia

Although osteocutaneous fibula flap has been used for composite reconstructions and it is considered a safe procedure with high success rate, there have been scarce reports of severe complications. We want to present our experience with a patient who was complicated with an OCS of the leg, and a systematic review of the literature.

We present the case of a 24 y/o man without significant medical history who was involved in a MVA presenting with a left open Gustillo IIIB forearm fracture. He was first treated with debridement, ulnar ORIF and Radius stabilization with an external fixator elsewhere. At our institution he was scheduled for a composite reconstruction with an osteo-cutaneous fibula flap and a sural graft to the ulnar nerve for a composite defect including a five cm segmental radial defect, ulnar arteriovenous bundle defect and a 15 by 10 cm skin defect in the anterior aspect of the forearm communicating with the radial fracture site.

Surgical procedure was realized under tourniquet at 300 mm Hg for 75 min, after flap raising, muscles of the lateral and deep posterior compartment were approximated and closed over a drain. The cutaneous defect was closed with a STSG from the ipsilateral thigh. A below-knee cast was applied with the ankle at 90°. Flap was anastomosed to the sectioned proximal ulnar artery and cephalic vein and fixed with a plate. Skin island was partially sutured and the remaining defect was left open for coverage in a second operation. Additionally, a 5 cm cable sural graft was used to reconstruct an ulnar nerve defect. Patient was transferred to the ICU for flap monitoring. In the postoperative period, the patient complained of severe pain in the leg. Dressings were removed, and surgical wound inspected looking for hematomas or extrinsic compression. Initially, no significant edema or augmented tension were seen, but at the second postoperative day the wound was reevaluated, and severe edema with signs of skin suffering, graft dehiscence and muscle ischemia were noted. An angioscan showed no signs of venous thrombosis but a generalized myositis with involvement of all the leg compartments was

seen. Patient was taken to the OR and an extensive debridement including all the muscles from the lateral and posterior compartments was required. Tissue cultures were positive for a multidrug resistant enterobacteria. A multidisciplinary treatment was started including systemic antibiotics, physical therapy, NWPT and serial debridements with infection resolution and granulation of residual defect that was later reconstructed by a STSG. During the healing phase, a complete involvement of the posterior tibial nerve and ankle rigidity were demonstrated. After four months patient persists with an anesthetic plant, but he is ambulatory with the aid of a walking stick and an Ankle foot orthosis. The reconstructed upper limb had no complications and it is completely healed.

Osteocutaneous fibula flap can be raised safely in most patients but surgeons have to be suspicious of early OCS due to extensive leg trauma or isquemia, even in the absence of closed space.

The Morphological Changes of Asian Face Depending on Posture

Presenter: Hiroshi Nishioka, MD, Plastic and Reconstructive Surgery, Kofu Municipal Hospital, Yamanashi, Japan
Co-Authors: Fumio Nagai, MD, Plastic and Reconstructive Surgery, Shinshu University, Nagano, Japan, Shunsuke Yuzuriha, MD, PhD, Plastic and Reconstructive Surgery, Shinshu University, Nagano, Japan

Background: During the facial operation, it is important to predict the postoperative results in the upright position, while doing the operation in the spine position. Most of the plastic surgeons change their preoperative design for individuals based on experience and not in actual measurement or detailed plan. It is well known that the facial soft tissue changes with posture and there may be a difference based on the patient's sex and age. This study was performed to clarify the morphological changes of facial soft tissue in Asian face depending on posture.

Methods: A total of 100 healthy volunteers were divided into four groups based on age and sex. The four groups were young men, young women, old men, and old women. For all subjects, 18 measuring points were marked on the skin with ink and 18 paired linear measurements and angle were measured by using the digital slinding caliper and angle meter in the upright position and the supine position.

Results: In all the four subject groups, intercanthal width (en-en), binocular width (ex-ex), length of the eye fissure (en-ex), length of the nasal bridge (n-prn), width of the nose (al-al), height of the lower face (sn-gn), vermilion height of the lower lip (sto-li), height of the lower lip (sto-sl), width of the philtrum (cphi-cphi), width of the mouth (ch-ch) and nasolabial angle (NLA) were significantly larger in the spine position than in the upright position. The amount of increase was different in depending on age and sex.

There was not much difference in amount of increase between young men and young women. The amount of increase was larger in old men compared to old women.

Conclusions: The facial configuration is composed of skin, fat, mimic muscles, retaining ligament and facial skeleton. These components change their forms by the external force and aging. The Asian face tends to age principally due to the gravitational descent because of the thicker skin, heavier malar fat pad, and weaker skeletal support which all contribute to considerable facial sagging. Men don't makeup and don't have skincare as everyday habit. These fact cause men's face more exposure to ultraviolet-light, more dryness of the skin, getting damage by the shaving, compare to women's face. These long years of damage to the facial skin results in more facial sagging in men's face compared to women's. During the Asian facial operation the plastic surgeons should change their preoperative design depending on the part of the face and patient's age and sex.

Marjolin’s Ulcer

Presenter: Sabrina Gallego-Gonima, MD, Plastic Surgery Division, Universidad de Antioquia, Medellin, Colombia
Co-Authors: Jeison Aguilar, MD, Plastic Surgery Division, Universidad de Antioquia, Medellin, Colombia, Nicolas E Duque-Rendon, MD, Department of General Surgery, Hospital Universitario de San Vicente Fundacion, Medellin, Colombia

The purpose of this poster is to present our experience with the treatment of a Marjolin’s Ulcer (MU) originated over a laparostomy chronic scar and to review the relevant literature on the subject. Although MU is a well-known entity, there are only a few cases reported all over the world originated from a laparostomy scar and all of them were treated by resection and combined local tissue reconstruction with lateral advancement over a mesh.

We report a 50 y/o male who presented to our hospital with a slow growing vegetating mass over a laparostomy scar after treatment of multiple GSW to the abdomen 20 years before. He sought medical attention after wound fistulization, significant weight loss and general symptoms. He underwent radical abdominal wall excision with 2 cm margins, segmental bowel resection and delayed reconstruction two weeks after validation of clear wound margins with a musculocutaneous Latissimus Dorsi free flap anastomosed to the right deep inferior epigastric vessels. In the immediate postoperative period he presented a distal 15% necrosis of the muscular component and 5% necrosis of the skin component which were treated by surgical debridement and flap advancement with complete healing.

Since the description of malignant changes in burns scars by Jean Marjolin in 1828, the mechanisms of malignization of unstable or chronically inflamed tissues has been

elucidated. Now it is recognized that can be originated in a variety of wounds such as pressure sores, venous ulcers, osteomyelitic tracts, and all kind of unstable healed wounds. With the improvement of intensive care, more patients survive severe abdominal trauma, or abdominal medical conditions, and there has been an increase frequency of patients with abdominal wall sequelae and when stable healing has not been achieved and ulceration or fistulization occurs, surgeons have to be always suspicious of malignization.
The ideal treatment for an open abdomen after patient stabilization is primary closure in order to avoid severe complications that can be fatal as Marjolin's Ulcer. Even though the prognosis of this malignancy is not always good, when judicious approach and treatment are done, long term survival and a good quality of life can be achieved.

The Contralateral Breast Flap in Autologous Breast Reconstruction

Presenter: Horacio F. Mayer, MD, FACS, Cirugia Plastica, Hospital Italiano de Buenos Aires, Ciudad de Buenos Aires, Argentina
Co-Author: Ignacio T Piedra Buena, MD, Cirugia Plastica, Hospital Italiano de Buenos Aires, Ciudad Autonoma de Buenos Aires, Argentina

The use of a contralateral breast flap is an old and sometimes overlooked surgical resource for autologous breast reconstruction in patients in which the opposite breast will need to be reduced due to breast hypertrophy and ptosis.
The aim of this study is to present our experience with breast sharing technique in three patients during a period of 5 years.

The single staged procedure was originally described by Pontes in 1973 as a breast reconstruction technique obtained from the hemipartition of the donor breast in a transversal fashion and rotated 180º in an anticlockwise direction to obtain a split breast perforator flap.

In this technique the contralateral breast is split exactly in half in a vertical fashion. The obtained flap is rotated 90º, with an axial pattern of vascularization based on perforating vessels of the internal mammary artery. Branches of the lateral thoracic artery nourish the remaining breast. In both flaps, a conical shape is obtained performing deepitheñizñisation of the ABC triangle and then approximating the points B and C.

The nipple-areolar complex (NAC) of the donating breast is reconstructed by a NAC free grafting during the same surgical stage on the original description. In our cases we preferred to delay this step for a second stage under local anesthesia.
With the single staged technique proposed by Pontes, flap congestion or failure are rare situations due to the limited torsion of the pedicle and robust blood supply. No fat necrosis was detected in our patients. The main limitation of this procedure is symmastia that appears as a consequence of split flap transposition and can be usually be corrected at the moment of NAC reconstruction by liposuction of the midline.

As with many other plastic surgery procedures, indication is critical. Ideal candidates for breast bi-partition technique are elderly women who have a large and ptotic contralateral breast that are not good candidates for a microsurgical reconstruction and do not accept the additional scars associated to other autologous reconstructive methods. On the other hand, in patients with family history of breast cancer or positive BRCA mutations this procedure should be avoided as breast cancer screening may be hindered.

Double Powered Free Gracilis Muscle Transfer for Long Standing Facial Palsy

Presenter: Fumiaki Shimizu, MD, PhD , plastic surgery, Oita University hospital, Oita, Japan
Co-Author: Miyuki Uehara, Md , plastic surgery, Oita University hospital, Oita, Japan

Background: Double innervation of the transferred muscle with the contralateral facial nerve plus the ipsilateral masseteric nerve has been recently reported by some authors. From 2010, the double innervated free gracilis muscle transfer for long standing facial palsy patient has been performed in our department. The aim of this study was to assess the utility of our procedure of double innervation of free gracilis muscle for reconstruction of long-standing facial palsy.

Patients and methods: In our department, twelve cases of long-standing facial paralysis (eight cases of complete palsy and four cases of incomplete palsy) were reconstructed using a free gracilis muscle innervated with the masseteric and contralateral facial nerves. In our procedure, the intramuscular motor branch which was the distal stump of obturator nerve of the transferred muscle was identified and sutured to the ipsilateral masseteric nerve in an end-to-end fashion, and the obturator nerve of the transferred muscle was sutured to the cross-face nerve graft, which was coaptated with the contralateral facial nerve by end-to-end suturing (Figure). At first, this operation was performed in one staged operation, but these days, the procedure was done in two staged operation in our department. In six cases, the procedure was performed in one staged procedure, and in another six cases, the procedure was performed in tow staged procedure.

Results: All patients in were followed up for more than 18 months and recovered their smiling function. The voluntary movement of the transferred muscle with teeth clenching was observed at about 4.7 months and 5.2 months after the operation in one staged group and two staged group respectively. The movement combined with contralateral mouth angle elevation was observed at about 9.5 months and 6.2 months after the operation in one staged group and two staged group respectively. All patient could

elevate their mouth angle same as healthy side. The period that the transferred muscle started to move with CFNG was shorter in two staged group than in one staged group.

Conclusion: Our result showed that the advantage of our procedure was that both strong movement with clenching and spontaneous movement combined with healthy side could be archived. Two staged procedure seemed to be better than that of one staged procedure. However, the mechanism of double innervations is still unknown. Further study is necessary to elucidate the utility and indication of this procedure.

Primary Modified Vertical Mastopexy Augmentation Personal Technique

Presenter: Ovidio Alfonso Alarcon, MD , Plastic Sugery, Hospital Internacional de Colombia, Bucaramanga, Colombia
Co-Authors: Diego Fernando Alarcon, MD, Plastic Sugery, Universidad Industrial de Santander, Bucaramanga, Colombia, Laura Cristina Zambrano, MD, Plastic Sugery, Universidad Industrial de Santander, Bucaramanga, Colombia, Natalia Cristina Alarcon, MD, Universidad Autonoma de Bucaramanga, Bucaramanga, Colombia

Purpose: This study was designed to describe a case of mastopexy augmentation with a modified vertical technique by the main author, highlighting a double plane implant pocket closure and a symmetrical, short and horizontal scar located at the new submammary line to prevent skin redundancy.

Methods: We present a case study of a 30 years old female with preoperative assessment of bilateral grade 2 ptosis, with moderate vertical excess and breast overhanging the inframammary fold (IMF). A vertical elliptical resection pattern was marked preoperatively. A superior based pedicle and intraoperative nipple siting. The implants were placed through a horizontal incision just below the inferior border of the areola, under the subfascial plane. The implant should always be placed before any tissue is removed for the pexy. Insert the implant providing the best possible coverage should be sought, avoiding incisions where implant extrusion is more probable. After the implant was placed, the distance from the nipple to the IMF was assessed, we measured 7cm for optimal nipple-to-IMF distance. Dermoglandular flaps of the medial and lateral pillars were fixed vertically, after vertical excess resection. The skin redundancy inferior to the intersection of this vertical line and the new submammary line, was excised by creating a triangular pattern seemed like dog ears. The resection of the triangular pattern resulted in a symmetrical, short and horizontal scar located at the new submammary line.

Results: With this superior pedicle modified vertical scar mammoplasty technique, the main author provides a double opposing plane closure for the implant pocket pattern diminishing implant extrusion risk. The risk of Persistent ptosis is decreased avoiding skin redundancy at the vertical scar with a short horizontal scar at the new

submammary line. Posoperative view 2 months after the patient underwent augmentation/mastopexy with a 255cc high profile silicone gel implants with satisfactory results. No scar, nipple, residual ptosis complications.

Conclusions: The combined mastopexy augmentation offers technical advantages and permits safe single-stage surgery. Our preferred approach is to insert the implant first, evaluate the degree of ptosis correction, and then proceed with a modified vertical mastopexy, with a short, Inverted-T modification preventing skin redundancy. Simple details such as these are of vital importance for ensuring the success of the surgery and for maximum avoidance of complications. This results in high patient satisfaction, superior results with little scarring, and fewer secondary procedures.

References:

1. Spear SL. Augmentation/mastopexy: Surgeon beware. Plast Reconstr Surg. 2003;112:905-906.
2. Calobrace MB, Herdt DR, Cothron KJ. Simultaneous augmentation/ mastopexy: a retrospective 5-year review of 332 consecutive cases. Plast Reconstr Surg. 2013;131:145-156.
3. Lejour, Madeleine. "Vertical mammaplasty for breast reduction and mastopexy." Aesthetic Surgery Journal 16.3 (1996): 167-170.
4. Khavanin N, Jordan SW, Rambachan A, et al. A systematic review of single-stage augmentation-mastopexy. Plast Reconstr Surg. 2014;134:922-931.
5. Kuran I, Tumerdem B (2007) Vertical reduction mammaplasty: preventing skin redundancy at the vertical scar in women with large breasts or poor skin elasticity. Aesthet Surg J 27:336-341

Iatrogenic Alogenosis in Face, Case Report of a Severe Inflammatory Process Due to A External Substance Injection Report

Presenter: Hector Ernesto Barbosa, MD , Plasti Sugery, Instituto Nacianal de Oftalmologia, bogota, Colombia

This a case report of a patient that was injected 2 times of external substances developing an important inflammation process He consulted for first time in November 2016, Antibiotic treatment was inciated with ciprofloxacine and claritromicine for 60 day. 2 surgical procedures were done on february and November of 2017, using blepharoplasty incision in lower and upper eyelids in first and through nasolabial folds and temporal área during the second restoring his anatomical feature. Every day asist to consult more ´patient victims of external substance injection. The antibiotic treatment for long time (40-60 days) can become an important clue for the treatment of these chronic inflammatory pathologies due to there is evidence of bacterial contamination in

the surfaces or this external substances and some autor think that these bacteria may cause the inflammatory process. 1,2 In this case it showed that the antibiotic improved his inflammatory process. The surgical process was done through incisions in order to take off the external substances and try to restore the normal anatomy of the face against the closed procedures as liposuctions or laser procedures that may involve other tissues with worse deformity

Bibliography:

1.Soft tissue filler complications: Important role of biofilm. Rohrich Rod, Nguyen G. Plast and Recons Surg Vol 125 No. 5 1250 -56
2. Facial Filler Complications. Woodward Julie, Khan T, Martin J Facial Plast Surg Clin N Am 23 (2015) 447-458
3. Facial Granulomas Secondary to Injection of Semi permanent Cosmetic Dermal filler containing Acrylic Hydrogel particules. Sachdev Mukta, Anantheswar YN, Ashok BC, Sunaina H J Cuta Aesth Surg Vol3, Issue 3 , 2010

Reconstruction of the A4 Pulley with a Lateral SLIP of Flexor Digitorum Superficialis

Presenter: Ricardo Galan, MD , Cirugia Plastica y Reconstructiva, Universidad Militar. Nueva Granada, Central. Bogota, Colombia
Co-Author: Daniel C Rivera, MD , Cirugia Plastica y Reconstructiva, Universidad Militar, Nueva Granada, Bogota, Colombia

Injuries at the A4 pulley have a significant negative effect in flexor tendon mechanism function[1]. We aimed to develop an animal model to perform biomechanical tests and compare the biomechanics of A4 flexor tendon[2] pulley reconstruction with an oblique vector technique (OVT) described by the authors with a currently used transverse vector technique (TVT)[3].

Materials and Methods: The effect of A4 pulley transection in DIP joint flexion strength and angles was determined in 10 chicken feet[4]. Thirty-two long toe's A4 flexor pulleys were transected and reconstructed with either OVT, using one slip of the flexor digitorum superficialis (n: 16), or TVT using tendon loops (n: 16). We measured DIP joint flexion degree and strength with the intact, transected and reconstructed pulleys using a device specifically designed for this study.

Results: Intact pulley feet were found to achieve a mean flexion of 96.5° at the DIP joint, with an increase in the angle (decrease in flexion) of 19.8% after A4 pulley section (96.5° to 115.6°; $p < 0.001$). DIP flexion strength decreased by 15.2% after A4 flexor pulley transection (from 8.16 psi to 6.92 psi; $p < 0.001$). In the 32 intervened chicken feet, differences in flexion angle of 1.23° ($p = 0.03$) and flexion strength of 0,026

psi (p= 0.6) in favor of OVT were found. Conclusions: Given the critical role the A4 pulley plays in their flexor function, chicken feet are an appropriate model to evaluate such pulley. The oblique vector reconstruction technique described provides biomechanical properties that are equivalent to those obtained with loop technique with a transverse vector

Conclusions: The A4 pulleys in chickens, like in humans, plays a fundamental role in the adequate functioning of flexor system specifically for the DIP flexion, making this animal model appropriate to perform biomechanical studies. The biomechanical behavior of the reconstructed A4 pulley with the OVT is equivalent to the TVT

References:

1. Arora R, Fritz D, Zimmermann R, Lutz M, Kamelger F, Klauser A, Gabl M. Reconstruction of the digital flexor pulley system: a retrospective comparison of two methods of treatment. The Journal of Hand Surgery. February 2007;32e(1)
2. Amirouchea F, Gonzalez M, Koldoffb J, Tiococ J, Hamc K. A biomechanical study of the finger pulley system during repair. Technology and Health Care 10 2002; pp. 23-31
3. Bunnell S, Böhler J. Die chirurgie der hand. Wein, Wilhlem Maudrich Verlag, 1958; 1:533-643
4. Farkas LG, Thomson HG, Martin R. Some practical notes on the anatomy of the chicken toe for surgeon investigators. Plast Reconstr Surg 1974;54:452-458

Successful Rescue of a Patient with Severe Crush Injury of Lower Extremity from an Earthquake in Taiwan: A Case Report

Presenter: Che-Jui Chang, MD, Section of Plastic and Reconstructive Surgery, Department of Surgery, National Cheng Kung University Hospital, Tainan City, Taiwan
Co-Author: Shin-Chen Pan, MD, PhD , Section of Plastic and Reconstructive Surgery, Department of Surgery, National Cheng Kung University Hospital, Tainan City, Taiwan

Introduction: Compartment syndrome is a common complication of crush injury. Compartment syndrome of the thigh and pelvic region is a serious but rare condition prompting surgical emergency. Delayed compartment release leads to significant morbidity and mortality. We reported a case of severe crush injury of lower extremity who survived from a strong medical support in 285 days-hospital stay.

Case: This 32-year-old male survived from a 6.4-magnitude earthquake in Tainan, Taiwan. His lower extremity was crushed under a collapsed 17-storey building for 12 hours before rescue. He was sent to emergency department with severe right pelvis crushing injury and open fracture of right lower leg. Due to hemorrhagic shock and rhabdomyolysis, emergent right above-knee amputation with left leg fasciotomy was performed.

His unstable hemodynamics was supported with extra-corporeal membrane oxygenation (ECMO) after surgery. Subsequent fasciotomy of both thighs and further left above-knee amputation were performed for persisted compartment syndrome with rhabdomyolysis on the next day after injury. Due to progressive muscle necrosis with uncontrolled hyperkalemia (K^+: 9.0 mmol/L), bilateral transfemoral disarticulation 3 days later.

Trans-arterial embolization of right iliac vessels was performed to control stump bleeding. More than 20 times of debridement were done for persistent muscle necrosis of the bilateral stump wounds. The wounds were healed eventually with vacuum assisted closure and skin graft. During 10 months of hospitalization and aggressive rehabilitation program, he was discharged under favorable condition.

Conclusion: Crush injury is one of common cause of death after earthquakes. Immediate fasciotomy is required for the cases of compartment syndrome. Despite emergent pressure release, urgent limb amputation should be considered in patients with progressive muscle necrosis and uncontrolled hyperkalemia.

Prevention and Treatment of Flap Congestion during Head and Neck Reconstruction with Respect to Onset Time

Presenter: Kaoru Sasaki, MD, PhD, Plastic surgery, Tsukuba University, Tsukuba-shi, Ibaraki-ken, Japan
Co-Authors: Yoichiro Shibuya, MD, PhD , Plastic Surgery, Tsukuba University, Tsukuba-shi, Ibaraki-ken, Japan, Masahiro Sasaki, MD , Plastic Surgery, Tsukuba University, Tsukuba-shi, Ibaraki-ken, Japan, Junya Oshima, MD , Plastic Surgery, Tsukuba University, Tsukuba-shi, Ibaraki-ken, Japan, Yukiko Aihara, MD , Plastic Surgery, Tsukuba University, Tsukuba-shi, Ibaraki-ken, Japan, Mitsuru Sekido, MD, PhD , Plastic Surgery, Tsukuba University, tsukuba-shi, Ibaraki-ken, Japan

Background: Circulatory failure in free tissue transfer surgery is a critical complication because an especially congestive condition damages tissue even more than does ischemia. Predicting the cause of flap congestion is important to ensure the immediate removal of the cause and the flap's survival. Here, we identified the causes of flap congestion with respect to onset time.

Methods: We retrospectively analyzed 249 cases of free tissue transplant in the head and neck, including 15 congestive cases, conducted at the University of Tsukuba Hospital from August 2008 to June 2018. In all cases, microvascular reconstruction was performed. Eight factors were investigated: primary disease, flap type, onset time of congestion, thrombosis, flap condition at onset, cause of congestion, treatment, and flap survival. The primary and secondary causes of congestion were chosen from intraoperative and postoperative factors, assuming that flap congestion is caused by several factors. And the congestion was classified into 3 grades.

Results: The most common primary diseases were tongue cancer (31.3%) and hypopharyngeal cancer (15.7%). Nine flaps were used, the most common being anterolateral thigh (36.9%) and rectus abdominis (21.7%) flaps. The overall flap congestion rate was 7.4%, and the venous thrombosis rate was 3.9%. As for the onset time of congestion, 93% of the congestions occurred within 3 days of surgery. Most of the congestions without thrombosis occurred within 12 hours of surgery. Venous thrombosis occurred in 9 cases and 3 areas (anastomosis area: 6 cases; distal area from anastomosis: 1 case; internal jugular vein: 1 case; external jugular vein: 1 case) (all within 3 days of surgery). The congestion caused by thrombosis at the anastomosis area was found within 12 hours of surgery, which was earlier than for the other areas. We classified flap congestion into 3 grades according to the purpuric appearance: grade 1: 5 cases; grade 2: 7 cases; grade 3: 3 cases. Grade-1 congestion was found in the early phase and worsened over time. The primary causes of the flap congestion were damaged endothelium (4 cases), flap volume (4 cases), flap positioning (3 cases), wound tension (1 case), recipient vessels (2 cases), swelling of the wound after surgery (2 cases), and rest of the wound (1 case). Seven kinds of treatment were performed: reanastomosis (7 cases), reduction of skin tension by stitch removal (7 cases), reconstruction with another flap (2 cases), medicinal leech therapy (2 cases), reduction of flap volume (2 cases), etc. The final result after congestion had 3 patterns: complete flap survival (5 cases), partial necrosis (3 cases), and total necrosis (7 cases).

Conclusion: Within a 24-hour posttransplant window, damaged endothelium, excessive flap volume, tight sutures and swelling of the surgical site were factors influencing flap congestion during head and neck reconstruction. Thereafter, damaged endothelium was the main factor. In addition, failure of the flap arrangement and neck rest as well as recipient vessel troubles were crucial factors to prevent complications. Using the time of onset to categorize types of flap congestion allows for preventive and rapid responses to the congestion.

Lipoabdominoplasty with Progressive Tension Suture and PAL (Power Assisted Lipoplasty)

Presenter: Mingu Kang, MD, PhD, BongBong Plastic Surgery Clinic, Seoul, Korea, Republic of (South)

Background: Abdominoplasty is a commonly performed aesthetic surgical procedure worldwide.

Classic abdominoplasty was merged with liposuction in the past decade to create a new technique—lipoabdominoplasty—that was proven to be safe and effective and that improves body contour.[1]
Also, PAL(power assisted lipoplasty) is a handy, atraumatic, time- and fatigue-sparing technique.[2]

In this article, we describe lipoabdominoplasty with the effectiveness of progressive traction suture (PTS) technique and PAL.

Methods: Twenty two patients were identified with a mean age of 39 years, mean BMI of 21.8 kg/m^2 and mean follow-up time of 20 months . All patients underwent lipoabdominoplasty with PAL(Microaire) throughout the abdomen and flanks. Abdominal rectus plication was performed in 100% of cases. All patients were operated on under general anesthesia and stayed overnight in our clinic.

Results: No patients developed seroma. Scar revisions were needed in 18%. Residual liposuction was applied under sedation in one patient.

Conclusions: The lipoabdominoplasty with progressive tension sutures and PAL can correct abdominal deformities more effectively and with fewer complications than traditional abdominoplasty.

References:

1. Epstein S, Epstein M, Gutowski K. Lipoabdominoplasty without drains or progressive tension sutures: an analysis of 100 consecutive patients. Aesthet Surg J 2015;35:434-440
2. Scuderi N, Tenna S, Spalvieri C, De Gado F. Power-assisted lipoplasty versus traditional suction-assisted lipoplasty: comparative evaluation and analysis of output Aesthetic Plast Surg 2005;29:49-52

An Innovative Form, Scaffold Type of Thread Lift: Its Satisfactory Performance and Safety

Presenter: Gyu Sik Jung, MD, Plastic and Reconstructive Surgery, Kyungpook National University Hospital, Daegu, Korea, Republic of (South)
Co-Authors: Heeyah Song, BS, Medical College of Georgia, Augusta University, Augusta, GA, Seung Gyun Chu, MD, Plastic and Reconstructive Surgery, Kyungpook National University Hospital, Daegu, Korea, Republic of (South), Jae Bong Kim, MD, PhD., Plastic and Reconstructive Surgery, Kyungpook National University Hospital, Daegu, Korea, Republic of (South)

As medical technology advances, patients have begun to prefer procedures that are minimally invasive, quick, simple, and have a fast recovery rate. Thread lift is a method of facial rejuvenation that meets patients' such needs[1]. The purpose of this study was to evaluate the outcomes and safety of the new scaffold type thread lift. The Cavern® thread (NEO Dr. INC, Republic of Korea) is made up of a polydioxanone (PDO) and is in the shape of a spring. The thread is inserted into sagging area and adds volume by maintaining its spring form. The thread is more effective in collagen synthesis, as it

stimulates various sites of the skin in multiple directions[2,3]. Thread lift and rejuvenation surgery were performed on four different areas: tear trough, nasolabial fold, cheek hollow, and marionette line; each group consisted of 12 patients using mass-type thread from October to December 2017. First, the sites of thread insertion and puncture were determined. Wrinkled areas or areas requiring additional volume were marked. Following the induction of local anesthesia in the trigeminal nerve, 1% lidocaine and 1:200,000 epinephrine were injected into puncture sites for local anesthesia and along the previously designed line. Puncture was performed on the previously marked puncture site using a 21-gauze needle, and the Cavern® thread was inserted into the subcutaneous layer. Thinner threads were used for the tear trough and palpebromalar groove. While thicker threads were used for the cheek hollow, nasolabial fold, and marionette line. All patients underwent follow-up for over 3 months. Patient satisfaction was investigated at one and three months postoperatively. Complications were also investigated. The satisfaction scores were 4.6, 4.2, 4.5, and 4.4 points for the tear trough, nasolabial fold, cheek hollow, and marionette line results at 1 month, respectively, and 4.5, 4.1, 4.5, and 4.3 points for the respective sites at three months. No hematoma, infection, chronic pain, or nerve injury occurred. Ecchymosis occurred in five patients (10.4%), asymmetry in one patient (2.1%), and palpability in three patients (6.3%). The procedure took about 7 minutes on average, and patients were able to return to work immediately afterwards. Facial rejuvenation using scaffold type thread Cavern® is a safe and effective procedure. This method produced good cosmetic results, a shorter operation time, less morbidity, and a faster recovery than the other method[4,5].

References:

1. Lambros V, Amos G. Three-Dimensional Facial Averaging: A Tool for Understanding Facial Aging. Plast Reconstr Surg. 2016;138:980-2.
2. Gülbitti HA, Colebunders B, Pirayesh A, et al. Thread-Lift Sutures: Still in the Lift? A Systematic Review of the Literature. Plast Reconstr Surg 2018;141:341-7.
3. Lee H, Yoon K, Lee M. Outcome of facial rejuvenation with polydioxanone thread for Asians. J Cosmet Laser Ther 2018;20:189-92.
4. Kim J, Zheng Z, Kim H, et al. Investigation on the Cutaneous Change Induced by Face-Lifting Monodirectional Barbed Polydioxanone Thread. Dermatol Surg 2017;43:74-80.
5. Abraham RF, DeFatta RJ, Williams EF 3rd. Thread-lift for facial rejuvenation: assessment of long-term results. Arch Facial Plast Surg. 2009;11:178-83.

Surgical Management after Breast Augmentation with Polyacrylamide Gel

Presenter: Sangmun Choi, MD, Ryan Plastic Surgery Clinic, Seoul, Korea, Republic of (South)

Co-Authors: Boktae Kim, MD, PhD, Department of Plastic and Reconstructive Surgery, Keio University, Tokyo, Japan, Sikyoung Choi, PhD, Department of Applied Chemistry, Andong University, Andong, Korea, Republic of (South)
Youn-jung Kim, PhD, Department of Applied Chemistry, Andong University, Andong, Korea, Republic of (South), Sunje Kim, MD, Department of Plastic and Reconstructive Surgery, Chungnam National University, Daejeon, Korea, Republic of (South)

Background: Polyacrylamide gel (PAAG), also known as Aquafilling® has been approved and is now commercially available in South Korea. Patients are not aware of the complications of the product when it is injected to the soft tissue, and have suffered after having the product injected to their breast which is an off-label usage. Typical symptoms include breast asymmetry, localized lumps, pain, and gel migration to the breast bottom. Additionally, while detecting breast cancer, the product could interfere the examiner by blocking the cancer cells. It is also known as a cause of breast cancer if the polymer breaks into the monomer.[1] Although there are adverse complications, Polyacrylamide is still currently widely used in Korea.

Methods: During 2017 and 2018, 9 patients between the ages of 22 to 50 years old underwent surgical management of the problems after breast augmentation with Aquafilling®. The patients' history was retrieved regarding the injection site, the duration between the injection period and symptom arousal was estimated. The injected plane and amount were evaluated with sonography (Samsung Medison, Korea) examination before and after the surgery. The gel that washed out, was sent to a lab (Andong National University, South Korea) to check the particles with a digital microscope (MXG--2500REZ, Hirox, USA).

Results: Palpable lump was the main complaint of the patients. Three patients experienced tenderness during menstruation period with redness and heat sense. One patient, who had the removal from another clinic through the periareolar approach, still had the gel inside their body. This was managed by another surgery through the axillary approach. The healing of the incision is interfered by the gel migrating due to the gravity, thus the inframmary or periareolar incision was avoided. 2 patients had injections in multiple layers and was impossible to completely remove the gel, especially in the glandular tissue. The patients were informed to examine their glandular tissue regularly. After the removal of the gel, all 9 patients had immediate insertion of the silicone implants at the same plane. All patients were satisfied with the shape of their breast and achieved improvements in symptoms. However, all 9 patients experienced psychological stress, depression with the gel and to their previous doctor. The patient who had periareolar incision at the other clinic also had disruption at the wound and was revised.

Conclusions: Based on the author's experience, polyacrylamide hydrogel injections should be restricted for breast augmentation. Doctors who are not aware of the danger of this substance are using it to augment soft tissue including the breast size. Caution should be taken to those who might consider using PAAG as a means of augmentation mammoplasty. Furthermore, patients who have had the injection but do not yet have

any symptoms, should undertake regular examination for gel migration or any other forms of complication.

Reference:

1. Nak, K.S., and Park, E.S. Letter: Correcting Shape and Size Using Temporary Filler after Breast Augmentation with Silicone Implants. Archives of Aesthetic Plastic Surgery. 22(1), 2016

Secondary Acellular Dermal Matrix Application to Integrated Primary Acellular Dermal Matrix in Implant-Based Breast Reconstruction

Presenter: Jang Won Lee, MD, Plastic Surgery, CHA University, Gyeonggi-do, Korea, Republic of (South)
Co-Authors: Chan Woo Kim, MD, Plastic and Reconstructive Surgery, CHA Bundang Medical Center, CHA University, Seongnam, Korea, Republic of (South), Tae Hwan Park, MD, PhD , Plastic Surgery, CHA University, Gyeonggi-do, Korea, Republic of (South), Chung Hun Kim, MD, PhD , Plastic and Reconstructive Surgery, CHA Bundang Medical Center, CHA University, Seongnam, Korea, Republic of (South), Euna Hwang, MD, PhD , Plastic and Reconstructive Surgery, CHA Bundang Medical Center, CHA University, Seongnam, Korea, Republic of (South)

Acellular dermal matrices (ADMs) are commonly used in implant-based breast reconstruction to supplement the lack of pectoralis muscle.[1] The incidence of capsular contracture has decreased with the use of ADMs.[2] Cases with a lack of pectoralis muscle can be supplemented with ADM to release the tightness of the pectoralis muscle and ADM sling can improve tissue expander inflation during the postoperative period.[3] At the time of completion of tissue expansion, the skin becomes very thin, especially in the lower pole of the breast in two-staged breast reconstruction. An indicating mark located in the lower pole of an implant, can be palpated and observed as a lump on the skin surface through the thin skin, especially in slim patients with low body mass index (BMI).

Therefore, we tried to add an additional sheet of ADM to the lower pole of the breast to enhance the thickness of the skin flap during an implant exchange operation after the tissue expander was removed. We applied the secondary ADM sized from 16 x 4~5 cm, thickness; 2.0 mm, to the lower pole in 11 breasts of 9 patients. We evaluated the outcomes of cases undergone the secondary ADM application and the change of the skin flap thickness by ultrasonography.

As a result, none of the cases had associated complications such as seroma, hematoma, infection, flap necrosis and reconstructive failure. Most patients had a low BMI, ranged from 18.9 to 24.9 (mean BMI; 20.9). The mean area of the primary ADM was 109±18 cm^2 and the area of the secondary ADM was 70±12 cm^2. The number of

drain maintenance days after an implant exchange were 5.5±2.0 days. Ultrasonographic examination showed that the layer of subcutaneous fat tissue became thinner at the time the tissue expansion procedure was completed. At postoperative 4~6 months after the implant exchange, the thickened subcutaneous fat layer was found between the skin and the ADM layers in all patients, and the primary and secondary ADM sheets were well-incorporated between the subcutaneous tissue and the breast implant. The entire skin flap thickness was increased (mean amount of increase; 3.43± 0.67 mm). In general, the supplement with a secondary ADM and the proliferation of subcutaneous fat tissue contributed to an increase of skin flap thickness.

The application of an additional ADM sheet to overlap the primary ADM sheet in implant-based breast reconstruction remains challenging but can be successful with meticulous intraoperative care and adequate postoperative management.

References

1. Jagsi R, Jiang J, Momoh AO, et al. Trends and variation in use of breast reconstruction in patients with breast cancer undergoing mastectomy in the United States. J Clin Oncol 2014; 32:919-26.
2. Colwell AS, Damjanovic B, Zahedi B, et al. Retrospective review of 331 consecutive immediate single-stage implant reconstructions with acellular dermal matrix: indications, complications, trends, and costs. Plast Reconstr Surg. 2011;128:1170–1178
3. Joanna Nguyen T, Carey JN, Wong AK. Use of human acellular dermal matrix in implant-based breast reconstruction: Evaluating the evidence. J Plast Reconstr Aesthet Surg 2011;64:1553–1561

A New Method for Breast Implant Insertion Using an Air Pressure Assisted Device

Presenter: Youngwan Jin, MD, PhD, Plastic Surgery, Gangnam K-Beauty Plastic Surgery Clinic, Seoul, Korea, Republic of (South)
Co-Author: Jungseok Yoo, MD, Plastic Surgery, Gangnam K-Beauty Plastic Surgery Clinic, Seoul, Korea, Republic of (South)

Purpose: Various methods for breast implant insertion have been developed to reduce time for implantation, skin contact and thus the risk of implant contamination.[1-3] But skin problem remains, such as maceration of the incision margin and long hypertrophic scar. We introduce a new method for breast implantation that requires minimal force and time, and reduces implant contamination, the friction of incision margin and finally to decrease surgical complications, particularly scar length.

Methods: From March to December 2017, 51 female patients underwent primary breast augmentation bilaterally with silicone gel implants using the air pressure assisted device designed for airbrushing which operates to maximum 35 psi working pressure. We

approached 40 patients by IMF incision, 9 patients by axillary incision and 2 patients by intraareolar incision. Before the implantation, we prepared 1000ml of sterilized intravenous fluid infusion bag after discarding fluids inside to function similar as funnel. We cut along the top of the bag and trimmed the lower tip of the bag according to the size of the implant. Then we poured the breast implant in the bag after applying sterilized anesthetic gel. Another 500ml of IV bag was placed into the 1000ml of IV bag to deliver pressure to the implant after connecting to the air compressor with an oxygen tubing connector. We closed the opening of the 1000ml of IV bag and approached the lower tip of the bag to the entrance of breast pocket. And the air pressure from the air compressor advanced the implant through the IV bag and into the breast pocket.

Results: Our follow-up period was minimum 6 months and no complications such as infection and capsular contracture occurred. All patients had acceptable scars without keloids or hypertrophic scar formation.

Conclusion: Our method using an air pressure assisted device has advantages over other previous insertion methods including: (1) easier insertion with an even pressure; (2) requires less force and time; (3) shorter incisions and thereby shorter scars (2.5-3.0cm per 250-300cc of implant); (4) prevents implant rotation during insertion; (5) reduce implant contamination that may help avoid capsular contracture.

References

1. Moyer HR, Ghazi B, Saunders, N, et al. Contamination in Smooth Gel Breast Implant Placement: Testing a Funnel Versus Digital Insertion Technique in a Cadaver Model. Aesthetic Surgery Journal. 2012; 32(2) 194 –199.
2. Castello MF, Han S, Silvestri A, et al. A Simple Method to Inset and Position Polyurethane-Covered Breast Implants. Aesth Plast Surg. 2014; DOI 10.1007/s00266-014-0285-7.
3. Dessy LA, Fallico N, Serratore F, et al. The use of the Alexis® device in breast augmentation to improve outcomes: a comparative randomized case-control survey. Gland Surg 2016;5(3):287-294

Patient-Specific Augmentation Rhinoplasty Using Three-Dimensional Printing

Presenter: Eunsoo Park, MD, PhD, Plastic & Reconstructive Surgery, Soonchunhyang University, Bucheon, Korea, Republic of (South)
Co-Authors: Yimdon Choi, MD, PhD, KIES-U plastic clinic, Seoul, Korea, Republic of (South), Heeyong Kang, MD, Department of Plastic and Reconstructive Surgery, College of Medicine, Soonchunhyang University, Bucheon, Korea, Republic of (South)

Background: The convergence of three-dimensional (3D) simulation, tissue engineering, and 3D printing technology is creating a paradigm shift in plastic surgery. In augmentation rhinoplasty, determining the ideal material and design method has

been a critical issue for many years. Thus, these technologies are expected to make important contributions to augmentation rhinoplasty.

Objectives: We sought to validate the feasibility of the 3D carving simulation and patient-specific implant fabrication system (3D carving system) in a clinical trial using reproducibility tests.

Methods: Patient-specific implants were designed using a program developed in-house with preoperative computed tomography (CT). Negative molds of the implant were fabricated by a 3D printer and silicone was injected into these molds (Fig 1-2). To check the exact planned implant position during surgery, the distance from the line connecting the right and left medial canthus to the most cephalic point of the implant was measured (Fig 3-4). Ten actual silicone implants were fabricated and compared with virtually designed implants. Seven patients underwent surgery and postoperative CT to confirm implant positioning.

Results: Virtually designed implants were produced into actual implants within 0.07 mm with a 0.17% ± 0.11% difference. The percentage within the gap was the highest at the cephalic end of the implant and reduced from the cephalic to caudal end (most cephalic point: 100%; rightmost and leftmost point of the implant at the caudal end of the nasal bone: 57.1% and 71.4%, respectively; rightmost and leftmost point at the supratip break: 28.6% and 28.6%, respectively; and most caudal point: 0%) (Fig 5-6). During postoperative period of 2 months, patients were fully satisfied with the result of the operation without any complications. On CT scans the ventral surface of the implant is accurately contoured so that it fits nicely with the patient's nasal bone (Fig 7).

Conclusions: The 3D carving system can facilitate rhinoplasty by enabling the more intuitive, rapid, and accurate fabrication of implants irrespective of surgeon experience level.

References

1. Pfaff MJ, Steinbacher DM. Plastic surgery applications using three-dimensional planning and computer-assisted design and manufacturing. Plast Reconstr Surg. 2016;137(3):603e-616e.
2. Kamali P, Dean D, Skoracki R, et al. The current role of three-dimensional printing in plastic surgery. Plast Reconstr Surg. 2016;137(3):1045-1055.
3. Peled ZM, Warren AG, Johnston P, Yaremchuk MJ. The use of alloplastic materials in rhinoplasty surgery: a meta-analysis. Plast Reconstr Surg. 2008;121(3):85e-92e.
4. Xu Y, Fan F, Kang N, et al. Tissue engineering of human nasal alar cartilage precisely by using three-dimensional printing. Plast Reconstr Surg. 2015;135(2):451-458.
5. Kim YS, Shin YS, Park DY, et al. The application of three-dimensional printing in animal model of augmentation rhinoplasty. Ann Biomed Eng. 2015;43(9):2153-2162.

Enhancing Survival of Fingertip Reconstruction Using Great Toe composite Grafts

Presenter: Bommie Florence Seo, MD, PhD, Department of Plastic Surgery, Uijeongbu St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Uijeongbu, Korea, Republic of (South)
Co-Authors: Hyuk-Joon Choi, MD, Plastic and Reconstructive Surgery, Catholic University, Seoul, Korea, Republic of (South), Sung-No Jung, MD, Plastic and Reconstructive Surgery, Uijeongbu St. Mary's Hospital, The Catholic University of Korea, Uijeongbu, Korea, Republic of (South), Kyo Joon Kang, MDF, Plastic and Reconstructive Surgery, Catholic University, Seoul, Korea, Republic of (South)

Background: Transfer of great toe pulp tissue is an established procedure in reconstructing soft tissue defects of the finger, but contains risk of partial or total necrosis because it is a graft of plump composite tissue without vascular anastomosis. We have modified the procedure to increase contact surface area that has led to higher rates of survival and patient satisfaction.

Methods: Between March 2006 and March 2017, 35 patients underwent great toe pulp grafts for reconstruction of fingertip amputation. A fish-mouth incision was applied to the injured fingertip to create a wedge-shaped defect. Composite tissue from the fibular aspect of the great toe was harvested in a “watermelon slice cutting” manner to obtain a wedge-shaped volume of tissue. The wedge was then snuggly fit into the recipient, amplifying contact surface. Evaluation included total operation length, graft survival and donor site morbidity.

Results: A total of 35 patients received 37 great toe pulp grafts. 37 fingertips underwent immediate or secondary reconstruction of fingertip. Total survival was found in 36 fingertips (97.3%). Partial necrosis was observed in one fingertip (2.7%).

Conclusion: This simple wedge modification of the great toe pulp graft enhances ease of donor site closure, graft inset, and most importantly graft survival.

Innovation in Free Flap Monitoring: Intra-Flap Vascular Catheterization (IFVC) Technique

Presenter: Atsuomi Saiga, MD, Plastic surgery, St. Mary's Hospital, Kurume city, Japan
Co-Authors: Nobuyuki Mitsukawa, MD, PhD, Plastic and Reconstructive Surgery, Chiba University, Chiba city, Japan, Yoshihisa Yamaji, MD, Plastic and Reconstructive Surgery, Chiba University, Chiba city, Japan

Background: Thrombosis at the anastomotic site is a major problem in free tissue transfer. In order to detect thrombosis, various methods have been described, including clinical monitoring,

implantable Doppler probe, oximetry, visible light spectroscopy, multispectral imaging, CO_2monitoring, laser Doppler flowmetry, glucose and lactate measurements and ultrasound. Although there is evidence of improvement of flap salvage rates with several methods, these methods are limited to monitoring. If we can monitor, prevent, and treat the thrombosis simultaneously, this would be innovative. We developed a new method for free flap monitoring called the intra-flap vascular catheterization technique (IFVC), which enables us to prevent thrombosis, monitor the flap in a highly sensitive manner, and, at the same time, treat small thromboses simply by injecting drugs from the catheter. This is the first report to show that monitoring, prevention, and treatment of thrombosis are possible by a single method.

Patients and Methods: Between 2015 and 2017, a total of 15 patients underwent free tissue transfer by a single surgeon in St. Mary's Hospital by using this technique. After the anastomosis, catheters were inserted to the side branch of the flap pedicle in both the artery and vein. The catheters were connected to the pressure monitor and infused either urokinase or saline to prevent thrombosis. Then, 360 U of urokinase were injected into the artery if an arterial pressure decrease was detected, and 5 ml of saline were injected into the vein if a venous pressure increase was detected. Fifteen consecutive patients were operated with this technique.

Results: All flaps survived, no major re-operation was required, and re-anastomosis during the initial operation was not needed in any cases.

Conclusion: IFVC may become a powerful tool for surgeons to avoid re-operation in free tissue transfer, even though it adds an hour of operation time. This may be called an innovation in monitoring, because IFVC enables monitoring, prevention, and treatment of thrombus by a single method.

Trunk Reconstruction with Free Style Pedicled Perforator Flaps: Clinical Experience and Decisional Algorithm

Presenter: Rosa Salzillo, MD, Plastic, Reconstructive and Aesthetic Surgery Department, Campus Bio-Medico University of Rome, Rome, Italy
Co-Author: Beniamino Brunetti, MD PhD, Plastic, Reconstructive and Aesthetic Surgery Department, Campus Bio-Medico University of Rome, Rome, Italy, Marco Morelli Coppola, MD, Plastic, Reconstructive and Aesthetic Department, Campus Bio-Medico University of Rome, Rome, Italy, Silvia Ciarrocchi, MD , Plastic, Reconstructive and Aesthetic Department, Campus Bio-Medico University of Rome, Rome, Italy, Stefania Tenna, MD PhD , Plastic, Reconstructive and Aesthetic Department, Campus Bio-Medico University of Rome, Rome, Italy, Paolo Persichetti, MD PhD , Plastic, Reconstructive and Aesthetic Surgery Department, Campus Bio-Medico University of Rome, Rome, Italy

Introduction: Before the introduction of perforator flaps, superficial or complex defects of the trunk were usually approached with muscular or myo-cutaneous flaps or, in

alternative, with less complex techniques such as random flaps or skin grafts. Both options were associated with sub-optimal morphological and functional results.

The introduction in the clinical practice of local perforator flaps and free style flaps allowed to overcome the limits of previous reconstructive techniques, obtaining a "like with like" reconstruction by using nearby tissues, optimizing the vascular supply and minimizing the donor site morbidity.

The authors reviewed their experience with free style pedicled perforator flaps of the trunk and hereby present a decisional algorithm to simplify the choice of the most suitable flap according to the region to be reconstructed.

Materials and Methods: From June 2014 to April 2018, 70 defects involving different regions of the trunk (thoraco-clavicular region, anterior thorax and breast, axillary region, posterior thorax, lumbar region), resulting from oncological resection or chronic wounds were reconstructed with free style pedicled perforator flaps. All flaps were harvested in a perforator-based fashion, using the free style Doppler-guided philosophy, with preservation of the underlying source vessels. We evaluated the vascularization patterns, the type of movement and complications associated with each flap and elaborated a decisional algorithm in order to optimize the success of the reconstructive procedure.

Results: We performed 28 DICAP (Dorsal Intercostal Artery Perforator) flaps, 7 LICAP (Lateral Intercostal Artery Perforator) flaps, 4 AICAP (Anterior Intercostal Artery Perforator) flaps, 10 TDAP (Thoracodorsal Artery Perforator) flaps, 4 CSAP (Circumflex Scapular Artery Perforator) flaps, 4 LAP (Lumbar Artery Perforator) flaps, 8 IMAP (Internal Mammary Artery Perforator) flaps, 2 DSAP (Dorsal Scapular Artery Perforator) flaps, 2 TAP (Thoracoacromial Artery Perforator) flaps and 1 DIEP (Deep Inferior Epigastric Perforator) flap. Flaps were mobilized on one or more perforators in a propeller and V-Y fashion in 45 and 25 cases respectively. The mean surgical time was 150 minutes. 7 patients (10%) presented vascular complications (partial necrosis of the flap).

Discussion: The clinical reliability of local perforator flaps in trunk reconstruction has been widely demonstrated by many authors. Our clinical experience confirmed the advantages deriving from their usage (reliability in complex reconstructions, minimal donor site morbidity, shorter surgical time, wide arc of rotation, shorter time of recovery). Besides atypical indications, DICAP flaps confirmed to be the best option for reconstructing the back, while LICAP and TDAP flaps better addressed the reconstruction of the axillary region and lateral quadrants of the breast.

Conclusions: With the advent of perforator flap surgery, trunk reconstruction is increasingly approached with more sophisticated and minimally invasive techniques. Muscular and myo-cutaneous flaps still maintain their indications, specifically for the treatment of complex cases associated with significant infection and hardware exposure. Nevertheless, our experience confirms the versatility and safety of free style

pedicled perforator flaps to obtain optimal aesthetic and functional results, minimizing donor site morbidity, reducing the operatory time and shortening the time of recovery.

New Devices to Improve the Quality of Scar after Brachioplasty

Presenter: Franco Bassetto, MD, Clinic of Plastic Surgery, Università di Padova, Padova, Italy
Co-Authors: Eleonora De Antoni, MD, Clinic of Plastic Surgery, Universit di Padova, Padova, Italy, Vincenzo Vindigni, MD, PhD, Clinic of Plastic Surgery, Universit di Padova, Padova, Italy

Massive weight loss after bariatric surgeries is often associated with the development of redundant skin with unaesthetic appearance. Given the visibility of naked arms in everyday life, the demands for brachioplasty as a body contouring surgery is increasing. All the various surgical techniques pay some immediate surgical site complications as well as late scar inconveniences, like widening and hypertrophying, that represent the main factor for surgical revision. Bad cicatrization's etiology is multifactorial and mainly concerns difficult wound healing and the lack of skin elasticity in massive weight loss patients.

We present now our pilot prospective studio on the treatment of brachioplasty scars with two new devices for postsurgical incision treatment, the ZipLine dressing (Zip 16/24 Surgical Skin Closure System, ZipLine Medical, Campbell, CA), which consists of two opposed hydrocolloid adherent strips locked by superficial bridging polyurethane skirts, and the portable disposable negative pressure system PICO (Smith and Nephew Medical Ltd, UK).

Two random cohorts were arranged, in which patients served as their own control: one cohort was treated with ZipLine on one arm and classic dressing on the other arm (fixation strips STERI-Strip, 3M, St. Paul, MN, USA), and the other cohort was treated with PICO on one arm and conventional dressing on the other arm.

Preoperative patient variables including age, gender, body mass index, American Society of Anesthesiologists (ASA) score and history of medical comorbidities were recorded. All patients had the dressing applied in the theatre at the end of surgery. Dressings were removed at the outpatient service at the 7th day post surgery and any evidence of wound complication (e.g. delayed healing, dehiscence, hematoma, infection, etc.) was recorded, as well as VAS (Visual Analogue Scale) pain at the dressing removal and patient's home discomfort referral. After surgery, all patients followed the same indications: massages with silicone cream and use of garments for at least 12 hours a day. A second visit was made 6 months later for scar check: aesthetic appearance and quality of scarring were recorded using VAS (visual analogue scale) questionnaires.

For the 20 included patients (40 arms: 10 ZipLine, 10 PICO, 20 controls), the number of early wound complications was lower for cases compared to controls, and both pain at the removal and home discomfort were particularly reduced; a similar high quality of scarring was noticed for both ZipLine and PICO treated arms compared to the classic dressings.

In conclusion, we found that both ZipLine dressing and PICO system reduced the incidence of early brachioplasty wound-related complications and late pathologic scarring with improvement in the aesthetic appearance in post-bariatric patients.

Outcomes in Post-Bariatric Body Contouring Procedures: A Multidisciplinary Approach to Patients Selection and Treatment

Presenter: Franco Bassetto, MD, Clinic of Plastic Surgery, Universit di Padova, Padova, Italy
Co-Authors: Paolo Marchica, MD, Clinic of Plastic Surgery, Universit di Padova, Padova, Italy, Vincenzo Vindigni, MD, PhD , Clinic of Plastic Surgery, Universit di Padova, Padova, Italy

Body countouring surgery in massive weight loss patients has spread all over the world due to global increase of obesity or "globesity" as defined by WHO. Obese and ex-obese patients are at high risk of minor and
major complications (eg. pulmonary embolysm and severe infection)
and their treatment needs an accurate selection.

Obese patient is addressed by general practiotioner to
an internal medicine physician in order to
investigate his general health condition and define primary and secondary disease that l ed to obesity. A psychiatric evaluation is required to eventually find and
solve or stabilize a mental disorder. Patient over 70 years old and with ASA score IV are excluded from surgical management of care.
A multidisciplinary discussion defines appropriate treatment. When patient is suitable to surgery, a general surgery procedure is performed (most of patients undergo to sleeve gastrectomy procedure). After target
BMI is reached, massive weigh loss patient is addressed to plastic surgery for
body contouring surgery. It is advised referral of ex-obese patient with unstable weight, BMI over 32,
nd unsolved internal or psychiatric disorder. If patients is considered suitable,
he is included in plastic surgery path that usually starts with abdominoplasty, proceeds with mastopexy, arm and thight lift, lower body
lift, until facelift. Since 2005, almost 1500 patient had consultation at our clinics
and almost 1300
of them, received body countouring procedure. Multidisciplinary approach to massive w

eight loss patients is necessary to minimize complications and to include suitable patients for general and plastic surgery procedures.

REVERSE EXPANSION IN BREAST RECONSTRUCTION AFTER NIPPLE SPARING MASTECTOMY (NSM) AN EFFECTIVE, SIMPLE AND SAFE NEW BREAST RECONSTRUCTION TECHNIQUE WITH AUTOLOGOUS TESSUTE

Presenter: Luca Fabiocchi, MD , Breast Surgery, AUSL Romagna, RIMINI, Italy
Co-Authors: G. Semprini , F. Cattin , L. Dellachiesa , T. Fogacci , G. Frisoni , D. Samorani, Breast Unit Rimini - AUSL della Romagna

BACKGROUND: The majority of surgeons choose an implant-based breast reconstruction after mastectomy (1). Nevertheless, lipofilling is a constantly growing technique allowing a complete breast reconstruction without prosthesis. We introduce our experience using reverse expansion for breast reconstruction following a nipple-sparing mastectomy with a breast expander and a human derived acellular dermal matrix insertion.

METHODS: In 2010, we began to perform fat grafting for breast reconstruction using the "Reverse Expansion" technique (2). In the period January 2010 - December 2017, 80 breast reconstruction procedures were performed on 33 patients. The technique consists of autologous fat tissue transplantation requiring the combined use of a skin expander and of multiple lipofilling sessions.We harvested an amount of fat tissue using a 2.5 mm liposuction cannula, we centrifuged it 3 minutes at 4000 rpm and injected in the recipient site using 3 ml syringes and a Coleman cannula. At the beginning of every session the breast expander was deflated of a saline volume similar to the one of the fat to be injected. Skin expander deflation is used to achieve a good breast volume without significative pressure during fat grafting

RESULTS: We harvested an average of 654.9 ccs of fat per session and injected an average of 324.07 ccs. The mean number of sessions has been 2.4. The average number of sessions in a radiotreated patients' subgroup has been slightly higher than a control group. The mean hospitalization time was two days. The mean follow up time is 32.5 months and we saw no complications in 77 over 80 procedures.

DISCUSSION: Lipofilling has proven to be a safe and effective technique for complete breast reconstruction. Our procedure considers the use of a breast expander as a device to prepare the recipient site. Reverse expansion after a nipple sparing mastectomy allows a like-to-like reconstruction and it might be the first reconstructive choice in a selected group of patients.

CONCLUSION: Considering the large number of positive factors such as: fast post-operative recovery, easy learning curve and no need of a specialized surgical team, natural look of the breast shape, soft consistency of the grafted tissue, we believe that

this method of breast reconstruction with autologous tissue could be considered as a new autologous reconstruction possibility after NSM.

REFERENCES:

1. American Society of Plastic Surgeons. 2014 Statistics. Available at: http://www.plasticsurgery.org/Documents/news-resources/statistics/2014-statistics/plastic-surgery-statsitics-full-report.pdf. Accessed October 1, 2015.
2. L. Fabiocchi , G. Semprini , F. Cattin , L. Dellachiesa , T. Fogacci , G. Frisoni , D. Samorani. Reverse expansion: A new technique of breast reconstruction with autologous tissue. Journal of Plastic, Reconstructive & Aesthetic Surgery (2017) 70, 1537e1542

Management of Tuberous Breast Deformities: Review of Long-term Outcomes and Patient Satisfaction with BREAST-Q.

Presenter: Stefania Tenna, MD PhD, Plastic, Reconstructive and Aesthetic Department, Campus Bio-Medico University of Rome, Rome, Italy
Co-Authors Mauro Barone, MD, Plastic Surgery, Campus BioMedico University of Rome, Rome, Italy.Barbara Cagli, MD, PhD, Campus BioMedico University of Rome, Rome, Italy.Beniamino Brunetti, MD PhD, Plastic, Reconstructive and Aesthetic Surgery Department, Campus Bio-Medico University of Rome, Rome, Italy. Paolo Persichetti, MD PhD, Plastic, Reconstructive and Aesthetic Surgery Department, Campus Bio-Medico University of Rome, Rome, Italy

BACKGROUND: The treatment of a tuberous breast deformity has changed over the years, with a large variety of procedures described. However, maintaining a long-lasting breast contour is an ongoing challenge. The aim of this study was to evaluate the long-term results of tuberous breast corrections, focusing on the incidence of secondary procedures and patient satisfaction.

MATERIALS AND METHODS: Forty-six patients who underwent correction of a tuberous breast deformity from 2000 through 2013 were considered. Age, degree of deformity, asymmetry, BMI, pregnancy, first surgical technique used, complications and further surgical procedures were evaluated. Statistical analysis was conducted to identify predicting factors for multiple procedures. Patient satisfaction was evaluated with BREAST-Q.

RESULTS: Eighty-eight breasts were treated: 57 breasts underwent implant-based corrections, whereas 31 breasts underwent autologous procedures. A multi-step procedure was initially planned in 7 breasts only, and 41 breasts underwent secondary procedures: 33 out of 53 breasts (62.3%) were re-operated in the implant-based group, whereas 8 out of 28 breasts (28.6%) were re-operated in the autologous group. Statistical analysis showed a correlation between the number of procedures and young

age (P = 0.0253) and between the number of procedures and the primary surgical technique (P = 0.0132). The BREAST-Q evaluation suggested that patient satisfaction was comparable.

CONCLUSIONS: The question of time is one of the main issues in breast surgery. The management of tuberous breast deformities requires a customized strategy considering all parameters to improve the longevity of the result in the long term.

Study on the Aging Dynamics of the Periorbital Region: From Observation to Knowledge of Physiopathology

Presenter: Nicola Zingaretti, MD, Clinic of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy
Co-Authors: Fabrizio De Biasio, MD, Clinic of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy. Giovanni Miotti, MD, Clinic of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy, Pier Camillo Parodi, MD, Clinic of Plastic and Reconstructive Surgery, University of Udine, Udine, Italy

Background: Several anatomical and physio-pathological studies of eyelid region have allowed the creation of theories on facial tissues aging dynamics, which have not been clarified yet. We assessed the signs of aging in the region over the time by observing the characteristics in the same person at different times of his/her life.

Methods: We compared the position of the main anatomical landmarks of the eyelid region of 80 patients by overlaying their photos when they were 20, 40 and 60 years old. By creating a fade in the photos, we produced an overlap of the faces (using a software) getting the correspondence of eyes, nose and mouth position. The signs we observed were the following ones: position of the medial and lateral portions of the eyebrow, presence of ptosis, accentuation of frontal wrinkles, width of the eyelid, presence of the upper and lower eyelid bags, presence of upper dermatochalasis, elongation of the lower eyelid height, position of the lateral canthus, highest point of the upper eyelid arc and the presence of the naso-jugal groove. The images were evaluated by a team composed of two plastic surgeons and two ophthalmologists.

In order to find age-related differences for each patient, we divided the overlapping images in 3 groups: 20-40, 40-60 and 20-60 years.
The Stuart-Maxwell test and multinomial logistic regression for repeated measures were used to analyze the data.

Results: we observed, as age increases, the position of the medial portion of the eyebrow tends to be higher and the lateral portion of the eyebrow tends to be lower. In almost half of them there was the presence of a more or less accentuated form of upper eyelid's ptosis in the photo at 60 years. About the accentuation of frontal wrinkles, it is

clear that this defect increases its incidence starting from the age of 40 years in both sexes ($p<0.05$).
There were changes in the horizontal dimension of the palpebral fissure: in fact seems to be shortening after 40 years, both for males and females ($p<0.05$).
The position of lateral canthus appeared lower in about one-third of patients photographed at 60, but it was stable in those photographed at 40. We didn't observe a significant difference in herniation of the upper eyelid bags between groups and sexes. Both dermatochalasis of the upper eyelid and elongation of the lower eyelid height were present in subjects after 40 years, with a statistically significant difference compared to the group 20-40 and more in women ($p<0.05$). Furthermore, the presence of the nose-jugal groove appears more in women over 40 years ($p<0.05$).

Conclusion: we have highlighted some interesting elements, partly agreeing with the data already recorded by other authors' and our data suggest an important role of the eyelid structures senescence and its impact on the surrounding structures.

References:
1. Lambros V. Observations on periorbital
and midface aging. Plast Reconstr Surg 2007; 120:1367-1376
2. Rohrich RJ, Pessa JE. The fat compartments of the face: anatomy and clinical implications for cosmetic surgery. Plast Reconstr Surg 2007;119:2219-2227

Oculonasal Synkinesis: Video Report, Anatomic Discussion and Etiological Analysis of a Rare Phenomenon

Presenter: Giuseppe Guarro, MD, University of Perugia, Perugia, Italy
Co-Author: Francesco Brunelli, MD, University of Perugia, Perugia, Italy, Barbara Rasile, MD, University of Perugia, Perugia, Italy, Carmine Alfano, MD, University of Perugia, Perugia, Italy

INTRODUCTION: Oculonasal Synkinesis is a rare phenomenon linked to involuntary movements in relation to the contraction of different muscular units. The etiology of this condition remains unclear, although the role of irregular connections between the temporal, zygomatic and buccal branches of the facial nerve, which innervate the orbicularis oculi and compressor narium minor muscles respectively, appears to be crucial. This study offers accurate video documentation on two cases, also suggesting the pathway to obtain a good surgical correction with both intra-nasal and open rhinoplasty.

METHODS. This report focused on Oculonasal Synkinesis noticed in two female patients. The average age was 27,5; one of the subjects showed bilateral synkinesis, the other one on the left side only.

RESULTS. Authors adopted two surgical approaches to correct the described condition: the patient who presented bilateral Oculonasal Synkinesis underwent open rhinoplasty, for the one who had the contraction only on the left side an endonasal procedure was preferred.

CONCLUSIONS. Oculonasal Synkinesis represents a rare phenomenon. This report focuses on the relevance of a well-conducted preoperative observation: patients who exhibit this particular condition could not discover this unusual muscular movement before rhinoplasty and could wrongly attribute it to the surgical procedure.

REFERENCES:

1. Guyuron B, Bokhari F, Galloway DV, Thomas T. Oculonasal Synkinesis. Plast Reconstr Surg. 1994 Aug;94(2):251-3.
2. Ciloglu NS, Duran A, Buyukdogan H. A rare phenomenon: oculonasal synkinesis. Aesthetic Plast Surg. 2014 Oct;38(5):1064-5.
3. Crumley RL. Mechanisms of synkinesis. Laryngoscope. 1979 Nov;89(11):1847-54.
4. Bajaj-Luthra A, VanSwearingen JM, Thornton RH. Quantitation of Patterns of Facial Movement in Patients with Ocular to Oral Synkinesis. Plast and Reconstr Surg. 1998;101: 1473.
5. Ramirez OM, Santamarina R. Spatial Orientation of Motor Innervation to the Lower Orbicularis Oculi Muscle. Aesthetic Surgery Journal. 2000;20 (2): 107-11.

Chest Wall Masculinization: Our Treatment Algorithm

Presenter: Paolo Giovanni Morselli, MD, S. Orsola Malpighi Hospital, Alma Mater Studiorum University of Bologna, Bologna, Italy
Co-Authors: Riccardo Villani, MD, S.Orsola Malpighi Hospital, Alma Mater studiorum University of Bologna, Bologna, Italy, Valeria Summo, MD, S.Orsola Malpighi Hospital, Alma Mater Studiorum Univeristy of Bologna, Bologna, Italy, Elisa Antoniazzi, MD, S.Orsola Malpighi Hospital, Alma Mater Studiorum Univeristy of Bologna, Bologna, Italy, Lucia Pannuto, MD, S.Orsola Malpighi Hospital, Alma Mater Studiorum Univeristy of Bologna, Bologna, Italy, Luca Contu, MD, S.Orsola Malpighi Hospital, Alma Mater Studiorum Univeristy of Bologna, Bologna, Italy, Federico Giorgini, MD , S.Orsola Malpighi Hospital, Alma Mater Studiorum Univeristy of Bologna, Bologna, Italy

Background: Estetic masculinization of the chest wall is one of the first surgical steps in female to male transsexual (FTMTS) reassignment.
This surgical procedure is not a simple mastectomy: it is required for removal of breast tissue with glandular resection and skin excess revision, to reduce and replace the nipple areola complex in the right location, minimizing chest-wall scars. The creation of an esthetically pleasing male chest allows the patient to live at ease in the male gender role.

Method: We present our series of 68 FTMTS who underwent bilateral mastectomies for surgical sexual reassignment (a total of 136 mastectomies) according to our algorithm, in the period between January 2010 and December 2016.

- For small - medium breast volume, combined with good skin envelope elasticity, the "pull-through" technique is our first choice. This technique makes it possible to remove the breast parenchyma using only two small incisions, placed far away from the esthetic unit of the male breast;
- For similar small-medium breast volume, with less skin elasticity or "elastorhex striae", a concentric circular technique is better suited;
- For a moderate sized breast with poor skin elasticity and several "elastorhex striae", or large volume breasts with no excessive laxity, we suggest the "ultra-thin vertical bipedicle" technique, designed to remove skin and replace NAC;
- Large sized breasts or ptotic glands with poor skin elasticity require breast glandular resection with free nipple grafting.

Results: We achieved a total complication rate of 6.6%, less than the literature; additional procedures for esthetic improvements were performed in 14.7% of cases. The mean patient satisfaction was about 4.57% out of a maximum value of 5 (excellent).

Conclusion: To help surgeons in choosing the most appropriate FTMTS surgical technique, and to reduce unfavorable results, we propose the use of our treatment algorithm in preoperative evaluation of the chest wall, according to the breast volume, degree of glandular ptosis and skin elasticity.

Evaluation of the Ex-Vivo Effect of Tamoxifen on Adipose Derive Stem Cells: A Pilot Study

Presenter: Andrea Vittorio Emanuele Lisa, MD, Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit, Humanitas Research Hospital, Rozzano, Milano, Italy
Co-Authors: Ilena Boemi, MD, Laboratory of Cellular and Molecular Endocrinology, IRCCS Clinical and Research Institute Humanitas, Milan, Italy., Rozzano, Italy, Luca Maione, MD, 1 Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit, Humanitas Research Hospital, Rozzano, Milano, Italy, Valeriano Vinci, MD , Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit,, Humanitas Research Hospital, Rozzano, Milano, Italy, Francesco Klinger, MD, Plastic Surgery Unit, Reconstructive and Aesthetic Plastic Surgery School-MultiMedica Holding S.p.A, Sesto San Giovanni (MI), Italy, Andrea Lania, Prof , Endocrinology Unit, Department of Biomedical Sciences,, IRCCS Clinical and Research Institute Humanitas, Milan, Italy., Rozzano, Italy, Marco Klinger, Prof , 1 Department of Medical Biotechnology and Translational Medicine BIOMETRA, Humanitas Research Hospital, Rozzano, Italy

Background: Frequently autologous fat graft is applied in breast reconstruction for the treatment and the correction of local deformities and pain syndromes. This could be useful also in patients that underwent reconstruction after surgery following breast cancer. However, these patients frequently are treated with tamoxifen (TAM). It is reported in literature that tamoxifen reduced cellular function and the ability to differentiate of adipose derive stem cell (ASC) in vitro [1].
The authors decided to evaluate the ex-vivo effect of tamoxifen on ASC from patients treated with mastectomy or quadrantectomy plus tamoxifen to understand if the cellular function od ASC are affected by TAM treatment or not.

Methods: We selected 9 female patient patients treated with mastectomy or quadrantectomy plus tamoxifen and pain syndrome correction with autologous fat graft and as control 7 female normo-mestruating patients treated for scar tissue with autologous fat graft. Fat tissue was drawn bilaterally from the flanks then adipose tissues were digested with collagenase I for 1h at 37°. After 10 min at 1200 g centrifuged, ASC were cultured at 37° in low glucose DMEM medium without phenol red, supplemented with 10% FBS, 1% P/S, 1% ultra-glutamine. Between passages 1-2 cells were controlled at FACS for expression marker (CD105, CD73, CD44, CD90) of ASC and submitted for experiments at passages 2-6. The effect of TAM on cellular functions was evaluated by cell proliferation (CyQuant cell proliferation Kit - Thermo Fisher), apoptosis (Annexin V – 7AAD - Biolegend), osteoblast or adipocytes differentiation and VEGF secretion (R&D duo set VEGF ELISA).

Results: We found that TAM as not effect on ex-vivo ASC obtained from patients treated with TAM or normo-mestruating patients. Tamoxifen didn’t inhibit cellular proliferation at 4 and 8 days of culture ($p>0,9$). Moreover, we observed that TAM had no effect also on apoptosis, measured by FACS analysis, after 48h of culture ($p>0,28$). Preliminary results shown also no differences in VEGF secretion (assessed by ELISA) and in adipocytes differentiation after 3 weeks of culture with the induction medium. Interestingly, our preliminary results shown less osteoblastic differentiation capability of ASC from patients treated with TAM.

Conclusion: Our results shown, for the first time in an ex-vivo single centre study, that tamoxifen as no effect on cellular functions of adipose derive stem cells. We hypothesized that this could be explained by the fact that Tamoxifen, which requires conversion into active metabolites (Z)-4-hydroxytamoxifen and (Z)-endoxifen that have up to 100-fold higher ER affinity than the parent drug, it accumulates in the adipose tissues predominantly as TAM [2], [3]. Our preliminary data shown a possible less osteoblastic differentiation capability in TAM treated patients, we need further investigation to better understand the mechanism underline this phenomenon, however we speculate that this could be related to the fact that TAM decrease the bone turnover and has a positive effect on bone density and reduces fractures in postmenopausal women with breast cancer [4], [5].

In conclusion, this study demonstrated that the autologous fat graft can be equally efficient even in patients treated with tamoxifen.

Three-Dimensional Dynamic Skin Movement of Hand Dorsum

Presenter: Sang on Baek, MD, Plastic and Reconstructive Surgery, Incheon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Incheon, Korea, Republic of (South)
Co-Authors: Jun Hyeok Kim, MD, Plastic and reconstructive surgery, College of Medicine, The Catholic University of Korea, Seoul, Korea, Republic of (South), Jun Yong Lee, MD, PhD, Plastic and Reconstructive Surgery, Incheon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Incheon, Korea, Republic of (South)

Purpose: Hand dorsum is one of the most dynamic region in human body with thin and mobile skin. Faulty reconstruction in this region can cause contracture and functional loss. For a dynamic reconstruction, normal motion and associated skin movement as well as the skin elastic properties should be considered. The authors evaluated the hand dorsum skin dynamics in between the full grip and full extension position for proper dynamic reconstruction.

Methods: Left hand was put in functional position and marked with 5-by-7 grid on the dorsum. While making a full grip and full extension without wrist motion, hand dorsum was scanned with portable 3D scanner. The scanned data was processed to align their three-dimensional axis and the surface markers. The markers' displacement during hand motion and their dimensional changes were evaluated in three-dimensional coordinate.

Results: Full grip caused dorsal skin dimensional change from 92.2 to 107.12% of its original length in horizontal axis and from 100.80 to 118.75% of the original length in longitudinal axis when compared to full extension position. Dimensional change was variable at every location in the dorsal skin. Radial to second metacarpal area, and each metacarpal base were found to be the least mobile regions during hand motions and act as the dorsal skin axes.

Conclusion: The result shows that hand dorsum is not a uniformly stretchable unit and its reconstruction should be customized according to injury location within the hand dorsum. For the proper dynamic reconstruction of the hand dorsum, consideration of 10-20% of skin stretching is required and Lazy S or Z-plasty incisions are recommended in dorsal ulnar axis.

Lateral Zig-Zag Incision Approach for Reverse Digital Artery Island Flap

Presenter: Kenichi Shimada,M.D. Ph.D, Department of Plastic and Reconstructive Surgery, Kanazawa Medical University Ishikawa, Japan

Introduction: The reverse digital artery island flap utilizing the transverse palmar branch of the interphalangeal joint reported by Kojima in 1985 is suited to moderate to severe damage to the finger pad. The skin flap is raised using a straight or zig-zag incision made at the mid-lateral aspect. The selection of one of these two approaches is based on the preference of the surgeon. In this report, postoperative contracture following these approaches is compared and the usefulness of the zig-zag incision is discussed.

Methodology: Straight and zig-zag, mid-lateral incision, flap-lifting approaches used in fingertip reconstruction were comparatively examined for 20 fingers of 19 patients, utilizing a reverse digital artery island flap.

Results: Straight incisions were made in 11 fingers and zig-zag incisions were made in 9 fingers. Skin contracture was observed in 5 cases involving a straight incision and in 1 case involving a zig-zag incision. Contracture of the proximal interphalangeal (PIP) joint was observed in 4 cases involving a straight incision but was not observed in any case involving a zig-zag incision. Thus, skin and PIP joint contracture tended to occur more readily following a straight incision compared with a zig-zag incision.

Discussion: A lateral zig-zag incision produces two triangular flaps on both sides of the wound. The incision can be designed simply and uses a suturing technique that resists reopening in conjunction with PIP joint flexion/extension, compared with that using a straight incision. Thus, prevention of postoperative scar contracture is possible and early rehabilitation can also be achieved. Additionally, reducing pressure placed on flap blood vessels is possible by using a triangular flap as a V-Y flap. A lateral zig-zag incision is a useful technique when raising reverse digital artery island flaps.

Autologous Fat Grafting Oncological Safety: A Single-Centre Equivalence Study

Presenter: Francesco Klinger, MD, Plastic Surgery Unit, Reconstructive and Aesthetic Plastic Surgery School-MultiMedica Holding S.p.A, Sesto San Giovanni (MI), Italy
Co-Authors: Fabio Caviggioli, MD, University of Milan, Reconstructive and Aesthetic Plastic Surgery School-MultiMedica Holding S.p.A.- Plastic Surgery Unit-, Sesto San Giovanni - MI, Italy, Luca Maione, MD , 1 Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit, Humanitas Research Hospital, Rozzano, Milano, Italy, Valeriano Vinci, MD , Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit,, Humanitas Research Hospital, Rozzano, Milano, Italy, Andrea Vittorio Emanuele Lisa, MD, Department of Medical

Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit,, Humanitas Research Hospital, Rozzano, Milano, Italy,
Emanuela Morenghi, MD, Department of Medical Biotechnology and Translational Medicine BIOMETRA-Plastic Surgery Unit, Biostatistics Unit, Humanitas University, Rozzano, Milano, Italy
Marco Klinger, Prof, 1 Department of Medical Biotechnology and Translational Medicine BIOMETRA, Humanitas Research Hospital, Rozzano, Italy

Background. Autologous fat graft, otherwise named “lipofilling”, is a minimally invasive surgical technique that uses the own patient’s adipose tissue to correct disfiguring and painful sequelae after several kinds of pathological events, including breast cancer surgery. Despite its proven and undeniable benefits, experimental research has demonstrated that autologous fat graft stimulates angiogenesis and tissue regeneration, and this element has induced researchers to evaluate its possible role in stimulating locoregional recurrence of breast cancer.

Methods. We conducted a single-centre retrospective analysis on 2397 female patients. Every patient has had a primary breast cancer diagnosis and has undergone breast cancer surgery at Humanitas Research Hospital between November 2007 and November 2015. Study population has been divided in a group of 414 cases, who have been treated with autologous fat graft after oncological surgery, and a group of 1983 controls, who haven’t been treated with fat graft. Patients have been selected with similar distribution in the two groups, according the TNM stadiation system; both intraepithelial and infiltrating neoplasias were included in the same proportion in the two groups.

Results. Mean age at diagnosis was 49 years in the case group and 55 years in the control group. Mean follow-up from surgery date was 4.2 years in the case group and 3.9 years in the control group. Mean time distance between surgery and first fat graft was 1.39 years, regarding the case group. The equivalence study revealed a global recurrence percentage of 4,5% in case group and 5,3% in control group, and it can be considered statistically non significant

Conclusions. This study represent one of the more significant equivalence “single center” study that demonstrate that autologous fat graft did not imply an increased rate of locoregional recurrence in patients with breast cancer. Lipofilling is a safe procedure that leads to satisfying cosmetic outcomes without increasing the locoregional recurrence risk after breast cancer surgery.