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Free Communications

Retrospective evaluation of progenitor biological bandage use in pediatric burns: A safe therapeutic management option for prevention of hypertrophic scarring

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Objective

Progenitor Biological Bandages (PBB) found clinical application two decade ago and are since applied for the treatment of second degree burns in children at the Burn Center in Centre Hospitalier Universitaire Vaudois (CHUV, Lausanne). PBB are viable allogenic fibroblastic progenitor cells layered on an equine collagen interface. By secreting cytokines and growth factors, PBB presuppose a capacity in restoring functions of the wounded skin. The main objective of this study is to see if PBB can stimulate enough the natural cutaneous healing process during the first ten to 12 days and thus potentially avoid an autograft or reduce its size. Secondary endpoints are evaluation of short- and long-terms complications, eventual adverse effects of PBB use and impact on global care.

Methods

This retrospective study took place from January 2010 to December 2018 at the Burn Center of the CHUV. It compared two different types of burn wound coverages (PBB and Aquacel Ag) and, after selection, gathered data from 43 patients.

Inclusion criteria were: <18 years old (yo), second- and third-degree burns, and extent of burns (>10% Total Body Surface Area [TBSA] or >5% for children <2 yo). Exclusion criteria were: 18 yo, less than 10% of TBSA burns, first-degree burns, and any documentation attesting to a refusal. Both groups were examined in terms of graft need, early (infections, blood transfusions, immune reactions) and late (scarring, corrective interventions) complications, and hospitalization time.

Results

The results showed PBB as a safe advanced therapy medical product for the treatment of second-degree burns in children. Regarding late complications (hypertrophic scarring and/or need for surgical scar corrections) during follow-up, we found that more corrective procedures were necessary in the Aquacel Ag group with significant decrease in the development of hypertrophic scars in the PBB group (p <0.031), thus diminishing the global morbidity.

Conclusions

Clinical studies under rigorous protocols are a necessity for hospitals seeking to maintain a high standard of care. PBB brought consequent knowledge for cell-based therapy. Future studies for PBB use must focus to further confirm safety and effectiveness on skin closure but also on skin quality. Our results highlight the importance of further development and application of specific cell therapies in highly specialized regenerative medicine.

Extra corporeal machine perfusion vs in vivo replantation to study ischemia reperfusion injury: Can we do without an in vivo model?

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Objective

Ischemia reperfusion injury (IRI) is an unavoidable major cause of morbidity in reconstructive microsurgery seen in many clinical scenarios such as free tissue transfer, replantation and vascularized composite allotransplantation. Successful therapeutic interventions to prevent IRI in rodents has resulted to be less beneficial once translated in clinical practice. We therefore aimed to develop a clinically relevant translational large animal model to study IRI.

Methods

Forelimbs from landrace pigs were surgically amputated under balanced general anesthesia. and exposed to 1 hour of ischemia (control) or 9 hours of ischemia at 22°C and subsequently reperfused for a maximum of 12 hours, by means of an extra corporeal machine (ex-vivo) or retransplanted to the donor pig (in-vivo). Clinical parameters, such as compartmental pressure and arterial pulsatile flow, were recorded to assess the perfusion status of the limb. Tissue and blood samples were collected at set time intervals to analyze markers of inflammation and muscle damage.

Results

All limbs exposed to 1 hour of ischemia, from both ex-vivo (n=6) and in-vivo (n=5) groups, successfully completed 12 hours of reperfusion. Contrarily, in the 9 hours ischemia ex-vivo (n=6) group the mean reperfusion time was 8.3 hours. Only one pig reached 12 hours of reperfusion. In the remaining limbs extra-corporeal circulation was terminated earlier due to massive vascular leakages associated with severe muscle damage evidenced by an increased in compartmental pressure, plasmatic levels of lactate, potassium and calcium. All limbs from the in-vivo 9 hours of ischemia group (n=3) reached 12 hours of in vivo reperfusion.

Evaluation of muscle damage by immunofluorescence microscopy showed significant destruction of the muscle fibers in the 9 hours ischemia limbs for both in-vivo and ex-vivo perfusions, but no relevant damage in the 1 hour ischemia groups.

Conclusions

Our preliminary findings indicate that both ex-vivo and in-vivo models mimic an IRI scenario, and can be used to investigate the pathophysiological processes associated with IRI and to test therapeutical interventions. The more pronounced damage seen with extra-corporeal perfusion suggests that an in-vivo setting is still required for a final confirmation and for the assessment of systemic consequences of IRI.

10-year single center experience in lower limb reconstruction: Factors influencing complications in 270 consecutive cases

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Objective

The anatomy and technique of free muscle flaps - in particular gracilis flap and latissimus dorsi flap - in lower extremity reconstruction have been well described. There is a paucity of data on outcomes and potential risk factors in larger patient series.

Methods

The objective of this study is to address this paucity by reporting on outcomes and complications of free muscle flaps as a primary option in lower extremity reconstruction.

Results

From 2009 to 2020, a total of 257 consecutive patients with soft tissue defects in the lower extremities from trauma, infection or malignancies underwent lower extremity reconstructive surgery with 270 free muscle flaps in our department.

Complications requiring revision surgery were noted in 35.6% of cases. Total flap loss occurred in 10.4% of cases. Patients requiring revision surgery were older, more likely to be female, more likely to be active smokers and more likely to have a higher ASA score.

Conclusions

Lower extremity reconstruction with free muscle flaps has a relevant complication rate that both patient and reconstructive surgeon need to be aware of. Prospective studies should try to further assess the factors affecting outcome.

Breast reduction with the central pedicle: a workhorse for every situation

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Objective

The reduction mammoplasty with the central pedicle was first described by Balch in 1981. Afterward many surgeons have published their experiences with this reliable technique.

Central or posterior reduction mammoplasty is known for the strong vascularisation of the pedicle and good innervation for maintaining of nipple sensation. Preservation of breastfeeding function is also an advantage of this technique.

I will expose my personal modifications of the operation and will present my experience after 1570 central reduction mammoplasties with 942 patients between 1995 and 2021 with a vertical or a T-scar design and will speak about the early and late complications.

Availability of reconstructive treatment options for breast cancer patients in Switzerland's breast center web sources

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Objective

Every year nearly 6000 women develop breast cancer in Switzerland. 30% of these patients have their breast removed of which about one third receive a breast reconstruction. These patients increasingly turn to online sources to gather information about their healthcare providers and treatment options. Hospital web pages can be useful in order to gain insight on the availability of reconstructive treatment options in Switzerland. Using that source, we attempt to illustrate the accessibility and spectrum of reconstructive treatment options for breast cancer patients in Switzerland.

Methods

Included were all breast centers in Switzerland resulting in a total of 33 institutions. All breast center web sources were scanned for collaborations with plastic surgeons/departments, presence of web links to plastic surgery websites and further information on reconstructive options including implant based reconstructions and autologous soft tissue reconstruction techniques (free tissue transfer, DIEP flap, TMG, I-GAP, TRAM flap, lipofilling).

Results

Collaboration with plastic surgeons/departments is mentioned on 63,4% of the hospitals home pages. Of those 66,6% contain a direct web link. 91% of the home pages describe the possibility of breast reconstruction, 57,6% of the websites mention the use of autologous tissue. In 39,4% of the cases a free tissue transfer is mentioned and 15,2% describe detailed procedures like DIEP flap, TMG, or I-GAP. Three out of the 33 centres use detailed illustrations. Breast reconstruction with a silicone implant is mentioned on 57,6% of the web sites. The possibility of lipofilling is discussed in 39,4% of breast center homepages.

Conclusions

Almost 40% of swiss breast center web sources do not show any cooperation with a plastic surgery. Figure 1 illustrates the significant regional disparity in information on free tissue transfer for breast reconstruction. Subsequent reconstructive treatment is an outcome-relevant factor of multimodal breast cancer therapy and thus further effort should be invested to increase the availability.

Skin regeneration and wound healing after mesenchymal stromal/stem cell treatment is dose dependent

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Objective

Skin regeneration and wound healing is crucial, especially after a burn injury. Mesenchymal stromal cell (MSC) therapy is under investigation in promising (pre)clinical trials to restore the damaged skin. However, the optimal cell dosage for therapy remains unknown. The aim of the study was to investigate the outcome of various low-to-high MSC dosages in skin regeneration and wound healing.

Methods

An animal study was conducted on swines (N = 8 Yorkshire pigs). Between 200–2,000,000 cells/cm² of umbilical cord mesenchymal stromal cells (UC-MSCs) were seeded on a biodegradable collagen-based dermal regeneration template (DRT) Integra® and grafted onto full-thickness burns after complete excision. On day 28, a comparison of the different low-to-high cell dose groups, the acellular control, a burn wound, and healthy skin were undertaken.

Results

The low dose group with 40,000 cells/cm² regenerated the full-thickness excised burns most efficaciously, followed by the 5,000 cells/cm² and 200,000 cells/cm² dose groups. The low dose of 40,000 cells/cm² accelerated re-epithelialization, reduced scarring, regenerated epidermal thickness superiorly, enhanced neovascularization, reduced fibrosis and reduced type 1 and type 2 macrophages compared to other cell dosages and the acellular control.

Conclusions

This regenerative cell therapy study shows efficacy when utilizing a low dose of MSCs, changing therefore the paradigm stating that more cells lead to a better wound healing outcome.

A distinct cytokine profile and stromal vascular fraction metabolic status without significant changes in the lipid composition characterizes lipedema

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Objective

Lipedema is an adipose tissue disorder characterized by the disproportionate increase of subcutaneous fat tissue mostly in the lower extremities. The underlying pathomechanisms remain unclear and no molecular biomarkers to distinguish the disease exist, leading to a large number of undiagnosed and misdiagnosed patients. The aim of the current study was to evaluate in depth the lipid and cytokine profile of lipedema and control subjects, exploring the identification of potential biomarkers that would facilitate the timely diagnosis and treatment of the affected patients at an early stage.

Methods

Tissue was collected during the operative procedure of lipedema patients fulfilling the diagnostic criteria of Wold et al. Control tissue derived from gender and BMI matched patients and was anatomically matched. Paraffine-embedded adipose tissue biopsies were used for histological analysis. Furthermore, liposuction aspirate was harvested and the following fractions were analyzed: the oily phase of the lipoaspirate was collected for lipid mass spectrometry analysis and the stromal vascular fraction was isolated and used in the mitochondrial respiration assay. Lastly, blood serum was isolated pre- and, in some cases, post-operatively and analyzed using the Multiplex immunoassay system.

Results

To unravel the distinct molecular characteristic of lipedema we performed lipidomic analysis of the adipose tissue and serum of lipedema versus anatomically- and BMI-matched control patients. Both tissue groups showed no significant changes regarding lipid composition. As hyperplastic adipose tissue represents low-grade inflammation, the potential systemic effects on circulating cytokines were evaluated using the Multiplex immunoassay system. Interestingly, increased systemic levels of interleukin 11 (P=0.03), interleukin 28A (P=0.04) and interleukin 29 (P=0.04) were observed. As cytokines can influence metabolic activity, the metabolic phenotype of the stromal vascular fraction was examined, revealing significantly increased mitochondrial respiration in lipedema.

Conclusions

In conclusion, despite sharing a comparable lipid profile with healthy adipose tissue, lipedema is characterized by a distinct systemic cytokine profile and metabolic activity of the stromal vascular fraction. Further analysis is required to validate the diagnostic or therapeutic potential of the identified targets.

Auto-augmentation techniques after breast implant removal: A simple algorithm for choosing the most suitable procedure

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Objective

Breast augmentation remains one of the most common surgical procedures performed by plastic surgeons. In recent years however, breast implant removal without replacement has become an intervention sought after by many patients, mainly due to severe capsular contracture, systemic symptoms or fear of breast implant-associated anaplastic large cell lymphoma. Explantation of the implant, without inserting a new one, usually leaves behind a wide, deflated breast containing very little glandular or subcutaneous tissue, with the new breast mound barely resembling the former breast. Due to the increase in named procedure, plastic surgeons will need to become familiar with techniques to manage the explantation patient and recreation of a natural appearing breast.

Methods

Our aim is to present a simple algorithm used to select the treatment of women with regards to breast ptosis, shape and volume deficiency after implant removal. To develop our algorithm, we observed a series of 29 consecutive patients, undergoing the removal of breast implants, unrelated to cause of explantation. After the first half of the surgical procedure is completed, breast implant removal with or without capsulectomy, the reconstructive part follows. In broad terms, the breast mound is recreated through an auto-augmentation technique. Depending on the amount of rest-parenchyma, degree of ptosis and tissue quality, the used technique can and should be varied accordingly.

Results

The treatment algorithm helps to guide the surgeon in correction of ptosis and increasing the projection and apparent volume of the breast. The postoperative results confirmed that auto-augmentation mastopexy of the breast with or without the use of autologous fat grafting following removal of an implant yields longstanding results, with the mean level of the inframammary fold being below the mean level of the nipple.

Conclusions

We offer a novel treatment algorithm for managing ptosis, shape and volume deficiency after breast implant removal without replacement. Complication and reoperation rates in our series were low and patient satisfaction was good. It is our hope that this scheme will provide guidance to surgeons in the operative management of this increasing popular procedure.

Nanofat – a cocktail of growth hormones and cytokines

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Objective

Nanofat grafting is a fairly new technique that has gained great popularity in esthetic surgery over the past few years. Nanofat grafting has emerged as an effective treatment used to improve scar quality, rejuvenate skin, and treat chronic wounds. Nevertheless, little is known about the underlying molecular and cellular mechanisms by which nanofat induces tissue regeneration.

Methods

We collected microfat and nanofat samples from 18 healthy patients that underwent liposuction and subsequent fat grafting. Samples were prepared as described by Tonnard and coauthors. Proteomic profiling was performed through untargeted mass spectrometry proteomics and multiplex antibody arrays. Pathway enrichment analysis of differentially expressed proteins between microfat and nanofat was performed with the NetworkAnalyst platform, using Gene Ontology, Reactome and KEGG as reference databases.

Results

Proteomic profiling showed that upregulated genes in nanofat are involved in innate immunity pathways like the complement and coagulation cascades, phagocytosis and acute inflammatory response. We further noticed an upregulation of AMPK and IL-6 signalling pathways, which are known to be crucial for cellular growth, proliferation and the inflammatory phase of wound healing. On the other hand, genes linked to cellular migration and extracellular matrix production were downregulated. Although secretome array screening of microfat and nanofat samples showed no significant difference in expression levels, we identified proteins that play an important role in wound healing, cellular migration, extracellular matrix remodelling, angiogenesis, stress response and immune response.

Conclusions

In conclusion, mechanical processing of lipoaspirates into nanofat significantly influences its proteome profile and regenerative potential. Nanofat is a cocktail of growth factors and cytokines that enhance inflammation and tissue remodelling explaining its clinically proven effect on skin rejuvenation.

How to control nasal tip rotation in rhinoplasty

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Objective

Changing the appearance of the nasal tip is one of the most common procedures in rhinoplasty. Thereby the longterm control of the tip rotation is one of the mayor challenges. Several techniques are described to solve that task. This presentation should help in the decision-making process which technique to choose.

Methods

The presentation will describe tongue in groove techniques with and without septal extension grafts. Further strategies like struts, suture techniques and steal maneuvers are demonstrated. Also soft tissue preservations strategies are explained. Every technique is explained with the help of video clips.

Results

The advantages and disadvantages of every mentioned technique are explained. Therefore the case studies are shown from three different perspectives pre and post-op. The minimum follow up is 6 months.

Conclusions

For finding the sufficient surgical strategy a careful analysis is essential. Thereby the cartilages as also the soft issues need to be assessed. Only when both components are included in the decision-making process the best suitable technique will be found. In modern rhinoplasty the aim must be to apply patient and anatomy adapted techniques. Although in Rhinoplasty there is not the one and only surgical strategy this study will present an algorithm of surgical procedures to control nasal tip rotation.

Outcome analysis between anterolateral thigh flap and profunda artery perforator flap in subtotal and total tongue reconstruction

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Objective

The tongue is a critical structure for maintaining normal speech and swallowing. The aggressive treatment modalities used for tongue cancers increase survival but have a significant impact on quality of life. In cases with relevant tissue loss, reconstruction with autologous free flap is necessary to recreate the tongue with volume. While the anterolateral thigh (ALT) flap is a workhorse in subtotal and total glossectomy, it can be associated with complex anatomical variations. The profunda artery perforator (PAP) flap has gained popularity as an alternative option for glossectomy defects. We compared donor and recipient site complications, flap volume and functional outcome between ALT and PAP flaps after total and subtotal tongue reconstruction.

Methods

We conducted a retrospective review of all patients who underwent subtotal and total tongue reconstruction with an ALT or PAP flap from January 2016 until July 2020 at a single institution. Primary endpoint was volume change of the flap over time. Secondary endpoints consisted of functional outcome and complications after flap reconstruction.

Results

Seventy-eight patients underwent tongue reconstruction with either PAP or ALT flap between January 2016 and July 2020. Of these patients, 54 were reconstructed with ALT flaps and 24 with PAP flaps. Donor site and recipient site complications were not significantly different between the two groups. M.D. Anderson Symptom Inventory (MDASI) mean global score in the ALT group was 125.5 ± 80.4 and 96.6 ± 45.7 in the PAP group (p = 0.308). Mean flap volume loss at 6 months, after radiation, was higher in the ALT group compared to PAP group (35.8 vs. 26.5%, p = 0.723)

Conclusions

This is the largest series comparing ALT and PAP flaps for tongue reconstruction. The profunda artery perforator flap proved to be a valuable tool in the armamentarium for subtotal and total tongue reconstruction, as it provides excellent volume, pliability, consistent anatomy and better durability in the setting of radiation in comparison to the ALT free flap.

In vivo evaluation of mechanically isolated stromal vascular fraction by a novel arteriovenous shunt model

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Objective

The stromal vascular fraction (SVF) is conventionally isolated by enzymatic digestion of adipose tissue. Regulatory issues in Western countries, however, have overshadowed its application in recent years. Consequently, a number of protocols utilizing mechanical forces were introduced in recent years to bypass aforementioned regulations including the "lipoconcentrate" protocol which showed interesting in vitro cell features. The fate of the mechanical SVF (mSVF), however, was not studied to date.

To study the in vivo fate of tissue constructs, vascularized tissue engineering chambers have emerged including the arteriovenous (AV) loop model which requires a vein graft from the contralateral leg.

Herein, we discuss a novel simplified technique by creating an AV shunt without vein grafts for in vivo evaluation of mSVF processed by our novel protocol.

Methods

Mechanical SVF was isolated from inguinal fat pads of male SD rats. The mSVF was next mixed with a fibrin hydrogel and implanted into a vascularized tissue engineering chamber. To establish a vascular axis, the saphenous artery and vein were ligated in the knee region and anastomosed in an end-to-end fashion (AV shunt). On the contralateral side, an mSVF-fibrin hydrogel mix without vascular axis served as a control. After two and six weeks, rats were sacrificed followed by mSVF explant analysis.

Results

The AV shunts were viable in 11/12 rats (91.66%), two chambers were lost due to chamber exposure. The vascularized mSVF explants gained weight with time whereas non-vascularized mSVF explants were macroscopically necrotic and the weight remained unaltered. HE staining revealed fat necrosis in vascularized and non-vascularized mSVF explants after two weeks. In the vascularized mSVF explants, however, fat necrosis diminished over time. Further data from qPCR and IHC show an increase in adipogenesis, viability and angiogenesis in vascularized m-SVF explants over time.

Conclusions

The AV shunt model is a valuable refinement of currently existing AV loop models in the rat. In theory, two AV shunts can be created in a single rat reducing the number of sacrificed animals which contributes to the fundamental 3R principles of animal research. Our experiments reveal that vascularized mSVF is able to proliferate and differentiate, thus generate de novo adipose tissue in vivo.

The multiple rib osteomyocutaneous split-latissimus dorsi flap for calvarial reconstruction: Indication, operative technique and review of literature

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Objective

Major complex cranial defects resulting from trauma, oncological resections, infections or anomalies may be challenging for the reconstructive microsurgeon. Affected patients often present with firm, scarred and irradiated soft tissue of the scalp including dura exposure with cerebrospinal fluid leakage. The lacking structural bony support underneath may cause severe neurological issues such as dizziness, headache, speech impairment, and seizures (aka sinking flap syndrome). To avoid this sequela as well as to restore the skull contour for aesthetic and protective reasons, proper reconstruction is imperative, and in select patients there is need for well vascularized autologous bony and soft tissue repair.

Methods

The authors elucidate the role of the multiple rib osteomyocutaneous split latissimus dorsi flap for reconstruction of composite skull defects, providing indication, an exemplary case demonstration with operation technique and a literature review.

Results

The authors' institution uses the multiple rib osteomyocutaneous latissimus dorsi flap in those delicate situations, where previous alloplastic reconstructions have failed due to infection or foreign material intolerance. A 40-year-old woman after resection of an anaplastic oligodendroglioma suffered multiple extrusions with secondary infections of her PEEK allograft cranioplasties, most probably due to a foreign body reaction towards the PEEK material. The curved bony defect to be spanned by autologous means after PEEK removal was 268 cm². The defect was covered with an osteomyocutaneous split latissimus dorsi flap including costae VIII, X, and XII and a skin island of 5x12 cm as soft tissue coverage. The included ribs were nourished by interconnecting perforators between the thoracodorsal and intercostal vessels. The posterior periosteum was left attached to the pleura parietalis for protection of the lungs. The patient presented after 6 months with stable bony and soft tissue conditions without any neurological symptoms, and acceptable donor site morbidity.

Conclusions

The free composite latissimus dorsi flap containing skin, muscle, and vascularized ribs is well suitable for coverage of large compound cranial defects, providing skeletal support, improving contour, and significantly enhancing functional outcome with limited donor site morbidity.

Posterior auricular perichondrial cutaneous graft for stable reconstruction of nasal defects: Long-term outcomes

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Objective

The posterior auricular perichondrial cutaneous graft (PCCG) was described in 2005 by Kalbermatten et al. as functional, stable and aesthetic reconstructive option in case of cartilage or fibrofatty tissue defects of the nasal tip or ala. The composite graft is harvested using a posterior auricular donor site which is closed with a postauricular transposition flap, thus avoiding resection from the anterior conchal bowl. The present study aims at reporting long-term outcomes of the procedure.

Methods

We conducted a retrospective review of all patients undergoing nasal tip reconstruction with PCCG between 2005 and 2020. Graft survival, donor-site morbidity, nostril stability, reoperation rate and aesthetic outcomes were assessed at long follow-up.

Results

We identified 13 patients undergoing PCCG nasal reconstruction to cover defects presenting an average size of 2 cm² on the ala and 2.5 cm² on the tip after basal cell carcinoma resection. Twelve patients showed primary complete healing, while reoperation was required in one case due to partial necrosis of the graft. At a mean follow-up of 14.5 months, nostril stability and symmetry were achieved in all patients, while all donor sites healed uneventfully. Aesthetic outcomes were judged as satisfactory for both patients and surgeons. Oncological control was ensured by this reconstruction allowing detection of relapse in three cases.

Conclusions

This follow-up study confirmed the findings initially presented with a shorter 6 months follow-up. The PCCG demonstrated to be a reliable and effective reconstructive option, able to restore function and aesthetic with minimal morbidity rate. Notably, the procedure allows optimal oncological control.

Enhanced recovery after surgery pathway decreases opioid use and complication rate following microsurgical breast reconstruction

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Objective

The use of ERAS protocols in the field of plastic surgery has gained popularity over the last decade especially in microsurgical breast reconstruction (MSBR) patients. The existing literature has been limited to single surgeon or a small group of microsurgeon experiences. The current study examines ERAS outcomes in a large group of microsurgeons with the novel addition of outcomes assessment from a quality improvement (QI) perspective. Moreover, the impact of anesthesia type on opioid consumption has not been previously delineated. We hypothesize that the implementation of ERAS in a large group of microsurgeons would lead to reduced opioid consumption and hospital stay from both traditional and QI perspectives.

Methods

A retrospective review of patients who underwent immediate or delayed abdominally-based MSBR was conducted at our institution. Patients who underwent MSBR between August-December 2019 were included in the ERAS cohort they. This group was compared to a historical cohort of MSBR patients who underwent surgery between June-December 2018 (conventional cohort, CC) prior to ERAS implementation with traditional postoperative care.

Results

A total of 169 patients [CC, 98 (58%); ERAS, 78 (42%)] underwent MSBR during the study period. Complication rate was significantly higher in the CC group (34% vs. 17%, $p=0.015$). Major complications were encountered in 16% of patients in CC group vs. 9% in the ERAS group. Reoperation and 30-day readmission rates were similar between the two groups. Length of stay (LOS) was slightly shorter in the ERAS group (4.6 ± 1.1 vs. 4.8 ± 0.9 , $p=0.024$). ERAS was a significant predictor of decreased opioid use ($p=0.0001$). Anesthesia type, reconstruction type, or laterality were not significant predictors of Opioid Oral Morphine Milligram Equivalent (MME) use.

Conclusions

The adoption of ERAS pathway for MSBR in a large heterogeneous group of microsurgeons improved patient outcomes by reducing length of stay, total opioid consumption, and incidence of postoperative complications.

Are muscle flaps on its way to retirement?

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Objective

The idea of using muscle flaps for reconstructive surgery has its origin in the 19th century. Further development made the muscle flap a good tool for coverage of soft tissue defects. With the rapid emergence of fasciocutaneous flaps with less donor site morbidity in comparison, the muscle flap received a competitor. There is an ongoing discussion between the advocates of the two methods. Even some may ask if muscle flaps are still an up to date therapy or if it is becoming a thing of the past.

Methods

We do believe they still have their indication especially in orthoplastic surgery. Therefore we want to point out the benefits of muscle flaps versus fasciocutaneous flaps as well as their indications for reconstruction of the lower extremity.

Results

With some cases we affirm good and satisfying results for the patients who received muscle flap reconstructive surgery.

Conclusions

In conclusion, although muscle flaps have been described and used for reconstructive surgery for about one hundred years, they are still up to date with the correct indications.

Lympho-venous anastomosis for the treatment of thoracic duct lesions and anomalies of the central lymphatic system: a multidisciplinary treatment approach

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Objective

Congenital and acquired lesions of the central lymphatic system are very rare entities with significant associated morbidity. The optimal treatment strategy remains unclear, with extremely limited evidence base and a variety of different treatment modalities.

Methods

We treated four patients with anomalies or lesions of central lymphatic system of different origin between 2018 and 2020. After a thorough interdisciplinary work-up, three patients underwent lympho-venous anastomosis (LVA) between the thoracic duct (TD) and a vein.

Results

In two patients, a central conducting lymphatic anomaly (CCLA) with a massively dilated TD and consecutive chylous reflux was diagnosed. In both, conservative treatment based on dietary measurements and octreotide remained without success. Given the high risk to worsen chylous reflux by lymphangiography-guided embolization, both patients underwent LVA leading to full remission in one patient, and partial remission in the other. A patient with postoperative chylous fistula after neck dissection was treated similarly and also showed complete remission. In contrast, one patient was diagnosed with a spontaneous TD rupture, that resolved without any treatment.

Conclusions

Based on a series of cases, in which conservative and interventional therapy failed we gained important clinical experience in the treatment of central lymphatic lesions by LVA. The authors recommend lymphangiography-guided interventions such as recanalization or embolization as standard treatment if possible. In case of remaining chylous leaks, chylous backflow and localized fistula or stenosis, LVA offers a chance of cure with a reasonable perioperative risk for patients.

Enhanced recovery after autologous breast reconstruction

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Objective

Although routine, autologous breast reconstruction is still a complex procedure, several components contribute to its complexity: cancer diagnosis with possible neo-adjuvant chemotherapy, 2 to 4 surgical sites, microsurgery, anesthesia > 3h, pain management, delayed mobilisation. These factors can decrease patients' acceptance and referral and many patients who would benefit from autologous reconstruction are not included. To strengthen acceptability and outcome we introduced an enhanced recovery protocol for microsurgical breast reconstruction.

Methods

The protocol included intra and postsurgical measures. A 2-team approach decreased operation time. Rectus sheath incision in DIEPs was limited to 5cm. All patients received ropivacaine 5mg/ml at harvest and recipient site intraoperatively. No abdominal drainage was used. Flap skin islands were only placed when required for breast shape. If the flap was intraoperatively well perfused a monitor island was omitted. Opioids were only given at the day of surgery, pain medication from 1. po day was switched to NSAIDs, opioids only given as a reserve. All patients were mobilized the evening after surgery, latest 1. po day. Anticoagulation consisted of prophylactic dose of LMWH and 100mg Aspirin.

Results

In a 12 months period 32 DIEP-flaps and 19 inner upper thigh flaps (TMG/PAP) were performed. Average surgery time was 211min (157-303min) for a unilateral DIEP-flap, 174min (139-225min) for unilateral upper thigh flap. Bilateral DIEP took 366min on average, bilateral upper thigh flap 310min. There was one flap loss, not attributed to the recovery, but to technical problems at recipient site. All other flaps were vital; no donor site wound healing problem occurred. Patients did not report increased pain. Patients were able to stay as long as they considered necessary, average length of stay (LOS) of the group, including uni- and bilateral reconstructions, was 5.1 (2-9) days.

Conclusions

ERAS is safe and does not lead to increased flap loss, donor site complication or delayed onset of adjuvant cancer therapy. ERAS starts with gentle surgical tissue handling, intraoperative pain block and should aim to reduce operation time. Post-surgical measures focus on early mobilization and pain management. Reduced use of opioids is well tolerated. Besides a reduced LOS which decreases hospital costs the acceptance of autologous reconstruction can be increased.

Long-term evaluation of nipple areolar complex changes in inferior versus superomedial pedicle reduction mammoplasty: A comparative study

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Objective

This study aims to compare Nipple-Areola Complex (NAC) sensation and appearance outcomes in inferior pedicle (IFP) and superomedial pedicle (SMP) wise pattern breast reductions over time.

Methods

A comparative retrospective review of IFP and SMP breast reductions was performed on a prospectively maintained database from January 2013 to July 2017. Patients having bilateral wise pattern breast reductions using the IFP or SMP technique, with a 2-year follow-up period were included in the study. NAC sensation was evaluated quantitatively using Semmes-Weinstein monofilaments (SWM) and qualitatively using patient-reported perception of their NAC sensation. Dimension of the NAC was evaluated by measuring the NAC diameter and NAC shape was evaluated by using the ratio of longest to shortest areola diameter. NAC distortion and NAC scars hypertrophy were also qualitatively judged and scored by surgeons.

Results

Among the 73 patients, 42 (58%) had a SMP technique and 31 (42%) an IFP technique. Areola sensitivity assessed by SWM showed better return in the SMP group at 6 months ($p < 0.01^{**}$) and nipple sensitivity was better in the SMP group at the 6-month ($p < 0.001^{***}$) and 24-month ($p < 0.01^{**}$) follow-up. Patients from both groups reported a progressive return to normal sensation from 6 months postoperatively, with no significant difference between groups at any time point. NAC enlargement was greater in the SMP group at 6 months ($p < 0.01^{**}$) but was not different ($p = 0.07$) between groups 24 months postoperatively. NAC shape showed increases in both the SMP group ($p < 0.001^{***}$) and the IFP group ($p < 0.01^{**}$) when comparing the 2-week and 24-month follow-up visits measured ratios confirming a more oval appearance over time. Scar hypertrophy showed statistically significant reduction in both the SMP ($p < 0.001^{***}$) and the IFP groups ($p < 0.01^{**}$) over time.

Conclusions

This 2-year follow-up study showed a statistically significant difference towards better quantitative NAC sensitivity with SMP. However, this difference in NAC sensation was not remarked from a patients' qualitative point of view. A tendency towards NAC distortion was seen with both techniques, with a more rapid distortion with SMP. Both techniques are valuable and safe options and this supports the choice of technique based on individual surgeon preference.

Loco regional blocks improve postoperative pain management in microsurgery reconstruction of lower extremities

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Objective

Opioid-based analgesia is often used in the management of pain in the immediate postoperative period generally limiting ERAS. Regional nerve blockade has been shown to not only reduce perioperative pain but also reduce sympathetic tone and peripheral vasospasm, which may be particularly useful in lower limb microsurgical reconstructions. The purpose of our study was to compare the amount of opioid use, calculated as morphine milligram equivalent (MME) between groups and to assess whether a single-shot peripheral nerve block was safe and associated with analgesic benefits in the post-operative setting in patients undergoing lower limb free flap reconstruction.

Methods

A retrospective review of a prospectively maintained database including all patients undergoing lower limb reconstruction with free tissue transfers between October 2017 and April 2020 was performed. Patients were divided in two groups based on preoperative single-shot peripheral nerve block (PNB) utilization. The use of oral opioids, post-operative pain scores, flap-related outcomes, patient morbidity and length of hospital stay (LOS) were recorded and compared between groups.

Results

Of 36 patients that underwent lower limb reconstruction with free tissue transfers, 31 patients were included in the study. Preoperative single-shot PNB was performed on 14 patients (45%), while 17 patients (55%) received general anesthesia (GA) alone. When comparing pain at rest between both groups, the VAS score on postoperative day (POD) 1 was significantly lower ($p < 0.01$) in the PNB group. The mean amounts of opioids consumed were significantly lower in the PNB group on both POD 1 ($p < 0.01$) and POD 2 ($p < 0.05$) and cumulatively over 7 days ($p < 0.05$) when compared to the GA-only group. The average hospital stay in both groups and complication rates were similar between groups.

Conclusions

Preoperative single-shot PNB significantly reduced postoperative opioid use, patient-reported pain severity and was not associated with an increase in complication rates. Loco-regional pain management in microsurgical lower extremities reconstruction can thus minimize patient discomfort and could be an option to avoid opioids-related side effects.

Muscle vs fasciocutaneous microvascular free flaps for lower limb reconstruction: A meta-analysis of comparative studies

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Objective

Lower extremity microvascular reconstruction for complex soft tissue defects aims at restoring function and preventing infection while ensuring optimal cosmetic outcomes. Muscle (M) or Fasciocutaneous (FC) microvascular free flaps are alternatively used to treat similar conditions. However, it is unclear whether one of these two options might be considered superior in terms of clinical outcomes.

We performed a meta-analysis of studies comparing M and FC flaps to evaluate this issue.

Methods

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed to perform a systematic search of the English literature.

We included all articles comparing M and FC flap reconstructions for large lower limb soft tissue defects following trauma, infection or tumor resection.

For our analysis we considered as primary outcomes flap loss, postoperative infection, donor site morbidity and aesthetic satisfaction. Secondary outcomes included minor recipient site complications, need for revision surgery, time to bony union and postoperative ambulation rates.

Results

A total of 14 articles involving 1707 patients receiving 1714 flaps were retrieved, corresponding to 979 (57%) M flaps and 735 (43%) FC flaps. The size of the studies included ranged from 24 to 518 patients. The most commonly used M flaps were Latissimus Dorsi, Gracilis, Rectus Abdominis and Vastus Lateralis, while the most commonly used FC flaps were Anterolateral Thigh, Radial Forearm and Lateral Arm.

No statistically significant differences ($p > 0.05$) were observed in relation to all of the investigated variables.

However, despite the lack of statistical significance, the majority of authors affirmed to prefer FC flaps because of greater aesthetic satisfaction, earlier postoperative ambulation, minimal donor site morbidity and better environment reducing susceptibility to postoperative infection.

Conclusions

Our data suggest that both M and FC flaps are equally safe and effective options for lower limb reconstruction following trauma, infection or tumor resection. Further research should be conducted to demonstrate the perceived superiority of FC flaps among authors.

Insurance coverage requests : three « standard-letters ».

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Objective

Those last years, we have met more difficulties with swiss insurance for plastic surgery's interventions. Until today, all the insurances letters were made by the physicians of our Center for their own patients.

We wanted to create « standard-letters » for the three most popular plastic surgery insurance coverage request. Those letters focus on diastasis recti abdominis with abdominoplasty, reduction mammoplasty, post bypass abdominal wall treatments.

The goal of this study is to standardize insurance coverage request in our center and save time for doctors on their administrative work. In a second time, we will be able to quantify the positive response rate of insurance companies.

Methods

We wrote three insurance request letters covering the treatment of: diastasis recti abdominis with abdominoplasty, reduction mammoplasty, post bypass abdominal wall surgery. A lawyer assisted us by verifying and providing legal information in our letters.

These letters will then be used by every doctors in the department in order to make standardized requests towards insurance companies.

Results

These « standard-letters » will be introduced in our center aiming standardization if insurance requests.

Initially, it will allow to optimize physicians time on administrative tasks. In a second time, we will observe the positive response rate.

Conclusions

We have just introduce « standard-letters » in our department in Lausanne. We have already observed a diminution in the administrative work charge. We are still accounting insurance responses and waiting to get enough data to make relevant conclusions.

The value of morphometric measurements in risk assessment for donor-site complications after microsurgical breast reconstruction

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Objective

Microsurgical abdominally-based reconstruction is considered the gold standard in autologous breast reconstruction. Despite refined surgical procedures, donor-site complications still occur, reducing patient satisfaction and quality of life. Recent work has outlined the potential of morphometric measurements in risk assessment for postoperative hernia development. With rising demand for personalised treatment, the goal of this study was to investigate their potential in risk assessment for any donor site complication.

Methods

In this retrospective cohort study, 90 patients were included who each received microsurgical breast reconstruction at the hands of one surgeon between January 2015 and May 2017. Donor-site complications formed the primary outcome and were classified according to Clavien–Dindo. Morphometric measurements were taken on a routinely performed computed tomographic angiogram.

Results

Complications occurred in 13 of the 90 (14.4%) cases studied. All patients who developed any type of postoperative donor site complication had a history of abdominal surgery. The risk of postoperative complications increased by 3% with every square centimetre of omental fat tissue (OR 1.03, 95% CI 1.00–1.06, and p-value = 0.022).

Conclusions

Morphometric measurements provide valuable information in risk assessment for donor-site complications in abdominally-based breast reconstruction. They may help identify personalised reconstructive options for maximal postoperative patient satisfaction and quality of life.

Soft-tissue reconstruction in lower-leg fracture-related infections: An orthopaedic outcome and risk factor analysis

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Objective

Fracture-related infection (FRI) is a severe post-traumatic complication which is occasionally accompanied by a deficient or even avital soft-tissue envelope. In these cases, a thoroughly planned orthopaedic approach is imperative as a vital and intact soft-tissue envelope is mandatory to achieve fracture union and infection eradication. The aim of this study was to analyse the outcome of soft-tissue reconstruction (STR), and to investigate if primary flap failure presents a risk factor for fracture nonunion and recurrence of infection.

Methods

Patients with a lower leg FRI requiring STR (local, pedicled and free flaps) who were treated from 2010–2018 at the University hospital of Basel were included in this retrospective analysis. The primary outcome was the success rate of STR, the secondary outcome was fracture nonunion and recurrence of infection.

Results

Overall, 145 patients with lower leg FRI were identified, of whom 58 (40%) received STR (muscle flaps: n=38, fascio-cutaneous flaps: n=19; composite osteo-cutaneous flap: n=1). In total seven patients required secondary STR due to primary flap failure. All failures and flap-related complications occurred within the first three weeks after surgery. Secondary STR was successful in all cases. A high Charlson Comorbidity Index Score was a significant risk factor for flap failure (p=0.011). Out of the 43 patients who completed the 9-month follow-up, 11 patients presented with fracture nonunion and 12 patients with a recurrent infection. Polymicrobial infection was a significant risk factor for fracture nonunion (p=0.002). Primary flap failure was neither a risk factor for compromised fracture consolidation (p = 0.590) nor for recurrence of infection (p = 0.508).

Conclusions

As STR in patients with local and systemic risk factors is associated with a considerable number of flap related complications, management in an interdisciplinary bone infection unit is highly recommended. If the primary flap fails, the soft-tissue defect can successfully be reconstructed with a second flap. This scenario does not represent a risk factor for compromised fracture union or recurrence of infection.

Reimbursement policies of swiss insurance companies for reduction mammoplasty in the treatment of symptomatic breast hypertrophy

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Objective

Current reimbursement policies for reduction mammoplasty (RM) of symptomatic breast hypertrophy (sBH) from health insurance companies (IC) in Switzerland are controversial, despite presumably clear legal basis. Consequently, patients that present a clear indication for RM as indicated by the specialist surgeon, are often assessed in a different way by the medical consultant of the patient's IC. This mismatch in patient assessment may result in additional outpatient visits and examinations, as well as prolonged symptomatology and/or absenteeism.

The study aim was to evaluate current reimbursement policies for RM and potential extra-expenses generated by a disagreement between the specialist surgeon and the medical consultant.

Methods

Multicentric study enrolling patients from Oct 2014 to Mar 2021 with cost approval for RM. End-points: Time between 1st application for reimbursement as defined by the specialist surgeon and approval for reimbursement by the IC; number and type of requests as well as additional visits, diagnostics and treatment needed.

Results

Data from 90 patients suffering from sBH were reviewed, of which 73 were included into the study. Reimbursement was confirmed after one, two, three or four requests in 44, 8, 17 and 4 patients, respectively. Medium time to obtain approval for reimbursement ranged from 6 and 38 weeks for patients needing one and four requests, respectively. 48% of the patients had to undergo further evaluation by a specialist (e.g. orthopedic or neurosurgeon, dermatologist, rheumatologist) with additional costs of 240.30 CHF per visit. 26% of the patients underwent supplementary imaging of the cervical spine: X-ray (125 CHF); CT-scan (342.20 CHF); MRI (415 CHF). 69% of the patients had to further undergo physical therapy of a minimum of 9 sessions (624 CHF).

Conclusions

RM for sBH is considered therapeutic due to its significant decrease in pain and discomfort as well as improvement in quality of life. Nevertheless, almost half of the patients suffering from sBH had to undergo additional medical visits or exams despite a clear indication for surgery as defined by the specialist surgeon. Current criteria as defined by our federal law on health insurance coverage (KVG) still enables some margin of interpretation that results in surgical delay and increased expenses of public health.

Our concept of total nasal reconstruction

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Objective

The main reason for total nasal reconstruction is a history of cancer resection but also trauma. Not only the reconstruction of the skin but also the innerlining is one of the major difficulties facing a surgeon.

Methods

We want to show you different possibilities for reconstruction of the total nose including the innerlining, the framework and also the skin depending on the defect up to ablatio nasi.

Results

In the case of an ablatio nasi one has to reconstruct the innerling with a forearm flap. However if there is at least some kind of innerlining residues, there is the possibility to do a hinge over flap and to use the surrounding intact skin. In nearly all cases the framework has to be built up by rib cartilage to provide sufficient stability. To reconstruct the skin the best way is the forehead flap with our without expansion.

Conclusions

Before one incision is made, planning the whole reconstruction is the major key for success.

Reduction mammoplasty in adolescents: should we wait? A systematic review

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Objective

Reduction mammoplasty is considered the gold standard treatment for symptomatic macromastia. Although the procedure is commonly performed in adolescent patients, plastic surgeons are often reluctant to operate at a young age, especially due to considerations on recurrence risk, breastfeeding capacity and psychological vulnerability. This review aimed at investigating the evidence behind these concerns.

Methods

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed to perform a systematic review of the literature, searching the PubMed/MEDLINE database for all original clinical studies focusing on reduction mammoplasty in patients under the age of 21. We included articles in all languages reporting surgery outcome information, while excluding case reports or studies covering other breast-related conditions but macromastia.

Results

The search identified 706 articles, 14 of which met inclusion criteria, 13 with retrospective and one with prospective study design, representing 2'956 adolescent patients who underwent reduction mammoplasty for symptomatic macromastia. According to these studies, reduction mammoplasty is an undeniably effective intervention to relieve young patients from the physical and psychological burdens of macromastia, with a high and lasting satisfaction rate. Major complications rate tended to be lower than in the general population. Re-operation for recurrence was rarely reported. Although it has been well demonstrated in adult population, the correlation between increased Body Mass Index (BMI) and complication rate resulted unclear for adolescents undergoing reduction mammoplasty. Some patients reported post-operative lactation success, while breastfeeding renouncement was not necessarily linked to history of breast reduction.

Conclusions

Our findings based on the analysis of 14 clinical studies suggest that reduction mammoplasty is an effective and safe treatment for symptomatic macromastia in adolescent patients. Surgeons should not be reluctant to treat patients of this age population, and indication for surgery should be based on the severity of symptoms and failure of conservative measures.

Clinical outcomes of late neurolysis: Shifting the paradigm?

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Objective

Aim of this study was to investigate whether or not late neurolysis (≥ 12 months after occurrence of clear symptoms) can still have a positive impact on patient's motor/sensory symptoms, despite acknowledgement of physical changes that occur in the nerve with chronic compression. This work tried to establish potential correlation between symptoms amelioration and time before surgical decompression since the duration of symptoms.

Methods

28 cases with median (n=8), ulnar (n=8), lateral femoral cutaneous (n=6) and common peroneal nerve (n=6) entrapment were prospectively examined preoperatively and at 3, 6 and 12 months follow-up to assess eventual signs of nerve recovery. Study population included 9 men and 19 women, mean age 50 years old. Mean duration of symptoms was 35 months (range 12 to 120). 11/28 patients had traumatic nerve compression.

Strength was graded with Medical Research Council (MRC) scale, Jamar and gauge dynamometer. Sensibility was evaluated with Ten Test (light touch), Semmes Weinstein Monofilament (sensory threshold), static two points discrimination (innervation density). Tinel sign's examination and pain numeric rating scale (NRS) completed the assessment. To attest subjective disability in daily life, the QuickDASH (disability of the Arm, Shoulder and Hand) and the LEFS (Lower Extremity Functional Scale) questionnaires were full filled.

Results

Our results show a positive trend toward amelioration in quality of life, strength, sensibility and pain for each nerve observed, even if the difference with preoperative values was not always statistically significant. Traumatic nerve compression had less favourable outcome when comparing to idiopathic group.

Patients with symptoms ≥ 24 months had a tendency to show higher NRS scores when compared to patients who benefited of decompression 12 months after initial symptom appearance.

Conclusions

We recommend proceeding neurolysis even in long standing nerve compression, particularly in idiopathic cases. This procedure reveals to be satisfactory, even in the persistence of some symptoms, particularly in groups with symptoms lasting for ≥ 24 months.

Merkel Cell Carcinoma of the lower limb and hip: A population-based analysis of epidemiology and survival outcomes with focus on surgery and radiotherapy.

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Objective

Merkel Cell Carcinoma (MCC) is a rare skin tumor with neuroendocrine attributes that occurs mainly in the head and neck. Skin of the lower limb and hip, despite being the third most frequent localization, are less targeted by current literature. Treatments often require a close collaboration among dermatologists, orthopedic and plastic surgeons. The aim of this article is to assess epidemiology and survival outcomes of MCC of lower limb and hip to identify prognostic factors and establish optimal therapeutic strategies.

Methods

The U.S. National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) database was searched for all cases of skin MCC between 2000 and 2018. Demographic and clinico-pathological features were compared between lower limb and hip and other skin localizations using T-test or chi-square Test. Survival analysis was conducted for lower limb and hip only. Overall survival was calculated using the Kaplan-Meier method and compared among subgroups with log-rank test. Multivariate cox regression analysis was conducted to identify independent predictors of overall survival.

Results

We identified 701 patients with a mean age of 72.8 years, predominantly white (91.1%), 49.5% males, 50.5% female. The diagnosis occurred mainly at localized stage (48,6%) with tumour size ranging between 2 and 5 cm in 33,7% of the cases. Surgery with margins over 1cm (standard of care, SOC) was performed in 39,7% of patients. Median overall survival was 65 months, significantly better than other skin localisations (51 months). Older age, positive regional lymph node or presence of metastasis were associated with lower overall survival ($p < 0,05$). Tumour size inferior or equal to 2cm was associated with better overall survival ($p < 0,05$). No significant difference in terms of survival was observed in case of SOC surgery with or without radiotherapy. However, SOC surgery with radiotherapy showed better survival than no SOC surgery with radiotherapy ($p < 0,05$). Age, lymph node status, presence of metastasis and treatment were identified as independent prognostic factors.

Conclusions

MCC of lower limb and hip is a rare neoplasm impacting the elderly with low overall survival. Best overall survival is ensured by the SOC surgery with over 1cm margin, while adjuvant radiotherapy does not impact significantly overall survival.

Orthoplastics in periprosthetic joint infection of the knee: Treatment concept for composite soft-tissue defect with extensor apparatus deficiency

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Objective

Reconstruction of composite soft-tissue defects with extensor apparatus deficiency in patients with periprosthetic joint infection (PJI) of the knee is challenging. We present a single-centre multidisciplinary orthoplastic treatment concept based on a retrospective outcome analysis over 20 years.

Methods

A prospectively maintained database of patients treated at the University Hospital of Basel from 1999 until 2020 was retrospectively searched for patients with PJI after TKA and concomitant soft-tissue defects with extensor apparatus deficiency. The presence and extent of extensor apparatus deficiency was intraoperatively defined by the orthopaedic surgeon.

Results

One-hundred sixty patients had PJI after total knee arthroplasty. Plastic surgical reconstruction of a concomitant perigenicular soft-tissue defect was indicated in 47 patients. Of these, six presented with extensor apparatus deficiency. One patient underwent primary arthrodesis and five patients underwent reconstruction of the extensor apparatus. The principle to reconstruct missing tissue 'like with like' was thereby favoured: Two patients with a wide soft-tissue defect received a free anterolateral thigh flap with fascia lata; one patient with a smaller soft-tissue defect received a free sensate, extended lateral arm flap with triceps tendon; and two patients who did not qualify for free flap surgery received a pedicled medial sural artery perforator gastrocnemius flap. Despite good functional results 1 year later, long-term follow-up revealed that two patients had to undergo arthrodesis because of recurrent infection and one patient was lost to follow-up.

Conclusions

These results show that PJI of the knee and extensor apparatus deficiency is a dreaded combination with a poor long-term outcome. Standardization of surgical techniques for a defined PJI problem and consensus on study variables may facilitate interinstitutional comparisons of outcome data, and hence, improvement of treatment concepts.

Microsurgical reconstruction of the lower extremity in the elderly

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Objective

Individuals of advanced age are the fastest growing subpopulation with an increasing incidence of complex lower extremity wounds. Historically, elderly patients were discouraged from microsurgical reconstructions because of medical comorbidities and lack of organ system reserve to withstand the lengthy and physically demanding intervention. The purpose of this article is to discuss strategies for microsurgical reconstruction of the lower extremity in the elderly population and to further reduce preoperative and postoperative risks and complications providing good functional results.

Methods

Based on a single centre experience and illustrated by four comprehensive case examples, indications, contraindications, preoperative evaluation and special considerations (including age vs. frailty, treatment objectives, principles and strategy, decision making, preoperative patient evaluation, perioperative management, preoperative planning and imaging), the surgical procedure itself, postoperative care and management of complications are discussed.

Results

A multidisciplinary team approach makes microsurgery a safe and successful procedure. Age-related pathologies (atherosclerosis above all) demand thorough preoperative planning. Intraoperative stress can be reduced by regional anaesthesia, a sitting position (beach-chair) and a short operative time through a two-team approach. Reliable workhorse flaps provide easy vascular access with limited incisions, reliable anatomy and long vascular pedicles for speedy and safe soft-tissue reconstruction. Postoperative intensive/intermediate care helps to detect and manage complications early, provide immediate interventions and avoid fast deterioration due to limited physiological reserve. Early flap dangling and mobilization minimize sequelae of prolonged immobilization and support rapid functional and social reintegration.

Conclusions

Microsurgical reconstruction in the lower extremity can be performed safely with high success rates and manageable complications in elderly patients. The prerequisites include (i) a comprehensive preoperative interdisciplinary assessment of the patient and optimization of risk factors, (ii) meticulous preoperative planning, (iii) intraoperative adaptation of anesthesia and efficient surgical technique, and (iv) specialized postoperative monitoring and early mobilization according to the specific needs of the elderly patient.

Surgeon's expertise versus virtual reality in planning augmentation mastopexy

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Objective

The nature of augmentation mastopexy includes two confounding factors that determine the aesthetic outcome: volume augmentation and cranial shift of the NAC. The challenge arises as volume augmentation itself exerts elevation of the NAC to an unknown extent, which thus makes preoperative planning of the pexy an arbitrary task. The aim of this study was to evaluate the precision of 3D-assisted preoperative planning in comparison with the conventional approach relying on the surgeon's expertise

Methods

We present a retrospective single center study including 25 consecutive cases in which virtual planning was used for augmentation mastopexy between 2013 and 2020. For that purpose, simulations of the desired outcome were made with the aid of computer-assisted design (CAD) based on a 3D scan of each patient's breasts preoperatively. In all patients, the finally executed cranial shift of the NAC during surgery relied upon the surgeon's estimation. Measurements were taken from pre- and postoperative clinical findings and computer simulations. The distance between the final NAC position and its ideal position in relation to the breast was measured in the follow-up photographs taken 6 to 50 months after surgery (median 13). These postoperative findings were then compared to the values obtained with the computer simulations. A final nipple position lower than ideal was expressed with negative values and vice versa. Finally, the data obtained for both groups (computer simulations and executed surgery) were compared with a paired student's t-test with a two-tailed distribution.

Results

Overall, the outcome NAC position tended to be lower than ideal ($-0.564\text{cm} \pm 0.83$, mean \pm SD). Compared with the outcome NAC position, the position planned in the computer simulations was significantly closer to ideal ($p < 0.05$). Revision mastopexy was performed in 3 patients (6 breasts) in whom the NAC was elevated to the level suggested by the 3D-simulations

Conclusions

Preoperative 3D-simulation has proven to be a helpful and reliable tool in planning augmentation mastopexy. In spite of the senior author's expertise of more than 30 years, he now started to adjust preoperative planning of augmentation mastopexy to the CAD.

The free serratus anterior musculocutaneous flap: Time for a wider adoption?

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Objective

Free flap holds an important role in complex reconstructions. While other flaps have become a standard practice, the serratus anterior musculocutaneous flap lacks popularity. This flap presents many advantages such as long pedicle, thin and pliable skin, minimal donor site morbidity with a scar that can be easily 'hidden' in the infa-mammary fold as well as possible reinnervation. However, the main reason of concern is the skin paddle vascularization as there seem to be no direct musculocutaneous perforators. Our aim is to validate the cutaneous component reliability of this flap.

Methods

We retrospectively reviewed the database of the plastic surgery department of the Geneva University Hospitals searching for patients operated with serratus anterior musculocutaneous free flap as reconstructive procedure from 1997 to 2020. The collected data were analyzed according to patients' demographic characteristics, surgical indication, outcomes including flap survival rate and complications.

Results

A total of 55 cases were initially identified. Fifty-two were musculocutaneous free flaps while the other three were muscular flaps in chimeric constructs and therefore excluded from this analysis. Of the 52 flaps analyzed, all were used for face reconstruction, including cheek, chin or midface, principally for sequelae of Noma. In the majority of them, the flap survival rate as well as the skin paddle vascularity were excellent. We observed one complete flap loss due to deficient surveillance, one patient with almost total skin paddle necrosis and another two which sustained partial skin necrosis due to damage during the harvest.

Conclusions

The serratus anterior musculocutaneous flap is efficient and safe for free flap utilization. Its indications may be extended in face reconstruction because of its perspective of innervation but also in other anatomic regions due to its versatility.

Is the happiness and fate of patients in the hands of the responsible insurance provider?

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Objective

To date there are no objective criteria that guarantee receiving approval for the cost of abdominoplasty or reduction mammoplasty. Functional reconstruction and restoration of the body silhouette alleviates physical discomfort and increases quality of life. Intrinsic to their role, the responsible insurance providers' decision significantly impacts the patient treatment and available outcomes. Within this context, this study identifies any criteria used to grant cost approval and examines any differences between those used by different insurance providers.

Methods

From January 2016 to May 2021, we provided 358 patients with consultations for post-bariatric or body-contouring surgery. 265 of the 358 patients presented an associated medical issue necessitating the surgery such that an application for reimbursement to the relevant responsible insurance provider was made. The 265 patients were divided into two groups according to the therapy: "abdominoplasty" and "reduction mammoplasty". We evaluated the patients and the respective outcomes based upon the following parameters: sex, age, BMI (pre-/post-bariatric), weight loss, conservative therapy, jugular-mammillary-distance, resected tissue weight and insurer.

Results

110 of the 265 applications were accepted by insurers including Visana, CSS, Swica, Helsana, Sanitas, Concordia and Groupe Mutuel. A significant ($p < 0.05$) correlation was observed between approval and insurance provider in the "reduction mammoplasty" group. No significant correlation was observed within the "abdominoplasty" group. Nevertheless, a medium to high effect size (Cramer's $V > 0.3$) was observed in both groups.

Conclusions

The results demonstrated a statistically significant correlation between cost approval and insurance provider. This result is contrary to the objective of insurers and medical professionals, namely that patient's interests and medical need, and not the identity of the insurance provider, drive approval decisions.

Bioengineered GDNF for neural tissue engineering applications

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Objective

Peripheral nerve regeneration across long nerve gaps is clinically challenging.

To address the issues associated with peripheral nerve injuries, the present study aimed at developing dual functional collagen nerve conduit (C-NC) for trophic and topographical guidance support. The resulting bioactive scaffolds were tested for their ability to promote axonal growth and guidance in vitro using chicken embryonic DRG.

Methods

Collagen binding-GDNF (CBD-GDNF) was cloned, expressed and purified from the mammalian expression system 911 cell-line. Recombinant CBD-GDNF or native GDNF (50 ng/NC) was loaded into C-NC fabricated by spinning mandrel technology. For preparing aligned microfibrillar scaffold, 8% (w/w) PLGA (85:15) in chloroform solvent was mixed with either of CBD-GDNF or native GDNF (5 ng/mg) and electrospun. Release kinetics were studied over 28 days and activity of released growth factors was assessed using Neuro-2A cells. Further, the ability of bioactive PLGA microfibrillar scaffolds to promote axonal outgrowth was tested in vitro using DRG-explants.

Results

The in vitro release of GDNF and CBD-GDNF from the drug loaded C-NC and PLGA fibers was sustained over 28 days. Interestingly, CBD-GDNF mediated slow and low release with significantly reduced initial burst release when compared to native GDNF. Release of GDNF and CBD-GDNF from the aligned fibrous scaffolds was also sustained, but the release profiles were similar for both GDNF and CBD-GDNF. Incubation of Neuro2A cells with release medium containing NTFs resulted in neuronal differentiation and axonal outgrowth.

Conclusions

The topography of the microstructured PLGA scaffolds loaded with GDNF or CBD-GDNF determined the direction and extent of axonal outgrowth from DRG. Axonal outgrowth of sensory neurons was perfectly (99.9%) in line with the aligned fibers, but randomly oriented on non-aligned fibers.

Evaluation of long-term breast shape in inferior versus superomedial pedicle reduction mammoplasty: A comparative study

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Objective

Among breast reduction mammoplasty, the inferior pedicle-based (IFP) technique is considered the most performed by plastic surgeons. A growing interest for the supero-medial based pedicle (SMP) mammoplasty technique has been documented in literature and clinical practice. However, no real evidence exists on the superiority of one technique over another.

Methods

This study represents a retrospective multimodal analysis, using a prospectively maintained database, comparing wise pattern breast reduction techniques (IFP vs. SMP) over a 24-month follow-up. From January 2015 to July 2017, all patients undergoing wise pattern bilateral reduction mammoplasty, using either an IFP or a SMP technique, were included in the study and divided in two groups. Pre-operative breast measurements included sternal notch-to-nipple distance (SN-N), infra-mammary fold to inferior border of Nipple Areolar Complex (NAC) distance length and ptosis. The same measurements were recorded at 2 weeks, 6 months and 24 months post-op. Complications were recorded and aesthetic outcomes were evaluated.

Results

A total of 58 patients were included in the study, among which 36 (62%) were treated with a SMP technique and 22 (38%) with an IFP technique. At the 24-month follow-up timepoint, the SN-N distance was significantly shorter (*P<0.05) in the SMP group, with a significantly smaller elongation of the lower pole arc (29.5% increase in length in the SMP group and 40.9% in the IFP group). Aesthetic result gave significantly higher mean VAS score for SMP patients compared to IFP patients.

Conclusions

The SMP technique provides stable and satisfactory results in term of breast shape, overcoming some of the major concerns related to the use of an IFP technique (lower pole elongation and ptosis recurrence), maintaining a superimposable complication rate.

Versatility of the pedicled superficial circumflex iliac artery perforator (SCIP) flap for lymphatic complications prevention and tissue defect reconstruction

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Objective

The superficial circumflex iliac artery perforator (SCIP) flap is lately gaining more and more approval for moderate-size defects reconstruction throughout the body. It provides a pliable tissue with quick elevation time and very low donor site morbidity. The purpose of this study is to highlight the capabilities of the pedicled SCIP for locoregional coverage and for lymphatic complications prevention.

Methods

Between 2018 and 2020 15 patients received locoregional reconstruction with pedicled SCIP flap. 5 of them received a conventional flap with only soft tissue transfer, 6 received an interpositional flap with lymphatic tissue preservation, and in 4 cases was performed an additional lymphovenous anastomosis (LVA) with a flap's superficial vein (lymphatic flow-through flap).

Results

All the patients were successfully treated. 3 cases developed minor post-operative complications. No secondary procedures were required. Among the cases that required a lymphatic reconstruction, in 2 out of 10 cases a complication was encountered. The mean follow-up was 7.8 months (range 5-10 months).

Conclusions

The pedicle SCIP flap represents a reliable solution for genital, inguinal and upper thigh defects reconstructions and its rich lymphatic network might be safely exploited to prevent lymphatic sequelae in these delicate regions.

Pressure sore incidence and treatment in Left Ventricular Assist Device (LVAD)-equipped patients: insights from a prospective series

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Objective

Left ventricular Assistance Device (LVAD) is indicated in patients with end-stage heart failure. Due to the non-physiologic nature of blood flow, this therapy may favor the development of pressure sore. However little is known about the occurrence and management of pressure sore in the LVAD population, and infection is particularly feared in this context. We aim to investigate the prevalence and treatment of pressure sore in the LVAD population to optimize management of these patients.

Methods

We retrospectively investigated a prospectively maintained database of the Cardiac Surgery department from Lausanne University Hospital (CHUV) from 1st November 2015 to 31st December 2019. We included all patients who benefited from LVAD implantation and detected patients who developed a pressure sore. We studied timeline of the pressure sore, management (conservative versus surgical) and outcomes.

Results

45 patients benefited from LVAD implantation during the study period, among which 5 developed a pressure sore (4/5 sacral stage IV; 1/5 ischiatic stage III). Mean time to the development of pressure sore was 25 days. 4/5 patients were treated surgically (debridement + gluteal fasciocutaneous rotational flap), and 1/5 conservatively. When surgically treated, 2/4 were debrided and covered in 2-stage, 1/4 had a single-stage procedure, and 1/4 was debrided without coverage. 2/4 patients in the surgical group had major complications requiring reoperation. Mean time to healing in the surgical group was 6 weeks versus 6 months in the conservative group.

Conclusions

The rapid development of pressure sores seen in the minority of patients (11%) may be a manifestation of the maladaptive blood flow induced by LVADs, combined with the bedridden condition of these patients after LVAD implantation. In our experience, initial signs of pressure sores in LVAD patients should be taken in consideration with particular attention, as rapidly evolving and needing an aggressive surgical treatment in the majority of the cases (80%). Despite the complication rate, which was particularly elevated when compared to standard pressure sore flap treatment, all patients requiring flap surgery finally achieved effective wound closure after a mean follow-up of 20 months. Surgery should be considered early in this population potential postoperative complications.

Bone reconstruction in the lower extremity with the fibular flap in an interdisciplinary ortho/plastic approach. A review of our experience in the last 15 years.

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Objective

The management of the large bone gap in the weight-bearing lower extremity is one of the most complex scenarios that may arise in the interdisciplinary interface of plastic and orthopedic surgeons in a tertiary center. The fibular flap is the only vascularized bone flap able to bridge and reconstruct even the longest circumferential bony defects. The indications and outcomes of bone reconstruction with the fibular flap are a constant matter of debate among interdisciplinary ortho/plastic teams. In our study we aim to take a detailed look at our experience with fibular flaps for lower extremity bone reconstruction and their outcomes.

Methods

A retrospective, single-center, chart review of all reconstructions with fibular flaps in the lower extremity from 2005 - 2020 was performed and demographic, perioperative and especially outcome data was extracted and analyzed. A detailed description of the harvesting technique for the fibular flap is provided.

Results

A total of 29 patients were included. Oncologic and traumatic indications for bone reconstruction were most frequent at 34% and 31% respectively. The median length of the bone defect was 11 cm. Most reconstructions were performed as double barrel fibula (58%) and 62% of patients had an additional flap performed before or at the time of the fibular flap. While reconstructive failure occurred in only 3 cases (10%), revisions at the recipient site were needed in 51% of cases and bone-healing related, late revisions were necessary in 31% of patients.

Conclusions

In the highly complex scenario of lower extremity bone defects needing reconstruction with a fibular free flap reconstructive failure is rare, but revision surgery of the recipient site and late bone-healing related revision is frequent. Patients but also colleagues involved in the management of such cases need to be made aware of the potentially long and difficult road nevertheless leading to a high success rate.

Microsurgery in patients with disorders of hemostasis: Perioperative risks and management

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Objective

Surgical and technological advances have resulted in the widespread adoption of microsurgical breast reconstruction. In many centers, comorbidities that impair vasculature and wound healing, such as obesity or diabetes mellitus, are no longer considered contraindications for such procedures. However, some uncertainty still prevails regarding the diagnosis and perioperative management of patients with disorders of hemostasis.

Methods

The authors combined a literature review with a retrospective chart review of patients with disorders of hemostasis who had undergone microsurgical breast reconstruction at the senior author's center between 2015 to 2020. Several disorders associated with thrombotic and/or hemorrhagic complications were identified, and a standardized risk assessment and management strategy was developed in cooperation with a hematologist.

Results

Overall, 17 microsurgical breast reconstructions were performed on eleven patients with a disorder of hemostasis at the senior author's center. The literature review revealed ten studies comprising 29 patients with a defined disorder of hemostasis who had undergone microsurgical breast reconstruction. High factor VIII levels, heterozygous Factor V Leiden, and heterozygous prothrombin mutation G20210A were the most common genetic or mixed genetic/acquired thrombophilic conditions. As expected, hereditary antithrombin, protein C, or protein S deficiencies were rare. Among hemorrhagic disorders, thrombocytopenia, platelet dysfunction, and von Willebrand disease or low von Willebrand factor levels were those factors most frequently associated with increased perioperative bleeding.

Conclusions

The authors present an algorithm based on their clinical findings and the literature review. Patients should be screened for elevated risk of thrombosis or bleeding before undergoing microsurgical breast reconstruction, and positive screening should prompt a complete hematologic evaluation. Interdisciplinary management of these disorders with a hematologist is vital to minimize risks and to obtain optimal reconstructive results.

Abdominal, perineal and genital soft tissue reconstruction with pedicled anterolateral thigh perforator flaps

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Objective

Pedicled perforator flaps have become a contemporary alternative to muscle flaps for soft tissue reconstruction as they have reduced donor site morbidity, avoid the need for microsurgical transfer, and are versatile and reliable. The anterolateral thigh (ALT) flap was first introduced as a free flap and has since gained popularity as a pedicled flap. Here we review our experience using pedicled ALT flaps for regional soft tissue reconstruction.

Methods

We retrospectively reviewed all patients who underwent loco-regional soft tissue reconstruction using pedicled ALT flaps between March 2014 and October 2018, with the goal of identifying potential applications of pedicled ALT flaps. The following aspects of each case were reviewed: patient demographics, defect location and size, comorbidities such as previous radiotherapy, flap details, clinical follow-up, and postoperative complications.

Results

Our analysis demonstrates the versatility of pedicled ALT flaps in a variety of indications to successfully cover large abdominal, perineal and genital soft tissue defects. Depending on the patient's needs to achieve more bulk or stability in the reconstruction, the ALT flap was individually tailored with underlying muscle or fascia. The average follow-up was seven months (range: 3-13 months).

Conclusions

Pedicled ALT flaps are a valuable reconstructive option for soft tissue defects located within the pedicle's range, from the lower abdomen to the perianal region. These flaps are usually raised from a non-irradiated donor site and are sufficient for covering extensive soft tissue defects. Three-dimensional reconstruction of the defect using pedicled ALT flaps allows for anatomical function and minor donor sites.

"Pure" vertical breast reduction

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Objective

Applying the vertical scar technique consistently in patients with gigantomasty is a challenge. Especially the excess skin in the lower part of the breast, which cannot be completely resected, often has certain disadvantages regarding the aesthetic result. Nevertheless, there are surgeons who have improved this technique and leave a pure vertical scar even in patients with resection weight over one kilogram per breast.

Methods

In this series we looked at our female patients having undergone breast reduction from 2003 up to 2020 performed by two plastic surgeons (J.P. and D.S.) in St.Gallen. Inclusion criteria was resection weight of at least 950 grams on one side (according to histology report). A superior pedicle and sagittal skin resection, wide undermining of the inferior pole skin and closure by a purse string suture vertically was performed. All reduction mammoplasties were combined with liposuction of the lateral breast and below the gland. The postoperative esthetic result was evaluated and whether an additional operation at distance, adding a horizontal scar in the inframammary fold, was necessary due to remaining skin excess.

Results

We identified 13 patients with a mean resection weight of 1072 grams on the right and 1062 on the left side. In 2 patients after having performed the purse string suture of the vertical scar, intraoperative decision was made to perform a small horizontal scar (max 4 cm) to correct the excess skin. In 2 patients a resection of the dog ear in the inframammary fold was performed up to 2 years postop. Overall the esthetic results in terms of scar length and form of the breast mound are satisfactory.

Conclusions

In some cases a small amount of skin excess in the inframammary fold remains, even though a purse string suture shortening the vertical scar length to the max was performed. In our opinion intraoperative correction, adding a small horizontal scar, is preferred over a correction of a remaining dog ear in local anesthesia postop. Based on our clinical experience, we conclude that the indication for the pure vertical resection technique should be limited to young patients with elastic skin in which retraction is expected. All patients are informed preop that a small T scar might be necessary if skin excess cannot be reduced completely by the purse string suture.

Training in aesthetic medicine

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Objective

The department of plastic surgery at the CHUV is aiming to establish the field of aesthetic personalized medicine with appropriate quality standards and scientific issues. Evolving over the last years, approximately 80% of trained plastic surgeons leave for private practice following their FMH formation and perform an increasing quantity of cosmetic and aesthetic interventions. Therefore, it is necessary to establish a structured education and formation in aesthetic medicine at an early stage and throughout Plastic & Reconstructive Surgery with scientific evaluation of the treatment concepts.

Methods

Parts of aesthetic medicine are already offered at our centre. We do also have the necessary know-how, acquired by additional training, to offer a high-quality education. The goal is now to bundle this knowledge and to do a structured formation for the upcoming generations of plastic surgeons.

Results

In our centre, various treatments and consultations will be offered to patients, with the aim of providing highly qualified and differentiated medicine. In this way we do not only offer our future board-certified colleagues an education that is fundamental to plastic surgery, but also to guaranty our patients quality standards trained in an university setup.

The offer is not only intended to serve patients who want to be treated for purely aesthetic reasons, but also separate patient space with adequately trained staff (anaesthesia, nurses) for patients undergoing aesthetic surgery and medical treatments. This designated know how could be used (alternating) with the follow-up of burn patients or transgender patients. Their continued needs for corrective surgery, laser and use of aesthetic techniques is essential.

Conclusions

We would like to establish adequate standardized procedures (SOPs) and know-how at the CHUV and eventually building cooperation with other clinics, which meet our aims and understand the need to improve the quality standards and scientific evaluation of aesthetic medicine. Moreover, a critical role would be the establishment of a first care centre after aesthetic/cosmetic complication (e.g. hyaluronidase treatments, secondary corrections, treatments after skin tissue necrosis etc). This would enhance the role of the University Hospital particularly in terms of safety and first-line care.

Insurance coverage policies for reconstructive lymphatic microsurgery procedures in Switzerland

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Objective

Lymphoedema is a progressive and potentially disabling disease. A growing number of studies show promising clinical results after microsurgical reconstruction. However, this treatment is currently not supported by level 1 evidence and insurance coverage is variable.

Methods

Electronic records of 55 patients with limb lymphoedema, who were eligible for lymphovenous bypass surgery and/or lymphatic tissue transfer in our department from 2017 to 2020, were reviewed. Correspondence between our department and health insurers was analysed. A web-based search and individual telephone interviews were conducted to identify health insurer policies.

Results

We included 42 patients undergoing 46 operations and evaluated the correspondence between our department and nine different health insurers. Overall, reimbursement of costs was approved in 67% (n = 31) of all surgeries and was refused in 33% (n = 15). The mean number of applications for reconsideration sent to insurers was 1.3 ± 0.7 . The time between confirmation of the indication and the final decision ranged from 6 to 300 days (mean 50 days). Reimbursement of cost coverage ranged from 0% to 100% depending on the individual insurance company. No insurance company had policies publicly available online and all stated that they determine coverage only when provided with specific patient details on a case-by-case basis.

Conclusions

Insurance companies in Switzerland do not have a uniform policy regarding cost coverage for lymphatic surgery procedures. Moreover, the decision process appeared to be rather uniform within the respective insurance company and independent of the individual case. Standardised evaluation criteria including patient reported outcome measures should be developed to underscore the beneficial effects of lymphatic surgery and facilitate insurance coverage.

Expression of macrophage migration inhibitory factor (MIF) family proteins and receptors in lipedema patients

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Objective

Lipedema is defined as a chronic disorder mainly affecting women. Typically, patients present a disproportionate distribution of adipose tissue in a bilateral-symmetrical manner of the extremities. Unfortunately, it still remains a relatively under- or misdiagnosed condition sometimes being mistaken for obesity, thus remaining undertreated. Current research suggests differences in expression like vascular endothelial growth factor (VEGF) between lipedema and obesity. Lipedema also is characterized by a distinct cytokine profile and increased macrophage infiltration. A widely expressed and known upstream mediator of innate immunity and inflammation is the macrophage migration inhibitory factor (MIF). MIF is overexpressed in various metabolic, immunological and inflammatory diseases and mediates macrophage infiltration and polarization. Recently, we identified an opposing role of its homolog D-dopachrome tautomerase (D-DT or MIF-2) in adipose tissue inflammation and obesity. MIF-1 and MIF-2 both bind to the receptor CD74 and thereby induce key signal cascades. In the present study, the expression of MIF-1, MIF-2 and their receptor CD74 will be evaluated in lipedema patient samples.

Methods

The protein and mRNA expression of MIF-1, MIF-2 and CD74 in primary fat samples were determined by qPCR. Anatomically matched tissue biopsies were gathered from 10 lipedema and 11 gender as well as body mass index-matched control patients.

Results

The qPCR analysis showed a significant increase in gene expression of MIF-1 and CD74, however MIF-2 expression was not significantly increased.

Conclusions

MIF-1 and CD74 are overexpressed in terms of mRNA levels in lipedema samples when compared to healthy control patients and suggest an involvement of the MIF axis in the development of the disease. These results possibly represent another piece in the puzzle of understanding the pathophysiology of lipedema, however, further investigation is needed.

A ten-year retrospective review of the omega resection technique

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Objective

Reduction mammoplasty is the gold standard procedure for symptomatic breast hypertrophy. Different breast reduction techniques using various skin pattern and pedicle designs exist. We aim at introducing a new procedure, which uses an omega resection pattern to simplify the inferior pedicle breast resection technique.

Methods

We conducted a retrospective review of all patients who received omega resection reduction mammoplasty by the senior author of this paper between 2010 and 2020. The technique was performed with an en bloc omega resection breast parenchyma resection associated with an inferior breast pedicle. We collected and analysed patient demographics, surgical outcomes, operation time, type and frequency of complications at 12 months follow-up. Outcomes were compared with the most commonly used techniques as reported in the literature. Additionally, we assessed if patients' and clinical characteristics augmented/diminished the complication rate.

Results

During the study period, 67 reduction mammoplasties were performed (Mage=42.5, SDage=15.6; MBMI=27.28, SDBMI=3.4; 20% smokers). The average tissue removed was 826g (ranging from 15 to 2307g) (see Table 1). Minor complications occurred in 10 breasts, all within one month after the operation, for a total complication rate of 15%. No major complications occurred (see Table 2). Non-parametric tests showed that operation time (M=149min; SD=34.5min) was significantly shorter than the inferior and superior pedicle technique. Protective factors against the risk to develop complications according to univariate Odd Ratios were: no smokers (OR=.17, p<.001), patients with a BMI in a normal range (OR=.09, p=.02), resection weight of 500-1000g (OR=.20, p=.03) and 1000-1500g (OR=.11, p=.03), NTN distance shorter than 30 cm (OR=.17, p=.005), removal of drains at least one day after the operation (OR=.22, p=.006), an ASA index of 2 (OR=.22, p=.006), staying at the hospital after the operation (OR=.07, p=.01), and not having had other concomitant surgical operations (OR=.27, p=.004) (see Table 3).

Conclusions

The omega resection pattern technique is an effective, safe, and fast mammoplasty reduction technique for bilateral macromastia and unilateral symmetrizing procedures, even for large breasts, which can be adopted as a new valid alternative to the existing ones.

The teardrop resection pattern for the correction of gynecomastia

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Objective

Gynecomastia is a commonly seen condition in the outpatient clinic of plastic surgeons. For men, it is the most common cause for seeking medical advice for a breast condition. The prevalence is high and ranges from 38% in young up to 72% in elderly patients.

Here we present an advanced surgical approach for the correction of grade III gynecomastia according to the Cordova classification to reduce circumareolar tension, that we call teardrop resection pattern.

Methods

A teardrop resection pattern was performed for surgical treatment of grade III gynecomastia in 11 patients from 2018 to 2020. 10 suffered from bilateral gynecomastia and one from unilateral gynecomastia. The mean age was 35.1 (range from 21 to 63). The mean body mass index was 28.61 kg/m². Ultrasound was done in all patients of which three underwent an additional mammography. Nine patients presented with pain preoperatively. Alcohol abuse was negated by all patients whereas one patient reported sporadic marijuana consumption. One patient took spironolactone. Apart from that, no one took any medication. Anabolic steroids were not used. In four patients additional liposuction was performed.

Results

No seroma or inadequate resection were encountered after teardrop resection. In a 1-year follow-up no hypersensitivity of the scars occurred, but three patients reported sensory changes of the NAC. One patient developed a unilateral hematoma, requiring operative revision the day after surgery. There were no contour deformities and none of the patients reported pain. One patient developed a widened scar on one side, where scar revision is anticipated. All patients reported that the results after the correction of gynecomastia were good or very good.

Conclusions

The teardrop resection pattern offers an additional approach for the correction of grade III gynecomastia according to Cordova. By reducing the circumareolar tension the surgeon is able to extend the resection of redundant skin without feminine scar patterns or large extra-areolar scarring. Breast surgeons may wish to consider this surgical technique when presented with grade III gynecomastia.

The chimeric gastrocnemius-medial sural artery perforator flap for complex soft tissue coverage after total knee arthroplasty

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Objective

The knee region presents particular specificities that make reconstruction challenging. Specifically, in the context of total knee arthroplasty (TKA), soft tissue defects can expose critical structures such as the joint, bone or extensor apparatus, besides the implant itself, with dramatic consequences in terms of periprosthetic joint infection.

This work reports our experience in knee reconstructions using chimeric musculo-cutaneous gastrocnemius flaps in specifically complex TKA scenarios. Outcomes and complications are critically analysed, and the orthoplastic surgical planning outlined.

Methods

From 2018 until 2021 we retrospectively searched a prospectively maintained database for adult patients with lower leg implant-associated infection and consequent soft tissue reconstruction (STR). Only patients who underwent STR with a pedicled, chimeric musculo-cutaneous medial or lateral sural artery perforator-gastrocnemius flap were included in this study. The orthoplastic timing of STR was assessed as well as the outcome of STR, in particular in the setting of a two-stage approach where the flap would have to be re-raised.

Results

16 patients (7 females) were included in this study. Of these, 11 patients needed STR over an infected TKA, 3 over infected hardware of the lower leg and 2 after sarcoma resection. 14 times a medial, 2 times a lateral sural artery perforator-gastrocnemius flap was used. 10 patients underwent a one-stage approach, 6 patients a two-stage approach. Soft tissue reconstruction was performed as early as possible but the timing was not always ideal, as most patients were referred and operated elsewhere before. 3 patients showed partial skin necrosis of the flap, of which one needed surgical revision. Another patient underwent transfemoral amputation due to uncontrolled sepsis. In 4 out of 6 patients undergoing a two-stage approach STR had been performed before the second stage. Here, no flap related complications were seen.

Conclusions

The chimeric gastrocnemius-MSAP flap should be considered the ideal solution in complex TKA procedures requiring multiple orthopaedic procedures, especially in two-stage procedures involving antibiotic spacers and in presence of extended or superolateral soft tissue defects.

The osteocutaneous SCIP-Flap: An emerging option in osteoplastic reconstructions

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Objective

Pioneered mainly by Asian units the superficial circumflex iliac perforator (SCIP) flap is increasingly gaining acceptance also in western centers, primarily due to its low donor site morbidity and customizability in thickness from bulky to superthin. Yet, the traditional SCIP-flap can further be adapted to incorporate a variety of additional tissues (bone, muscle, nerve, fascia, vascularized lymph nodes) and therefore can be tailored to fit a wide variety of different reconstructive needs, also in osteoplastic surgery.

Methods

We performed a retrospective chart review of all our cases in which osteocutaneous SCIP-flaps were used. We describe the relevant anatomy, our surgical technique and present the surgical, functional as well as aesthetic outcome of the patients in our series.

Results

Since January of 2019, we have successfully used osteocutaneous SCIP-flaps in 4 patients, 3 in the extremities and 1 for the head and neck region. Indications entailed both traumatic and oncological cases. The vascularized iliac crest was used to reconstruct defects of the hand (metacarpal), foot (calcaneus, metatarsal) and facial bones (orbital rim, maxillary sinus). All flaps survived without the need for any salvage procedures and there were no relevant complications at the donor or recipient sites. Long-term follow-up shows adequate bony integration and satisfactory soft tissue coverage with minimal donor site morbidity.

Conclusions

We believe that the osteocutaneous SCIP-flap offers a reliable and versatile alternative for combined vascularized soft tissue and bone reconstructions, especially in cases where thin soft tissue coverage is needed in addition to small to moderately sized vascularized bone.

Poster Presentations

Microsurgery training without living animals: A new cursus in Switzerland

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Objective

Teaching microsurgery skills remains challenging without having access to a living animal model. Our idea was to develop a training program that does not require using a living model, which would therefore call for less infrastructure and resources.

Methods

The training program is divided into different sections:

- An e-learning section allows students to access the theoretical knowledge pertaining to the main topics of microsurgery, namely the basics of microsurgery and nerve and vascular suturing.
- A practical section that does not include an animal model which would be a low cost model to allow students to warm up to the different microsurgical skills. This part is divided into different sections that allow a progressive practical approach in 3 steps. First, we focus on DEXTERITY with the "round the clock" and the grape dissection models. Secondly, we focus on a SIMPLE surgical suture on a latex matrix placed around the clock. Lastly, we focus on surgical knots done UNDER PRESSURE, for example in angles, and on dissecting a grape placed in an angle.
- The last step before reaching the animal model is vascular suturing on a tube.
- The practical skills section on the animal model is done on a chicken thigh, where a catheterized system containing food colorant will allow the students to practice suturing on pedicle. Multiple sutures can be performed on this model, namely nerve sutures, autografting, and arterial and venous sutures (in an end-to-end, end-to side and bypass fashion). The irrigation system in place allows to test the patency of the different sutures.

Results

The training program is made up of 9 teaching sessions of 4 hours each (amounting to 36 hours of practice) followed by an exam with a theoretical part (multiple choice questions) and a practical skills part (setting up the catheterized system, nerve and vascular suturing).

Our first complete program was a success with a high satisfaction rate, a constant and very impressive technical progression from all 10 participants. The success rate to exam was 90%.

Conclusions

This low-cost teaching approach is a valid alternative to the living animal model currently used to teach microsurgery skills

Novosorb: Experience with a new dermal substitute

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Objective

Deep tissue defects represent a true surgical challenge when traditional skin transplants and flaps are not an ideal solution. Novosorb, BTM (Biogradable Temporizing Matrix) is a synthetic polymer which acts as a dermis replacement and can be used to address defects reaching as deep as the muscular layer. It favors the growth of a new dermal layer within its matrix, while at the same time protecting the wound, limiting moisture loss and hindering bacterial growth. The matrix then slowly deteriorates over a course of 18 months. We present our clinical experience with this innovative dermis replacement.

Methods

In the Department of Plastic Surgery and Hand Surgery of the University Hospital Zurich, between 2020 and 2021, 17 patients were operated with this technique. Defects that reach the subcutaneous tissue or the muscle, which would be unsuitable for flaps because of unfit patients, unavailability of donor sites, complexity and broadness of tissue defects and for whom skin grafts would be insufficient, are candidates for Novosorb. After three weeks during which the dermis is allowed to grow, the superficial sealing membrane is delaminated and the defect is covered by a skin graft. Patients characteristics, complications and postoperative outcomes have been evaluated.

Results

Two patients who didn't undergo delamination yet and one who was lost to follow-up were excluded from the results. The defects were very heterogeneous ranging from burns to chronic ulcers. Complete graft take was seen in ten patients, the other four had a partial epithelialization which led to delayed wound healing in three. Only one patient, who initially developed hematomas, required Novosorb removal because of infection; despite these complications he had an overall positive outcome. Skin graft loss because of infection with need for further surgery, was seen in only one patient. Two patients with neck burns later developed contraction cords which required to be addressed surgically.

Conclusions

Novosorb represents a valid alternative for a selected population that would have a very poor outcome with either skin grafts or free flaps. By providing the body with the matrix where it can rebuild its own dermal layer, Novosorb can lead to satisfactory functional and aesthetic outcomes.

The role of negative pressure wound therapy with or without instillation in orthoplastic surgery

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Objective

Effective wound management consists in a comprehensive assessment of both patient and wound, eventually elaborating a personalized wound treatment schedule. One common treatment modality for acute and chronic wounds in orthoplastic surgery is negative pressure or vacuum-assisted wound therapy (NPWT), i.e. wound dressing systems that apply subatmospheric pressure to a wound surface in a continuous or intermittent way. An up-and-coming extension of this technology consists in the instillation of a topical solution and its dwelling for a planned interval of time, the so called NPWT with instillation (NPWT-id). The purpose of this review is to provide an overview of the current literature regarding the current role of NPWT with or without -id in the setting of orthoplastic surgery.

Methods

Evidence based recommendations were obtained by performing a systematic review of the literature in Pubmed and Cochrane Library.

Results

An important aspect of NPWT consists in its application to bridge the time, indicated for various motives, until definitive wound closure can be performed. Regarding NPWTid, the results show that this modality may be effective as an adjunctive therapeutic modality in managing infected wounds, whereas traditional NPWT is contraindicated for these cases. This seems to be due to the fact that simple NPWT use may result in an exacerbation of both local and systemic infectious status. Furthermore, NPWTid applied in infected wounds is capable of reducing the local bacterial load or biofilm formation, through the use of antibacterial solutions or simply saline. One basic concept that both NPWT and NPWTid have in common is the reduction of wound edema, thus improving local perfusion and lymphatic flow, thereby consequently improving wound healing.

Conclusions

Despite the lack of scientific high level of evidence, both treatment modalities appear to be effective in the treatment of critical wounds in the field of orthoplastic surgery. NPWTid seems to be superior compared to NPWT in only very selected cases.

Rintala flap and Posterior Perichondrial Cutaneous Graft (PCCG): A combined approach for nasal tip reconstruction

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Objective

Nasal tip reconstruction requires a meticulous approach owing to the complexity of the nasal anatomy and its aesthetic importance. Many procedures have been described to restore this aesthetic unit, including the paramedian forehead flap, which is one of the workhorse flaps. However, despite excellent final outcomes, this procedure may be refused by the patients, due to its temporary conspicuous appearance possibly associated with serious psychological implications, and the need of multiple interventions.

We aim to present an approach combining the Rintala flap and the posterior perichondrial cutaneous graft (PCCG) as a valuable alternative to treat large nasal tip defects.

Methods

We hereby describe the case of a 25 year old male, who was addressed to our service for melanoma wide excision with 1 cm margin on the tip of his nose. Given the extent of the expected defect, we initially proposed the paramedian forehead flap as a procedure in order to provide a good aesthetic outcome. However, after showing pictures of the intermediate steps, the patient refused the procedure. We then decided to use a combined approach of a Rintala flap and posterior PCCG. Wide excision and reconstruction were performed in a single operative time. After covering the cranial part of the defect with advancement of the Rintala flap, a template was used to harvest the PCCG from the right posterior auricular region. The donor site was reconstructed with a transposition flap. The PCCG was then used to reconstruct the distal part of the defect. Stitches were removed 7 days post-operative and the results were assessed during a 3 months follow-up.

Results

Primary complete healing of flap and graft were observed. After 3months follow-up an excellent aesthetic outcome, with nostril stability and symmetry and no contraction or depressed contour were achieved. The donor site healed uneventfully, without deformity or destabilization of the ear. The patient was fully satisfied.

Conclusions

The combination of Rintala flap and PCCG could be used as a single-stage reconstructive procedure of large nasal tip defects providing good cosmetic and functional outcomes while respecting the aesthetic subunits. This approach can be considered a valuable option particularly for patients who demonstrate a psychological inability to support the steps of reconstruction with a paramedian forehead flap

20 years of long-term results after DIEP breast reconstruction: What has changed?

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Objective

Nächstes Jahr im 2022 ist das 30-jährige Jubiläum der ersten DIEP-Operation durch Robert Allen in den USA. An unserer Institution erfolgt 9 Jahre später 2001 die erste autologe Brustrekonstruktion mit dem DIEP-Lappen. Wir konnten die ersten 3 Patientinnen aus dem 2001 nachkontrollieren. Diese feiern also das 20 Jahr-Jubiläum.

Zeit eine Rückschau zu diesem Eingriff zu halten bezüglich Veränderungen in der präoperativen Abklärung, der intraoperativen Phase und der postoperativen Kontrolle.

Conclusions

Das Poster zeigt die Langzeitergebnisse dieser 3 Fälle und die wichtigsten Veränderungen in den 3 Abschnitten des Eingriffes im Zeitraum von 20 Jahren

Split breast technique - How the reduction mammoplasty can be used as a perforator based free flap for breast reconstruction

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Objective

Today there are many different possibilities for breast reconstruction. The goal of any reconstruction is to transplant tissue of similar quality. This "like-with-like" reconstructive principle has already been described by Sir Harold Gillies in 1950.

The split breast technique was first described by W. Reinhard in 1932, where he used a pedicled flap for the breast reconstruction on the contralateral side. Afterwards there have been few reports on the use of pedicled split breast grafts.

Methods

We performed a split breast reconstruction as a perforator based free flap in a 75-year-old female patient with a multicentric mammary carcinoma, following chemotherapy, mastectomy, axillary lymph node dissection and radiotherapy. The patient had a mammary hyperplasia on the contralateral right side and asked for a simultaneous reduction mammoplasty. Risk factors including heavy alcohol and tobacco dependence and COPD, limited the surgical options. That is why we opted for a procedure with minimal surgery-related morbidity. The right breast was tumor free and the patient had no family history of breast cancer. The split breast free flap was based on the right internal mammary artery perforator and the anastomosis was performed on the internal mammary artery perforator on the left side. After harvesting the split breast flap on the right side, a mastopexy was performed.

Results

There was complete flap survival with a pleasant cosmetic result.

Conclusions

In patients with a mammary hyperplasia on the contralateral side, the split breast technique offers a great alternative for breast reconstruction, minimizing the surgery-related morbidity. However, this approach is only feasible in patients without any risk factors for developing a secondary primary breast cancer.

Human-Platelet Lysate Serum as a potential clinical-translatable supplement to support human adipose-derived stem cells neurotrophic properties

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Objective

Autologous nerve graft is the gold standard in peripheral nerve repair, despite donor site morbidity and unpredictable functional recovery.

We investigate a completely xenogeneic-free expansion method for adipose-derived stem cells (hADSC) to maintain their properties and enhancing their neurotrophic potential.

Moreover, we focus on the therapeutic potential of mimicking the Extra Cellular matrix (ECM)-components (Laminin (LN), Fibronectin (FN)) in a combinatorial strategy with hADSC expanded in the human platelet lysate (hPL-hADSC) to develop a reliable and safe strategy to be extended to nerve regeneration in vivo.

Methods

We compared isolation methods (with collagenase or only mechanical) and supplement media (fetal bovine serum (FBS) or human-platelet lysate (hPL)) on hADSC morphology, proliferation rate, immunophenotype, lineage differentiation potential and neurogenic commitment (nerve growth factors secretion). Functional analysis of hADSC expanded in both medium conditions and on different ECM-proteins was performed using an in vitro co-culture model with rat dorsal root ganglia (DRG) explants, following neurite outgrowth.

Cocultures were performed in direct contact with neurons or "indirect", where neurons were treated with conditioned medium of the hADSC grown on the ECM molecules.

Results

We found no significant difference between the means of cell isolation and the supplements except for a higher proliferation rate and more elongated, spindle-shape morphology of hPL-hADSC.

Neurotrophic factor secretion by hPL-hADSC showed statistically higher levels in all three growth factors (BDNF 82.42 pg/mL, GDNF 4.03 pg/mL, NGF 12.24 pg/mL, *p<0.05) compared with FBS-hADSC. DRG showed significantly longer neurite length and higher axonal area when co-cultured with hPL-hADSC (direct co-culture) or with their conditioned medium (indirect).

LN positively impacted on the DRG sprouting in all hPL-culture conditions.

Conclusions

We show that hPL provides a clinically translatable means to support hADSC growth in vitro: increasing cell proliferation, maintaining stem cell phenotype and enhancing secretion of neurotrophic factors. Considering the ECM role, hPL-hADSC act synergistically with LN, strengthening cells proliferation and further promoting their neurotrophic properties in vitro.

Reconstruction of a large maxillary defect with an engineered, vascularized, prefabricated bone graft

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Objective

The reconstruction of complex midface defects is a challenging clinical scenario considering the high anatomical, functional and aesthetic requirements. In this study, we proposed a surgical treatment to achieve improved oral rehabilitation and anatomical and functional reconstruction of a complex defect of the maxilla with a vascularized, engineered composite graft.

Methods

The patient was a 39-year-old female, postoperative after left hemimaxillectomy for ameloblastic carcinoma in 2010 and tumor-free at 5-year oncological follow-up. The left hemimaxillary defect was restored in a two-step approach. First, a composite graft was ectopically engineered using autologous stromal vascular fraction (SVF) cells seeded on an allogenic devitalized bone matrix. The resulting construct was further loaded with bone morphogenetic protein-2 (BMP-2), wrapped within the latissimus dorsi muscle and pedicled with an arteriovenous (AV)-bundle. Subsequently, the prefabricated graft was orthotopically transferred into the defect site and revascularized through microvascular surgical techniques.

Results

The prefabricated graft contained vascularized bone tissue embedded within muscular tissue. Despite unexpected resorption, its orthotopic transfer enabled restoration of the orbital floor, separation of the oral and nasal cavities and midface symmetry, and allowed the patient to return to normal diet as well as to restore normal speech and swallowing function. These results remained stable for the entire follow-up period of two years.

Conclusions

This clinical case demonstrates the safety and the feasibility of composite graft engineering for the treatment of complex maxillary defects. As compared to the current gold standard of autologous tissue transfer, this patient's benefits included decreased donor site morbidity and improved oral rehabilitation. Bone resorption of the construct at the ectopic prefabrication site still needs to be further addressed to preserve the designed graft size and shape.

Rates of insurance denial for breast surgery: A systematic review of the literature

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Objective

Indications for insurance reimbursement in breast surgery mainly include breast reduction and reconstruction. The process of requesting reimbursement and insurance policies vary greatly. Consequently, while a large majority of these procedures are not aesthetic, they are not always reimbursed. Our aim was to systematically review the existing literature and identify the rates and the reasons for insurance denials in the context of breast surgery.

Methods

A systematic review of the literature was performed following the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines on PubMed/MEDLINE.

We included all articles where reimbursement of plastic surgery interventions were correlated with accepted guidelines for breast reduction or reconstruction. Studies where the information was reported unclearly or where it was impossible to assess the direct link between pathological condition and reimbursement were excluded.

Results

Thirteen studies, published between 1980 and 2017 met inclusion criteria. The majority of the papers (12/13) referred to the United States context, while one was an international survey collecting reports from different countries. A key factor to explain insurance denial was the use of different algorithms to define "medical" vs "esthetic" breast surgery between insurer (weight of the resection or Schur score) and healthcare workers (symptomatology). This explained in particular regarding breast reductions a certain disparity between surgical indications posed by plastic surgeons and indications accepted for reimbursement. Reconstruction with prosthesis would be better reimbursed than reconstruction with autologous flaps. In particular it is described limited access to autologous reconstructions in patients of low socio-economic level. This explains the increased incidence of prosthetic reconstructions in the United States despite the evidence of long-term economical superiority of autologous reconstructions, especially with the gold standard Deep Inferior Epigastric Artery Perforator Flap (DIEAP).

Conclusions

A standardized, and common documentation between insurance companies and hospitals could reduce insurance denials and finally optimize financial resources utilization.

A new player for dermis reconstruction

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Objective

We report on our experience with a novel, biodegradable polyurethane temporising membrane (NovoSorb™, PolyNovo, Melbourne, Australia), which had initially been implemented for large burn wounds. NovoSorb™ is used for staged reconstruction with secondary split-thickness skin grafting. We would like to share our experience and learning curve with the application of NovoSorb™ as a versatile dermal substitute for various indications of complex wound repair.

Methods

A consecutive case series of 15 patients with different indications for NovoSorb BTM Membrane™ treated at the Kantonsspital Aarau was evaluated. We assessed patient's demographic data, co-morbidities, defect size and aetiology. Regarding wound management we analyzed the number of debridements, time to coverage and time to skin grafting. We furthermore analyzed the handling, dressing and potential complications.

Results

During our learning curve with the biodegradable temporising matrix, sufficient preconditioning with good vascularization and coverage with split-thickness skin grafting was achieved in all cases. Survival of split-thickness skin grafts was compromised in few cases. The learning curve took noticeable effect with regard to surgical procedure, timing of definitive wound closure and handling of infections. Especially in the latter one NovoSorb BTM™ showed, in our opinion, more resistance and easier handling than other dermal matrices. In no case the matrix had to be removed.

Conclusions

Wound temporization with NovoSorb BTM™ has been proven as a viable option in a wide range of applications establishing new standards regarding resistance, shorter latency till skin grafting and manageability in cases of wound infection. Flexibility in terms of time offers the treating physicians more possibilities for an individualized treatment protocol, optimizing patient's needs and final outcome.

Contemporary concepts of primary dynamic facial nerve reconstruction in the oncologic patient

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Objective

Transection of the facial nerve and its branches during extensive ablative procedures in the oncologic patient causes loss of control of facial mimetic muscles with severe functional and aesthetic sequelae. In those patients with advanced tumorous disease, copious comorbidities, and poor prognosis, rehabilitation of the facial nerve has long been considered of secondary priority. Recent advances in primary facial nerve reconstruction after extensive resection demonstrated encouraging results focusing on rapid and reliable restoration of facial functions.

Methods

The authors summarize three innovative approaches of primary dynamic facial nerve reconstruction by using vascularized nerve grafts, dual innervation concepts, and intra-facial nerve transfers.

Results

Vascularized nerve grafts demonstrate reduced endoneurial scarring by maintaining the Schwann cell population and suppressing fibroblast infiltration, thus providing an optimal nutritional environment that results in an increased and faster axonal regeneration. An example is the vastus lateralis motor nerve harvested along with the pedicle of the anterolateral thigh (ALT) flap.

Dual innervation refers to the simultaneous usage of nerve transfers as well as (vascularized) autologous nerve grafts for facial reanimation providing separate innervation to 2 different functional targets of the facial nerve. E.g., (1) Neurotizing the frontal and zygomatic branches for adequate eye function using either the (vascularized) vastus lateralis motor nerve or the lateral femoral cutaneous nerve in order to maintain a single harvest site along with the ALT flap; (2) masseter nerve transfer to the buccal and marginal mandibular branches for smile restoration and oral competence.

Intra-facial nerve transfers aim at redirecting less important facial nerve branches to those branches with crucial function. E.g., upper buccal or cervical branches of the facial nerve are sacrificed in order to restore zygomatic or marginal mandibular branches, thus lowering the risk for corneal exposure, drooling, and asymmetrical smile.

Conclusions

Vascularized nerve grafts, concepts of dual innervation and intrafacial nerve transfers provide adequate primary dynamic restoration of the facial nerve with low donor site morbidity, autarkic vascularity as well as suitable length, diameter and not last axonal load.

Lactational performance after breast reduction surgery: What do we know about it? - An update

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Objective

Breast reduction surgery is one of the most widely performed plastic surgery procedures in the western world with almost half a million breast- reductions each year . Since a considerable percentage of all women undergoing breast- reduction surgery is of fertile age, preservation of lactation is a key point for breast- reduction techniques. The WHO recommends exclusive breastfeeding of babies /newborns up to six months of age. Yet the plastic surgery literature is not able to define the duration of successful breastfeeding after breastreduction, what makes data reviewing and providing evidence-based information for patients difficult.

Methods

Pubmed/Medline was searched for comparative studies about the effect of different surgical breast reduction techniques on the lactational performance on fertile women with the terms breastreduction and breastfeeding. Out of 26 studies about breastfeeding after reduction mammoplasty, we found 3 studies, comparing the lactational performance of different surgical techniques.

Results

Allthough no clear definition about the duration of successful breastfeeding after breast reduction procedures can be made, breast reductive surgeries seem not to be obstacles for breastfeeding attempts. All studies, except Chiummariello et al. found no significant difference in the ability to breastfeed after reductive mammoplasty with different pedicles. Also, the quantity of resected glandular tissue and the sensivity of the nipple areola complex don't affect the breastfeeding. The preservation of the column of subareolar parenchyma connected to the NAC seems to be the key point.

Conclusions

Fertile woman attempting a breast reductive surgery should be informed about the ability of breastfeeding after surgery and should be encouraged to attempt to breastfeed prior to surgery. Guidelines on the best reductive techniques to be used in women of childbearing years should be designed. More studies must be conducted to define a successful duration of breastfeeding after reductive mammoplasty comparing to the recommendations of the WHO.

How do you untie the gordian knot in a complex orthoplastic case?

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Objective

It is well known that many strong and intelligent men tried to untie the famous knot of the Phrygian king named Gordias in 333 BC. Alexander the Great cut the knot with his sword and solved the problem. We want to use a complex orthoplastic case to show how symbolically a difficult, actually unsolvable problem has been solved.

Methods

A young woman suffered complete necrosis of the heel of her right leg from dry ice. Multiple reconstructive interventions with free folded microvascular fibula and latissimus flaps and in-step flaps followed. The woman regained the ability to walk, but due to the lack of sensitivity of the soft tissues of the heel, pressure ulcers kept coming back.

After 1.5 years of treatment by plastic and reconstructive surgery it was time to strike a new path and we found cooperation with the orthopedic surgeons.

Results

Six moth after the start of our orthoplastic cooperation, we received a greeting card from Kenya from the patient. She had successfully climbed Kilimanjaro with the injured leg.

Conclusions

The orthopedic surgeon solved the insoluble problem, the Gordian knot, for us. But how? This is to be shown, but not revealed here.

Case report: Liposuction with consequences: what to consider when using prilocaine

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Objective

Aetiologically, prilocaine-induced methaemoglobinaemia is a rare form of acquired methaemoglobinaemia, which occurs rarely in the first place. This case report highlights a potentially dangerous complication arising after application of prilocaine during liposuction.

Methods

A young female visited the emergency department following a pre-syncopal fall. As a consequence of her fall, she experienced debilitating wrist pain and exhibited a laceration on her chin. She had undergone liposuction of the lower extremity as an outpatient *alio loco* approximately 12 hours earlier and received regional anaesthesia in the process. A large volume of an anaesthetic solution containing prilocaine had been injected into the tissue.

Results

The patient was normotensive and slightly tachycardic and had oxygen saturations of 90 % on room air. She was cyanotic and her lips were pale. Initial arterial blood gas analysis showed a methaemoglobin fraction, which was increased significantly to 10.9 %. Conventional radiography confirmed the presence of a minimally dislocated distal radius fracture. Following subsequent oxygen therapy over a four-hour period, the patient's methaemoglobin level dropped to 6 %, her lip cyanosis abated and her vital parameters stabilised. The laceration of her chin was sutured and her wrist immobilised in a split plaster brace. After a 12-hour hospital stay, the patient was discharged. At her six-week follow-up appointment, the fracture had healed and both the functional and cosmetic aspects of her chin wound were adequate.

Conclusions

We hope that this report draws the attention of emergency care personnel to the possible diagnosis of prilocaine-induced methaemoglobinaemia after liposuction and encourages more general discussions around the use of prilocaine for plastic surgery procedures.

The impact of age on patient-reported outcomes after oncoplastic versus conventional breast cancer surgery

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Objective

Some studies have indicated age-specific differences in quality of life (QoL) among breast cancer (BC) patients.

The aim of this study was to compare patient-reported outcomes after conventional and oncoplastic breast surgery in two distinct age groups.

Methods

Patients who underwent oncoplastic and conventional breast surgery for stage I-III BC, between 6/2011–3/2019, were identified from a prospectively maintained database. QoL was prospectively evaluated using the Breast-Q questionnaire.

Comparisons were made between women <60 and ≥60 years.

Results

One hundred thirty-three patients were included. Seventy-three of them were ≥60 years old. 15 (20.5%) of them received a round-block technique (RB) / oncoplastic breast-conserving surgeries (OBCS), 10 (13.7%) underwent nipplesparing mastectomies (NSM) with deep inferior epigastric perforator flap (DIEP) reconstruction, 23 (31.5%) underwent conventional breast-conserving surgeries (CBCS), and 25 (34.2%) received total mastectomy (TM). Sixty patients were younger than 60 years, 15 (25%) thereof received RB/OBCS, 22 (36.7%) NSM/DIEP, 17 (28.3%) CBCS, and 6 (10%) TM.

Physical well-being chest and psychosocial well-being scores were significantly higher in older women compared to younger patients (88.05 vs 75.10; $p < 0.001$ and 90.46 vs 80.71; $p = 0.002$, respectively). In multivariate linear regression, longer time intervals had a significantly positive effect on the scales Physical Well-being Chest ($p = 0.014$) and Satisfaction with Breasts ($p = 0.004$). No significant results were found concerning different types of surgery.

Conclusions

Our findings indicate that age does have a relevant impact on postoperative QoL. Patient counseling should include age-related considerations, however, age itself cannot be regarded as a contraindication for oncoplastic surgery.

The “Sombrero-shape” super-thin pedicled ALT flap for complete scrotal reconstruction following Fournier’s gangrene: A case report

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Objective

Fournier’s gangrene is a necrotizing fasciitis affecting skin and soft tissues of the perineum and external genitalia. Despite medical and surgical advancements, the mortality rate associated with this pathology remains high.

When the scrotal sac is entirely debrided, testes exposure poses unique challenges for the plastic surgeon. The ideal reconstruction should include thin and pliable tissue, with a reliable vascularity and an accessible surgical technique. The pedicled anterolateral thigh (ALT) flap is a well-known option in such context. However, aesthetic results are often suboptimal due to lack of natural ptosis and patchwork appearance. We describe the use of a super-thin pedicled ALT flap for total scrotal reconstruction, modified according to a peculiar flap design and inset technique.

Methods

A 42-year old man was referred to our department for total scrotal reconstruction 8 months after a Fournier gangrene extensive debridement. Testes exposure was treated by burying the testes in the inner thighs, later causing the patient significant pain while walking. In order to relocate testicles back to their anatomical position, a super-thin pedicled ALT flap from the right thigh was designed. The particular flap arrangement has inspired the name “Sombrero” as the shape is akin to the famous hat. The flap was self-folded in such way that proximal and distal extremities were sutured to both penis’ sides. Medial flap borders were sewed together to recreate a median raphe anteriorly while the lateral flap extension (the tip of the “Sombrero”) was anchored posteriorly to the perineal muscles, allowing a natural ptosis of the neo-scrotum. A split-thickness skin graft was used for partial donor site closure.

Results

Given favorable clinical evolution, the patient was discharged 2 weeks postoperatively. No major complications were recorded, while a donor site seroma developed one-month post-operatively was treated conservatively in the outpatient clinic. At 12 months follow-up, the patient showed satisfying aesthetic and functional outcomes. Thus, no secondary refinements were needed.

Conclusions

Depending on each patient’s case and anatomical features, flap choice should remain at the surgeon’s discretion. The ALT flap design “sombrero” modification proposed can improve scrotum cosmesis and patient satisfaction in a single-stage single-flap procedure.

Sacral chordoma: A population-based analysis of epidemiology and survival outcomes with focus on surgery and radiotherapy

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Objective

Sacral chordoma is a rare primary bone neoplasm associated with high morbidity because of aggressive local invasion, which often requires challenging surgical procedures and a multidisciplinary approach involving spinal, colorectal and plastic surgeons. The aims of this study were to identify demographic and clinic-pathological characteristics of this tumour, to evaluate efficacy of different therapeutic approach, to analyse survival outcomes, to identify prognostic factors, and to define tailored optimal treatments strategies.

Methods

The U.S. National Cancer Institute’s Surveillance, Epidemiology and End Results (SEER) database collecting data between 2000 and 2018 was searched for all cases of sacral chordoma. We analysed demographic aspects, cancer stage and treatment patterns including radiotherapy and surgery. Overall survival was calculated using the Kaplan-Meier method and compared between subgroups using the log-rank test. A multi-variate cox hazard regression analysis was conducted to identify independent predictors of overall survival.

Results

442 patients were identified with a mean age of 62,7 years, distributed as follow in different age groups: 20,8% younger than 50 years, 40,5% aged between 50 and 69 and 38,7% aged 70 or older. Male represented 61.1% of the patients’ population. White race was predominant (83.3%). Most tumours presented regional invasion at diagnosis (43,2%), but metastatic disease remained rare (10,9%). Surgery alone was the most frequent therapy (44%), followed by surgery associated with radiotherapy (21,3%). The mean overall survival was 124.7 months with a five-year overall survival rate of 72.9 %. No significant difference in terms of overall survival was found between surgery alone and surgery associated with radiotherapy, but both options provided a significantly increased survival than radiotherapy alone. Age of less than 50 years or between 50 and 69 correlated significantly with improved survival.

Conclusions

Sacral chordoma is a rare tumour affecting mainly white males around their sixties. Wide surgical resection remains the mainstay treatment as regional invasion is frequent at diagnosis. Adjuvant radiotherapy does not improve overall survival. Knowledge of demographic, clinico-pathological and treatment-related outcomes is essential for patient’s information and appropriate therapeutic planning.

It is never too late for a free flap to treat chronic osteomyelitis after fracture-related infection

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Objective

Chronic osteomyelitis (COM) after fracture-related infection (FRI) is a severe post-traumatic complication which is occasionally accompanied by a soft-tissue defect. Patients of advanced age are the fastest growing subpopulation in Europe, therefore COM after FRI with concomitant soft-tissue defect can be encountered even decades after the initial fracture. Here we present the orthoplastic treatment concept and long-term outcome of two patients with a history of motorbike accident, traumatological treatment and consequent FRI. The soft-tissues were to heal secondarily at that time. This left the tibial metaphyseal bone chronically exposed over the course of 44 and 51 years, respectively.

Methods

Two male patients now 63 and 85 years of age presented with a composite osteo-fascio-cutaneous soft-tissue defect after FRI 1970 and 1977. The preoperative workup included arteriography, angiological examination, conventional radiograph, MRI and CT scan. Both patients were treated in a one-stage orthoplastic procedure including debridement of the soft-tissue and bone (positive paprika sign) and reconstruction with a free fasciocutaneous antero-lateral thigh (ALT) flap.

Results

The histological workup confirmed COM, in both patients polymicrobial infection was seen (*S. aureus*, *E. cloacae*, *A. baumannii* vs. *E. coli*, *S. simulans*, *E. faecalis*, anaerobic mixed flora). The duration of intravenous antibiotic treatment was two weeks, followed by 4 more weeks of oral treatment. No complications or flap failures were seen. Both patients started dangling at day 3 and mobilizing with compression garments from day 5 on, fully weightbearing after 10 days. At the most recent follow-up 7 months and 3 months postoperatively, no clinical or radiological signs for persistent / recurrent infection or COM were seen.

Conclusions

The steadily growing elderly population implies an increasing need of complex lower extremity reconstruction. Preoperative multidisciplinary planning, including modern imaging and intraoperative management, is key to reduce complications. Microsurgery is not contraindicated because of advanced age per se (biological age supersedes chronologic age) and can often successfully restore ambulation, mobility, and quality of life in the elderly.

Frostbites during the COVID-19 pandemic

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Objective

Frostbite injury happens when the tissue is exposed to temperatures below 0°C. Ice crystals develop in the tissue, leading to a cellular injury especially regarding the vascular endothelium. Subsequent microvascular thrombosis occurs resulting in progressive ischemia and tissue necrosis. During the COVID-19 pandemic we faced an unexpected high number of frostbite cases.

Methods

We included five patients who underwent frostbite injuries this winter and were treated at the Department of Plastic and Reconstructive Surgery of the University Hospital Zurich. All patients were exposed to temperatures below the freezing point for several hours. Only fingers and toes were affected by frostbites of second- and third degree.

Results

Mean age was 29. We divided the patients in groups of second and third degree frostbites. Three out of five patients with second degree frostbites were treated conservatively with Mepitel dressings during the exudative phase while hemorrhagic blisters were not removed. When the necrotic tissue dried out the dressings were changed daily with a consultation every 14 days. Based on this therapy regimen, the affected fingers and toes recovered. Two patients suffered third degree frostbites and were in need of an amputation. One patient was hospitalized and received an intravenous Iloprost-therapy paired with daily hyperbaric oxygen therapy for 3 weeks. An amputation of four necrotic fingers was planned 12 weeks posttraumatic. The second patient was treated conservatively with frostbites affecting 10 toes. He developed an infection and was treated with antibiotics for 14 days. The patient underwent daily dressings and betadine treatment. Eventually after demarcation 6 toes got amputated 14 weeks posttraumatic.

Conclusions

The surgical therapy should be postponed until a clear demarcation of the necrosis can be specified, to safe as much vital tissue as possible. Second degree frostbites should be treated conservatively, although taking a long time to recover.

Soft-tissue and incision management in breast surgery: proof of concept using next generation closed incision negative-pressure wound therapy for high risk patients

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Objective

Adverse outcome following breast surgery is often associated with previous oncoplastic surgery, radiotherapy or due to comorbidities such as diabetes, obesity and smoking. A new concept of negative-pressure wound therapy is gaining popularity for its use on closed incisions to prevent wound healing problems. Novel closed incision negative-pressure wound therapy (ciNPWT) systems such as the Prevena Restor Bella•Form (Prevena Bella; KCI, USA) stabilize the soft tissue environment and facilitate the removal of exudate and infectious material. The dressing bolsters the breast and applies continuous negative pressure to the entire envelope. We hypothesize that the Prevena Bella ciNPWT improves scarring and the survival of nipple-areola grafts, prevents wound dehiscence in addition to reduction of seroma formation and surgical site infections especially in high risk patients.

Methods

In a preliminary analysis, four patients undergoing breast surgery (mastopexy-augmentation, secondary reconstruction, reduction mammoplasty) were treated with the Prevena Bella ciNPWT in our clinic. Patients were included if they had at least one risk factor for developing wound complications. The system was applied according to the manufacturers' use and safety instructions. In one patient no skin protectant (Cavilon Advanced; 3M, USA) was used. We analysed the postoperative day (POD) of Redon drain removal and the length of hospital stay. All patients were assessed for scar appearance, wound complications and seroma formation at 1, 2, 6 and 12 weeks postoperatively.

Results

Three of four patients tolerated the ciNPWT dressing well and were able to operate the system after given instructions. The system was removed 3, 5 or 8 days following surgery. In three patients, we noted an improved scar appearance and no wound healing problems. In one patient, without additional skin protectant, the system had to be removed on the third POD as she reported itching and intolerance to the foil dressing. In our interim analysis we could not recognize earlier removal of the Redon drainages. Patients were discharged on POD 2, 3, 5 and 5.

Conclusions

Initial findings of our study using the Prevena Bella ciNPWT indicated favourable results. The analysis showed a potential benefit using the system to improve scar appearance and prevent wound complications following breast surgery in patients presenting with risk factors.

Pelvic reconstruction after large sacral chordoma resection using acellular dermal matrix and double pedicled gracilis muscle flap combined with gluteal fasciocutaneous rotation flap

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Objective

Sacral chordomas are rare, slow growing malignant primary bone tumors. Surgical resection with wide margins, combined or not with radiotherapy, is the only effective treatment with near 50% remission at 10 years. The surgery often results in large three dimensional defects, as total or subtotal sacrectomy is often required. The treatment is challenging and requires a multidisciplinary approach including spinal surgeons, visceral surgeons as well as reconstructive plastic surgeons. Several reconstructive approaches have been described after resection, classically including rectus abdominis musculocutaneous flap, gluteus musculocutaneous flap and omental flap. We aim at presenting an innovative method of pelvic floor reconstruction using acellular dermal matrix and double pedicled Gracilis muscle flap combined with gluteal fasciocutaneous rotation flap.

Methods

We report the case of a 70 yo patient affected by locally invasive sacral chordoma. The oncological treatment included neuronavigation-assisted subtotal sacrectomy with en bloc resection at the level of S1-S2 intervertebral disc and laparoscopic abdomino-perineal amputation with terminal colostomy. The defect was initially covered with VAC® therapy dressing, the final histologic result confirmed an R0 resection. The pelvic floor was then finally reconstructed with an acellular dermal matrix and a double-breasted pedicled muscle Gracilis flap to avoid herniation of the abdominal cavity organs. The overlying soft tissue defect was reconstructed with an unilateral gluteal fasciocutaneous rotation flap partially deepithelialized to fill the dead space. The donor sites were closed directly.

Results

No surgical complications were observed, with flaps and donor sites healing uneventfully. After 3 days in the intermediate intensive care and 22 days in the plastic surgery department, he was transferred to rehabilitation center. Walking was reassumed after 2 weeks, sitting after 4 weeks. Satisfying outcomes both functionally and cosmetically for both patient and surgeons were observed at 3 months follow-up.

Conclusions

Large sacral defect can successfully be reconstructed with double pedicled muscle Gracilis flap combined with gluteal rotation flap. The association with acellular dermal matrix is recommended to avoid abdominal cavity organs herniation. The oncological and functional results are satisfying with minimal donor site morbidity.

Complications of minimally invasive cosmetic procedures: case series

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Objective

Minimally invasive strategies have become the primary treatment modalities for addressing mild to moderate facial changes; nevertheless, complications can occur and are underreported.

Methods

We report the case of a patient with an upper airway obstruction following radiofrequency-assisted liposuction (RFAL) of the neck and lower face.

We also report the case of another patient with diffuse subcutaneous atrophy and premature aging following high intensity focused ultrasound (HIFU) of the face.

Results

The first case report shows that soft tissue hardening and edema induced by diffuse fat necrosis associated with a subcutaneous hematoma in the neck and lower face following RFAL may be so extensive as to completely obstruct the airway and become life threatening.

The second case report shows that HIFU that is not targeting the appropriate layers of the face may not only be ineffective, but may also result in diffuse subcutaneous atrophy and premature aging of the face.

Conclusions

We encourage our colleagues to report similar complications of minimally invasive cosmetic procedures in order to raise awareness among practitioners and patients alike.

3D custom made silicone implants for correction of pectus excavatum: A case series

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Objective

Pectus excavatum (PE) is a congenital defect where the anterior chest wall is depressed into the thoracic cavity. While PE can be detected at birth or in early childhood, patients may not present until early adolescence as the condition can worsen with growth. Patients with severe PE can receive a surgical correction via an intrathoracic bar placed behind the sternum. However, many patients do not wish to receive such an invasive but still suffer from psychological stress.

Methods

We evaluated 4 female patients with PE, which were treated with 3D custom-made silicone implants. A virtual filling CAD-implant was designed by 3D-machining of a block of hard polyurethane resin according to a 1mm resolution CT scan (Anatomik modelling). The implant was placed under the muscle layer anterior to the breastbone and incised caudally in order to fix it on the incised rectus fascia and linea alba. Access was through a sub-mammary incision in a modified approach to conceal the scar.

Results

The patient's age was between 23 and 30. All patients received peri- and postoperative antibiotic prophylaxis as long as the drains were in place. The hospital stay was between 1 and 6 days. A sports bra was worn for 6 weeks. There were no postoperative complications. We prefer to place drains and to leave them in place up to three weeks in order to prevent repetitive puncture, since usually a prolonged drainage of seroma occurs in these procedures. All patients reported high level of aesthetic satisfaction.

Conclusions

Compared to other surgical procedures to correct the deformity it is a less invasive technique. Correction of pectus excavatum using custom made silicone implants yields satisfactory aesthetic results and aids patient in their psychological well-being. The technique is straightforward and safe.

Reconstruction of meatus accusticus externus: Ideal indication for skin and muscle chimeric SKIP flap

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Objective

Defects of the scalp, the mastoid and the meatus accusticus externus presents a unique challenge to the reconstructive plastic surgeons. Common reconstructive therapies, like split skin graft, local flaps or skin expander are often not suitable solutions for these demanding composite defects. The goal is therefore to rebuilt bony contour, restoration of soft tissue, epithelial coverage and seal intracranial contents from the air.

This can be achieved with an individualized chimeric free tissue transfer offering distinct advantages with favourable, functional and cosmetic results.

Methods

We present a unique case with squamous cell carcinoma of the meatus accusticus externus, which was surgically treated by auricular resection, latin temporal bone resection, parotidectomy, neck dissection and jaw head resection.

Results

The defect was covered by a microvascular free chimeric SKIP flap with m. sartorius. In detail the defect was filled with muscle and the retroauricular area was rebuilt as well as the meatus accusticus externus with a thin SKIP flap.

Conclusions

This solution brought volume, viable tissue and thin skin in the auricular area.

The impact of delayed wound healing on patient-reported outcomes after breast cancer surgery

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Objective

Postoperative complications after breast cancer surgery may be associated with decreased quality of life (QoL). It remains unclear whether oncoplastic breast surgery (OBS) leads to more postoperative complications than conventional breast surgery. As delayed wound healing (DWH) is one of the most frequent minor complications, we sought to investigate the significance of DWH for patient-reported outcomes (PROs) after oncoplastic and conventional breast surgery.

Methods

Our study is a retrospective cohort study of consecutive patients with stage I-II breast cancer undergoing oncoplastic or conventional breast surgery performed by three breast surgeons at a single tertiary referral hospital from June 2011 until May 2019. PROs were evaluated postoperatively using the BREAST-Q questionnaire. Comparisons were made between patients with and without DWH.

Results

229 patients met the inclusion criteria and 28 (12.2%) of them developed DWH, 27/158 (17.1%) in the OBS group and 1/71 (1.4%) in the conventional breast surgery group. The mean time from surgery to BREAST-Q assessment was comparable in both groups (29.30 months in the DWH vs. 32.69 months in the Normal wound healing (NWH) group). No statistically significant difference for any BREAST-Q scale was detected between patients with and without DWH. This includes physical ($p=0.183$), psychosocial ($p=0.489$) and sexual well-being ($p=0.895$) as well as satisfaction with breasts ($p=0.068$).

Conclusions

Our study confirms that OBS leads to significantly more DWH and short-term complications (Clavien-Dindo grades I-IIIb) than conventional breast surgery.

Poster

Less names – improved clinical accuracy. Eponyms in hand surgery

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Objective

Background Medical eponyms are ubiquitous. The legacy of 19th c medicine, honoring discoveries, assuming the user knew the original paper. Currently the WHO prefers non-eponymous terms. There are pro and contra positions, though contra arguments predominate. Incorrect use of eponyms may distort both medicine and medical history, including errors and confusion.

Aim To reveal possible trends of using eponyms in hand surgery (HS), comparing pre-digital (1966/68) and digital data (2009/2021) of leading dictionaries.

Methods

Two dictionaries were chosen to retrieve and compare eponymous entries related to HS: 1. 'Die klinischen Syndrome', B. Leiber/G. Olbrich (LO), 4th ed., 1966, plus 'Die klinischen Eponyme', LO, 1968, in all 1589 pages (print); 2. 'Oxford A-Z of Plastic Surgery', A. Hodges (OPS), 2009 (online). Personal name eponyms (upper extremity) were included. Additional searches were performed (whonamedit.com, wikipedia, PubMed).

Results

Overall entries in whonamedit increased from 7588 (2007) to 8061 (2021; + 6 %). LO presents 2796 entries in total, thereof 233 (8,3 %) HS related. OPS lists 1360 eponyms, thereof 135 (9,9 %) HS related. The majority of entries (LO, OPS) deals with rather rare malformations (upper extremity) and systemic diseases. The second group of frequently used eponyms is related to clinical signs/tests (LO, OPS), and methods/classifications (OPS). 'Tainted' eponyms such as 'Reiter' are eliminated in OPS. Possessive use of eponyms is evident (e. g. Froment's), despite advise against it (44 % OPS, 100 % LO). Sign/test eponyms used in HS (26 % OPS) are most critical regarding clinical practice. In one study only 10 % of surgeons recognised the correct method. A spot check (PubMed) of 'Sudeck syndrome' (LO/OPS entries) vs. 'CRPS' (complex regional pain syndrome) indicates the usefulness of accurate nomenclature: 'Sudeck' produced 309 publications (1947–2021), 'CRPS' 2533 (1996–2021), heralding improvements in clinical medicine.

Conclusions

Overall fraction of HS related eponyms has not changed significantly. Possessive use is declining slowly. A more recent shift from 'historical' to clinical signs/test/methods eponyms could be observed. These eponyms remain most relevant to clinical practice in HS, given their high proportion of entries and error rates. More accuracy and consideration is demanded for coining and using such terms.

Multispectral optoacoustic imaging for preoperative mapping of lymph vessels

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Objective

Lymphedema is a chronic, progressive and burdensome disease that affects approximately 10.000 people in Switzerland. While there is still no cure for lymphedema, lymphatic reconstructive surgery has been an important milestone that allows to restore lymph drainage. In the context of lymphovenous anastomosis (LVA), pre- and intraoperative visualization of suitable indocyaninegreen-positive (ICG) lymph vessels is crucial. However, in advanced stage lymphedema dermal backflow of ICG impairs identification of lymph vessels. We therefore aim to establish multispectral optoacoustic imaging (MOST) as an alternative for preoperative mapping of lymph vessels.

Methods

We conducted a single center observational study evaluating MSOT for mapping of lymph vessels prior to LVA.

All patients received an intradermal injection of approximately 1ml ICG at the site of lymphedema. After one hour, ICG lymphography using Fluobeam (Fluoptics Imaging Inc., Cambridge, MA, USA) was performed, followed by MSOT Acuity (iThera Medical GmbH, Munich, Germany).

Results

So far, we included three patients. Of those, two were diagnosed with lower limb lymphedema grade II and one suffered arm lymphedema grade III. On preoperative ICG lymphography a typical stardust pattern could be observed that impaired identification of suitable lymph vessels for LVA. In two out of three patients ICG positive lymph vessels and nearby veins could easily be localized by MSOT and facilitated the performance of LVA.

Conclusions

Identification of suitable ICG-positive lymph vessels is crucial for successful LVAs and has been shown to improve outcomes. MSOT is a brand new device that shows promising results in visualizing lymph vessels, even in advanced lymphedema, and without the disadvantage of radiation exposure or the use of a radionuclide.

Patient-reported outcomes after lymphatic surgery: A prospective data evaluation from the Zurich Lymph Registry

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Objective

Lymphatic reconstructive surgery has been an important milestone in the treatment of lymphedema patients. In recent years, we experienced a constantly rising number of patients receiving lymphovenous anastomosis (LVA) and free vascularized lymph node transfer (LTT). This led to the development of the Zurich Lymph registry which allows a precise analysis and comparison of patient outcomes after lymphatic reconstructive surgery including objective and subjective parameters.

Methods

We conducted a prospective single center study to include all patients prior to lymphatic reconstructive surgery. Patients receive volume measurements preoperatively and at standardized intervals after the last surgery. To evaluate the patient-reported outcome, patients with upper limb lymphedema (ULL) complete the LYMPH Q, quickDASH and SF-36 preoperatively as well as at six weeks, six months, one and two years postoperatively. Patients with lower limb lymphedema (LLL) receive the LEFS and SF-36.

Results

Between May 2020 and April 2021 we included five patients with ULL and sixteen patients with LLL. Most patients (N = 15) presented with lymphedema grade II, whereas lymphedema grade I (N = 3) and III (N = 3) were less common. The majority of the patients (N = 11) received combined LVA and LTT either as laparoscopic right gastroepiploic lymph node transfer or taking lymph nodes from the thoracic or the abdominal wall after reverse lymphatic mapping. The remaining patients underwent LVAs (N = 5) or LLT (N = 5) only. In six patients additional liposuction was performed.

Based on SF-36 patients with LLL experienced improvements regarding energy, emotional well-being, physical and emotional limitations without being statistically significant. Given a maximum score of 80, the average LEFS score of 75 remained unchanged in LLL. In ULL, SF-36 showed only minor changes. In contrast, patients reported significant improvements of symptoms ($p = 0.004$), arm function ($p = 0.002$) and psychological impairment ($p = 0.003$) based on the different LYMPH Q scales and quick DASH ($p = 0.05$).

Conclusions

Development of registries is becoming more and more popular and allows a continuous improvement of quality of care and is crucial to establish treatment guidelines. The current study design underscores the importance of patient-reported outcome measurements and is the first step towards a digitalised lymph registry.

Infraorbital subcutaneous intravascular lobular capillary hemangioma following rhinoplasty

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Objective

Lobular capillary hemangioma (LCH; also referred to as pyogenic granuloma) is a common benign vascular tumor that is characterized by proliferation of capillaries with a lobular architecture. LCH can involve superficial cutaneous, mucosal, or subcutaneous structures; the subcutaneous and intravascular variant is very rare. This is the first report of a subcutaneous intravascular LCH following rhinoplasty. By presenting this case report we would like to raise awareness to this rare condition.

Methods

We performed a retrospective chart review to demonstrate the clinical, radiologic (MRI and Doppler sonography), and histological findings of a female patient with a subcutaneous infraorbital mass one year after closed rhinoplasty.

Results

On physical examination, the 6x6mm measuring subcutaneous lesion presented as a bulging, pulsating, and slightly mobile mass in the region of the infraorbital margin of the maxilla. No color change of the overlying skin was observable. An MRI revealed a T2 hyperintense 5mm lesion with early and strong enhancement, and a fast venous outflow in a dynamic MR-angiography. Doppler sonography of the lesion showed high flow perfusion suggesting a small arteriovenous fistula. An excisional biopsy was performed via a transconjunctival approach, and the histopathological findings were characteristic for a subcutaneous intravascular LCH. At 3 months follow-up, the patient was asymptomatic with no evidence of a recurrent lesion. The transconjunctival approach left no visible scar, and, with no evidence of eyelid deformity, the patient was very satisfied.

Conclusions

The etiology of the tumor remains unclear in our case, but can most likely be considered as post-traumatic regarding the close temporal connection with previous rhinoplasty. Since no case of SLCH or ILCH following rhinoplasty has been reported to date, we would like to draw the attention of stakeholders to this rare condition and raise awareness among clinicians to what seems to be a late finding following rhinosurgery. For subcutaneous nodules in the face with clinical and radiological findings similar to the ones described in this case, subcutaneous or intravascular LCH as a differential diagnosis should be considered.

Suicide attempt – Cardioplegic solution – Migraine surgery: Comprehensive care for a Hand Amputation

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Objective

Hand macro-amputations require immediate treatment in a specialized centre by a trained team of microsurgeons. However, the success of the operation and its long-term outcome may not only depend on the replantation itself, but sometimes also need additional peri- and postoperative measures beyond anastomotic expertise, as presented in this exceptional case.

Methods

A 67-year-old male patient attempted to commit suicide because of chronic hemi-lateral occipital head-aches. Treatment was severely delayed for about 6 hours after the injury as the patient had hidden himself and the amputated hand in the forest. To prevent reperfusion injury, the hand had to be flushed by cardio-plegic solution and kept cold between admittance to the emergency department until the patient arrived in the operation room and vascular anastomosis could be started. The replantation could be completed after 7 hours, no postoperative complications occurred. After several successful blocks of the left greater occipital nerve, in a second operation bilateral surgical nerve decompression in the neck was performed 17 months later. This revealed a severe greater occipital nerve entrapment by scar tissue on the symptomatic side, presumably due to work-related heavy loading and carrying on the left neck and shoulder for decades.

Results

At 19-month after the replantation, the patient has regained a very useful hand function with good opening and strong grip which even enabled him to resume his original work as a plumber. Regarding the unbearable head-ache which made him suicidal, he is completely free of symptoms.

Conclusions

This case shows that beyond surgical performance during a macro-replantation, a holistic view and comprehensive treatment of the individual is important to achieve a successful long-term outcome.

Knee extensor apparatus reconstruction with MSAP-gastrocnemius and patella allograft

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Objective

Cadaveric patella allograft has been described for chronic patella or quadriceps tendon ruptures, but has rarely been described in conjunction with flaps for extensive knee defects. Here we describe the use of the Medial Sural Artery Perforator (MSAP)-gastrocnemius flap with patella allograft in sarcoma and extensive Total Knee Replacement (TKR) defects with resection of the entire knee extensor mechanism.

Methods

We present 3 cases with loss of the knee extensor mechanism and overlying soft tissue. Reconstruction of the soft tissue was twice performed with a combined MSAP-gastrocnemius flap and once with a gastrocnemius flap alone, and replacement of the knee extensor mechanism with tibial tuberosity-patella tendon-patella-quadriceps tendon fresh frozen cadaveric allograft. The two sarcoma patients were reconstructed in 1 stage, and the TKR defect was reconstructed in 2 stages (flap&spacer, followed by allograft&revision knee prosthesis). Follow up was 40 months post-reconstruction.

Results

All patients were able to ambulate normally without braces or walking aids. Straight leg raise was eventually near normal in all patients, but with a period of approximately 1 year where there was a noticeable extensor lag, which diminished with physiotherapy over another 1 year time. A minor quadriceps allograft-native quadriceps interface tear occurred in one patient undergoing radiotherapy, which eventually healed. Two patients underwent 3D Gait Profile Analysis, with a nearly normal overall Gait Profile Score (mean 7.7, normal population 5.6). Gait Profile Analysis showed a slightly reduced step length (0.55, normal 0.74), walking velocity (0.78, normal 1.4) and an altered knee movement analysis profile (mean 14.6, normal 5.5).

Conclusions

The use of MSAP-gastrocnemius combined flap together with patella allograft, allows salvage of function in very extensive defects around the knee. The MSAP-gastrocnemius flap is a versatile flap that allows independent orientation of the muscle and skin flap components, with reconstruction of the knee capsule using the muscle placed horizontally, and the skin flap component to resurface the knee in a vertical orientation. Tibial-tuberosity-patella tendon-patella-quadriceps tendon provides a 'like for like' extensor mechanism reconstruction which allows patients to return to near normal function, with some minor limitations in walking speed and step length.

Free omental lymphatic flap with robotic harvesting for treatment of lymphedema after axillary lymph node dissection

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Objective

The omental flap has a wide variety of applications in reconstructive surgery, it is employed either as a pedicle or as a free flap. Advances in endoscopic surgery have reduced the donor site morbidity. Abundance of lymphatic tissues within the greater omentum without risk for donor site lymphedema recently stimulated interest in its use in the lymphedema treatment. We aim at reporting an innovative approach to robotically harvest the omental free flap to treat chronic lymphedema

Methods

We report the case of a 60yo woman with a history of stage II (ISL) secondary upper limb lymphedema after left breast cancer treated with mastectomy, lymphadenectomy and adjuvant radiotherapy. Nonoperative measures did not improve the patient's clinical situation. Lymphoscintigraphy showed no residual lymph node in the axilla. We decided to perform a free omental flap transfer to the axilla with a robotically assisted harvesting approach to minimize the donor site morbidity. An approximately 10 cm-long skin incision was made along the axillary on the previous lymphadenectomy scar and a branch of the lateral thoracic artery and vein were prepared. The flap harvest was performed by a general surgeon using a robot Da Vinci with 5 port sites. The right gastroepiploic artery and vein were identified, clipped and resected at their roots with special care to provide adequate pedicle length for anastomosis, which was guided by a plastic surgeon. Fluorescent angiography with indocyanine green showed a good vascularization of the flap. The greater omentum was then anastomosed to the axilla with one artery and two venous anastomosis. The flap was again examined clinically and under fluorescent angiography with good result. Primary closure of the skin was easily performed. We didn't monitor the flap as it was buried.

Results

The operative time was 6:30 and the hospital stay was 5 days, we have no complications to report. The patient was satisfied with the functional outcome with subjective improvement of swelling and reduction of numbness. The degree of donor-site scarring was minimal and the postoperative recovery was fast.

Conclusions

The free omental flap is a reliable lymphatic flap that may offer good chances for lymphedema treatment. The robotically assisted approach allows a minimal donor site morbidity and deformity.

Video

Prepectoral hybrid breast reconstruction: Synergy of autologous fat grafting and breast implants

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Objective

Breast cancer (BC) is the world's most prevalent cancer. Globally, there are more lost disability-adjusted life years (DALYs) in women due to BC than any other type of cancer. Currently, available multimodal therapy results in an overall survival rate of more than 80% in early BC, eventually generating the largest patient cohort that survives cancer respectively needs «organ reconstruction». Accordingly, reconstruction that yields warm, soft and natural breasts with durable outcome compatible with a high quality of life is desirable. Although being a safe procedure, microvascular flap-based breast reconstruction (BR) is associated with complex surgery and donor-site morbidity, whereas implant-based BR is associated with increased rate of unplanned surgical revisions and a higher rate of reconstructive failure at "mid-term". Combining the use of autologous tissue in order to minimize the impact of the implant on the surrounding tissues and eventually guarantee adequate tissue coverage of prepectoral implant location seems therefore appealing.

Methods

We present our first experience with the hybrid approach using ergonomic implants in "de novo" BR and revisional surgery due to reconstruction failure.

Results

The hybrid approach is based on tissue expansion followed by serial sessions of fat grafting to increase the thickness of the residual autologous (subcutaneous) compartment of the mastectomy flap and insertion of a prepectoral implant to obtain central core projection and lacking volume

Conclusions

Prepectoral, hybrid BR seems to be a safe technique that reduces the drawbacks of implant-based BR, including unnatural final breast shape and complications related to subpectoral implant positioning. Despite its long and cumbersome path due to repetitive fat grafting, it does add an "autologous" benefit to obtain natural results.

Lateral to medial tension Mastopexy

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Objective

Mastopexy is one of the most common aesthetic surgical procedures performed worldwide. Its purpose is to improve the shape of the breast, as well as to reposition the areola-nipple complex and reduce exceeding skin. There are a variety of mastopexy techniques and some of them use mesh, including flaps of the pectoral muscle to support the breast. However, most of these techniques do not sufficiently address the excess of tissue in the back and the infra-axillary area, which is often an issue in patients with severe ptosis of the breast. Hence, this technique aims to solve the problem of raising and securing the infra-mammary fold as well as to allow a satisfactory design and projection of the breast with a major tissue transfer.

Methods

We have included a schematic drawing and a video to give a step-by-step approach to the technique. The author treated most of the patients with this technique since January of 2010 in an inpatient facility. Written consent was obtained from all patients for use of their data and photographs.

Results

From 2010 to 2020, 132 lateral to medial tension mastopexys were performed by the senior author. No serious complications such as hematoma, infection or nipple necrosis were encountered in our patient series.

Conclusions

Based on up to 10 years of follow up experience in 132 patients, the author believes the lateral to medial tension mastopexy being an effective alternative in selected patients. We therefore suggest that plastic surgeons use this new technique as a viable alternative to other mastopexy techniques.

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