SWISS PLASTIC SURGERY

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**ABSTRACT BOOK** 

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# **Free Communications**

Implementing virtual surgical planning, patient-specific implants and 3D-printed cutting guides in facial feminization surgery: What's new?

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## Objective

Facial feminization surgery (FFS) comprises a range of surgical procedures that are aimed to feminize specific facial features. The use of digital planning and its transfer to the patient, using patient-specific implants and cutting guides, shortens operating time, increases patient safety, and demonstrably improves postoperative results.

The use of cutting guides and patient-specific implants is especially useful for osteotomies of the facial skull. In order to reduce treatment costs and optimize work processes, we developed our own artificial intelligence tool that automatically designs cutting guides. In 2024 we started to implement augmented reality within the surgical procedure. Digital planning is projected onto the patient's facial skull and gives the surgeon real-time information.

To illustrate our new tools we present a complex patient case who underwent complete surgical feminization of the facial skull combined with orthognathic surgery. We also present the newest technologies and our experiences.

#### **Results**

We overlaid our digital planning with postoperative computer tomography, determining a deviation of less than one millimeter. Meanwhile the listed technologies are used for standardization in facial feminization surgery (FFS), but they are also applied in highly complex cases, such as FFS combined with orthognathic surgery.

#### Conclusions

The use of new technologies shortens operating times, increases patient safety and demonstrably improves post-operative results in facial feminization surgery.





Immediate and delayed effect1



2x stronger, compared to other tested threads<sup>2</sup>



Balanced between plasticity and elasticity<sup>2</sup>

References: 1 A. Savoia et al. (2014): Outcomes in thread lift for facial rejuvenation: a study performed with Happy Lift™. Dermatol Ther (Heidelb.), 4(1):103 - 14, 2 Open test (Analysis of different types of sutures wires), Rigano Laboratoires S.r.l.Prot 148/17. Happy Lift™: Designation for Definisse™ Threads in Asia and formerly in the EU. References are available on request.







# 1

# Our experience and results by exclusive subglandular implant placement in transgender augmentation mammoplasty

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# Objective

Augmentation mammoplasty may be the most important surgery, and often the only one, sought by transgender women. The moral and social impact of the procedure makes it a crucial point of discussion and reflection. Several arguments in favor are advanced in both subglandular and subpectoral implant placement. The subpectoral pocket offers better coverage of the upper pole, thus avoiding rippling deformity, whereas subglandular placement avoids muscular dynamic deformity and lateralization of the implant. In our center, we consider that subglandular placement is suitable for almost every case and yields satisfactory results with lower pole expansion.

#### Methods

Approximation of the implant size was always done during preoperative consultation. The final choice was made during surgery with the help of sizers. Only round implants were used and compromise between implant base and projection was made depending on the overlying glandular tissue. The incision for the inframammary approach was placed beneath the natural fold. Patients were photographed preoperatively and postoperatively at 4 and 12 months. Based on a retrospective design, 8 cases followed between 2020 and 2022 with complete photo-documentation were selected for further analysis.

#### Results

In all cases, we noted an expansion of the lower pole at 4 months, which remained stable over time. Good symmetry was achieved in most cases. The implants were well-covered without rippling. One case presented with a bilateral bottoming out deformity at 1 year and 1 case developed a gross irregularity of the lower pole on the right breast. The nipple-areolar complex was commonly lateralized.

## Conclusions

The broad thorax, the shortened nipple to inframammary fold distance, the lateralized nipple-areolar complex, and the hypertrophied pectoralis muscle pose unique difficulties in achieving an aesthetic result in feminization top surgery. Though subpectoral placement is recognized for its better implant coverage, especially in the absence of adequate breast soft tissue, and better control on the upper pole fullness, we found that, subglandular placement gives our patients a satisfactory result with a well-developed lower pole and without the risk of dynamic animation or implant lateralization. Furthermore, implant rippling doesn't seem to be an issue and could be linked to the dermal thickness of the native male chest.

# Next generation of bio-stimulatory injectables for facial contouring

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## Objective

Cultured fibroblast progenitor cells (FPC) have been studied in Swiss translational regenerative medicine for over two decades, wherein clinical experience was gathered for safely managing burns and refractory cutaneous ulcers. Inherent FPC advantages include high robustness, optimal adaptability to industrial manufacture, potential for effective repair and soft tissue stimulation. Stability and logistics of Active Pharmaceutical Ingredients (API) including material sourcing, cell isolation, culture expansion, and subsequent processing are essential for therapeutic biological product availability. Methodological aspects of FPC cell-based or cell-derived therapeutic product development were optimized for the obtention of off-the-shelf injectable ingredients for medicalized skincare.

### Methods

Optimized and up-scaled processing (cell biobanking and stabilization by lyophilization) of dermal FPCs was devised, with the objective of addressing potential cell source sustainability and stability issues in cutaneous regenerative medicine. Cell banking was accomplished with tier 1 and 2 levels of Master and Working Cell Bank processing. Lyophilization recipes were optimized for low-temperature freezing and drying parameters. Characterization of extracellular matrix and collagen quantification were assessed as quality measures for final formulations. FPC-derived formulas were finally assessed for in vitro biocompatibility and bio-stimulatory attributes in primary cell models.

#### **Results**

Multi-tiered FPC banking was optimized in terms of overall quality and efficiency by benchmarking key reagents, consumables, and technical specifications. Fetal bovine serum batch identity and culture vessel surface were confirmed to largely impact harvest cell yields. FPC stabilization by lyophilization was undertaken and shown to maintain critical functions for devitalized cells in vitro, potentially enabling high logistical gains. Final formulations were assessed for extracellular matrix stability in batch testing. FPC-based formula in vitro efficacy for target cell stimulation and migration promotion, along with biocompatibility with primary human cells, showed higher efficiency than alternative cell sources.

#### Conclusions

Overall, this study provides the technical basis for the elaboration of next-generation off-the-shelf topical and/or injectable FPC-derived therapeutic products for facial skin bio-stimulation.

# Neutrophil extracellular trap formation can be modulated by local immunosuppression in vascularized composite allografts

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# Objective

The broader application of vascularized composite allotransplantation is primarily limited by the slow advancement of safe immunosuppression therapies, for which an understating of the mechanism behind rejection is crucial. Traditionally, transplant studies have mainly focused on adaptive immune cells, particularly T and B cells. However, recent research has highlighted the significant role of innate immune components, particularly neutrophil extracellular traps (NETs), in solid organ transplantation. This study aims to assess the impact of a tacrolimus-based drug delivery system on both neutrophils and NETs in rejected porcine VCA allografts.

#### Methods

After heterotopic pig limb allotransplantation, animals were treated with a tacrolimus-hydrogel DDS (TGMS-TAC) or systemic tacrolimus and, compared with an untreated group. Pigs were followed up until postoperative day 90 (POD) or grade IV rejection. T cells, neutrophils and NETs were analyzed in graft tissues by immunofluorescence and/or Western blot. Subsequently, NETs were measured in plasma using both Quantifluor dsDNA and a DNA-MPO ELISA. Furthermore, to evaluate the effect of tacrolimus on NET formation, NETs were induced in-vitro in porcine and human peripheral neutrophils previous incubation with different concentrations of tacrolimus.

#### Results

As expected, treatment with tacrolimus prolonged graft survival. Interestingly, plasmatic levels of NETs only increased after the interruption of tacrolimus treatment in the systemic group (POD21 and 28). Furthermore, not only neutrophils but also NETs were detected in rejected grafts alongside T cells. Intra-graft administration of tacrolimus led to a significant reduction in both T-cell infiltration and NET formation in the tissue compared to untreated grafts. This was further confirmed in vitro, where a 62-84% reduction in NETs was observed after neutrophil stimulation when the cells were pretreated with tacrolimus.

#### Conclusions

Neutrophils and NETs are found in rejected grafts indicating that, together with T cells, also neutrophils play a predominant role in graft rejection. Furthermore, tacrolimus, other than inhibiting T cells, also dampens both neutrophil infiltration and NETosis. Future experiments are needed to define whether inhibition of NETosis could be a potential novel therapeutic target in VCA.

# Robotic-assisted sigmoid vaginoplasty in gender-affirming surgery : Technique and outcomes

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## Objective

Robotic-assisted surgery has revolutionized various procedures, offering enhanced precision and minimally invasive techniques especially in gender-affirming surgery for transgender patients. Sigmoid vaginoplasty presents unique challenges in traditional surgical methods. For the first time in Switzerland, we introduced a robotic-assisted sigmoid vaginoplasty in transgender individuals.

#### Methods

A 45-year-old transgender patient underwent robotic-assisted sigmoid vaginoplasty in April 2024. The procedure utilized 4 ports with the intra-abdominal portion was performed entirely with the Da Vinci S robot (Intuitive Surgical, Sunnyvale, CA). Follow-up at 6 months revealed successful dilation with no complications.

#### Results

Robotic-assisted sigmoid vaginoplasty yielded favorable outcomes, demonstrating successful surgery and postoperative recovery. The utilization of robotic technology facilitated precise intra-abdominal manipulation, contributing to improved surgical outcomes and patient satisfaction.

#### Conclusions

This study presents the first reported case in Switzerland of robotically assisted laparoscopic sigmoid vaginoplasty, highlighting the potential of minimally invasive techniques in gender-affirming surgeries. The favorable results support the integration of robotic-assisted approaches as a valuable option for transgender individuals seeking vaginoplasty, emphasizing cosmetic outcomes and patient well-being. Continued research and refinement of this technique are warranted to optimize outcomes and expand its utilization in transgender healthcare.

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# Lower lid blepharoplasty with orbital fat remodelling: My experience after 260 consecutive operated patients

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#### Objective

The lower lid blepharoplasty is one of the most difficult operation in plastic surgery and achieving a good result with a minimum of complications is in every patient a real challenge.

#### Methods

This retrospective study is based on 260 consecutive operated patients for lower lid blepharoplasty with the fat remodelling technique (Loeb 1981 and Hamra 1993) between 1998 and 2023.

### Results

The percentage of woman was 85 % and the percentage of man was 15%. The average age was 52.4 years with a minimum of 27 years and a maximum of 76 years. One hematoma was noticed and no infection was seen. Twenty patients (8.2 %) had a chemosis and or a scleral show between one week until 6 weeks. Three patients had to be re-operated because of ectropion (1.1%). Seven patients needed a secondary operation for removing more fat with a transconjunctival approach (2.7%).

# Conclusions

The technique will shortly be described, the possible complications will be listed and the way to avoid them will be discussed.

# Nanofat improves the vascularization and tissue integration of dermal skin substitutes

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### Objective

As an alternative to tissue flaps, large full-thickness skin defects may be treated with dermal skin substitutes (DSs), such as the glycosaminoglycan-collagen matrix Integra®, in combination with split-thickness skin graft (STSG) coverage. However, these dermal substitutes require adequate integration into the surrounding tissue before being covered with STSGs, which is a time-consuming process, associated with repeated out-patient visits and increased risk of infection. The study aim was therefore to analyze whether the vascularization and integration of Integra® can be accelerated by seeding it with nanofat, a mechanically processed fat derivative with potent pro-angiogenetic effects.

## Methods

Inguinal fat of green fluorescent protein (GFP)-positive C57BL/6J donor mice was excised and processed into nanofat by emulsification and filtration. The nanofat was then seeded on DSs, which were implanted into full-thickness skin defects in the dorsal skinfold chamber of wild-type C57BL/6J recipient mice. Non-seeded DSs served as controls. Vascularization and integration of the matrices were evaluated by means of stereomicroscopy and intravital fluorescence microscopy (IVM) as well as histology and immunohistochemistry. All values were expressed as means ± SEM. Statistical significance was accepted for p<0.05.

#### Results

Nanofat-seeded DSs exhibited an improved tissue integration with an increased formation of granulation tissue surrounding the DSs. Moreover, the vascularization of Integra® seeded with GFP-positive nanofat was markedly accelerated, as indicated by a significantly higher density of functional microvessels of the substitutes' borders during IVM (70,6 $\pm$ 12,4 cm/cm2 vs. 15,5 $\pm$ 7,1 cm/cm2) and immunohistochemical detection of CD31-positive microvessels in the center (141.6  $\pm$  11.2 mm-2 vs. 15.7  $\pm$  5.9 mm-2) on day 14 when compared to controls.

#### Conclusions

Nanofat represents a promising autologous fat derivative, which markedly accelerates the vascularization and integration of DSs used to treat full-thickness skin defects, eventually reducing morbidity and time to final treatment.

# 1

# The OOM and the SOOF in rejuvenation of the lower eyelid

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## Objective

How to improve the lower eyelid when aging is associated with laxity of the OOM and a descent of the SOOF

#### Methods

Orbiculopexy and fat repositioning will correct the tear trough . Skin laxity had also to be addressed . However the vectors of traction are different for the muscle-fat compared to the skin.

## **Results**

Some cases are shown including patients with festoons as well as tips and tricks to avoid complications

#### Conclusions

Lower eyelid rejuvenation can be tricky. Not only prominent fat bags is addressed but we should also include the orbicularis muscle and the SOOF.

Analysis of individual cases is critical in assessing patient's needs.

# Integration of Artificial Intelligence in therapeutic proposals for breast pathologies

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# Objective

Breast pathologies, although frequent, may sometimes be challenging concerning surgical approaches and planning, requiring expertise and surgical skills for good patient outcomes. Artificial intelligence (AI) shows potential in optimizing decision-making processes and eventually enhancing treatment strategies. This study aims to assess the effectiveness of integrating AI in therapeutic planning for common breast pathologies, through the evaluation of responses generated by an AI model to clinically relevant scenarios.

#### Methods

A series of five clinical cases, characterizing common breast pathologies encountered in daily clinical practice were presented to ChatGPT-4o, an advanced AI language model. Responses provided by ChatGPT were evaluated by a panel of n = 13 experienced, board-certified plastic surgeons, as well as n = 8 plastic surgery residents, for accuracy, relevance, and completeness. The panelists independently assessed each response and provided qualitative feedback using the Likert scale, a psychometric method used to measure attitudes or opinions, typically ranging from "strongly agree" to "strongly disagree". Readability scores were evaluated for each clinical scenario, taking into account word length, sentence complexity, as well as syllable count.

#### Results

The Likert scale demonstrated the responses on the one hand to be medically accurate, systematic in presentation and comprehensible, but on the other hand limited in terms of surgical planning and risk assessment. The mean readability scores of Flesch Reading Ease Score were 27.874, Flesch-Kincaid Grade Level of 14.276, and Coleman-Liau Index of 14.952.

#### Conclusions

Al tools like ChatGPT-40 can act as supplementary aids in the analysis of common breast pathologies, providing valuable insights and enhancing both diagnostic and treatment planning processes. However, these tools currently fall short in accounting for individual patient factors and specific therapeutical nuances in a field, where personalized surgical treatment is of particular value. Nevertheless, with improved training data and thorough expert validation to ensure accuracy, these Al tools have significant potential for application in the field of breast pathologies.

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# The impact of gender-confirming chest surgery on sexual health: A prospective study

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## Objective

In gender-confirming chest surgery, hardly any study has evaluated the improvement of the sexual well-being of transgender patients after breast augmentation or removal. This prospective study aims to assess the potential improvement of body awareness during sexual intercourse and the nipple-areolar complex (NAC) sensitivity recovery after gender-confirming chest surgeries. Eventual differences in perceived outcomes after surgery between male-to-female (FtM) and female-to-male (MtF) patients were analysed.

## Methods

From October 2019 to April 2021, all transgender patients eligible for gender-confirming chest surgery in our institution were asked to file BREAST-Q and BESAQ questionnaires to investigate not only aesthetic outcome and psychological well-being, but also body awareness during sexual intercourse. The Semmes Weinstein monofilament test was used to evaluate NAC sensitivity recovery. Different follow-ups were considered: pre-op, 4 and 12-month post-op.

#### Results

21 FtM and 12 MtF patients were enrolled in the study. Both FtM and MtF patients experienced significant improvement in psychological well-being and chest/breast satisfaction already at 4-month post-op, compared to pre-op values. Body awareness during sexual intercourse improved significantly at 4-month post-op in the FtM groups (p<0.001), but at 12-month post-op in the MtF group (p<0.01), only after completion of genital reassignment. No correlation between body awareness during sexual intercourse and NAC sensitivity was observed in either group

#### Conclusions

While aesthetic and psychological well-being outcomes increased quickly post-operatively in both groups, sexual health remained low among MtF patients until they completed their transition by the vaginoplasty surgical procedure. NAC sensitivity recovery was found to be not contributive to the improvement of sexual health of transgender patients after gender-confirming chest surgery.

# Quality of life and working conditions of swiss plastic surgeons and trainees: A national survey

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## Objective

Delivering high-quality patient care in plastic surgery is a daily commitment. However, the quality of life and working conditions of the plastic surgeons who provide these services both in hospital centers and private practice require examination. Therefore, this study aimed to assess the quality of life and working conditions of plastic surgeons in Switzerland.

### Methods

A national survey targeting Swiss plastic surgeons and trainees was conducted, distributed via email by Swiss Plastic Surgery and the Association of Young Plastic Surgeons. Participants completed standardized, anonymous surveys online through an access link. Key topics included working conditions, quality of life, job satisfaction, and aspects of personal life. Data was analyzed using univariable and multivariable models.

#### Results

Of the 400 invited plastic surgeons and trainees, 120 completed the survey, resulting in a 30% response rate. Most participants were male (57.5%), with 79% living in a relationship and 45% having children. Among them, 37% reported being on call 4-7 days per month, while 15% stated they were never on call. Long weekly working hours and job responsibilities negatively impacted their quality of life. Over 50% of younger and female respondents experienced job-related stress even during holidays and leisure time. Additionally, 85% felt that work affected their private relationships, while 82% felt understood and supported by their social environment (e.g., family, friends, workplace). Despite the stress, 88% indicated they would choose the profession again.

## Conclusions

Quality of life of Swiss plastic surgeons is significantly influenced by the demanding and stressful nature of their profession. Rates of chronic fatigue, burnout, and depression were comparable to those reported in other surgical specialties. Residents and young professionals were particularly affected by these conditions. Arguments for better staffing at acute hospitals often revolve around improved pay or reduced duties, yet these measures are challenging to implement given the current financial constraints and the shortage of skilled workers in the Swiss healthcare system.

# Therapeutic potential and challenges of mesenchymal stem cell-derived exosomes for peripheral nerve regeneration: A systematic review

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## Objective

Gap Injuries to the peripheral nervous system result in pain and loss of function, without quite effective therapeutic option. Within this context, mesenchymal stem cell (MSC)-derived exosomes have emerged as potential therapeutic option. Thus, the focus of this study was to review currently available data on MSC-derived exosome-mounted scaffolds in peripheral nerve regeneration, in order to identify the most promising scaffolds and exosome sources currently in the field of peripheral nerve regeneration.

## Methods

A systematic review with the Meshterms "peripheral nerve regeneration" and "exosome" was conducted following PRISMA 2020 guidelines. The main outcomes were exosome origin, scaffolds materials, and in vivo histological and functional outcomes on peripheral nerve regeneration.

#### Results

Exosome origins varied (adipose-derived MSCs, bone marrow MSCs, gingival MSC, induced pluripotent stem cells and a purified exosome product), similar to the materials (Matrigel, alginate and silicone, acellular nerve graft [ANG], chitosan, chitin, hydrogel, and fibrin glue). The compound muscle action potential (CMAP), sciatic functional index (SFI), gastrocnemius wet weight and histological analyses were used as main outcome measures. Overall, exosome-mounted scaffolds showed better regeneration than scaffolds alone. Functionally, both exosome-enriched chitin and ANG showed a significant improvement over time in the sciatica functional index, CMAP and wet weight. The best histological outcomes were found in the exosome-enriched ANG scaffold with a high increase in the axonal diameter and muscle cross-section area.

#### Conclusions

Encouraging results are reported with significant improvement in function and histological parameters in exosome-enriched scaffolds. Chitin and ANG scaffolds appear to be the most promising scaffolds to host exosomes. Further studies are needed to confirm the efficacy of exosome-mounted scaffolds in peripheral nerve regeneration.

# LICAP Flap:

# A robust and elegant solution for lateral breast reconstructions

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# Objective

Partial breast reconstruction is an integral aspect of breast cancer surgery, offering patients both physical and emotional restoration. Traditionally, the pedicled latissimus dorsi, split-latissimus dorsi flap, or thoracodorsal artery perforator (TAP) flap have been popular choices for reconstruction. However, these flaps involve an additional remote donor site on the back and affect muscle tissue to varying degrees. In lateral partial breast reconstruction, the LICAP (Lateral Intercostal Artery Perforator) flap presents an elegant alternative. Here we present our findings and insights on the efficacy and advantages of the LICAP flap in partial breast reconstruction.

#### Methods

Between 2022 and 2023, eight patients underwent lateral breast reconstruction utilizing the Lateral Intercostal Artery Perforator (LICAP) flap. Of these, six cases involved lower lateral quadrant reconstructions, while two cases involved upper quadrant reconstructions. The mean age of the patients was 53 years. Preoperative perforator mapping was performed using unidirectional Doppler ultrasound. Typically, the perforators were identified between the 4th and 8th intercostal spaces, with an average distance of approximately 3.5 cm from the anterior border of the Latissimus Dorsi muscle. Intraoperatively, the flap was raised, with the distal aspect being deepithelialized and undermined beneath the surrounding tissue to facilitate volume augmentation and improved contouring. This approach allowed for effective enhancement of breast shape and volume in the reconstructed areas.

## Results

In our patient cohort, we successfully achieved direct closure of all donor sites without any functional impairments. Among the eight flaps performed, seven healed primarily, with only one instance of partial flap necrosis. Overall, we observed very high patient satisfaction, with aesthetically pleasing outcomes.

#### Conclusions

The LICAP flap provides an elegant and efficient solution for lateral breast reconstruction, featuring a short operative time and a manageable learning curve. As a purely fasciocutaneous flap, it significantly reduces donor site morbidity while allowing for a notable increase in lateral breast volume, resulting in cosmetically pleasing results. Given its benefits, the LICAP flap is a valuable addition to any plastic surgeon's repertoire and offers a reliable option for partial breast reconstructions.

# Long-term results of facial feminization surgery in treatment of gender dysphoria

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## Objective

Facial Feminization Surgery (FFS) is being increasingly requested by many trans-women who wish so to improve their passing and hence their quality of life. FFS involves a series of facial procedures, which can be combined, and the therapeutc concept is based on an induvidual patient assessment and their needs. In this single-surgeon experience series, we present surgical concepts and long-term review of complication rates.

#### Methods

Medical records were reviewed and post-operative physical examination as well as photographic documentation was performed in last 150 patients, who underwent FFS by the same surgeon within past 4 years.

#### Results

The main FFS procedures involved reduction of supraorbital bossing and indirect brown lifting (92%), chin feminization (65%), feminizing septo-rhinoplasty (28%), followed by less requested procedures, such as facial fat grafting (12%), bichectomy (7%), direct brown lifting (5%), and face and neck lifting (4%). Most of these interventions have been performed as multiprocedural (92%) and/or with a simultaneous breast augmentation in 43% of cases. The complication rate is 1.5%, involving a partial nerve palsy of a frontal branch of facial nerve (1 patient) and prolonged wound healing in 3 patients.

## Conclusions

Despite technical overlap in feminizing and esthetic indications, the surgical concepts and care for gender dysphoria patients vastly differ from that for the cis-gender population. This review includes comments on gender norms and outline considerations for the preoperative assessment and operative execution. It also demonstrates FFS to be safe and effective meausre in treating of gender dypshoria.

# Face and necklift using the High-SMAS/deep plane flap

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# Objective

Despite the increase in non-invasive and less invasive facial procedures, the facelift remains the only technique that can permanently reduce the appearance of ageing. It is primarily intended to reposition sagging structures and remove excess skin; a facelift, however, cannot improve the quality of the skin.

#### Methods

Since almost 20 years we are using the High-SMAS flap to lift midface, cheek and jawline (and removing the jowls). The skin is only dissected in a limited approach preserving the anterior platysma-cutaneous ligaments. The SMAS flap is entered over the zygomatic arch and prepared medially. The zygomatic ligaments around the origin of the zygomatic maj. muscle are released which repositions the upper-cheek and midface. In the lower face the masseteric-cutaneous ligaments are released. Below the mandible the platysma is also released to address the neck. The SMAS flap is then lifted following the vector of the zygomatic maj. muscle. Excess skin is resected with a more posterior vector. If necessary, adjunct procedures to the neck can be added, such as an anterior platysma plasty (via submental incision), platysma myotomy and submandibular gland resection. Additionally, lipofilling can be applied to the cheek and perioral area, if desired. In cases where the main aim is to reposition the sagged subcutaneous soft tissue and not to resect excess skin, the bilamellar approach described above can be converted into a composite flap (nowadays often referred to as a deep plane approach).

### Results

We describe the indications, the safety of the techniques and show results after the procedures. Both techniques achieve a natural, harmonious effect repositioning the mid face tissue, creating a nice jaw line and lifting the neck.

### Conclusions

SMAS flap techniques have proven their worth and provide good long-lasting results. The face is not changed, but truly rejuvenated. An operated look, feared by many patients, can thus be avoided.

# 1

# Liposuction-assisted breast reduction

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# Objective

Adequate reduction of the pedicle in superomedial pedicled breast reduction is sometimes challenging in very large-sized breasts with massive ptosis. Direct excision of tissue bulk can lead to vascular insufficiency of the pedicle and nipple-areola complex (NAC). On the other hand, if not reduced, the pedicle cannot be inset in the keyhole or may be strangulated when forced into it, with a subsequent risk of necrosis. To overcome this issue, we performed power-assisted liposuction of the pedicle aiming to preserve its vascular supply while effectively reducing its volume.

#### Methods

Since 2021, a total of 63 patients underwent superomedial breast reduction surgery using the Wise pattern incision at our institution. Following tissue resection, 15 patients (23%) were treated with additional liposuction of the pedicle because of its resistance hindering a proper inset.

#### Results

Liposuction of the pedicle was effectively performed in all selected patients with a mean volume of 300 cc per breast. Evaluation of complications did not reveal any vascular perfusion problems in terms of fat necrosis or necrosis of the NAC in this group. One patient from this group developed a hematoma requiring revision on postoperative day 1.

#### Conclusions

Based on our initial experience, liposuction-assisted reduction of the superomedial pedicle is a safe and effective method for reshaping and reducing the pedicle volume in large-sized breasts.

# Quality of life and associated factors in Swiss trans people: A cross-sectional study

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# Objective

Experiences of stressful life events during transition may have a negative impact on quality of life (QoL) in trans persons. Little attention has been paid to this population in Switzerland, resulting in sparse data on their QoL and associated social factors.

### Methods

30 participants were recruited during their medical transition treatment and surveyed on their experiences within this time period (13 months after the first medical intervention on average). After performing a diagnostic interview to evaluate their mental health, health-related QoL, psychological distress, self-esteem and the impact of life events that occurred in the last six months on participants were further assessed.

#### Results

Approximately 17% of participants had suffered from major depression, 43% reported having had suicidal thoughts or having attempted suicide, and 43% suffered from an anxiety disorder. Psychological distress was twice as high compared to the norm values of the cis population. With regard to QoL, trans individuals showed impairments in the mental domain. Stressful life events were particularly evident on a psychological and social level. Analysis showed a negative correlation between impact of life events and mental QoL and between psychological distress and mental QoL. At the same time, there was a positive correlation between self-esteem and mental QoL. Psychological distress and self-esteem emerged as independent significant predictors of mental QoL.

## Conclusions

This study shows lowered mental QoL and associations of low mental QoL with psychological distress, low self-esteem and stressful life events in trans individuals in Switzerland. The findings concur with the Gender Minority Stress Model and point out that medical transition must not be viewed in isolation but must be embedded in the framework of integrative psychosocial support.

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# Is it safe to remove the skin paddle in free flap breast reconstruction?

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# Objective

The rate of nipple-sparing mastectomies (NSM) has increased significantly over the past years, making the need for additional procedures after free flap reconstruction unnecessary. The standardized use of the venous coupler has proven to be safe and reduces venous complications. The arterial perfusion of the flap can easily be assessed via handheld Doppler. Small sentinel skin paddles will only show a selected area of the flap and can therefore mislead clinical judgement. These facts have lead us to change our practice over the last four years: in selected cases the monitor island is removed. In this audit we retrospectively compare our buried and non-buried free flaps in breast reconstruction.

# Methods

Autologous free flap reconstructions in NSM, buried or with a cutaneous paddle, performed between 2020 and 2023 by a team of four microsurgeons were identified. Demographic, oncologic and reconstructive details, immediate complications and revision surgeries were recorded and compared between buried flaps and those with a skin paddle for monitoring.

# Results

A total of 236 free flaps for NSM were performed on 194 patients, 52 buried and 184 incorporating a skin paddle. The most common flap used was the deep inferior epigastric perforator (DIEP), followed by transverse myocutaneous gracilis (TMG). Comparing outcomes, there were no significant differences in flap failure (1.6 percent versus 1.4 percent) or percentage of flaps requiring return to the operating room (8.9 percent versus 7.6 percent) between groups.

#### Conclusions

In our series, there was no difference in revisions or flap failure rates comparing buried flaps to externally monitored flaps. Hence, in cases without intraoperative complications, removing the external monitor island has been shown to be safe and effective.

# Handedness and laterality in plastic surgery and outcome: A retrospective, two-center, evaluator-blinded study

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## Objective

Currently, little is known about the influence of handedness on the outcome of operations in plastic surgery. In the orthopedic literature it has been shown that there are disadvantages for left-handed individuals in their surgical practice. Our study addresses the question of whether there is a difference between the right and left sides in the outcome of plastic surgeries in relation to the handedness of the surgeon (right-handed).

### Methods

In this two-center study, patients undergoing plastic (aesthetic) surgery on bilateral locations (thigh lift, breast reduction, mastopexy, augmentation mastopexy, eyelid surgery, brachioplasty) from January 2020 to December 2023, were included. The outcome was assessed separately by an independent assessor on each side. The Likert scale (1-10) was used as the standardized assessment method for the study data, as it converts perceptions and opinions ideally into numbers, enabling quantitative analyses. Additionally, complications were assessed by as minor or major complications, depending on whether a reoperation was necessary or not, and according to the Clavien-Dindo classification.

#### Results

During the study period, 60 patients were included (mean age 44years, range 18 - 83 years). The results of the right side were compared with those of the left side after a mean follow-up of 9.3 months (range 1-28 months). There was no statistically significant difference between both sides (p = 0.60) with a tendency towards the right side: Mean Likert scale 9.2 right side, range 7-10, mean Likert scale 9.12 left side, range 6-10). Complications were also relatively rare: The results on the Clavien-Dindo scale (0-5) showed a mean value of 1.29. There were 9 major complications (16.7%) without a relevant difference between both sides.

## Conclusions

Our preliminary results indicate that handedness may play a minor role in the outcome of plastic surgeries and that the results are similar regardless of the handedness of the surgeon. Nevertheless, ergonomic measurements can be made in order to optimize the outcome, e.g. the right-handed surgeon always stands on the right side of the patient and lowers and turns the table towards his side to complete the left side, always standing on the right side of the patient.

# The pedicled latissimus dorsi flap in head and neck reconstruction: The last resort for high-risk patients

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### Objective

Microvascular free flaps are usually the first choice for reconstruction in the head and neck area. However, in high-risk patients with multiple comorbidities pedicled flaps may be indicated due to their lower risk of failure, reduced operative time, and lower costs. The latissimus dorsi (LD) flap is one of the most effective options for pedicled flaps in head and neck reconstruction. This retrospective study evaluates the indications and outcome of pedicled LD flaps in head and neck reconstruction in our unit.

#### Methods

A retrospective, single-center chart review was conducted of all the patients undergoing a pedicled latissimus dorsi flap for head and neck reconstruction between 2006 and 2023. Patient demographics, comorbidities, indications and outcomes were analyzed.

#### Results

17 pedicled LD flaps for head and neck reconstruction were performed from 2006 to 2023. Among all the patients, 71% were male and 29% were female. The mean age was 64 years (range: 37-90 years). The main etiology reported was osteoradionecrosis (58.8%) followed by cancer (35.3%). The defect localization was mostly mandibular (52.9%), with an associated intraoral defect in 35.3% of the cases. Prior defect coverage was performed in 70.6% of the patients. In addition, 2 patients underwent a free osteomyocutaneous fibula flap during the same operation. A bone defect was present in 70.6% of the cases. Prior radiotherapy and/or chemotherapy were conducted in 82.4% and 64.7% of the patients, respectively. Most of the patients had at least one comorbidity, the most frequent being hypertension (n=7) and coronary artery disease (n=7). The mean operation time was 07:51 (range: 04:00-15:00) with a mean hospital stay of 24 days (range: 6-114 days). The overall success rate was 100%, but 64.7% (n=11) of the patients required re-surgery due to various recipient site complications, the most frequent being wound dehiscence (58.8%) and wound infection (11.8%). Four patients died within the first 3 months postoperatively. The mean follow-up time was 50.75 months.

#### Conclusions

The pedicled LD flap still plays a significant role in head and neck reconstruction mainly as a last resort in high-risk patients particularly for mandibular and intraoral defects with high reconstructive success rates despite a considerable rate of postoperative complications necessitating reintervention.

# Comparing the effectiveness of microsurgical reconstruction in primary versus secondary lymphedema of the lower limb

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## Objective

Lymphedema, whether primary or secondary, describes a chronic condition characterized by swelling due to lymphatic system dysfunction. Whilst it has been established that the microsurgical reconstruction of the lymphatic system can provide significant symptom relief, variations in the underlying etiology of these two entities may affect patient outcomes. The aim of this study was to compare the effectiveness and complication rates of lymphaticovenous anastomosis (LVA) and vascularized lymph node transfer (VLNT) for patients with primary versus secondary lymphedema of the lower limb.

#### Methods

All patients treated with unilateral LVA or VLNT between 2015 and 2023 for either primary or secondary lymphedema in the lower limb, with a minimum follow-up duration of one year, were included from a prospectively maintained database. Circumferential measurements of both legs were taken preoperatively and during regular postoperative follow-ups. Patient-specific characteristics, such as lymphedema type and postoperative complications were then compared.

# Results

A total of 152 patients were included in this study, of whom 123 (80.9%) were treated with LVA and 29 (19.1%) with VLNT. The outcomes of these microsurgical approaches varied between patients with primary and secondary lower limb lymphedema. While LVA resulted in superior outcomes, measured by the Relative Reduction Rate (RRR) and the Relative Excess Reduction Rate (RERR), in patients with primary lymphedema, VLNT was more effective in treating secondary lymphedema, as observed by the end of the two-year period. The complications rates were very low in both groups with 0% in the primary lymphedema group and 2.1% in the secondary lymphedema group.

#### Conclusions

LVA resulted in superior outcomes for patients with primary lymphedema compared to those with secondary lymphedema. Conversely, in our study, patients with secondary lymphedema benefited more from VLNT than those with primary lymphedema.

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# Amputations and reconstructive management in necrotizing soft tissue infections of the lower extremities: A multicentre analysis

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# Objective

Necrotizing fasciitis (NF) is a rare and rapidly progressing bacterial soft tissue infection with a high mortality and morbidity. Early diagnosis, surgical debridement and timely reconstruction are critical for the outcome. We analysed surgical management and outcome after necrotizing fasciitis of the lower extremities.

#### Methods

A multicentre medical chart review was conducted focusing on patients with NF of the lower extremities (2003-2023). Patients' characteristics and treatment were analysed.

### **Results**

Ninety-nine patients were included (median 56 years). All patients underwent radical serial debridement and received broad-spectrum antibiotics. 11 received i.v. immunoglobulins. β-haemolytic Strept. (35%), E. coli (23%), Strept. pyogenes (22%) and Staph. aureus (20%) were most common. Median number of debridements was 4. Amputation rate was 20% (inter-institution range 19-25%): 45% primary, 55% secondary amputations (25% re-amputations). Amputations were performed at hip (mean 5%; inter-institution range 0-20%), upper leg (30%; 20-40%), transgenicular (mean 10%; 0-40%), lower leg (mean 30%; 25-40%), chopart line (mean 5%; 0-10%), metatarsals (mean 15%; 0-30%) and toes (mean 5%; 0-20%). In amputees, mean hospital stay was 40.2±20.8d, mean ICU stay was 10.6±15.4d; in non-amputees 29.1±20.9d and 9.0±13.6d. Overall mortality was 14%. For reconstruction 42% underwent skin grafting (12% with Novosorb); 63% were treated with NPWT; 31% received secondary closure and 25% underwent flap-based reconstruction with a total of 25 flaps (2 local, 7 pedicled, 16 free flaps). Pedicled flaps were gracilis, biceps femoris, ALT, hemisoleus, PMT/PAP, SIEA, tib. ant. muscle. Free flaps were LD, SCIP and ALT flaps. Local and pedicled flaps showed no complete but 1 partial flap loss (11%). Complications in pedicled flaps were hematoma, wound infection and delayed wound healing (28%). Free flaps showed 1 total flap failure and 5 partial flap losses (31%). Complications after free flaps were donor site seroma (12.5%), flap ischaemia (12.5%), venous congestion and hematoma (12.5%). Compromised flaps were successfully salvaged.

## Conclusions

Lower extremity NF presents with high mortality/morbidity. One fifth of patients require an amputation, mostly at hip or lower leg level, and a quarter of the patients require flap-based reconstruction, with a comparatively high complication rate for both pedicled and free flaps.

Combined extra- and enoral sub-periosteal midface mask-lift for facial rejuvenation and comprehensive surgical skill development at a teaching hospital in Switzerland

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## Objective

To acquire the specialization as a plastic, reconstructive and aesthetic surgeon in Switzerland it is required to fulfill a catalogue of interventions. Furthermore, it is required to complete part of the training in so-called A-classified hospitals, mainly university hospitals or bigger cantonal hospitals. As complexity of interventions increases with the size of the hospital, aesthetic procedures are rather infrequent. Therefore, junior physicians do not have the chance to carry out such operations on a regular basis. Consequently, operation time is high as teaching is extensive. At Cantonal Hospital Winterthur an adapted two-leveled approach according to Tessier's publication in 1989 was utilized to take countermeasures against missing training in the education of assistant physicians.

#### Methods

Regarding education for junior professionals, it appears important to teach aesthetic procedures as well. To stay on top of things in the preparation of sub-periosteal level and to accurately identify the exiting infraorbital nerve we decided to approach from transoral in first line. After having tagged the nerve by a vessel loop the second extra-oral sub-ciliary approach is performed. Subsequently, sub-periosteal preparation enoral in cranial and from the arcus marginalis in caudal direction is made with tender care to the nerve. The following steps with suturing the periosteal part stay the same. We postulate that with this modified technique operation time by specialization candidates can be minimized. Additionally, junior surgeons feel way more comfortable whilst preparation, as overview is retained.

### Results

Our observation period was from 2013 to 2023. In those ten years a total of 38 operations were carried out either at Cantonal Hospital Winterthur or in an outpatient joint venture clinic Swiss Maxillofacial Associates Winterthur Center. All procedures were primarily performed by the same leading physician, whereas assistant junior surgeons differed among interventions. At the beginning, operations were made with only one sub-ciliary approach. After having combined both approaches over time, operation time was halved. Furthermore, comfort zone of assistant physician has improved.

# Conclusions

By expanding the comfort zone of junior professionals whilst sub-periosteal preparation for midface lift surgery due to two complementary approaches, operation time is reduced about half.

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# Genito-perineal reconstruction after necrotizing soft tissue infections: A multicentric update

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## Objective

Fournier's Gangrene (FG) is a rare, but severe necrotizing soft tissue infection of the perineal/genital area, requiring prompt diagnosis and treatment, characterized by rapid progression and high mortality. Early and aggressive debridement is needed to increase survival, often resulting in large soft tissue defects. Here, reconstructive strategies for soft tissue restoration are reviewed in a multicentre study.

#### Methods

Patient charts were reviewed retrospectively to identify NF cases involving the genital/perineal region admitted at three Swiss tertiary hospitals between 2003 and 2022. Patient characteristics and surgical management were analyzed retrospectively.

#### Results

53 patients met the inclusion criteria (mean age 63.2y). Most common co-morbidities were arterial hypertension (49%), renal insufficiency (47%), cardiac disease (43%) and diabetes mellitus (42%). Most frequent pathogens were E. coli (36%), Ent. faecalis (32%), Strept. anginosus (25%), Pseudomonas aeruginosa and Staph. epidermidis (each 17%)(similar between institutions). Mortality was 23%. 77% of the patients needed reconstructive surgery, out of which 22% were skin grafted, while 66% patients underwent flap-based reconstruction: 85% pedicled flaps, 4% free flaps, 11% local flaps. Most performed pedicled flaps were gracilis 37% (intercenter range 11-57%), ALT 30% (14-36%) and PMT 20% (7-33%). One institution performed a SCIP and Sartorius (each 7%). 22% were treated by NPWT or secondary closure. Two of the centers were divided into two sequential time periods: an increase in rate of pedicled flaps from 37.5% to 60%, and 10% to 50%, respectively, could be observed. Overall flap-complication rate was high (69%; range 62-80%). Most common complications were haematoma (39%), infection (28%), wound breakdown (17%), and seroma (6%). Flap failure occurred in 11%. Median length of stay was 35±27.1 days overall, with one center standing out with 42±32 days. Median ICU stay was 5±26.7 days.

# Conclusions

Soft-tissue reconstruction remains challenging in the genito-perineal region, and more recently predominantly achieved with flap-based approach with the rationale of better soft-tissue quality and faster wound healing. Pedicled fasciocutaneous flaps seem to be the preferred, although there is a great intercenter variability.

# Filler and neurotoxin injections around the eye: Leads and limits

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## Objective

The use of fillers and neurotoxins around the eye has become increasingly popular in cosmetic procedures, aimed at reducing signs of aging and enhancing facial aesthetics. These treatments address concerns such as wrinkles, fine lines, and volume loss, offering a non-surgical alternative to more invasive procedures.

#### Methods

Guidelines to use fillers and neurotoxins around the eye area

#### Results

When fillers are injected around the eye area, they can restore volume, smooth out under-eye hollows, and reduce the appearance of dark circles. This is particularly effective in combating tear trough deformities, where volume loss under the eyes creates a hollowed look. Fillers can also be used to correct asymmetries, lifting eyebrows and reduce sunken temples. However, their application requires precision to avoid complications such as lumpiness, asymmetry, or vascular occlusion, which can lead to more serious issues like tissue necrosis.

Neurotoxins, commonly known as Onabotulinumtoxin A, work by temporarily paralyzing the muscles that cause wrinkles. When injected around the eyes, neurotoxins target the muscles responsible for smile lines and crow's feet, lower eyelid rolls and wrinkles and glabellar frown lines. They can also be used to lift the lateral eyebrow, for chemical browlifts and to correct excessive lateral brow lift. Neurotoxins must be administered carefully to avoid side effects such as drooping eyelids or an unnatural, frozen appearance.

#### Conclusions

The synergy between fillers and neurotoxins can yield comprehensive rejuvenation results. While fillers address volume loss, neurotoxins mitigate dynamic wrinkles, creating a balanced, natural look. Proper patient assessment and skilled technique are crucial to ensure both the safety and effectiveness of these treatments.

# Reconstruction of axillary defects and contractures

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# Objective

Axillary defects in the context of extensive thermal injuries continue to pose a challenge for practitioners. Not only the coverage of acute defects, but especially the reconstruction of subsequent contractures is demanding. The treatment plan has to balance between less invasive regenerative methods and complex microsurgical flap reconstructions depending on the defect, given donor sites and the overfall state of the patient. In this presentation, surgical concepts and data between 2021 and 2023 of the Zurich Burn Center are presented and compared with the available literature.

#### Methods

Regenerative approaches using synthetic or biological dermal substitutes, and in vitro engineered split-thickness skin, and reconstructive procedures including locoregional/free microsurgical flaps are presented. With regards to autologous reconstruction, nuanced reconstructive strategies and concepts such as timing or use of microsurgical robotic systems are discussed beyond the mere choice of flap. In addition, factors such as the extent of the burn injury, acute or reconstruction situation, general condition of the patient and available donor areas are further differentiated in the decision making process.

#### Results

In total, 30 patients with undergoing axillary reconstruction by dermal substitutes plus skin grafting were evaluated. Aside from limited ingrowth of the dermal substitutes, a high rate of re-contractures were observed. In two patients, a novel tissue engineered split-thickness skin graft was applied which assisted in contracture resolution but showed partial breakdown. A total of 10 flaps were performed of which 3 were locoregional flaps and xx were microvascular free flaps. There were no total flap loss but a high ratio of minor wound healing disorders. No recurrence of re-contractures were found in the follow-up. Robotic surgery helped to reach difficult to reach vessels in the axilla.

#### Conclusions

Our results indicate that flap surgery is the more reliable solution for acute axillary defects and post-burn contractures as they show quicker healing and little tendency towards re-contractures. In vitro tissue engineered split thickness skin graft can serve as an adjunct. Dermal substitutes, on the contrary, can be considered as second tier solutions due to a limited take rate and the high ratio of re-contractures.

# The prefabricated fibula flap yields superior functional and aesthetic outcome in maxillo-mandibular reconstruction

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# Objective

Dental rehabilitation after autologous jaw reconstruction is critical to achieve both functional and aesthetic components, and to facilitate the patient's integration back into work and society. Although vascularized bone flaps have a high success rate in terms of tissue survival, proper functional dental restoration is only achieved in a minority of patients. The prefabricated fibula flap is an advanced method of occlusal-based reconstruction that combines placement of osseointegrated dental implants with prelamination using a split skin graft on the fibula, weeks prior to the definitive reconstruction.

## Methods

The technique involves two surgical steps. The first step encompasses the preparation of the fibula with implants and a skin graft for mucosal lining. The position of the implants is defined with drilling templates according to a three-dimensional virtual plan. After a healing time of 6-10 weeks, osseointegration of the implants has taken place and the skin graft is vascularized. The prefabricated fibula is then transplanted for maxilla/mandibula reconstruction with a provisional prosthesis for exact occlusion.

#### Results

A total of 6 prefabricated fibula flaps were performed in 2023/2024 with the first step of implant positioning and prelamination in an out-patient setting (average time of surgery 136 +-28 min). Fibula transfer was carried out after a median healing period of 8 weeks. Four mandibula and two maxilla reconstructions were performed without flap loss. Average time for fibula transfer was 350+-41 min. A total of 18 implants were placed (median 3 implants). No implant failure was detected so far.

# Conclusions

This approach is resource intensive but has several advantages including eliminating the delay from reconstruction to dental rehabilitation. Prefabrication and prelamination establishes a fixed and keratinized neogingiva around the implants, creates a gingivolabial/buccal sulcus that is difficult to achieve using any other approach and allows both the skin graft and implants to heal in a sterile environment away from oral bacteria.

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# Artificial muscles for facial reanimation

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# Objective

Facial paralysis, characterized by the loss of voluntary control over facial muscles, presents a significant challenge, impacting their ability to convey emotions and interact socially. Traditional treatment approaches predominantly involve invasive surgical interventions, notably nerve transfers and dynamic muscle transfers, aimed at reanimating the paralysed facial musculature. However, these methods are not without limitations. The aim of this study is to implement a new strategy for dynamic facial reanimation by using a type of soft artificial muscle, namely a Dielectric Elastomer Actuator (DEA). DEAs are a type of electroactive polymers, showing promising properties similar to natural muscles such as the fact that they are soft, lightweight and allow for large displacements. For this purpose, a neural interface is implemented, which allows the real-time actuation of the DEA.

#### Methods

The behaviour of the actuator is first modelled to match the specifications of the application. Inspired by biological muscles, fibre reinforcement is used to guide the movement of the actuator and enhance its performance. Surface electromyography (EMG) was performed on the face of a healthy participant to record the signal of the muscle in motion. A microcontroller (STM32F-401RE, Nucleo F401RE) is used in order to get the signal from the sensor, apply the necessary processing steps and give the filtered signal back to the high power supply. This allows to reduce the delay between the DEA displacement and the processed normalized EMG signal. A realistic setup is created with an anatomically correct skull and embedded silicone skin.

### Results

The displacement of the artificial muscle is increased by 75% due to the fiber reinforcement, reaching realistic movements in a fabricated anatomically accurate setup. The analysis of the signals showed a delay of less than 30 ms between the electromyography signal processing and the DEA displacement. In addition, the maximum delay of the electromyography signal processing with the embedded processing amounted to 52 ms.

# **Conclusions**

The use of biologically inspired fibre reinforcement and embedded processing solutions allow to enhance the performance of the artificial muscle facial prosthesis, in terms of displacement and processing delays respectively. The usage of DEA combined with a neural interface presents a promising approach for treatment of facial paralysis.

# Aesthetics in immediate delayed autologous breast reconstruction: Does it hold up to immediate?

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#### Objective

Immediate autologous breast reconstruction (IBR) is the gold standard nowadays. Due to interdisciplinary planning and economic reasons we also perform two stage breast reconstructions with an immediate positioning of a epipectoral expander during mastectomy and autologous BR later (immediate delayed autologous BR, IDBR). The aim of this study is to present our technique in IDBR and evaluate the aesthetic outcome of IDBR.

### Methods

This study is a two-center study including immediate delayed autologous abdominal flap reconstructions performed over the past three years at the Plastic Surgery Group in Zürich and the Kantonsspital Graubünden in Chur. In IDBR a circumferential capsulotomy was performed, and an elliptical skin island was created for flap inset.

# **Results**

In total 142 IDBR with abdominal flaps were included. Second stage (expander explantation, flap insertion) was performed on average after 16.5 weeks after expander insertion. 39 expanders were irradiated prior to second stage with inferior aesthetic results compared to non irradiated IDBR.

#### Conclusions

The review our IDBR group showed good results with inset of an elliptical skin island and complete capsulotomy to regain the height and sufficient footprint of the breast in non irradiated IDBR. Irradiation of the expander lowers the aesthetic outcome in IDBR and IBR should be considered.

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# Cryopreservation does not affect the viability and regenerative capacity of nanofat

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## Objective

Nanofat is a mechanically fat derivative used for tissue regeneration in various clinical settings including the treatment of non-healing wounds. However, factors as patients comorbidities and wound dimension strongly affects a proper healing process, requiring multiple surgeries to achieve the desired results. For this reasons, cryopreservation of this biologically product may represent an interesting solution to avoid multiple fat harvesting procedures. This study therefore aimed to evaluate the effects of cryopreservation on nanofat viability and its regenerative potential.

#### Methods

Adult C57BL/6J mice were randomly assigned to 2 groups: fresh nanofat + platelet-rich plasma (fNF+PRP) and cryopreserved nanofat + PRP (cNF+PRP). For in vitro analyses, pure nanofat was harvested from donor mice and cryopreserved at -20° for 7 days prior to immunohistochemical analyses of cellular apoptosis and microvessel density. **Results** were compared to fNF. For in vivo analysis, a 4mm full-thickness punch skin defect was created in a dorsal skin fold chamber model and filled with a mix of fNF+PRP or cNF+PRP. Wound healing rate, tissue microperfusion in vivo were analyzed over 14 days as well as proliferation and inflammatory cells with specific immunohistochemical stainings at the end of the experiment. All values were expressed as means±SEM. Statistical significance was accepted for p<0.05.

### Results

In vitro results were similar in terms of cellular apoptosis rate  $(7.9\pm0.8 \text{ vs } 9.7\pm0.1)$  and tissue vascularization  $(391.7\pm27.2 \text{mm-}2 \text{ vs } 361.3\pm17.2 \text{mm-}2)$  in the two groups. In vivo wound healing rate  $(87.3\pm4.4\% \text{ and } 87\pm4.5\%)$  and functional microvessel density  $(119.3\pm16.7 \text{cm/cm2} \text{ vs } 132.2\pm11.2 \text{cm/cm2})$  at day 14 showed no significant differences between both groups. Moreover cellular density was also comparable in the two groups  $(3469.7\pm317.8 \text{mm-}2 \text{ vs } 3168.8\pm312.6 \text{mm-}2)$ . On the other hand, pro-inflammatory M1-type macrophages and anti-inflammatory M2-type macrophages were found to be higher in fresh group in comparison to cryopreserved group  $(131.1\pm36.2 \text{mm-}2 \text{ vs } 66.2\pm20.9 \text{mm-}2 \text{ and } 1116.2\pm145.8 \text{mm-}2 \text{ vs } 619.2\pm72.5 \text{mm-}2)$ .

## Conclusions

Taken together, these results indicate that cryopreservation does not affect nanofat viability and its regenerative capacity. Hence, this procedure might represent a promising strategy to improve nanofat treatment of non-healing wounds requiring multiple surgical procedures.

# Microsurgical reconstruction, molecular profiling and histological analysis of peripheral and central lymphatic flow disorders in children

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**FREE COMMUNICATIONS** 

# Objective

In the past decade lymphatic reconstructive surgery has revolutionized the treatment of lymphedema in adults resulting in significantly improved quality of life. However, the microsurgical treatment of peripheral and central lymphatic disease in the pediatric population is still in its infancy. Therefore it is the aim of our interdisciplinary team to develop and validate a comprehensive treatment algorithm for primary lymphedema and congenital and acquired central lymphatic flow disorders in children. In this context robotic-assisted microsurgery may aid significantly in performing delicate supermicrosurgical anastomoses and accessing the prevertebral axial lymphatic system.

### Methods

9 patients (age range 6 months to 18 years) who received microsurgical reconstruction of the peripheral (n=5) or central (n=4) lymphatic system were included. Dynamic Contrast Magnetic Resonance Lymphangiography (DCMRL) was performed in all patients elucidating the underlying lymphatic flow pathology. Intraoperatively specimens were collected and detailed molecular and histological analyses performed. Tissue biopsies were phenotypically analyzed regarding lymphatic vessel morphology.

### Results

Each patient was treated based on an individually designed treatment plan comprising the performance of vascularized lymphatic tissue transfer from the omentum, lympho-venous anastomosis of peripheral or central lymphatics complemented by liposuction. Patients suffered from chronic chylothorax, chyle leak and severe peripheral lymphedema. DCMRL revealed a disturbed flow pattern in all patients ranging from absent flow within the lumbar collectors to central lymphatic leaks and thrombotic occlusions at the left venous angle. Genetical testing showed distinct mutations associated with lymphatic pathology, such as a heterozygotous PIEZO-1 variant. Histology revealed a varying pattern of vascular lymphatic pathologies. The success of the microsurgical ranged from mild improvement to complete resolution of all symptoms. Robotic-assisted microsurgery has been shown to be very beneficial in particular for lympho-venous anastomoses in children of less than 2 years.

### Conclusions

Lymphatic microsurgery in the pediatric population should be considered as a treatment option to reconstruct the lymphatic flow in lymphedema or central lymphatic flow disorders in an interdisciplinary fashion in specialized centers.

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Quilting sutures: Old but gold

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## Objective

Seromas remain a problem in soft tissue surgery. They impair healing and reduce postoperative quality of life. Several risk factors and predictors like age, comorbidities, nicotine consumption, protein loss, use of certain medications were analysed. In the context of reconstructive surgery and free flap harvesting, quilting sutures/progressive tension sutures were reintroduced to close the detached space of the donor site, as described by Baroudi and Ferreira to prevent and treat seromas after abdominoplasties. We implemented these internal sutures that bite the muscular fascia below and the superficial fascia of the skin flap above, as a routine in the whole spectrum of plastic surgery.

#### Methods

This technique was applied to patients for reconstructive and aesthetic operations in our department since 2019 by a consistent co-surgeon team. All patients received tranexamic acid perioperatively. A high protein supplement is a postoperative routine while in hospital. Patients are encouraged to maintain a high protein diet in the first weeks. Patients are discharged on average on the second postoperative day. After discharge from the hospital, all patients are followed up on an outpatient basis for approximately 4 weeks. Seroma formation is examined by palpation and ultrasound examination. Quilting sutures are used for transverse mastectomies, implant removal and mastopexy without new implant, DIEP flaps and abdominoplasty, latissimus dorsi muscle flap donor site, inner thigh flaps (TMG/PAP flap), and face- and necklifts.

### Results

Quilting sutures do not prolong operation time significantly. They lead to a reduction in associated complications such as edema, ecchymosis, ischemia and infection. Examples are presented and surgical pitfalls are shown. The usage of drains can be shortened or omitted, alleviating the patients' postoperative mobilisation and comfort and improving the overall recovery.

## Conclusions

With the consistent application of quilting sutures in various plastic surgery procedures, drains can be largely avoided, or their duration can be significantly reduced. Hematomas and seromas are also significantly less frequent. We use these sutures for aesthetic and reconstructive procedures. They avoid seromas/wound healing complications and in turn allow patients to receive adjuvant therapy without delay. We therefore speak in favour of the consistent implementation of guilting sutures.

Is there a norms-shifting on Social Media ? The ideal Instagram face: A retrospective observational cohort study analyzing facial proportions of 100 Instagram Influencers

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# **Objective**

Background: In the digital arena, wherein younger generations predominantly spend their time, social media continues to determine what is considered beautiful. Social media, particularly Instagram, is becoming a prominent aspect of the plastic surgeon-patient relationship. Therefore, the beauty ideal escalates without any barriers and breaks. The majority of influencers look alike. This sets a new trend for a beauty ideal.

#### Methods

We identified the top 100 beauty influencers, according to the latest rankings of November 2022. A detailed facial analysis has been conducted using the Fiji biomedical image analysis software. The primary outcome parameters included facial proportions such as lip ratio, Ricketts' line, and nasal dimensions. Secondary outcomes comprised Body Mass Index (BMI), age, and ethnicity. The results were collected and analyzed descriptively using graphs and statistics.

#### Results

Complete datasets were obtained from the top 100 female beauty influencers with a mean age of  $31.3 \pm 6.3$  years (range 24–38). The majority of influencers were Americans, followed by Germans and British. Based upon the mean of the aforementioned parameters, we could design the ideal Instagram face. There was no significant difference between the golden ratio and the new trend of the ideal Instagram face.

#### Conclusions

Despite the existence of varied ethnic population groups and non-standard measurements, the ideal Instagram face represents today's ideal trending face. The ideal Instagram face is symmetrical, matching the golden ratios, with a small and neat nose, full and lush lips, high cheekbones, as also a sharp and chiseled jawline. Further studies on this topic, involving a greater number of influencers with standardized measurements, should be advocated to identify the ideal facial proportions. This will lead to improvements in invasive and non-invasive cosmetic treatments.

# Surgical hairline lowering in Facial Feminization Surgery (FFS): Adapting different techniques based on preoperative conditions

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## Objective

At the innovation focus for gender variance at Basel University hospital, FFS is offered to a growing patient population. Together with bony forehead reduction, hairline lowering has a major impact on gender typing and ranges among the most requested procedures in FFS.

### Methods

Depending on age and individual predisposition, patients present with varying degrees of androgenetic alopecia. Based on Norwood scale, previous surgery, previous hair transplant, patients preference and concomitant brow lift, we established an algorithm to schedule patients for the most suitable procedure.

#### Results

Operative techniques ranging from temporal to full hairline advancement, using local flaps, forehead or scalp excision patterns and the use of tissue expanders are presented. Indications and complications are discussed.

#### Conclusions

Depending on individual patient baseline and surgical plan, different techniques for surgical hairline lowering may be indicated for FFS.

# Oncological and surgical outcomes of oncoplastic reduction mammoplasty: A singlecentre retrospective study

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# Objective

Breast-conserving surgery is the preferred treatment for early-stage breast cancer but can often result in unsatisfactory cosmetic outcomes. Oncoplastic surgery aims to improve both oncologic and aesthetic outcomes by combining local excision with plastic surgery techniques. Using breast reduction techniques in breast cancer treatment has been shown to allow for wider margins of excision, leading to enhanced oncological safety and reduced recurrence rates without causing significant asymmetry. This study aims at analysing surgical and oncological outcomes of a large cohort of patients undergoing oncoplastic reduction mammoplasty (ORM).

### Methods

A retrospective analysis of postoperative surgical and oncological outcomes of all patients who underwent ORM at a single center between January 2018 and December 2023 was performed. Preoperative patient characteristics, operative and post-operative outcomes were recorded and analyzed.

#### **Results**

A total of 67 patients that underwent oncologic breast reduction were included in the final analysis – representing a total of 71 ORM, with a mean (SD) age of 53.1 (10.5) years and a mean (SD) BMI of 28.8 (5.9) kg/m2. A superomedial pedicle-based technique was the most frequently used (36.6%), followed by inferior pedicle-based technique (28.1%). A complication rate of 18.3% on the ipsilateral side was observed. Salvage surgery was necessary in 6 cases (8.4%) due to positive margins – with 1 patient (1.4%) requiring margin expansion surgery and 5 (7%) a completion mastectomy.

### Conclusions

This monocentric retrospective study shows that ORM is safe, with a complication rate on par with conventional breast reduction and offers satisfactory oncological outcomes.

# Optimizing direct brow lifting: Expanded indications and techniques

M. Meoli

Meoli Martino, Lugano

## Objective

Direct brow lifting, despite its effectiveness, has seen reduced application due to concerns about scarring. This presentation aims to demonstrate that, with meticulous suturing direct brow lifting remains a versatile and effective technique with broad indications. This study addresses the gap in current practice by reaffirming its clinical utility and expanding its indications.

#### Methods

The presentation discusses patient selection criteria and surgical outcomes, focusing on cases where direct brow lifting was used to correct artificially altered brow positions, such as those adjusted with tattoos. Various brow lifting techniques are compared to highlight their respective benefits and limitations.

#### Results

Clinical cases show that direct brow lifting can achieve reliable and aesthetically pleasing outcomes. The results indicate that, when performed with meticulous suturing, the technique effectively minimizes scarring and broadens the range of suitable candidates.

# Conclusions

These findings support the continued and expanded use of direct brow lifting in clinical practice. Optimized techniques offer significant benefits for patients needing brow position corrections, challenging the misconception that scarring is a major deterrent.

# Human adipose stem cell spheroids exhibit enhanced neurotrophic properties for neural tissue engineering applications

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# Objective

Currently, there is no effective treatments for peripheral nerve injuries. Cell therapy holds promise for tissue repair and regeneration. However, immunogenicity and graft rejection hinder allogenic cell therapy progress. Thus, we investigated the spheroid culture technology's potential in maintaining the hypoimmunogenic features of human adipose stem cells (hASCs). We analysed the regenerative potential of hASCs while maintaining them under hypo-immunogenic state, crucial in preventing adverse reactions after transplantation. This study focused on the fabrication and characterisation of hASC spheroids with an emphasis on preserving stemness and reducing immunogenicity to enhance their therapeutic efficacy for nerve tissue regeneration.

#### Methods

Spheroids were generated from hASCs (passage 4 to 5) using the microwell technique. Various cell seeding densities (1000, 2000, 3000, and 4000 cells per spheroid) were tested to identify optimal culture conditions, and these cultures were maintained over seven-days. Subsequently, the spheroids were characterised for size and viability, and further assessed for their stemness markers and expression profile of antigen presenting complexes such as HLA-I and HLA-II, as well as their growth factors release. Finally, immunogenicity of the spheroid hASCs was characterised by using the mixed lymphocyte reaction and the growth factors through biological assay.

#### Results

The culture of hASC spheroids was successfully established. Data analysis revealed a correlation between seeding density and growth kinetics and related cell viability. Molecular analysis of the spheroid cells indicates a structure and density-dependent impact on the expression of stem cell and immunogenicity markers. Particularly, spheroids exhibited size and time dependent release kinetics for NGF and GDNF, which are significantly higher than the 2D cultures.

# Conclusions

The immunogenicity experiment reveals no significant cell death in comparison to the control, i.e., differentiated hASCs. Thus, the spheroid cultures of hASCs show promising way to overcome the adverse immune rejection in vitro. They also present promising method for growth factors release. Nevertheless, these findings will be further validated in vitro and in animal model by evaluating the maintenance of stemness and antigen presenting complexes, particularly in the context of a sciatic nerve injury.

# FACING the future: Artificial Intelligence in facial palsy treatment

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# Objective

Advancing Artificial Intelligence (AI) technologies have the capability to objectively recognize facial asymmetries and emotions. This is particularly significant in the field of facial palsy surgery, where outcomes have traditionally been graded based on observer-dependent metrics such as the House-Brackmann scale. With these technological advancements, it is now possible to not only compare static symmetry but also, more importantly, to assess emotions, which involve complex muscle activation patterns. Despite the revolutionary potential of these AI programs, to our knowledge, no systematic review has yet been performed. Our review aims to address this critical gap by offering an overview and aiding surgeons in the decision-making process for choosing the right AI program.

#### Methods

We conducted a systematic review following PRISMA guidelines, analyzing databases including Medline, Embase, and the Cochrane Central Register of Controlled Trials. The literature search and analysis were performed in February and March 2024. Our inclusion criteria focused on patients with facial palsy undergoing surgery or intervention, examined using automated Al-based facial assessment approaches.

#### Results

Our literature search identified 3222 articles, 35 of which met the inclusion criteria, encompassing 1297 patients. The publication of studies has increased annually, from three in 2019 to fourteen in 2023. Six different AI programs were identified, capable of analyzing static, dynamic, and chemodenervation procedures in patients with unilateral or bilateral facial palsy. These programs either focused on the measurement of landmarks or emotion recognition from photos and videos. A wide age range was analyzed, from 3-year-old children to 90-year-old patients.

#### Conclusions

There has been a significant increase in AI-related publications concerning facial palsy surgery. These programs enable the analysis of a broad spectrum of patients and therapeutic modalities. Based on this systematic review, we have initiated a multicentric prospective study analyzing dynamic reanimation in facial palsy patients. A proposed flowchart will assist in selecting the most suitable AI program for clinical use.

# The distally based peroneus brevis flap: Reconstruction of complex soft tissue defects with bony infection of the lateral malleolus

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# Objective

Managing wounds of the lateral malleolus is challenging due to limited nearby tissues and possibly injured or inadequate vessels for free flaps, especially in case of underlying infections. Free flaps require specialized skills and are not suitable for every patient. Therefore, identifying reliable local alternatives is crucial. This retrospective study investigates efficacy and safety of the distally based peroneus brevis muscle flap in treating complex and infected soft-tissue defects of the lateral malleolus.

### Methods

A retrospective medical chart review of all patients undergoing a distally based peroneus brevis muscle flap reconstruction in the context of an infected lateral malleolus defect at Geneva University Hospitals between October 2020 and January 2024 was performed.

#### Results

Ten patients underwent lateral malleolus reconstruction using a distally based peroneus brevis muscle flap primarily to address post-traumatic infections. Flap coverage was performed within four weeks of infection onset for post-traumatic cases, alongside antibiotic treatment. The defects were moderate in size, with a median width of 2.5 cm and length of 5.5 cm. There were no complete or partial flap failure. All patients regained the ability to walk within five days after surgery.

#### Conclusions

The distally based peroneus brevis muscle flap was efficient in managing complex and infected soft-tissue defects of the lateral malleolus, with control of infection in all patients and minimal donor site morbidity.

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# Post-traumatic scar correction at the lateral pericanthal area using Z-plasty: A case report

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## Objective

Post-traumatic scars can cause both aesthetic and functional impairments. An effective method for treating such scars is a simple Z-plasty, a surgical technique that reduces tension on scar tissues, thereby improving both the functional and aesthetic outcome.

### Methods

A 35-year-old otherwise healthy man presented following an accident. He had sustained a laceration at the lateral pericanthal region of the left eye. Initial management included the closure of the laceration. Two years later, the patient returned with a disruptive, contractile scar at the pericanthal area, experiencing restricted visual fields during left lateral eye movements.

Planning began with a detailed analysis of the contraction vectors related to the scar and how to add vascularized tissue to the contracted scar area, aiming to change the main vector of the new scar for a proper long-term outcome. We decided on a simple Z-plasty to achieve these goals. This technique enables the change of the vector and angle of the post-traumatic scar and was, in this case, equivalent to more complex and elaborate techniques. Particular attention was paid to preserving flap blood supply via the lateral palpebral arteries (Aa. palpebrales laterales). The Z-shaped incisions were marked on the skin, typically at an angle of 60 degrees with a limb length corresponding to the length of the scar (7 mm in this case).

After incisions along the marked lines, the skin flaps were carefully mobilized by lifting the skin from the underlying tissue. The skin flaps were then rotated and transposed to shift the tension away from the scar. The skin flaps were fixed in their new position with subcutaneous Vicryl 5-0 and Prolene 6-0 to minimize scar formation

#### Results

After Z-plasty, there was an improvement in function of the eyelid. The patient reported a marked reduction in the disruptive symptoms. Regular follow-up appointments so far confirmed the positive outcome, with no signs of complications or recurrence. The scar-releasing effect of the Z-plasty was crucial in restoring normal eyelid function and visual field.

### Conclusions

Post-traumatic scars in the eyelid area pose a particular challenge, as they can cause both aesthetic and functional problems. Z-plasty is a well-established method for treating contractile scars. By reshaping the scar into a Z-pattern, tension along the scar is reduced by reshaping the vector.

# Clavicle Height Asymmetry: A commonly unnoticed problem when planning reduction mammoplasties: A correlational study

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## Objective

The mid-clavicle-to-nipple distance (MCN) is an important landmark for preoperative markings when planning reduction mammoplasties. When comparing different anthropometric measurements, prior analyses confirmed the superiority of MCN over suprasternal notch-to-nipple distances (SSN) for achieving nipple-areola-complex symmetry. Yet, there appears to be great variability in clavicle anatomy, notably clavicle height asymmetries. Detecting these differences is crucial for achieving optimal postoperative breast symmetry. Thus, our aim was to analyze our patient population regarding clavicle height asymmetries and to examine possible correlations with decisive outcome measures, including variations in resection weight and clavicle angles.

#### Methods

Our study included 100 patients who underwent reduction mammoplasties with superomedial pedicle and wise-pattern skin resection. Clavicle height asymmetries were identified using preoperative anthropometric measurements. Differences in clavicle angles were assessed using both pre- and postoperative images to distinguish between fixed and dynamic (or compensatory) asymmetries. Frequency distribution tables were used for descriptive statistics, generalized linear models for count data, and logistic regression analysis for categorical variables.

#### Results

Clavicle height differences were identified in 78% of patients using preoperative anthropometric measurements. Pre- and postoperative images showed 45% with fixed and 16% with dynamic clavicle angle differences. A significant association was observed between differences in dynamic clavicle height asymmetries and differences in resection weight between both breasts (p = 0.012). In addition, we found a significant correlation between dynamic asymmetries and smaller differences in clavicle angles (p = 0.006), while the fixed asymmetries were correlated with larger differences in clavicle angles (p = 0.023).

#### Conclusions

Clavicle height asymmetry is common in reduction mammoplasty patients and its preoperative identification is crucial for optimal surgical planning. Furthermore, one must differentiate between dynamic and fixed asymmetries. Our study reveals strong correlations between clavicle height differences and resection weight and clavicle angles. These findings suggest that compensatory clavicular asymmetries play a significant role in cases of pre-existing breast asymmetry, affecting surgical planning.

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# Bioglass/ceria nanoparticle hybrids for the prophylactic treatment of seroma: A comparative short-term study in rats

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## Objective

Seroma formation remains a common postoperative complication. While the best treatment has yet to be established, recent focus has been put on bioglass/ceria nanoparticle (NP) treatment for seromas. Previously, we demonstrated early and complete seroma reduction in a rat model after NP treatment. However, little is known about the prophylactic effect of NPs. Therefore, the aim of this study was to assess the short-term prophylactic efficacy of NP application.

#### Methods

20 male Lewis rats underwent bilateral axillary surgery through a technique our group has previously established to induce seroma. After sugery, seroma-induced side was either treated with NPs, NPs vehicle buffer, fibrin glue, or left untreated. Animals where followed up for 2 weeks, where at different time points blood, seroma fluid and tissue were retrieved for biochemical, histopathological and immunohistochemical analyses.

#### Results

By postoperative day 14, seroma fluid reduction was complete in NP-treated sides. In contrast, on fibrin-treated sides, 50% of the rats still had seromas, whereas buffer solution-treated sides showed 60% seroma persistance. Furthermore, prophylactic NP treatment showed decreased levels of inflammatory markers. Contrarily, fibrin glue clearly exerted an increased pro-inflammatory response. Histologically, a reduction in vascularization and single macrophage recruitment was observed in the superficial capsules on NP-treated sides, while complement factors were significantly increased, tagging grouped macrophages, definitely co-localizing with NPs. At endpoint, NPs did not show any biodistribution to the systemic circulation.

#### Conclusions

Prophylactic NP application reduced postoperative seroma mostly through their anti-inflammatory effects. We also identified macrophage-oriented complement factors, co-localizing with NPs, directing these into macrophages and internalizing them. Moreover, there were no detectable systemic adverse effects observed. These findings emphasize the clinical potential of NPs in the prevention of seromas.

# Free flap loss in the traumatized lower extremity: Strategies and outcomes based on our patient data and literature review

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## Objective

Despite significant advancements in microsurgical techniques and instruments, flap failure remains a considerable issue for some patients. This complication is a major concern in the microsurgical reconstruction of the lower extremity, as it heightens the risk of amputation. Consequently, patients may experience reduced functional capacity, a lower quality of life, and an increased likelihood of mortality.

#### Methods

We will present six cases from our patient data over the last 12 years and provide a brief overview of the current literature.

#### Results

Among our six cases, one was – after negative pressure wound therapy- covered with a split-thickness skin graft. Three cases were successfully treated with new free flaps, while in two cases, the new flaps failed again. These two cases subsequently received as third free flap, which were successful in both instances. These results are in good accordance with the literature, where in the majority of cases new free laps are chosen to cover the defects after flap loss in the lower extremity.

#### Conclusions

Studies show that despite high success rates in many centers, partial or complete flap loss after trauma of the lower extremity remains a significant complication, often due to factors like arterial or venous insufficiency and infection. Managing free flap loss in the lower extremity with microsurgery is complex and necessitates a thorough reassessment of risk factors and alternative approaches. This involves reconsidering the choice of flap, favoring reliable and well-established options, and being prepared to switch to different recipient vessels, including using arteriovenous loops or bypasses, especially for venous insufficiency. Additionally, backup procedures such as negative pressure wound therapy or skin grafting should be considered for patients with lower demand or critical conditions.

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# Comparison of frailty index scores in predicting outcomes in DIEP free flap breast reconstruction

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# Objective

Frailty, a multidimensional concept reflecting decreased physiological reserve and increased vulnerability to stressors, has gained prominence in surgical literature as a predictor of postoperative outcomes. In the context of free flap breast reconstruction, understanding the impact of frailty on surgical success and patient well-being is of paramount importance.

#### Methods

We conducted a retrospective analysis between 2019-2022 to investigate the association between length of hospital stay or complications with frailty. Extended stay was defined as a hospital admission that exceeded our normal perioperative protocol (3 and 4 days for unilateral and bilateral DIEPs respectively). Complications included readmission or reoperation within 90 days of the original surgery. Binary logistic regression was employed to determine the association between frailty and extended length of stay or complications. Descriptive statistics were calculated for demographic information. Data analysis was conducted using IBM SPSS Statistics.

# Results

From 477 individuals, n=398 (83.4%) were nonfrail (MFI-5 score of 0), while 79 (16.6%) were frail. The mean age of the participants was 51.17 years (SD = 9.76), with a median age of 51 years. Of 477 patients, n=401 (84.1%) of the individuals had no complications, while n=76 (15.9%) had complications. A total of n=67 (14.0%) individuals reported an extended hospital stay while n=410 (86.0%) were discharged on schedule. The binary logistic regression analysis revealed a statistically significant positive association between extended hospital stay and frailty (OR = 1.93, 95% CI [1.05, 3.57], p=.035). However, the association between complications and frailty was not significant, p=0.52).

#### Conclusions

Beyond individual complications and hospital length of stay, frailty index scores have been linked to overall postoperative recovery and patient-reported outcomes. Frail patients may face challenges in returning to baseline functional status and quality of life, highlighting the need for tailored rehabilitation strategies and enhanced support during the recovery process. Our findings confirm the significance of identifying frail patients preoperatively to optimize perioperative care planning and achieve better outcomes.

Patient-centered evaluation of post-operative outcomes and body image satisfaction in trans individuals after transition: A multicenter cross-sectional study in Switzerland

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## Objective

Although previous research shows gender-affirming surgery (GAS) can alleviate gender incongruence, limitations exist. Studies often lack data on subjective patient satisfaction with GAS outcomes and their impact on body image, particularly in Switzerland. This study addresses this gap by employing a patient-centered approach to assess the satisfaction of transitioned trans individuals with their current body image and the outcomes of GAS through the lens of the patient in Switzerland.

### Methods

This cross-sectional study recruited 143 transitioned trans individuals from multicenter outpatient clinics in Switzerland and through a web-based survey. A self-reported questionnaire assessed satisfaction with various aspects of breast and genital post-operative GAS experiences (aesthetics, sensitivity, functionality, sexuality). Additionally, the Hamburg Body Drawing Scale (HBDS) was employed to evaluate current body image satisfaction.

#### Results

Our study revealed high post-operative satisfaction across most aspects of breast GAS for all participants (52.6-66.7%). However, a noteworthy finding was that around 20% of both trans feminine and trans masculine individuals who underwent breast GAS reported dissatisfaction with post-operative sensitivity. For genital GAS, satisfaction rates were similar for aesthetics, sensitivity, and functionality (satisfied: 50.0-72.0%). Notably, satisfaction with sexuality post-genital GAS differed significantly by gender identity (75.0% satisfied for trans masculine vs. 44.0% for trans feminine). Current body image satisfaction for the operated body regions was moderate to high for all participants (mean values: 3.79-4.19). Interestingly, predictors of body image satisfaction varied across genders, with aesthetics, psychosocial functionality, and sexuality significantly influencing satisfaction for trans feminine individuals who underwent genital GAS, while only aesthetics and psychosocial functionality mattered for trans masculine individuals.

# Conclusions

Preoperative education for breast GAS should emphasize potential for decreased sensitivity, particularly for trans feminine individuals. Additionally, realistic expectations regarding post-genital GAS sexuality, especially for trans feminine individuals, are crucial. High satisfaction with postoperative GAS outcomes underscores its positive impact on long-term body image satisfaction in trans individuals.

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# Prefabricated and axially vascularized bone graft for microsurgical reconstruction of mandibular or maxillary defects

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## Objective

Bone defects following tumor resections in the head/neck region pose a challenging task in reconstructive microsurgery. The current gold standard of reconstruction using vascularized bone grafts is limited by donor site morbidity and limited availability. The aim of this study was to develop and clinically test a prefabricated and axially vascularized bone graft in a rat model as an alternative.

#### Methods

Devitalized bovine bone matrix (1 cm $^3$ ) was coated with a mixture of fibrin gel, BMP-2 (16  $\mu$ g/cm $^3$ ), and SVF cells. The concentration of SVF cells derived from lipoaspirate varied according to the intervention group (0, 1, 4, 10 x 10 $^6$  cells/cm $^3$ ). The construct was implanted subcutaneously in the groin of 22 RNU rats and axially vascularized using a ligated AV bundle. Bone formation was assessed via micro-CT and histology after 2 and 12 weeks in vivo.

## Results

De novo bone formation was demonstrated in 82% of the implanted constructs. A statistically significant increase in bone quantity was observed in the micro-CT scans and histology quantifications. The addition of SVF cells did not appear to influence the bone formation rate in our model.

#### Conclusions

In our model, we successfully generated new bone tissue in a construct of clinically relevant size. The next step is to examine tumorigenicity and biodistribution to obtain regulatory approval for a Phase I clinical trial.

# The role of venous insufficiency in fat necrosis

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## Objective

Autologous breast reconstruction represents a commonly chosen option for women following mastectomy. Fat necrosis, however, can compromise the outcome of the reconstruction, creating hard and painful areas that result in a less soft and mobile tissue than the one of a natural breast. No common agreement has been found in literature regarding the aethiology of fat necrosis. The use of ICG-FA devices has only partially contributed to lower the occurrence of this event.

#### Methods

A retrospective study was conducted on 158 women who received unilateral or bilateral with a free deep inferior epigastric perforator (DIEP) flap between April 2018 and August 2020 (184 Flaps). The study primarily aimed to define a standardized way of diagnosis of fat necrosis both using US investigation performed by the breast surgeon and clinical findings observed bu the plastic surgeon in the follow-up clinic. The second aim of the study was to collect data from all flaps performed using ICG-FA device in our institution in order to quantify the presence of fat necrosis and to compare the results with the available published ones. All flaps were then divided into 2 groups depending on the presence or absence of fat necrosis

## **Results**

Overall fat necrosis rate was 23.4% (n= 43). Within this group of 43 patients, 23 patients (53.5%) needed surgical revision in order to treat the hardening of the flap. When the number of veins performed per flap was compared between the fat necrosis and non-fat necrosis group, flaps with 2 venous anastomoses were associated to lower incidence of necrotic fat degeneration.

#### Conclusions

After the advent of ICG-FA, fat necrosis incidence was reported to be between 0 and 29.2% in literature. Although the incidence in our institution falls within this range (23.4%), the unexpectedly high rate of fat degeneration pushed us analyzing our data with more attention, seeking an explanation for such relevant figures of necrotic fat tissue despite the use of intraoperative ICG-FA and consequent removal of hypo or non-perfused flap portions. As our data suggest that increased venous outflow is associated with lower rate of fat necrosis, the use of ICG-FA devices should be re-assessed. Fat necrosis seems not to be only related to hypo-perfusion but also to low venous outflow, hence imaging should evaluate his aspect as well.

# A secretome with neurotrophic capacity: A proteomic analysis in vitro

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# Objective

We present findings on secretome alterations that facilitate neuronal regeneration mediated by adipose stem cells (ASC) stimulated by the neurotrophic factor neurotrophin 3 (NT3) in vitro.

#### Methods

In our investigation, ASC were exposed to NT3 for 72 hours, resulting in the generation of conditioned medium (CM-NT3-ASC), which was then utilized to culture neuronal cells derived from dorsal root ganglion (DRG) explants for 48 hours.

### Results

Prior phosphoproteomic analysis of NT3-treated ASC unveiled significant alterations in the phosphorylation levels of various proteins associated with cytokine release, growth factor signaling, stem cell maintenance, and differentiation. Moreover, DRG cultures treated with CM-NT3-ASC displayed notable shifts in the phosphorylation status of proteins involved in tubulin and actin cytoskeletal pathways, pivotal for axonal growth and elongation. Our current proteomic analysis is in line with these previous findings, identifying modifications in the secretome of DRG cells involved in neuronal differentiation and neurite outgrowth.

# Conclusions

Hence, our results support the hypothesis of enhanced neurotrophic potential in NT3-stimulated ASC and offer new options for enhancing the axonal growth-promoting capabilities of ASC in vitro.

# Alginate: Scaffold for mechanically isolated stromal vascular fraction

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# Objective

Of the current therapies considered regenerative strategies to restore micro-vascularization in large-volume skin defects and chronic wounds, human adipose tissue-derived stromal vascular fraction (SVF) has immense potential. SVF is a heterogeneous cell population composed mainly of mesenchymal stromal and endothelial cells. It is isolated from adipose tissue following liposuction and either enzymatic or mechanical digestion. In the acute setting, such as large area burns, SVF can be isolated and applied to the affected skin by direct injection, needling or as a spray. As the transplanted cells are in fluid form, the retention in the desired area is very poor. Alginate is a low-cost, readily available, biocompatible hydrogel that can be used as a cell carrier. This study aims to investigate whether Alginate can retain the cell survival and function of mechanically isolated SVF.

#### Methods

SVF was isolated mechanically from fresh lipoaspirate and cultured in varying concentrations of Alginate (1.5%, 2%, 2.5%, 3%). The hydrogels were cultured for 21 days in standard conditions and tested for degradation over time, cell viability, total protein release and growth factor release (FGF and VEGF). A co-culture with human dermal fibroblasts was performed, as well as immunohistochemical and immunofluorescent cell analysis.

### Results

After 21 days, all hydrogel concentrations maintained the original size and shape. Cell viability and protein release was equal to the positive control of only mSVF. Growth factor analysis showed a trend towards higher FGF release. mSVF co-culture with or without the hydrogel increased fibroblast viability compared to negative controls. IHC-Analysis demonstrated increased CD31 and CD73 expression compared to day 7.

### Conclusions

As a long-term proof-of-concept, these in-vitro results show alginate can act as carrier and scaffold for mSVF without inhibiting cell viability or the protein release, also in co-culture. Alginate warrants further research as a low-cost scaffold for this readily available cell-source in the in-vivo setting.

# Application of lymphatic surgery in different clinical scenarios: From curative to preventive approaches

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## Objective

Lymphatic diseases and lymphatic complications have gained increasing attention in recent years, leading to significant advancements in therapeutic approaches. The encouraging results obtained from surgical treatments have expanded the clinical applications of this kind of procedures, leading to a significant change of their indications. Lymphatic procedures may be employed not only for lymphedema symptoms relief, but also as a curative and preventive approach for a wide variety of lymphatic diseases. In the present work, we aim to share our experience with various applications of lymphatic surgery.

### Methods

The most important surgical procedures available in this setting are lymphaticovenous anastomosis (LVA), including different variations, vascularized lymph node transfer (VLNT), and vascularized lymph vessel transfer (VLVT). All of them were used for the management of different clinical scenarios in different body regions. Both curative and preventive treatments were performed for patients affected by primary and secondary lymphedema, either surgical- or trauma-related, by recurrent lymphoceles, or undergoing large surgical resections with severe damage to the lymphatic system.

# Results

All the patients that were elected for a surgical treatment presented an improvement of the initial condition. In case of preventive approach further study are necessary to confirm the efficacy of these procedures. In all cases, the function of the lymphatic treatments was evaluated intra-operatively with indocyanine green lymphangiography and post-operatively with Tc-99m lymphoscintigraphy. Instrumental objective evaluation routinely performed at follow-up confirmed at least a partial restoration of lymph drainage in all cases.

#### Conclusions

Micro- and Supermicrosurgical lymphatic techniques represents a valuable and reliable treatment for a wide variety of lymphatic conditions. The improvements of the surgical instruments and diagnostic tools played a key role in this change and progress. A proper diagnostic and therapeutic pathway can significantly improve di quality of life of the patients reducing and preventing lymph stasis in different body regions. Achieving consistent and successful results requires mastering microsurgical techniques combined with creative thinking.

# Sequential treatment by lymphovenous shunt followed by free gastro-epiploic vascularised lymph node transfer for penoscrotal lymphedema: A case report

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# Objective

Genital lymphoedema (GL) is a chronic and debilitating disease, which can severely affect the patient quality of life. Nowadays, no specific and definitive treatment exists for GL. We report the use of gastro-epiploic vascularised lymphnode transfer as supplementary procedure after lymphovenous bypass in a recurrent case of primary penoscrotal lymphedema.

## Methods

A 54 years old male presented with a primary penoscrotal lymphedema, resistant to all conservative treatment such as selective compression and physical therapy. The patient presented total shaft distortion associated to cutaneous papillomatosis and active lymphorrhea. A first approach using a lymphovenous bypass consisted in multi lymphatic into vein (MLVA) anastomosis, shunting 3 lymphatic vessels into the external pudendal vein. Such procedure allowed for immediate cease of the active lymphorrhea and drastic scrotal volume reduction, with clinical and lymphoscintigraphic improvement. However, such procedure did not significantly improve the penile shaft edema and distortion. Four years postoperatively the patient presented a partial scrotal edema recurrence with two episodes of infections and worsening of the penile shaft edema. A laparoscopic harvest of gastroepiploic lymphnode was performed and the omental flap was transferred to the pubic base. The flap was revascularised by rerouting the left deep inferior epigastric vessels, with E-E anastomoses on the right gastroepiploic pedicle.

# Results

No postoperative complications occurred. At 12 months post-operatively the patient presented a progressive clinical improvement, without any infectious episodes. At 3 years follow-up the edema was totally resorbed except two limited fibrotic zones, which were excised in day-surgery, with a stable, excellent functional and aesthetic result.

## Conclusions

Gastro-epiploic vascularised lymph node transfert showed to be extremely effective in treating genital lymphedema. This procedure may add to the surgical armamentarium to treat such extremely complex ad severely debilitating disease.

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# Analysis of different outcome parameters and quality of life after vascularized lymph node transfer

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## Objective

Vascularized lymph node transfer (VLNT) has become an important surgical technique in the treatment of lymphedema (LE). However, to date there is limited evidence on the superiority of a specific donor-site in terms of morbidity and postoperative outcomes. Considering the various regions available for flap harvest, we aimed to assess different donor sites for VLNT with respect to donor-site morbidity, impact on limb volume and patient-reported outcome measurements (PROMs).

#### Methods

A single-center, prospective study was conducted including patients receiving VLNT from different donor-sites at the Department of Plastic Surgery and Hand Surgery of the University Hospital Zurich between 2016 and 2023. Lymph nodes were harvested either laparoscopically from the omentum (GE-VLNT) or guided by reverse mapping from the lateral thoracic wall (LTW) or the superficial inguinal region (SI-VLNT). Volume measurements and PROMs (LYMPH Q, SF 36, LYMPH-ICF-LL) were assessed preoperatively and at specific postoperative intervals.

#### Results

70 patients receiving VLNT for upper limb LE (ULL) (21%) or lower limb LE (LLL) (79%) were included. Of those, 46% suffered from primary LE. All LE stages were included in the study. 49 patients received GE-VLNT, followed by LTW-VLNT (n=16) and SI-VLNT (n=5). Concerning postoperative outcomes, SI-VLNT was associated with a significantly higher rate of donor-site seroma. 45 extremities (55%) could be evaluated regarding their volume measurements at the 6 to 12 months follow-up. At this follow-up, 100% of patients with ULL and 63% of patients with LLL showed a volume reduction. The average volume loss of the affected limb was 9% after GE-VLNT, 10% after LTW-VLNT and 5% after SI-VLNT without a significant difference between the groups. A reduction in compression class was achieved in 47% of patients after GE-VLNT, 8% after LTW-VLNT and 33% after SI-VLNT. PROMs revealed significant improvements in physical functioning, symptoms and psychological well-being in LE patients, with no difference between VLNT techniques.

# Conclusions

VLNT leads to a significant improvement in quality of life and can effectively reduce limb volume. However, we observed a higher incidence of donor-site seroma after SI-VLNT. GE-VLNT has become our flap of choice due to the low donor-site morbidity and because it allows for simultaneous bilateral or unilateral double VLNT, avoiding a second donor-site.

# Feminizing genital gender affirmation surgery: Patient-reported outcomes of urethral flap and classical penile inversion techniques

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## Objective

Although more and more transgender individuals are receiving gender-affirming medical interventions, there are limited data on patient-reported outcome measures (PROMs). We assessed PROMs in patients who received genital gender affirmation surgery (gGAS) with vaginoplasty by conventional penile inversion (PI) or urethral flap (UF).

#### Methods

Consecutive patients undergoing vaginoplasty by PI or UF between 2015 and 2021 were candidates for this questionnaire-based cohort study. PROMs including satisfaction with body image and overall quality of life, esthetic, sensory, and functional parameters, including urological and sexual outcomes, and decision for surgery were assessed by using the Gender Congruence and Life Satisfaction scale, the Hamburg Body Drawing Scale, the Inclusive Sexual Function Inventory, and additional guestions, and responses from PI and UF groups were compared.

## **Results**

With a response rate of 64%, total 41 patients were included in the study. Overall, patients reported high satisfaction with body image and quality of life after PI and UF. Patients with UF were significantly more comfortable being naked in front of a sexual partner compared to those with PI, but satisfaction with esthetics was high in both groups. The UF group had a significantly higher frequency of sanguineous discharge from the neovagina. Functional urological problems were rare in both groups, but urgency was reported more frequently in PI than in UF. Both groups reported generally high interest in sexual activity, and both frequently needed lubrication for neovaginal penetration. There were few regrets about the decision to undergo gGAS in either group.

#### Conclusions

Patient satisfaction regarding body image, quality of life, functionality, sexuality, and decision for surgery was reasonably high, and UF seems to be a valid alternative to PI.

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The hidden role of plastic surgeons: The management of post-operative complications from other surgical specialties

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## Objective

This study aims to analyze the profiles and outcomes of patients referred to a plastic surgeon due to aesthetic or functional complications arising from previous surgeries. It is observed that these patients often have a long therapeutic journey before being referred to a plastic surgeon. Despite the prevalence of such complications, there is a scarcity of articles in the literature addressing this issue.

## Methods

A prospective and descriptive study is conducted on patients of all ages who present with post-operative complications necessitating plastic surgery intervention at the Hôpital de Morges between February 1, 2024, and January 31, 2025. Data are collected on patient demographics, initial surgeries performed, nature of complications, types of corrective procedures or treatments undertaken, and outcomes. The study also analyzes the duration of work incapacity resulting from these complications. Patients requiring expected reconstruction (such as in oncological situations or severe trauma) are excluded from the study.

### Results

It is anticipated that complications from other surgeries represent approximately 50% of our new patients, who will be included in the study. Common complications expected to be encountered include neuropathic pain, pathological scarring leading to mobility restrictions or pain, and aesthetic dissatisfaction in visible areas following any type of surgery. We expect significant number of patients seeking consultation following unsuccessful aesthetic or reconstructive surgeries, orthopedics procedures, general procedures, vascular procedures and gynecological procedures. These preliminary results will be presented at the Swiss Congress of Plastic Surgery in October 2024.

## **Conclusions**

The study aims to highlight the critical role of plastic surgeons in managing post-operative complications from various surgical disciplines. Early referral and intervention by a plastic surgeon could significantly improve patient outcomes, emphasizing the need for multidisciplinary collaboration in surgical care. Given the limited literature on this topic, the findings of this study are expected to provide valuable insights into the effective management of these complications.

Effects of systemic administration of tranexamic acid on drainage volume in patients undergoing skin- or nipple-sparing mastectomies and immediate breast reconstruction

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## Objective

Skin- (SSM) and nipple-sparing (NSM) mastectomies are frequent interventions with a considerable risk to develop postoperative hematoma or seroma with an incidence of 3% and 10-20% respectively. Tranexamic acid (TXA) is a potent antifibrinolytic drug commonly used in many surgical fields. However, its use in plastic and reconstructive surgery is rather novel, especially in breast surgery. For this purpose, we investigated the effect of systemically administered TXA in patients undergoing SSM or NSM with direct expander-based reconstruction (EbR). We evaluated the effects on post-operative bleeding, drainage volume and eventually length of hospital stay.

## Methods

All patients that underwent SSM or NSM with EbR in our department between May 2015 and March 2022 were consecutively evaluated. A total of 132 patients were included and divided into two groups: systemic TXA treatment for 48 hours according to a standardised protocol versus no treatment. Multivariable linear regression was performed to identify influencing factors and quantify their effect on the defined outcomes.

### Results

132 patients underwent a total of 155 mastectomies (72 breasts in the TXA group, 83 breasts in the control group). TXA has shown to significantly reduce drainage volume (p<0.05) but showed no statistically significant effect on length of hospital stay. The resection weight of the mastectomy has, however, shown to increase drainage volume significantly (p<0.05). No significant side-effects have been described by the patients receiving TXA.

## Conclusions

TXA is a safe drug if administered respecting the well-defined contraindications. Systemic application significantly reduces the drainage volume in patients undergoing SSM or NSM and should encourage surgeons to reconsider using surgical drains in post-operative protocols.

# Feedback delivery in plastic surgery: The impact of competency-based medical education

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## Objective

Competency-based medical education (CBME) remains a comparatively nascent concept for Plastic Surgery in Switzerland. Starting in January 2024, the Department of Plastic Surgery at the Cantonal Hospital Aarau has integrated Entrustable Professional Activity (EPA)-based assessments into its curriculum. The ability to consistently deliver valuable feedback is essential. The study aim was to evaluate feedback delivery to residents as well as supervisors' self-perception on giving feedback both before and after the implementation of CBME. The goal was to enhance quantity and quality of feedback given in order to improve the effectiveness of clinical teaching.

#### Methods

From January to May 2024 the assessment application, preparedEPA, comprising 71 EPAs in Plastic Surgery, was consistently employed for workplace-based assessments of Plastic Surgery residents at the Cantonal Hospital in Aarau. Feedback delivery to residents was assessed through a validated 15-item REFLECT (Residency Education Feedback Level Evaluation in Clinical Training) questionnaire. Five trainees completed the questionnaire in relation to their respective supervisors. Six supervisors completed a modified version of the questionnaire for self-assessment of their skills on giving feedback. All survey results were evaluated quarterly and structured according to the four factors in the questionnaire: attitude towards feedback, quality of feedback, perceived importance of feedback, and reaction to feedback. The data will be updated from May to September 2024 continuously.

#### Results

The evaluation prior to the implementation of a CBME revealed diverse levels in various dimensions of feedback delivery within our team. Analysis showed a trend towards slightly improved feedback quality among the supervisors after the introduction of CBME. The positive trend towards better feedback quality might be influenced by the team's increased motivation and awareness of teaching practices as well as the introduction of the new assessment app. The supervisors' self-assessments on feedback delivery varied pre- and post-implementation of CBME.

#### Conclusions

Feedback quality of supervisors has slightly improved after the implementation of a CBME curriculum in the department of Plastic Surgery in Aarau. Further research is needed to explore the change in feedback delivery within the context of CBME.

# Delayed unilateral eyelid oedema following non-periocular hyaluronic acid injection: Case report and literature review

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## Objective

Hyaluronic acid (HA) is the most common soft tissue filler currently used worldwide. Its complications are rare. Chronic oedema is a late-onset complication often seen in the peri-ocular region. Its pathophysiology is still unclear, and the treatment difficult. To the best of our knowledge, all described cases of peri-ocular HA-related oedema stem from tear-trough or malar injections. Our paper describes a case of delayed unilateral eyelid oedema following migration from the glabellar region.

#### Methods

A healthy 47-year-old woman presents left lower lid and malar oedema appeared overnight. Ocular examination and blood tests are normal. She doesn't take medications and denies any ongoing or recent cosmetic procedure. Head MRI shows infiltration of the left infero-lateral extraconal fat tissue, evocative of a reaction to HA injection. A more detailed anamnesis reveals HA injection to correct glabellar lines 7 months prior. Suspecting HA migration, three consecutive treatments of hyaluronidase (300, 900, 900 UI) are done at 4 weeks interval. The oedema is dramatically reduced, but the patient still reports residual swelling upon waking.

#### Results

Late-onset oedema after HA filler, occurring almost exclusively in the periorbital region, can appear years after the first injection, mimicking other pathologies. The pathophysiology is multifactorial: HA metabolism shows progressive molecular degradation, each new degraded molecule retaining further water in an isovolumetric degradation fashion. The rheological characteristics of the chosen HA also affect the duration and water retention phenomenon. The simultaneous treatment with botulinum toxin can worsen the oedema, lowering the lymphatic pump-like activity of the orbicularis oculi, and migration of the filler can contribute to oedema at a distant site.

#### Conclusions

To manage chronic HA-filler related oedema no clear protocol is proposed in the literature. Observation is unsatisfactory. Surgery is a valid option, but only after correction of the oedema. Hyaluronidase injection is the most satisfactory therapeutic alternative, in a stepwise fashion. Oedema can completely resolve, but persistence of the effect over the long-term is still to be determined. A recent study proposes triamcinolone as an addition to the HA filler syringe upon injection to prevent formation of the oedema, but results over the long-term still need to be assessed.

# Analysis of chest masculinization surgery satisfaction in female-to-male transgender patients

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## Objective

Masculinizing chest surgery is frequently the first, and occasionally the only, procedure that transgender men choose to undergo. It is crucial to understand the objectives of this surgery, the different techniques available and the criteria for selecting the most suitable approach. The main aim of this research is to measure patients' post-operative satisfaction levels using the Body-Q questionnaire, a validated tool for assessing quality of life and patient satisfaction after plastic, reconstructive and aesthetic procedures.

## Methods

In this prospective cohort study, a total of 50 participants who underwent torsoplasty between 2021 and 2024 were recruited. Data were collected through preoperative interviews (Day -1) and postoperative follow-ups at 6 months after the surgery at the Saint-Louis Plastic Surgery Department in Paris. The Body-Q questionnaire, covering various aspects such as body satisfaction, psychological well-being, and overall quality of life, was administered to gather patients' perceptions.

#### Results

The results show a significant improvement in body satisfaction and psychological well-being following the procedure. Participants reported a notable reduction in gender dysphoria and better integration of their gender identity into their daily lives. Additionally, high scores in quality of life domains indicate that torsoplasty positively contributes to the overall well-being of patients.

## Conclusions

In conclusion, this study underscores the significance of torsoplasty as a beneficial surgical intervention for transgender individuals experiencing gender dysphoria. The outcomes derived from the Body-Q questionnaire reveal high patient satisfaction, affirming the effectiveness of this procedure in enhancing the quality of life and psychological well-being of those affected.

# Efficacy of the power brow lift in correction of the paralytic brow

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# Objective

Brow ptosis due to frontal branch lesion of the facial nerve affects the visual field and may impair eye closure and protection. Several options for static correction of the eye brow are described, but unfavorable scarring and limited longevity due to tissue sagging flaw the overall result and patients' satisfaction.

#### Methods

Surgical procedure: Three stab incisions are made directly within the brow. Another incision is done approximately 2 cm cranial to the hairline with subsequent dissection of subcutaneous tissue and removal of periosteum, where a 4-hole mini-plate is fixed. Two non-resorbable braided sutures are then passed subcutaneously through the stab incisions and secured to the plate while adjusting the brow height with substantial overcorrection. Al-based software Emotrics was used to objectively assess brow height and symmetry at regular intervals (3, 6, and 12 months).

## **Results**

Five patients were included with a mean age of 70.6 years. Brow height was measured at 3, 6, and 12 months and symmetry at rest was reached in all patients after 12 months. Average preoperative brow deviation was 40.4% and substantially reduced to 11.9% postoperatively. No complications were reported, and patients expressed satisfaction with the aesthetic outcome.

#### Conclusions

The power brow lift is a successful procedure in correcting brow ptosis associated with facial nerve paralysis. Advantages of this procedure include efficient and long-lasting brow elevation, with limited incisions and minimal scarring.

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# Upper blepharoplasty for dermatochalasis with or without resection of the orbicularis oculi muscle, preaponeurotic and nasal fat pads: A comparative study

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### Objective

Upper blepharoplasty is the gold standard procedure for upper eyelid dermatochalasis. Upper blepharoplasty procedures include removing the skin, orbicularis oculi muscle, preaponeural fat pads, or nasal fat pads. The purpose of this study is to report surgical outcomes, such as the percentage of complications and operation time, and compare them to the most commonly performed techniques. Additionally, we want to assess if patient and clinical characteristics increase or decrease the risk of complications.

#### Methods

A retrospective evaluation of 386 consecutive patients who underwent upper blepharoplasty for dermatochalasis of the upper eyelid at Turku University Hospital from January 1st, 2015 to June 30th, 2017 was conducted. Data collected include patient demographics, surgical details, and details regarding the type and frequency of complications. Patients were separated into two groups based on whether they had skin, preaponeurotic, orbicularis oculi muscle and nasal fat pads removed (study group, 51 patients) or just skin (control group, 335 patients). At periodic follow-ups till 20.6 months postoperatively, outcomes, patient and surgeon satisfaction were assessed.

#### Results

During the study period, 51 upper blepharoplasty with orbicularis oculi muscle excision, skin, preaponeurotic and nasal fat pads removal (study group) and upper blepharoplasty with skin only removal (control group) were performed. Non-parametric tests showed that operative time (M=60.2min; SD=11.7min) and return to work (M=8.0days; SD=3.1days) were significantly shorter in the control group. No significant differences in the total amount of complications were detected (7.8% vs 2.4%, p=0.075). Ecchymosis was significantly more frequent in the study group (3.9% vs 0.29%, p=0.046). Re-operation rates at follow-up were similar between the two groups. Subjective patients' satisfaction was significantly higher in the study group (from 0-10, mean 8.3 vs 7.0, p=0.034).

#### Conclusions

When compared to skin-only blepharoplasty, upper blepharoplasty with orbicularis oculi muscle excision, removal of skin, preaponeurotic and nasal fat pad appears to be a safe surgery with improved patient satisfaction and without carrying on additional complications.

# **FREE COMMUNICATIONS**

# 100 anastomoses: A two-year single-center experience with robotic-assisted micro- and supermicrosurgery for lymphatic reconstruction

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# Objective

Robotic-assisted microsurgery has gained significant attention in recent years following the introduction of two dedicated microsurgical robotic systems specifically designed for this purpose. These feature higher degrees of movement and motion scaling. Our study gives an insight into the details and outcomes of the first 100 consecutive (super-) microsurgical anastomoses in peripheral and central lymphatic reconstruction performed at our institution with the Symani® Surgical System between 2021 and 2024.

#### Methods

We conducted a retrospective analysis of all patients in which microsurgical anastomoses in lymphatic reconstruction were performed in our centre with the use of the Symani® Surgical System. For all anastomoses, data on surgical technique, time as well as outcomes, e.g. complications, were recorded. For patients receiving lymphatic surgery, follow-up visits with volume measurements and photographic documentation of the affected limb were scheduled pre- and postoperatively.

#### Results

In total, 67 patients were treated, receiving robotic-assisted lymphatic reconstruction with lymphatic tissue transfer and / or lymphovenous anastomoses (LVA) / lympholymphatic anastomoses. The majority of patients received surgery for primary (n = 22) or secondary lymphedema (n = 33). Mean total surgery time was 365 minutes (range 107 to 604 minutes), which typically included flap harvest, preparation of the recipient site(s), intraoperative lymphography, additional LVA and in some cases liposuction of the affected limb(s). The mean follow up time of the reported cases was 10.1 months (range 0 to 26 months). No anastomosis-associated complications were recorded postoperatively. The majority of patients reported a postoperative improvement of their lymphedema or central lymphatic disorder and around half of the patients for which data was available were able to reduce their compression garment class.

# Conclusions

With this data, we show the successful implementation of the Symani® Surgical System into our clinical practice of lymphatic reconstruction. Although the necessary intraoperative setup and the use of intrinsic motion scaling lead to a slight increase in operating time, the presented study demonstrates the advantages of robotic assistance which becomes particularly evident in lymphatic surgery due to the involved deep surgical sites and the need for supermicrosurgical techniques.

# Laparoscopic sigmoid vaginoplasty pedicled on inferior and middle rectal arteries for gender affirming surgery: A single-centre experience

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# Objective

In male-to-female (MtF) transgender patients seeking for genital affirming surgery, the lack of penile skin necessitates the use of a colon segment, to create sufficient depth of the neovagina. In this study, we describe the use of an alternative vascular pedicle supplied by the inferior- and middle rectal artery for the transposed sigmoid-segment.

#### Methods

Transwomen who underwent sigmoid-vaginoplasty between 2016 and 2022 were identified in our hospital registry. Surgical characteristics, complication rates, and reoperations were analyzed. Patients underwent physical and endoscopic examination of the neovagina in the follow up.

# **Results**

11 patients were operated with the classic vascular pedicle technique (group 1) and 14 with the inferior pedicle (group 2). There was no significant difference in age (mean 35.2 vs. 33.2 ys), BMI (mean 23.3 vs. 23.8 kg/m2) and length of the transposed sigmoid-segment (mean 13.5 vs. 13.4cm) between the groups. There was a significant difference in concomitant breast augmentation between the groups (70% in group 1 vs. 27% vs. in group 2). Surgical time was shorter in group 2 (392+/- 36.1 min vs. 420 +/- 60 min), while hospital stay was similar in both groups (mean 9.7 vs. 10.5 days). There was one leakage of the colorectal anastomosis in group 2. One patient in group 2 was excluded due to an intraoperative complication.

## Conclusions

The sigmoid colon vaginoplasty using an inferior pedicle is a safe surgical technique, obviating the need for extended left colonic mobilization including the splenic flexure, which is often required when the blood supply to the sigmoid segment is derived from the middle colic artery. This relates to a shortened length of operation and potentially, lower complication rates due to less colonic mobilization. Finally, the anatomy of the left colon is preserved, which would facilitate treatment of potential left colonic cancer later in life.

# Implementing EPAs in plastic surgery: The Aarau experience

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## Objective

Entrustable Professional Activities (EPAs) represent the next significant shift in the evaluation of Plastic Surgery residents as part of the overarching progression toward competency-based education (CBE) among all Swiss residency programs. The aim of this report is to provide a comprehensive overview of the process involved in defining EPAs for Plastic Surgery at the Cantonal Hospital Aarau and to offer insights into practical aspects of introducing EPAs.

### Methods

EPA titles were defined based on the most important procedures in the SIWF continuing education program for Plastic, Reconstructive and Aesthetic Surgery. The detailed definition of EPAs was done according to a previously published 8-item framework (Ten Cate et al.). EPAs were adjusted to ensure that they are in line with both European and local educational goals. We selected the preparedEPA App for use as an assessment tool.

#### Results

A total of 71 EPAs were defined and successfully implemented into the assessment framework at our institution. In January 2024, all residents and attending physicians began utilizing EPA-based assessments. The distribution of engagement in the use of EPA-based assessment showed small numbers of high performers in both resident and faculty groups. Continued development of residents and faculty was required to sustain engagement with EPA-based assessment.

# Conclusions

Here we provide an example of a successful introduction of a large set of EPAs in a Swiss Plastic Surgery department. This was a long-term process that required investment and a cultural change in clinical teaching. While challenges remain, our experience may assist other clinics in implementing EPAs. Further analysis of barriers and facilitators will be needed to continue to optimize and advance this new assessment framework.

# Long-term comparison of effectiveness of lymphaticovenous anastomosis (LVA) versus vascularized lymph node transfer (VLNT) for the treatment of chronic lower extremity lymphedema

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# Objective

Chronic lower extremity lymphedema is a debilitating condition affecting millions of people worldwide. Lymphaticovenous anastomosis (LVA) and vascularized lymph node transfer (VLNT) are innovative, minimally invasive microsurgical techniques designed to enhance lymphatic drainage. Despite promising outcomes in treating chronic upper extremity lymphedema, their long-term effectiveness in the lower extremity remains inadequately studied.

#### Methods

Patients with unilateral chronic lower extremity lymphedema treated with VLNT or LVA between 2015 and 2023, with a minimum follow-up of one year, were included from a prospectively maintained database. Patient-specific variables, including circumferential measurements, were compared preoperatively and at 3, 6, 12, 18, and 24 months postoperatively.

# Results

A total of 152 patients met the inclusion criteria, of which 123 (80.9%) were treated with LVA and 29 (19.1%) with VLNT. As expected, the VLNT group presented with larger preoperative leg circumferences. LVA showed significant improvements within three months, while VLNT demonstrated a slow but steady increase in effectiveness over the two-year follow-up period. After two years, both techniques were similarly effective, even though VLNT was utilized in more advanced cases. Postoperative complications occurred in two (6.9%) patients undergoing VLNT, with one case requiring surgical revision, compared to a complication rate of 0.8% in the LVA group, none of which required surgical revision.

### Conclusions

Both LVA and VLNT are safe and effective for treating lower extremity lymphedema. LVA is the preferred choice for patients with mild to moderate lymphedema due to rapid improvements and low complication rates, while the long-term effectiveness of VLNT makes it a valuable treatment option for patients with more advanced lower extremity lymphedema, despite a slightly higher complication rate.

# **FREE COMMUNICATIONS**

Comparing postoperative outcomes in prepectoral vs. retropectoral immediate implant-based breast reconstruction across Body Mass Index categories: A retrospective analysis

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# Objective

Immediate implant-based breast reconstruction (IBBR) has become the most frequently used post-mastectomy breast reconstruction technique, with prepectoral reconstruction (PP) becoming increasingly popular compared to retropectoral reconstruction (RP).

The aim of this study is to compare complication rates across different body mass index (BMI) groups in patients undergoing PP or RP IBBR.

#### Methods

A monocentric retrospective analysis was conducted on patients who underwent mastectomy and IBBR at Geneva University Hospitals from January 2018 to December 2023. Preoperative characteristics, body mass index (BMI), type of mastectomy procedure, PP or RR implant placement, postoperative outcomes were collected and analyzed.

#### Results

217 patients were included, representing a total of 276 IBBR. The overall complication rate on a per breast basis was 26.4%. The complication rate did not differ across BMI groups, with a 36.4%, 25.3%, 28.2% and 24.1% complication rate in underweight (BMI < 18.5 kg/m2), normal weight (BMI = 18.5 to 24.9 kg/m2), overweight (BMI = 25 to 29.9 kg/m2) and obese (BMI > 30 kg/m2) patients, respectively (p-value = 0.314). There were no significant differences in overall complication rates between PP and RP IBBR (p-value = 0.8083). Anemia rate increased with low BMI (OR = 0.0215, CI-95% = 0.6099 - 0.9921, p-value = 0.033) and skin complications were more frequent with higher BMI in the PP IBBR group (OR = 0.0428, CI-95% = 1.0063 - 1.2744, p-value = 0.0389). An increase in BMI was correlated a higher seroma rate in the RP IBBR group (OR = 1.2045, CI-95% = 1.0147 - 1.4297, p-value = 0.0334) and a longer hospital length stay (coefficient 0.248, adjusted R² = 0.082, SD 0.098, p-value = 0.014).

#### Conclusions

Our study showed that there are no significant differences in overall complication rates across different BMI categories following PP or RP IBBR. However, a lower BMI was associated with a higher rate of anemia, while higher BMI was associated with a higher rate of skin complications in the PP IBBR group. Higher BMI was associated with a higher seroma rate and longer hospital length of stay in the RP IBBR group. To our knowledge, this is the first study to observe a correlation between an increase in BMI and an increase in hospitalization time following RP IBBR.

# Risk factors associated with adverse functional outcomes in free flap reconstructions of the lower extremity

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#### Objective

Lower extremity reconstruction, whether needed for sequelas of severe trauma, cancer ablation or other indications, remains a significant challenge, often requiring free tissue transfers. However, the goal is not only microsurgical success and flap survival, but the long-term coverage of vital structures, restauration of function, and obtaining a satisfactory appearance of the limb. Ultimately, the primary goal of surgical reconstruction of the lower extremity is to restore or maintain independent ambulation. While there is still a debate about limb salvage versus primary amputation and early prosthetic fitting, it is clear that secondary amputation following initial reconstructive attempts equals reconstructive failure and comes at a significant burden to the patient. Therefore, the goal of this study was to review our experience with free tissue transfer in lower limb reconstruction and to identify risk factors associated with adverse surgical and functional outcomes.

## Methods

A retrospective single center review of all free flaps performed in lower extremity reconstructions in our unit between 2006–2022 was undertaken. Apart from demographic and perioperative details, data collection focused on long term results regarding weight bearing, ambulatory status, recurrence of infection, as well as secondary amputation. Patient reported outcomes were stratified using the Lower Extremity Functional Scale (LEFS).

#### Results

513 consecutive free flaps for lower extremity reconstructions were included, recording a 95.9% flap success rate. Mean follow-up was 47 months. In most cases, preoperative ambulatory status was restored postoperatively, resulting in 86.4 % unassisted ambulation (12.9% assisted, 0.6% wheelchair). Weight bearing was commenced after 6.2 weeks on average and the best ambulation level was reached after 18.5 weeks. Postoperative infection ensued in 17.4% of patients, while 4% of cases underwent secondary amputation. The most significant risk factor associated with secondary amputation was postoperative infection, while a lower LEFS-score correlated with obesity.

#### Conclusions

Lower extremity reconstruction remains a challenging endeavor for the surgeon and often a life-changing event for the patient, where flap survival is not the endpoint. Functional restauration and ambulation should constitute the main goals in these cases and good results can be expected in specialized centers.

# Chemical peels: When, what, where A comprehensive review and case series

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## Objective

The market of aesthetic medicine is booming, including the increasing offer of different devices, injectables and topical agents, such as chemical peels. Plastic surgeons must be aware of these ongoing developments because patients ask for it and many doctors offer aesthetic medicine on a daily base. Unfortunately, scientific evidence of its benefit is scarce and management of complications often neglected. The study aim was to evaluate the scientific evidence of the mode of action of chemical peels and to present a practical algorithm on when to use what type of peel, highlighted by a case series.

## Methods

Pubmed, Cochrane Library and Web of Science were screened for articles published between 1989 and 2022, entering the search terms "chemical peel", "chemical peeling", "history of chemical peels", "chemical peel AND indications", "chemical peel AND therapy", "chemical peel AND complications". Finally, a series of 5 cases with a practical protocol is presented.

#### Results

Based on their penetration depth, chemical peels are classified into superficial (reaching stratum basale of the epidermis), medium (papillary and upper reticular dermis) and deep peels (mid reticular dermis). The penetration depth depends on the type of the acid, the pH, the application time and the number of applications. Accordingly, different pathologies can be treated. Superficial peels include retinoic (RA), salicylic (SA), trichloro-acetic acid (TCA) < 35 %, glycolic (GA) and mandelic acid (MA). Medium depth peels include poly-acid combinations, TCA  $\geq$  35% and Phenol. Acne and comedones are treated successfully with superficial peels, whereas acne scars, melasma and consequences of photo-aging (fine wrinkles, lentigines and actinic keratosis) are treated with medium depth peels. Moreover, skin cancer-preventive properties by suppression of p53-mutations have been described in the literature. Post-inflammatory hyperpigmentation, hypopigmentation, scars and peri-ocular injury are amongst the most common complications. In the personal case series, patients have been treated successfully for acne, melasma and consequences of photo-aging.

### Conclusions

Current evidence demonstrates an anti-aging, photo-protective and cancer-preventive effect of chemical peels. Knowledge on the skin pathology, the patients' phototype, and allergies, as well as correct patient information and instruction are mandatory to avoid complications.

## **FREE COMMUNICATIONS**

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# Surgical outcome and quality of life after lymphatic reconstructive surgery: A systemic review of literature

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### Objective

Microsurgical treatment of lymphedema has evolved significantly over the past decades. Improved cancer treatment has led to increasing cancer survivors but also to a growing population of patients suffering from lymphedema. The well-established conservative treatment is time-consuming and burdens patient's social und work lives. Furthermore, the severity of the disease can progress over time. Therefore, surgical treatment has become popular by improving lymphatic drainage through lymphovenous anastomosis or free vascularized lymph node transfer, which has led to a steadily growing number of studies. This study aims to present the current literature of lymphatic reconstructive surgery to treat patients with lymphedema with a particular focus on postoperative limb volumes and quality of life.

### Methods

A systemic literature review was conducted based on the database of Medline, Embase (excluding conference abstracts), Cochrane, and web of science. The search included terms related to effectiveness, efficacy, outcome, volume reduction, and patient-reported outcome measurements (PROMs) after different techniques of lymphatic reconstructive surgery in lymphedema patients. Two separate individuals (HC and UH) reviewed all studies based on title and abstract for inclusion criteria. Differences were discussed with the senior author (NL).

### Results

Most of the studies reported a postoperative volume reduction compared to baseline measurements. There was a broad variety of assessing PROMs by different questionnaires such as LYMPHQ, Lymph-ICF-UL, LYMQOL etc., with patients mostly reporting remarkable differences in terms of mobility, pain relief and improved function and psychological well-being.

### Conclusions

This systematic review gives an overview on the steadily growing field of lymphatic reconstructive surgery. Despite the heterogeneity of all analyzed studies, we can conclude that lymphatic reconstructive surgery leads to a significant long-term reduction of limb volume and improved health-related quality of life in patients with lymphedema.

# SV/ISS PLASTIC SURGERY

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61<sup>st</sup> Annual Meeting Swiss Plastic Surgery



13<sup>th</sup> Annual Meeting Swiss Aesthetic Surgery

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Palazzo dei Congressi Lugano

## **Poster Presentations**

# Local complications in full thickness burn wounds after enzymatic debridement

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## Objective

Bromelain-based enzymatic debridement (ED) has become well-established in burn surgery, as it protects the dermis, reduces excision area and the necessity of autologous skin transplantation. Regarding full thickness burns (FTBs), clinical data for (bromelain-based) ED is sparse. We herein report on our clinical experience with ED in acute FTBs including local complications at our Burn Center.

### Methods

In this retrospective case series, we analysed all patients with FTBs treated with ED in the years 2018 until 2023 at the Burn Center of the University Hospital of Zurich. We assessed wound healing, and the need and kind for further interventions. Furthermore, we monitored short-term and long-term complications such as infection and contractures.

### **Results**

In total, 45 patients with FTBs were treated with ED of which 12 patients were female, 33 were male. The mean affected total body surface area (TBSA) was 35.6%. The average abbreviated burn severity index (ABSI) score was 8.25. In 42% of the cases ED was applied very early (defined as within 12 h), in 34% early (between 12 and 72 h), and in 25% delayed (>72h after trauma). In most cases, ED was used on the upper extremities and the face. 80% received autologous skin transplantation and, on average, 3.25 further surgical interventions were needed. Local wound infections occurred in 25%. In 20% secondary healing was observed without further skin grafting, of which were 56% FTBs located in the facial region.

### Conclusions

Enzymatic debridement is a well-known and safe technique in burn surgery. While skin grafting often can be avoided in partial thickness burns, FTBs after ED usually necessitate autologous skin transplantation. In addition, the local complication rate is high with respect to number of revisions and wound infection.

## **POSTER PRESENTATIONS**

# Breast cancer incidence and screening in female-to-male transgender and non-binary patients undergoing mastectomy at a single institution in Switzerland

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### Objective

Since the introduction of widespread breast cancer (BC) screening programs, early detection has improved and mortality has decreased significantly in the female population. However, in the female-to-male transgender (FtM) and non-binary population, it is more challenging to evaluate the benefit of systematic screening, owing to their low representation in large population-based databases. Uniform screening recommendations do not yet exist. In this study, we evaluated the incidence of BC in mastectomy specimens as well as the presence of preoperative screening in FtM and non-binary patients who underwent gender-affirming mastectomies at our institution.

### Methods

We performed a retrospective analysis of pathology reports of breast specimens in transgender-male or non-binary patients who underwent gender-affirming mastectomies at our institution between 2010 and 2023. In addition, we assessed whether preoperative imaging (Ultrasound, Mammography or MRI) for the detection of BC took place in these patients.

### Results

Between 2010 and 2023, 87 FtM (75) or non-binary patients (12) (biologically female) underwent gender-affirming mastectomy at our institution and were included in this study. Mean Patient age at surgery was 29.5 years (Median: 24.9 yrs, Range: 17-72 yrs). The majority of patients underwent mastectomy with free nipple grafting (43) or subcutaneous mastectomy (29) (Other: 15). 22 patients (25%) had a preoperative gynecological consultation for their breasts. 13 of 87 patients had breast imaging. Only 4 out of 17 patients >40 yrs (23.5%) had breast imaging. All mastectomy specimens underwent histopathological examination. 95.4% of mastectomy specimens did not show any pathological findings. One mastectomy specimen showed multifocal invasive carcinoma (ductal/NST). One other patient had atypical ductal hyperplasia of the right breast.

### Conclusions

The risk of BC in transgender and non-binary patients depends on multiple factors, including age and stage of transition, length of hormone therapy and prior surgery. One patient was diagnosed with BC. Only 22% of patients underwent preoperative gynecological examination and 13% breast imaging preoperatively. Although screening guidelines do not yet exist, preoperative BC screening in all FtM and non-binary patients above 40yrs planning to undergo mastectomy is recommended.

# Optimization of culture and conservation parameters of clinical grade progenitor cells for plastic surgery use in scar and wound management

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### Objective

There is high pressure from authorities to abolish animal-origin products for cell culture sources destined for patient use. Processes and materials for cell expansion as well as the use of DMSO for long-term conservation of cell banks are concerned. Herein, we evaluated the use of a non-animal supplement (human platelet lysate, hPL) instead of fetal bovine serum (FBS) for cell culture and also evaluated various cryopreservation formulations to be used with the clinical FE002-SK2 cell bank.

### Methods

Standardized conditions using FE002-SK2 cells were evaluated by seeding 3,000 cells/cm2 in 6 well plates in medium composed of DMEM with either 10% FBS, 5 and 10% hPL and cell quantities were assessed at 4, 5, 6, 7, 10, 11 and 14 days. To evaluate the impact of the different culture media on cellular passages, FE002-SK2 cells were seeded in T25 culture flasks and counted at day 7 from passages 3 and up to passage 10. For cryopreservation, 1 million cells were frozen in commercial CryoSoFree or the gold-standard formulation (DMEM-FBS-10% DMSO) and the cellular viability was evaluated using trypan blue exclusion directly after thawing and comparing to the total cells originally cryopreserved.

### Results

Cells cultured in medium with 5 or 10% hPL showed a higher growth rate compared to the 10% FBS medium. The same observation is accomplished for cells at different cellular passages and it was found that hPL showed more variability in total cell yields. Cells cryopreserved in medium containing 10% DMSO showed more than 95% of viable cells after thawing whereas CryoSoFree displayed only 60% of viable cells.

### Conclusions

hPL-supplemented medium showed a significant increase in cellular growth compared to the medium with 10% FBS, but the increased cell physiology over passage and cell behavior would need more analysis to approve these mediums to ensure finished product quality and patient safety. For the evaluation of the cryopreservation protocol, it is clear that the gold-standard medium with 10% DMSO provides excellent viability of the cells after thawing, confirming that this cryopreservation medium is the best to date as it has a proven long-term stability of the progenitor cell sources used in the clinic.

Efficacy and safety of low molecular weight heparin and mechanical thromboprophylaxis in immediate implant-based breast reconstruction: A retrospective comparative analysis

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### Objective

Low molecular weight heparin (LMWH) is widely employed to prevent postoperative venous thromboembolism (VTE). This study aims at analyzing LMWH use and evaluating its efficacy and safety in immediate implant-based post-mastectomy breast reconstruction.

### Methods

A monocentric retrospective analysis was conducted on patients who underwent immediate implant-based breast reconstruction from January 2021 to December 2023. Preoperative characteristics, Caprini score, type of mastectomy procedure, administration of LMWH, postoperative outcomes and any adverse events linked to LMWH usage, with particular attention to hematoma or VTE were collected and analyzed.

### Results

A total of 211 breast procedures were performed on 179 patients - with a mean age of 50.9 years old and a mean (SD) Caprini score of 6.8 (1.4). 133 patients received LMWH (enoxaparin 40mg/day) post-operatively and 46 only had mechanical thromboprophylaxis. The overall complication rate was higher in the LMWH group with 27.8% compared to 17.4% in the no-LMWH group. Hematoma occurred in 17 patients (12.8%) in the LMWH group compared to 2 (4.4%) patients in the no-LMWH group. Moreover, 15 (11.2%) patients who received LMWH required reoperation compared to 1 (2.2%) in patients who did not receive LMWH. There were no VTE events in either group.

### Conclusions

There were no significant differences in complications, hematoma rate and reoperation rate in patients who received LMWH after mastectomy and immediate implant-based breast reconstruction, compared to patients who did not. Moreover, no difference in VTE rate was observed across groups.

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# Reconstruction of massive chest wall defects: Our experience of 17 consecutive cases

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### Objective

Complex chest wall defects represent a challenge for both thoracic and reconstructive surgeons. This study aims to highlight the potential factors influencing the outcomes of chest wall reconstruction after massive resection, using Patient Reported Outcomes (PROMs) and functional evaluations.

### Methods

This case series is a retrospective analysis of a prospectively maintained database of 17 consecutive reconstructions of massive chest wall defects from 2014 to 2023. The PROMs include the dyspnea functional limitation test 10a and the following sections of the BODY-Q: psychological distress, chest and scars aesthetic satisfaction. The range of motion and the strength of the upper extremities were quantified with an electronic dynamometer (MicroFet2). The PROMs and the functional tests were assessed in a prospective cross-sectional fashion.

### **Results**

The following flaps were done: 13 latissimus dorsi flaps, 2 DIEPs and 1 ALT. Synthetic meshes were implanted in 12 patients. The average defect size was 246cm2 and most patients had 2-3 ribs and part of the sternum removed. In the postoperative period, 1 total flap loss and 1 venous congestion were recorded. 4 patients had pulmonary complications. Preliminary results showed no correlations between the complexity of the defect and the BODY-Q results. The type of flap used didn't influence the mobility and strength of the upper extremities.

### Conclusions

Neither the defect size nor the flap impacts patients' satisfaction regarding their chest wall appearance after reconstruction of a massive defect. Latissimus dorsi is the primary option in the majority of chest defects. Free tissue transfert needs to be kept as back up option, keeping in mind considering potential microsurgical complexity and respiratory dynamics

Synergistic approach: Exploring the collaboration between plastic and reconstructive surgery and oral-maxillofacial surgery for facial reconstruction with free flaps

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### Objective

Free tissue transfer is a cornerstone in the reconstruction of complex head and neck defects. The purpose of this study was to demonstrate the frequency and positive aspects of interdisciplinary collaboration between plastic and reconstructive surgery and oral and maxillofacial surgery in the treatment of complex cases at our clinic.

### Methods

A retrospective cohort study was established by collecting data from all patients who underwent facial reconstruction with free tissue transfer. The data were statistically analyzed and evaluated.

### **Results**

From 2013 to 2022, a total of 170 free flaps in the head and neck region were performed with the participation of both teams. The majority of cases were performed after tumor resection (62.7%). The free fibula flap was the most commonly used flap with a total of 58 flaps (34.1%), followed by the ALT flap (25.3%), radial forearm flap (22.9%), and other flaps. Survival flap rate was 94.6%. The most common complication was wound dehiscence.

### Conclusions

This study shows that over a 10-year period, the total number of free flap surgeries performed has increased many times over and is now the most commonly performed free flap surgery at our facility compared to other indications (e.g. breast reconstruction, trauma, etc.). Thanks to this team approach, we have been able to take on much more complicated cases over the years, which is reflected in a slight increase in operating time, while the complication rate remains stable and comparable to international standards. We see the collaboration between plastic and reconstructive surgery and oral and maxillofacial surgery as a forward-looking model. The different academic training backgrounds guarantee the highest quality of care for patients. In addition, this system offers the opportunity to introduce young colleagues to the specialty and maintain a high standard of training by allowing them to learn from experienced colleagues in two different specialties.

# A geometric approach to facial burn treatment: Applying the Suprathel® face-ear-mask explained through an educational video

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### Objective

Treating facial burns, including those affecting the ears, presents unique challenges due to their anatomical contour and constant exposure to the environment. One option for addressing facial burns is the use of Suprathel®, a flexible, alloplastic synthetic skin substitute known to promote healing in superficial and partial thickness burns. Recently, we introduced a Suprathel®-based face and ear mask along with a cutting scheme based on a manufacturer-derived nesting technique to minimize material waste. However, surgical teams require clear instructions on how to apply this mask. Therefore, an educational video with visual and audio guidance was developed to facilitate its application.

### Methods

An audiovisual educational video was created to demonstrate the optimized cutting algorithm for preparing the Suprathel® wound dressing for the treatment of facial burns involving the face and ears. A human voice recording was included to explain each preparation step, and subtitles were added for enhanced comprehension.

### Results

The video, with a duration of less than 4 minutes, provides a step-by-step guide for cutting the face and ear mask for burn treatment. In addition to serving as a cutting guide, the video offers an engaging learning experience.

### Conclusions

Educational videos play a crucial role in learning, particularly in the field of medicine and healthcare. Given the costliness of the Suprathel® wound dressing material, alternatives to hands-on preparation support treatment care without compromising on material waste and sterility issues. This video has the potential to improve the treatment of facial burns involving the face and ears.

# Strategies after total DIEP flap loss for breast reconstruction: Literature review & single-center experience

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**POSTER PRESENTATIONS** 

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## Objective

With a success rate of over 95% (depending on the literature) in high volume centres, the DIEP is not only the undisputed gold standard in autologous breast reconstruction - it is almost considered a sure thing. But what strategies do we rely on if the "workhorse" fails, flap loss occurs & the patient remains without breast reconstruction?

### Methods

Flap necrosis after DIEP reconstruction at the Cantonal Hospital Lucerne was analysed over a period of several years.

### Results

On the basis of 10 cases with total DIEP flap necrosis, we show which options are possible as a (satisfactory?) plan B and in particular address the factors that led to the decision making in the individual case.

### Conclusions

The presentation of our costumized solutions includes secondary free flap reconstructions, pedicled flaps as well as heterologous procedures with implants.

# Testosterone hormonotherapy influence on female ASC: Implications for soft tissue contouring of transgender patients

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### Objective

The first step towards sex reassignment consists of hormonal treatment, where regular intake of steroid hormones promotes secondary sex characteristics of the opposite gender. For female to male transition, 2 years of testosterone therapy induces development of musculature, fat redistribution, body hair augmentation and voice modification. Autologous fat grafts are often used to help restructure the body. Moreover, it has been shown that longevity and quality of fat grafts may considerably be improved when cultured adipose stem cells (ASC) are supplemented. Our aim was to evaluate the impact of testosterone treatment on the differentiation capacities of female ASC cells in vitro.

### Methods

Optimization of culture medium was assessed for acute and chronic testosterone design. Primary female ASC cells were stimulated with two testosterone doses (10nM and 100nM) and evaluated for proliferation, adipogenic and osteogenic differentiation capacities. In addition, the capacity cell stem-ness retention traits were assessed by looking at CD90+, CD73+, CD105+, CD45- and CD34- molecular profile by FACS.

### Results

Our results show that cell surface markers remained unaltered after acute testosterone treatment for cells at passage 1, indicating that the treatment has no impact on the stem-ness. However, it was observed that a chronic dose of 10nM testosterone added to the culture medium lead to a decrease in the differentiation capacities of the cells into both adipocyte and osteoblast lineages. Chronic addition of 100nM testosterone totally inhibited differentiation of the cells into osteogenic lineage and strongly impaired the adipogenic differentiation.

### Conclusions

Primary ASC exposure to chronic 10nM and 100nM testosterone doses were used to design and mimic in vivo cell behavior of a patient. Therefore, impact of the treatment on differentiation potential may lead to assessing surgical management of patients and the use of ASC supplementation with fat grafts of testosterone treated patients.

# Assessing burn depth by indocyanine green: A systematic review and algorithm for clinical use

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### Objective

Only in 60-75% of cases, experienced burn surgeons can correctly diagnose the patient's degree of burn. There are several strategies to define the burn's degree, from clinical observation (most frequent) to biopsy and subsequent histological analysis. Among the various tools available, indocyanine green angiography is also gaining ground in burns. The objective of this study is to demonstrate the utility of using indocyanine green in the evaluation of burns.

### Methods

A systematic literature review was performed in Pubmed in February 2023 using the terms [ICG OR indocyanin green] AND [burn]. The selection of articles was performed according to PRISMA guidelines. The inclusion criteria were: human and animal studies, studies that exclusively considered indocyanine green as a method of analysis in the depth of burns.

### Results

The PubMed search initially yielded 177 results. Of these 177 articles, 167 did not meet the inclusion criteria. Among the 10 articles selected, 3 concerned studies in animal models and 7 in human models. In the first 3 articles cited, well-defined burns performed on rats or pigs were studied with indocyanine green, the first study dating back to 1992.

As regards human studies, burn patients were subjected to quantitative and qualitative analysis of fluorescence, demonstrating the usefulness of this dye.

### Conclusions

Indocyanine green allows, thanks to the quantitative and qualitative analysis of the fluorescence emitted after excitation with infrared light, to discriminate superficial burns, in which the vascularization of the dermis appears preserved, from deep ones, avoiding long waits and anticipating the surgical treatment of the patient.

Advancements in the treatment of localized scleroderma (morphea) and the role of injectables: A comprehensive overview of facial changes induced by scleriform conditions

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### Objective

This review aims to explore the transformative potential of injectable therapies, specifically hyaluronic acid fillers, Sculptra, Radiesse, and fat grafting, in the management of localized scleroderma (morphea). The focus is on understanding their mechanisms of action, clinical applications, and their role in addressing the facial changes induced by this rare autoimmune disorder characterized by skin thickening or atrophy and fat loss.

### Methods

A comprehensive analysis was conducted on the use of hyaluronic acid fillers, Sculptra, Radiesse, and fat grafting in the treatment of morphea. The review involved evaluating clinical studies, mechanism of action, application techniques, and outcomes associated with these treatments. Case studies were also examined to provide real-world evidence of their effectiveness.

### **Results**

Hyaluronic acid fillers were found to be effective in restoring lost volume and improving skin texture in localized morphea lesions. Sculptra, a Poly-L-Lactic acid-based biostimulator, showed promise in stimulating collagen production and promoting natural skin regeneration. Radiesse, with calcium hydroxylapatite microspheres, augmented volume and enhanced skin quality through collagen stimulation. Fat grafting demonstrated potential benefits by utilizing the body's natural resources for lasting improvements, though repeated applications were necessary for sustained results. Case studies highlighted the practical success of these treatments, demonstrating significant improvements in patients' quality of life.

### Conclusions

Injectable therapies, including hyaluronic acid fillers, Sculptra, Radiesse, and fat grafting, offer promising minimally invasive options for the management of localized scleroderma (morphea), particularly in addressing facial changes. An interdisciplinary approach is essential for the optimal treatment of this highly specific patient population with cutaneous limited systemic sclerosis, including soft tissue loss of the face. Tissue reconstruction should be performed after achieving a stable disease state induced by medication, without any further progression. The compelling evidence from case studies supports the broader adoption of these therapies, encouraging healthcare practitioners and patients to consider these advancements in morphea management. Targeted studies are necessary to develop optimal treatment protocols for this specific patient group.

## **POSTER PRESENTATIONS**

Improved proliferation and collagen synthesis augmentation in primary human fibroblasts treated with Redensity 1 (RD1) hyaluronic acid for skin quality

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### Objective

Hyaluronic acid (HA) is a naturally occurring polysaccharide in the human body and is widely used in aesthetic treatments. RD1 is a non-crosslinked HA solution typically injected into the dermis for skin rejuvenation. Yet, its precise impact on fibroblasts, for the production of collagen, remains unclear. This study aims to develop an in vitro model mimicking the gel diffusion into the skin to evaluate the stimulatory effects of RD1 on human skin fibroblast proliferation and collagen synthesis.

### Methods

Redensity 1 (RD1) is a non-crosslinked 15 mg/mL high molecular weight (HMw) HA combined with several nutrients such as amino acids, Vitamin B, and antioxidants (Teoxane™, Geneva, Switzerland). To test the effect of the RD1 on cellular growth and collagen production, cell strainer inserts (CSI) were used to observe diffusion effects of the gel on primary human fibroblasts. Fibroblasts were cultured from polydactyly extra fingers registered in the Department Biobank (BB\_029\_DAL). For cellular growth, cells were seeded at Day0 at a density of 3,000 cells/cm2 in 6-well plates. After 24h, 3 groups and controls were as follows: 1) CSI with 100 ul RD1, 2) CSI alone, 3) medium. Cells were enumerated at Day4,7 and 10 and results were expressed as a percentage of control 3). For collagen production, fibroblasts cells were seeded in 6-well plates and grown to confluency. 3 groups were set: 1) CSI with 100 ul RD1, 2) positive control -10-4 M Vit C and (3) CSI alone. After 1 week, cells were fixed and collagen was stained with Sirus Red, then total collagen content was quantified by OD490 absorbance measurements on a Varioskan LUX.

### Results

**Results** showed that CSI have an impact on cellular growth probably by reducing gas exchanges. RD1-treated primary skin fibroblasts exhibited a drastic increase in cell number compared to the control groups. Additionally, treatment with RD1 and Vit C showed a marked and comparable increase in collagen production compared to the control groups.

### Conclusions

CSI was shown to be a good method to test clinical doses of injectable products mimicking diffusion to dermal fibroblasts. Overall, non-crosslinked HMw HA supplemented with nutrients (RD1) was shown to promote both cellular growth and collagen production in primary Human skin fibroblasts and this specific methodology could provide important screening parameters for newly designed injectables for skin care.

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Red breast syndrome following implant reconstruction: Is the mesh to blame?

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### Objective

Red breast syndrome (RBS) is a recognized postoperative complication associated with the use of biological meshes in direct-to-implant breast reconstruction. However, its occurrence with synthetic meshes, specifically vicryl meshes, has not been documented.

### Methods

We describe the case of a 45 year-old patient who underwent a nipple sparing skin reducing mastectomy to the left breast with sentinel lymph node biopsy for a ductal carcinoma in situ. The patient was reconstructed with a direct-to-implant approach, and the implant was covered with a vicryl mesh. Twenty days after the reconstruction, she presented with a blanching erythema of the reconstructed breast. A comprehensive literature review was conducted to identify previous reports and studies related to RBS in both biological and synthetic meshes.

### Results

The patient denied symptoms like fever and presented with no clinical signs of infection. Decision was made for conservative management and watchful wait. Gradually, the erythema resolved spontaneously. The literature review highlighted that while RBS is well documented with biological meshes, there is a notable absence of reports involving synthetic meshes such as vicryl.

### Conclusions

We suggest RBS should also be considered with the use of synthetic mesh. This case report and review of the literature opens the door to a case series we aim to describe after having observed various similar cases in our center in the last four years, helping us understand the underlying mechanisms and establishing guidelines for prevention and management of RBS in the context of synthetic mesh use.

Is intraoperative volumetric assessment of breast volume reliable? Comparing volumetric assessment using a vectra H2 handheld device in supine, sitting, and lying positions

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### Objective

Three-dimensional (3D) volumetric assessment is receiving increased recognition in breast surgery. It is commonly used for preoperative planning and postoperative control with the patient standing in an upright position. The Vectra H2 System has been validated for breast volume assessment in an upright, standing position. Recently, intraoperative use was evaluated with patients in the supine position. The aim of this prospective study was to evaluate the volumetric changes in 3D surface imaging depending on the patient's position.

### Methods

3D volumetric analysis was performed using a Vectra-H2 device with patients in standing, sitting, and supine positions. A total of 100 complete datasets of female breasts were included in the study. The measured volumes of each evaluated breast (n = 200) were compared between the three positions.

### Results

The mean difference between the 3D volumetric assessments of the sitting and standing positions per breast was 7.15 cc and, thus, statistically insignificant (p = 0.28). However, the difference between supine and standing positions, at 120.31 cc, was significant (p < 0.01).

### Conclusions

The 3D volumetric assessment of breasts in the supine position did not statistically correlate with the validated assessment of breast volume in the standing position while breast volume in the sitting position is reliable and correlates with the assessment of a standing patient. We conclude that intraoperative volumetric assessment should be performed with patients in an upright sitting position.

# Topical application of SVF / PRF in thermal injuries: A case series

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### Objective

New technologies try to challenge the disadvantages of STSGing coverages in burn wounds. The stromal vascular fraction (SVF) can be harvested from patients' fat depots, contains adipose-derived stromal cells and promotes epithelialization, angiogenesis and immunomodulation. Platelet-rich fibrin (PRF), obtained through centrifugation of autologous patient blood, consits of platelets, cytokines and growth factors in a fibrin matrix. The SVF and PRF nurtured the hope for a less-invasive solution treating acute burn wounds. In this case series, we provide a descriptive retrospective evaluation of patients with thermal injuries that were treated with the combination of topical SVF and PRF at the Burn Center of the USZ.

### Methods

Between 2018 and 2020 patients with acute thermal injuries presenting DPTBs or MPBs were treated with a combined topical application of SVF and PRF. The SVF was was harvested from the patient's adipose tissue by liposuction and then processed. Retrospectively the course of wound healing and the need of further surgical interventions in the presence of residual defects were assessed. The Manchester scar scale was evaluated for outcome analysis.

### **Results**

13 patients were treated and evaluated. Cause of injury involved flames and scalds. The mean TBSA was 29.6 % and the mean BSA treated with SVF / PRF was 6.3 %. First debridement was performed enzymatically with Bromelain in 9 cases and surgically in 4 cases. Residual defects requiring further surgical interventions occurred in 5 out of the 13 patients. The mean time until the wounds fully epithelialized was 33 days. The areas without residual defects showed a complete healing within 20 days whereas those with residual defects healed within 51 days. The mean MSS score was 7.3 at their final follow-up. Mean MSS score of the cases with residual defects was 8.4 when compared to 5.9 of the cases without residual defects.

### Conclusions

Taken together, the topical application of SVF and PRF in theory permits a minimal invasive therapeutical option for the coverage of acute MPB and DPTB injuries. Due to the relatively high occurrence of residual defects requiring further surgical interventions after the treatment with topical SVF and PRF, it may not yet be considered a standard therapeutical procedures. Furthermore, regulatory aspects for SVF isolation have to be respected as enzymatic digestion is restricted in many countries.

# Topic tacrolimus: An important tool to diagnose and treat pyoderma gangrenosum

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### Objective

Pyoderma gangrenosum (PG) is a rare, slowly progressing and painful ulcerative skin disorder, often associated with underlying systemic problems. Its estimated incidence is 0.3-1 cases per 100'000 people annually. Since PG manifests and evolves in various forms, misdiagnosis is frequent. We aim here to emphasize on the diagnostic work and therapeutic strategies, especially to facilitate earlier diagnosis in clinical practice.

### Methods

We present a challenging evolution of a histologically proven Necrotic Angiodermitis in an 80-year-old male with a history of long-term arterial hypertension and type 2 diabetes. After excision and skin grafting, the wound healed only partially. The anterior aspect evolved unfavorable to a painful large ulcer despite several surgical debridements, and the use of negative pressure wound therapy (Figure 1). A concomitant staphylococcus infection was treated with antibiotics.

### Results

The turning point in treatment occurred with the initiation of topic Tacrolimus application after biopsy results, which suggested PG as a differential diagnosis. Following that, the patient experienced a remarkable swift and substantial improvement in pain and wound healing. This extraordinary response to topical Tacrolimus strongly supported the diagnosis of PG, even in the absence of proving biopsy result. The therapy was intensified by adjunction of Adalimumab injections and finally conducted to a complete healing of the wound within 4 months

### Conclusions

This case highlights the complexity of the evolution, diagnosing and managing PG, especially when complicated by previous surgical interventions and concomitant infections. Long-term follow-up with tailored multidisciplinary therapeutic strategies remains essential to obtain favorable clinical outcomes in PG patients. The outstanding response to topic Tacrolimus application in our patient underlines its properties as a valuable diagnostic and therapeutic tool for PG. Early correct diagnosis is most important and this may be achieved with empiric topical Tacrolimus application.

# Adherence to standardized pre- and postoperative photodocumentation in reconstructive breast surgery: A comprehensive analysis of an international congress

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### Objective

Photodocumentation in plastic surgery is essential for maintaining patients' medical records, serving not only for documentation but also potentially carrying significant legal implications. In breast surgery, meticulous documentation is indispensable. Professional societies and international plastic surgery organizations provide guidelines that standardize various parameters of these images, including the number of images, framing, background, focus, and the presence of jewellery and clothing. This study aims to assess the adherence to these standards, a topic scarcely investigated in the past.

### Methods

We examined presentations from an international congress in 2024 focused on cosmetic and reconstructive breast surgery. Out of respect for the organizers and faculty, the congress remains unnamed. Over 60 presentations by international speakers were reviewed for adherence to recommended photodocumentation standards, specifically assessing parameters such as framing, focus, image ratio, background, presence of jewellery and clothing, and overall image quality.

### Results

The analysis revealed disappointing results. With very few exceptions, the standards were either not followed or inadequately followed. Adherence rates for different parameters were below 50%, and none of the presentations fully met the standards. The data on individual parameters will be presented anonymously, highlighting the most serious deviations observed.

### Conclusions

Adhering to photographic standards in plastic breast surgery is critically important. However, our analysis of a 2024 international congress shows widespread non-compliance with these standards in many presentations. To avoid any bias, we selected a congress without participation from our society members, however, we anticipate that similar results would be found at national congresses. Our findings suggest that event organizers should place greater emphasis on adherence to these standards and make compliance a mandatory requirement.

## **POSTER PRESENTATIONS**

Lacrimal duct reconstruction with Nunchaku® silicone tubes in the setting of periorbital destruction by traumatic and tumorous lesions

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## Objective

Reconstruction of the lacrimal duct system is a critical component in periorbital management following resection of periorbital tumors and trauma. Unfortunately, lacrimal duct reconstruction is often neglected, leading to significant sequelae such as epiphora and conjunctivitis. We report our experience of Nunchaku® lacrimal stent insertion in 3 patients during reconstructive surgery.

### Methods

The suggested reconstruction employes the Nunchaku® lacrimal stenting system, a pushed silicone self-retaining bicanalicular nasolacrimal intubation tube. The Nunchaku® stent is usually inserted into the upper and lower canaliculus and the following nasolacrimal duct. In cases with partial or full destruction of the canaliculi, the Nunchaku is placed in the surrounding (reconstructed) soft tissue with the aim to establish a fistula between the orbit and the nasal cavity for lacrimal drainage. The stent acts as a conformer, maintaining the patency of the new drainage pathway and allowing tears to drain by capillarity through the newly created fistula into the lacrimal sac and nasolacrimal duct.

### Results

Between 2023 and 2024, three patients underwent lacrimal duct reconstruction at the Cantonal Hospital Aarau. One patient was referred for the excision of a basal cell carcinoma, while the other two required reconstruction due to complex facial trauma. Two patients underwent nasolacrimal stenting during the initial reconstructive phase and defect coverage. In the third patient, the reconstruction of the lacrimal drainage was performed secondarily during a revision surgery to correct ectropion and epiphora. All patients had their stents removed 2 to 4 months following insertion. Epiphora was reduced in all patients with the Nunchaku® in place. After its removal, all patients had patent nasolacrimal ducts without any symptoms of epiphora. None of the patients reported complications such as conjunctival/corneal irritation or pain.

#### Conclusion

The preservation and/or restoration of the lacrimal system is a fundamental aspect of periorbital reconstruction. The use of the Nunchaku® lacrimal stent after tumor excision and trauma offers a potent method to reestablish the natural lacrimal draining preventing epiphora and further sequelae.

In vitro evaluation and clinical efficacy of a swiss polynucleotide regenerative complex for periocular cutaneous prejuvenation

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### Objective

Skin aging is a multifaceted process influenced by a combination of intrinsic and extrinsic factors. Perioculars are delicate and sensitive cutaneous regions, which are highly susceptible to premature aging. Recently, polynucleotide (PN) administration has gained a lot of popularity due to its clinical efficacy on skin rejuvenation. However, there is a gap in the literature supporting the use of PN in monotherapy treatments. The aim of this study was to perform in vitro characterization of a novel Swiss Polynucleotide regenerative biopolymer injectable complex. Additionally, we report the clinical efficacy for monotherapy periocular cutaneous prejuvenation.

### Methods

Innovyal Regenerative Action® is a regenerative biopolymer complex made of 22.5 mg of PN, 15.0 mg of long-chain hyaluronic acid (HA) and 45.0 mg of vitamin B3 (i.e., niacinamide). Its anti-oxidant properties were evaluated using ORAC and CUPRAC assays, comparing it to Profhilo® and phosphate-buffered saline (PBS). To evaluate the neocollagenesis attributes, Innovyal Regenerative Action® was incubated in contact with human primary fibroblast (DECH-2jM-Fib cell type) for 72 hours. Total collagen quantification was performed in a two-step assay. First, collagen was enzymatically digested into peptides. Then, the N-terminal glycine-containing peptides reacted with a dye reagent to form a fluorescent complex, with fluorescence intensity directly proportional to collagen concentration. Clinically, the product was injected intradermally (30 G needle) into periocular areas, with 1.0 mL per side of the face, performed twice with a two-week interval. Clinical follow-up imaging was conducted after one month.

### **Results**

The results demonstrated that Innovyal Regenerative Action® exhibited superior antioxidant effects and stimulated primary dermal fibroblasts to produce collagen. Clinically, it increased skin firmness and hydration, softening fine lines and addressing early signs of periocular aging.

### Conclusions

The novel regenerative complex administered in this study stands out as a highly polyvalent solution which combines the documented rejuvenation attributes of PN with the well-known benefits of HA and niacinamide in skincare. The considered formulation yields rapid results, incurs short downtime, and bares the potential to simultaneously address multiple concerns for local appearance enhancement.

Interfascicular nerve splitting technique in latissimus dorsi muscle transfer in dynamic facial reanimation to minimize donor site morbidity: Preliminary results

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### Objective

The latissimus dorsi muscle is one of the most commonly used free tissue transfers for dynamic facial reanimation in order to obtain a symmetrical smile. While only a segment of the muscle is used for facial reanimation, the entire muscle is usually sacrificed through the harvest of the thoracodorsal nerve. There are only a few studies in the literature looking at donor site morbidity, even though patients can suffer from considerable disability (weakness, decreased range of motion or interference in daily life and sport activities). The aim of this study was to reduce donor site morbidity in patients undergoing dynamic facial reanimation with free functional latissimus dorsi transfer utilizing an interfascicular nerve splitting technique.

### Methods

The descending branch of the thoracodorsal nerve was dissected during surgery until a sufficient length was reached. The activity of the transverse and descending parts of the muscle were analyzed using intraoperative EMG, assessing both the functionality of the remaining muscle through the transverse branch of the thoracodorsal nerve and the muscle segment to be transferred for facial reanimation.

### Results

DASH scores assessing donor site morbidity have been determined in the first five patients in this prospective study, showing no statistically significant difference between pre- and postoperative scores. Moreover, all patients started showing facial movement of the transferred latissimus dorsi muscle.

### Conclusions

Interfascicular nerve splitting in latissimus dorsi muscle transfer is an elegant technique to reduce donor site morbidity, while still being able to obtain good functional results in dynamic facial reanimation.

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# Hyperbaric oxygen therapy outcomes in post-irradiated patient undergoing microvascular breast reconstruction: A preliminary retrospective comparative study

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## Objective

Radiotherapy is a challenge in autologous breast reconstruction because of its impact on cutaneous and vascular systems. Hyperbaric oxygen therapy (HBOT) is a recognized treatment of radiation-related complications. We aim at assessing the impact of peri-operative HBOT on irradiated breast microvascular reconstructive outcomes.

### Methods

We reviewed medical charts of patients who received radiotherapy and then underwent secondary free autologous breast reconstruction at our institution. Demographic, HBOT protocol, intervention characteristics and recipient-site complications were collected. Outcomes of irradiated patients were then compared between HBOT and non-HBOT groups.

### Results

Fourteen patients were included (eleven unilateral and two bilateral deep inferior epigastric artery perforator flaps (DIEP) and one free transverse rectus abdominis muscle flap (f-TRAM)). Seven patients received HBOT and seven did not. In the non-HBOT group, there were one Clavien-Dindo grade II, one Clavien-Dindo grade IIIa and two Clavien-Dindo grade IIIb post-operative complications. In the HBOT group, there were three Clavien-Dindo grade I, one Clavien-Dindo grade IIIa and two Clavien-Dindo grade IIIb post-operative complications. Mean operative time was 452.3 minutes (SD +/- 62.4) for unilateral cases without HBOT and 457.8 minutes (SD 102.1) with HBOT (p=0.913). Mean ischemia time per flap without HBOT was 109.4 minutes (SD 51.8), versus 80.1 minutes (SD 37.7) in the HBOT group (p=0.249).

### Conclusions

This study gives insights on the potential of HBOT treatment in preparing irradiated breast cancer patients for secondary autologous reconstruction.

## **POSTER PRESENTATIONS**

# The paranasal flap in lower lid reconstruction

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### Objective

Reconstruction of extensive and full-thickness lower lid defects is both functionally and aesthetically challenging. The potential and limitations of the paranasal flap in lower lid reconstruction are illustrated in two cases.

### Methods

Case 1: In a 93-year-old male patient, an extensive squamous cell carcinoma of the lower lid was resected under frozen section control with preservation of the posterior lamella. The defect was covered with a Tenzel flap and lateral tarsal strip procedure. Due to extensive perineural sheath infiltration, re-excision was performed with partial flap loss. A wide paranasal flap with a low pivot point was used to cover the resulting defect.

### Results

Case 1: Uneventful primary healing with full lid closure was followed by a protracted lymphedema that was not adequately controlled by conservative treatment and ultimately led to flap contracture and ectropion. The ectropion was treated by a combination of a midface lift and bipedicled myocutaneous flap from the upper eyelid, achieving a good functional and cosmetic result after contralateral upper blepharoplasty.

Case 2: The postoperative healing was uneventful and the correct lower eyelid position with full lid closure was achieved after 4 weeks following transection of the conjunctival bridge of the tarsoconjunctival flap. The functional and cosmetic outcome was judged to be very good.

### Conclusions

In case of extensive skin malignancies of the lower eyelid, histologically controlled complete tumor removal is mandatory before any reconstruction. Paranasal flaps can be used for both partial and full-thickness lower eyelid defects when combined with appropriate techniques that provide the inner lining. A high pivot point avoids extensive flap rotation, facilitates flap inset and prevents flap edema, contracture and ectropion.

# Treatment of periorbital fractures as an important component of plastic surgeons training

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### Objective

Midface fractures involving the orbit are the third most common type of facial fractures and usually occur with blunt force trauma. The fractures can cause functional and aesthetic defects. Their treatment require extensive knowledge and skills across various disciplines. Especially the role of plastic surgeons in the treatment of orbital fractures is different in between European countries.

### Methods

To demonstrate the role of plastic surgery in the treatment of orbital and periorbital fractures at the Kantonsspital Winterthur (KSW) as a cantonal hospital, the number of operated midface fractures involving the orbit over the past ten years was analyzed. Fractures involving an occlusion disorder were treated by our colleagues in the OFMS department and were therefore excluded. Nasal fractures were also not included in the analysis.

### Results

In the last ten years, 147 cases of midface fractures involving the orbital socket where surgically treated by the team of plastic surgery at KSW. 52.4 percent of these involved only the orbit. 44.9 percent were lateral midface fractures and 2.7 percent were frontal fractures.

### Conclusions

The management of periorbital fractures is a critical part of plastic surgery training as it encompasses a wide range of skills and knowledge applicable to many other interventions in the area around the eyes. Using case studies, we demonstrate the indications for surgery, the surgical treatment, and particularly the standard approaches to the orbit.

# Complication rates in unilateral versus bilateral DIEP flap reconstructions: A systematic review and meta-analysis

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### Objective

Prior studies indicate higher complication rates in bilateral compared to unilateral DIEP flap breast reconstructions. Given the rise in bilateral procedures, a re-examination of current data is essential. This meta-analysis updates previous research, assessing complication rates in unilateral versus bilateral reconstructions to guide clinicians and patients.

### Methods

A systematic review of the literature was conducted in accordance with PRISMA guidelines. We exclusively included comparative studies that reported on post-operative complications following unilateral and bilateral DIEP flap breast reconstructions, with complications reported on a per-flap basis. A comparative meta-analysis was performed to assess the differences in complication rates between unilateral and bilateral procedures. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using a random-effects model to accommodate variability among the included comparative studies.

### Results

Our meta-analysis synthesized data from five comparative studies, encompassing a cohort of 5,120 patients who underwent either unilateral or bilateral DIEP flap breast reconstructions. The results from the random-effects model indicated that bilateral DIEP flap reconstructions were associated with a higher risk of total flap loss, with an odds ratio (OR) of 1.48 [95% CI: 1.02; 2.14], p-value: 0.04. Conversely, the risk of developing a hematoma was lower in bilateral reconstructions, with an OR of 0.69 [95% CI: 0.42; 1.14], p-value: 0.15. Similarly, the risk of requiring re-exploration surgery was also reduced, with an OR of 0.68 [95% CI: 0.55; 1.83], p-value: <0.01

### Conclusions

This meta-analysis reveals that bilateral DIEP flap breast reconstructions carry a significantly higher risk of total flap loss compared to unilateral reconstructions. However, they also present lower risks for developing hematomas and requiring re-exploration surgeries. These findings provide crucial evidence to inform surgical decision-making.

# Development of a treatment protocol for female feminization surgery Management of infection in prepectoral implants tion: Consequative treatment versus implants

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### Objective

Facial feminization is an important step in the surgical transition process of male-to-female gender dysphoria patients. Because of the variance of facial features, patient's expectations and a wide range of surgical techniques proper surgical planning for this critical area of the body is difficult. In order to develop a treatment protocol for surgical facial feminization, we present our approach for gender dysphoria patients undergoing facial feminization at our institution.

### Methods

After psychiatric evaluation and hormone treatment, gender dysphoria patients with the wish for facial feminization undergo a schematic facial analysis during our outpatient consultation. Computer tomography imaging and clinical photographs are used to create 3D models for surgical planning. With establishing the necessary alterations to the craniofacial bone structures and soft tissue of the face, each patient receives an individualized treatment plan. If needed, interdisciplinary surgical planning with the Maxillofacial - or Otorhinolaryngology department is carried out.

### Results

The facial features were divided into three vertical sections. For softening of the upper third of the face we perform a forehead reduction including bone shaving, osteotomies und repositioning of the anterior wall of the frontal sinus in some cases combined with hairline lowering. To feminize the midface, patient undergo a feminizing rhinoplasty and, if necessary, an upper lip lift. To contour the lower third of the face, we combine osteotomies and burring of the jawline and chin using a transoral approach during a multidisciplinary procedure. Reduction of thyroid cartilage is performed by direct access in the cervicomental fold. All patients receive compression, hilotherapy and lymphatic drainage during the short postoperative inpatient phase, to improve recovery. Perioperative complications are rare. Postoperative patient satisfaction is generally high.

### **Conclusions**

We believe that a comprehensive treatment concept at a multidisciplinary center combining a standardized facial analysis, matching the patient's needs and expectations and the use of the proper surgical technique lead to improved postoperative outcomes. By sharing our experience and insight into our protocols, we contribute to the development for common consensus in the field of facial feminization surgery, which is supported by increased evidence.

# Management of infection in prepectoral implant-based breast reconstruction: Conservative treatment versus implant removal

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### Objective

Infection following implant-based breast reconstruction (IBBR) represents a major complication, potentially leading to prosthesis removal. However, no clear protocol for its prevention and management exists. This study aims to evaluate the efficacy of conservative treatment methods in preventing implant removal and analyze factors responsible for implant loss in the context of prepectoral IBBR.

### Methods

A single-institution retrospective review chart of patients undergoing immediate prepectoral IBBR for breast cancer between October 2020 and January 2024 was performed. The inclusion criteria were the presence of at least one of the following postoperative complications: seromas, cellulitis, clinically suspected prosthesis infection, and confirmed periprosthetic infection. A comparative analysis between patients with successful conservative treatment (ultrasound-guided aspiration and antibiotic therapy) and patients undergoing implant removal was performed.

### **Results**

A total of 219 immediate prepectoral IBBR cases were identified, 38 of which met inclusion criteria. Implant removal was required in 11 cases, while implant retention was achieved in 27 patients with conservative treatment. Implants were invariably removed when bacterial cultures were positive (p-value < 0.05). Conversely, when pathogens were not identified, the likelihood of implant removal decreased significantly (p-value < 0.05). Conservative treatment allowed implant salvage in all patients presenting with postoperative seroma alone without other associated complications (p- value < 0.05).

### Conclusions

This study suggests that when bacterial cultures are positive, implant removal is unavoidable. Conversely, non-infected seromas correlated with implant salvage. Infections from Bacillus Pumilus, Corynebacterium Pseudodiphtheriticum, and Serratia Marcescens complex are reported for the first time.

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# Our first experience using the Symani® robotic system in free flap reconstruction of the head and neck

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### Objective

Robotic surgery has developed as a new opportunity with potential benefits for reconstructive surgery. The Symani® Surgical System has shown feasibility in performing microsurgical anastomosis. Soft tissue defects of the head and neck have different etiologies; neoplasms, intracranial vascular pathologies and trauma with following neurosurgical procedures are the most common. We describe our experience with free soft tissue transfer to the scalp using the Symani® Surgical System for microsurgical anastomosis.

### Methods

We analyzed 7 patients with soft tissue defect of the head and neck. Every patient underwent soft tissue reconstruction with a free Antero lateral thigh (ALT) or Latissimus dorsi (MLD) flap from September 2023 to February 2024. The microsurgical anastomosis was performed by using the Symani® Surgical System.

### Results

5 male patients and 2 female patients, age 61-81 years (mean 72.1 years) were included. Mean hospital stay was 10 (8-13) days. The most common recipient vessels were the superficial temporal artery and comitant vein (57.1 %). In other cases we used the facial artery and vein (42.9%). All arterial anastomosis were performed by using the Symani robotic system. The mean operative time was 412 (339-558) minutes. The mean anastomosis time was 33 (19-44) minutes. No revision surgery was needed and no complications or flap loss were observed. The application of the system markedly improved accessibility to the vascular structures in the head and neck area.

### Conclusions

For reconstruction of soft tissue defects of the head and neck the Symani® Surgical System is a safe technology with its known benefits for performing microsurgical anastomoses and is leading to satisfactory outcome.

The flap that came in from the cold... or what do we really know about tolerable flap ischemia time. Case presentation and literature review

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### Objective

In free microvascular flap surgery, the surgeon's goal is still to keep the ischemia time of the transferred flaps as short as possible. Most surgeons have little or no knowledge of whether there is evidence of whether flap losses or partial flap necrosis are increased when the flaps are exposed to long periods of warm and cold ischemia. There is a lot of literature on this in replantation surgery, but little literature on flap surgery.

### Methods

Based on an unusual case of a free microvascular flap that was stored in the refrigerator for over 24 hours and was then successfully revascularized, we would like to discuss the question of the tolerable ischemia time of free microvascular flaps. The few clinical cases and the sparse, especially experimental, literature are presented to refresh knowledge and knowledge on this topic.

### Results

2 Clinical cases in the literature and our own case show that with correct positioning, the tolerable cold ischemia time for free flaps can be safely extended to 24 hours, possibly up to 48 hours, especially for fasciocutaneous flaps. Experimental work shows a survival rate of 86 percent for flaps exposed to cold ischemia for up to 72 hours.

### Conclusions

Free microvascular flaps, especially fascio-cutaneous flaps, show an amazingly long tolerable cold ischemia time. The literature and the case we present are evidence that the application of surface cold can improve flap survival even after a long period of normothermic ischemia. It therefore seems to make sense to provide the option of surface cooling for double flaps, for example, or to use it in the event of intraoperative difficulties in order to delay a possible no reflow phenomenon.

# Sentinel lymph node detection in cutaneous melanoma using indocyanine green-based near-infrared fluorescence imaging: A systematic review and meta-analysis

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### Objective

The standard of care approach to identify sentinel lymph nodes (SLN) in clinically non-metastatic cutaneous melanoma patients is technetium (Tc)-based lymphoscintigraphy (LS). This technique is associated with radiation exposure, long intervention time, high costs, and limited availability. Indocyanine green (ICG)-based near-infrared fluorescence imaging (NIRFI) offers a potential alternative if proven to be of comparable diagnostic accuracy. While several clinical cohorts have compared these modalities, no systematic review exists that provides a quantitative analysis of their results. This systematic review and meta-analysis aims to investigate the respective diagnostic accuracy of ICG-only and Tc-only approaches in identifying SLN, metastatic SLN and metastatic patients, with a special regard to the false-negative rate (FNR).

### Methods

A systematic literature review was conducted in December 2023 on MEDLINE via PubMed, Embase, and the Cochrane Library databases. We considered clinical studies that included at least 10 patients comparing the diagnostic accuracy of intraoperative ICG- and Tc-guidance for SLNB in cutaneous melanoma patients without any additional dye. Studies were screened in accordance with the PRISMA 2020 guidelines and quantitative analysis of included studies performed following the Cochrane Handbook for Systematic Reviews and Meta-analysis.

#### Results

319 studies were identified and further screened, resulting in 7 studies included in the final analysis, which provided clinical data on 941 patients. To identified a significantly higher number of SLN and metastatic SLN in prospective studies only. However, in the overall meta-analysis of all included comparative studies, no significant difference was found regarding the identification of metastatic patients or the false negative rate (FNR).

### Conclusions

ICG-NIRFI may be a safe alternative to Tc for intraoperative guidance during SLNB in cutaneous melanoma patients, especially in the context of an advantageous adverse events profile, cost considerations, and limited availability of Tc and LS equipment in parts of the world. Future randomized controlled trials are needed, especially regarding the preoperative, transcutaneous identification of the affected lymph node basin.

## **POSTER PRESENTATIONS**

Is there an ideal thigh donor site for microsurgical breast reconstruction? Transverse upper gracilis versus profunda artery perforator flap: A systematic review and meta-analysis

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### Objective

The Profunda Artery Perforator (PAP) flap and Transverse Musculocutaneous Gracilis (TMG) flap are well established donor sites for autologous breast reconstruction, which are routinely performed by plastic surgeons around the globe. Literature suggests that PAP flaps lead to lower complication rates than TMG flaps . However, there is still no evidence on how patient satisfaction and quality of life compare between these two donor sites.

### Methods

We performed a systematic review of the literature on Embase, Medline, and the Web of Science Core Collection and conducted meta-analyses to assess the BREAST-Q scores of patients who underwent either PAP or TMG flap for breast reconstruction. We included randomized trials, prospective and retrospective cohort studies and observational studies that explicitly report BREAST-Q scores for women who underwent breast reconstruction after mastectomy with PAP or TMG flap. Two reviewers independently screened the studies and extracted data using a standardized template. We used a random-effects model for estimating the pooled overall effects.

### Results

Out of 674 abstracts screened 10 studies met our inclusion criteria. Both reconstructive techniques showed similar BREAST-Q scores in the subscales of physical well-being (PAP: 81.27 [95% CI 7.84 - 87.71]; TMG: 82.66 [95% CI 79.84 - 85.49]), psychosocial well-being (PAP: 70.04 [95% CI 64.00 - 76.08]; TMG: 77.03 [95% CI 73.03 - 81.03]), sexual well-being (PAP: 57.23 [95% CI 47.98 - 66.49]; TMG: 60.02 [95% CI 56.51 - 63.52]), as well as satisfaction with the breasts (PAP: 68.41 [95% CI 62.49 - 74.33]; TMG: 72.11 [95% CI 63.26 - 80.97]). There was a large variability within the outcomes of the investigated studies.

### Conclusions

The TMG and PAP flap both lead to equally high patient-reported outcome satisfaction and quality of life in autologous breast reconstruction. However, the large Heterogeneity of reported outcomes indicates the need for further investigation to provide a more comprehensive understanding.

## **Posters**

# Secondary knee extensor tendon reconstruction with gastrocnemius flap associated with achillen tendon: Long term functional result

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## Objective

Extensor mechanism ruptures are rare, but result in loss of active knee extension, causing significant disability. Patients with chronic patellar tendon ruptures, failed primary repair, injuries with significant loss of tendon tissue or skin coverage will require a complex reconstruction. The degree of secondary retraction, the extent of the defect, and the vitality of the tissues will determine the need for tendon transfer or muscle flap augmentation. Several reconstructive options are available, including the use of allograft, synthetic graft or autologous graft. In 1994, the use of a vascularized gastrocnemius tendon graft to reconstruct the knee extensor apparatus was first reported. Since then, a few other case reports and small case series have described similar techniques, but the literature on this surgical procedure is still limited despite its potential importance. We here describe three of our cases to demonstrate the potential indications and advantages of this technique.

### Methods

We retrospectively reviewed the medical records of three cases of patellar tendon reconstruction using a medial gastrocnemius flap . The final outcome was crutch-free gait and patient satisfaction. Additional outcomes were collected primarily for the second case, which was the best documented. These cases are reported in the light of the underlining condition with the intention of providing an overview of some typical surgical indications for this technique.

### Results

The three cases presented are two males and one female. The patients were between 58 and 74 years of age. All three had a history of multiple surgeries around the knee, had sustained a deep infection, and had failed primary repair of the patellar tendon. They presented with a skin coverage defect in addition to the chronic patellar tendon deficiency. The follow-up ranged from 3 and 10 years. At the end of follow-up all patients had a subjectively satisfactory result with a crunch-free gait .

### Conclusions

The gastrocnemius flap appears to be a viable option for addressing soft tissue defects with extensor mechanism loss, consistently delivering positive outcomes across a wide range of presentations. This muscle flap is especially robust in cases involving infection and revision surgeries, offering efficient extensor mechanism reconstruction with minimal donor site morbidity in non-athletic patients.

# Bilateral surgical resection of perianal extramammary paget's disease and reconstruction using double lotus petal flaps: A case report

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### Objective

To present a case and analyse the efficacy and outcomes of bilateral lotus petal flaps in reconstructing large perianal defects following extensive surgical resection for recurrent extramammary Paget's disease.

### Methods

A 68-year-old male patient presented with a potential recurrence of extramammary Paget's disease despite multiple previous interventions. Due to aggressive perianal skin ulceration, an extensive en-bloc resection of the perianal area was performed, combined with a lateral colostomy, followed by three successive bilateral perianal surgical excisions. The resultant large postoperative defect was reconstructed using bilateral lotus petal flaps, harvested from the inner thigh area, measuring 11x16 cm on the left and 13x18 cm on the right.

### Results

Histological analysis of the first resected area confirmed the resurgence of skin cancer. Subsequent excisions achieved complete disease removal. The reconstruction with bilateral lotus petal flaps resulted in satisfactory aesthetic and functional outcomes at follow-up, with no compromise in ambulatory functions.

### Conclusions

Bilateral lotus petal flap reconstruction following extensive perianal tumoral resection is a reliable and effective method for addressing extramammary Paget's disease in the perianal region. This approach yielded a satisfactory aesthetic result and allowed for preservation of ambulatory functions.

Third recidivism resection of schwannoma, neurotomy of the N. peroneus superficialis, nerve reconstruction with allograft and defect reconstruction with a free SCIP-flap

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### Objective

We discuss the treatment of an 18-year-old male patient suffering of a third recidivism of schwannoma of the N. peroneus superficialis and bothering skin scarring with pain in the lower left leg. The patient was already treated twice in his home country Ukraine. Currently propagated techniques for reconstruction following schwannoma are either resection with neurolysis, reconstruction with nerve or allograft or neurotomy and RPNI (regenerative peripheral nerve interface). In some cases, the defect must be reconstructed either with a local or free flap as in this case.

### Methods

18-year-old male patient suffering from a third recidivism of a Schwannoma of the N. peroneus superficialis. Resection and Neurolysis of the Nerve was already twice performed in the Ukraine. Because of scarring tissue surrounding the nerve, the patient was suffering huge pain around the anterior foot ankle. We performed and exploration of the nerve, which was degenerated over about 3 cm distance, Schwannoma cells were isolated. Because of the degeneration of the nerve, we performed a neurotomy and reconstruction with an allograft. The scarring tissue was resected, and the resulting defect of about 10 x 15 cm was covered with a free SCIP Flap from ipsilateral side (anastomosed to the anterior tibial artery).

### Results

The final result showed a very well-integrated free SCIP Flap and total relief of the patient's pain six weeks post operatively. Sensation recovery is still ongoing. No signs of neuropathies occurred. Full Range of Motion of the foot and no pain at all.

### Conclusions

In the literature several techniques are described, either resection of the schwannoma, neurolysis and performing of RPNI. In our case we resected the degenerated nerve and performed a reconstruction with an allograft. Because of the surrounding scaring tissue, we had to perform a free SCIP Flap to cover the defect. The free SCIP Flap integrated very well.

# Orthoplastic metatarsal reconstruction using a chimeric vascularized bone graft in a heavy smoker: A case report

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### Objective

Large scale bony defects caused by trauma, tumors, infection or congenital anomalies are challenging regarding reconstruction. Free vascularised fibular bone grafts (FVFGs) are a well established treatment option especially for craniofacial reconstruction. However, FVFGs can be a useful tool in interdisciplinary extremity reconstruction.

### Methods

A 63yo underwent arthrodesis of the lower ankle joint due to osteonecrosis. After 6 months osteosynthesis-associated infection was detected resulting in implant removal and subsequent large bone defect. After 6 weeks of systemic and local antibiotic therapy, bone samples were aseptic and we planned to reconstructe the medial midfoot by means of a FVFG.

The flap was harvested from the ipsilateral leg including a single-perforator based skin island to cover the columne fusion plate (Artrex) and a 3.7cm fibula graft to restore the medial foot. Vascular anastomosis to the dorsalis pedis artery and great saphenous vein - using an additional vein graft - was performed.

#### Results

Six month following surgery the patient was able to walk painless without walking aid with activ flexion/extension of 40-0-10°.

### Conclusions

Due to the fact that FVFGs provide proper blood supply, they are effective even in cases where poor vascularity is present at the recipient site, e.g. after infection or radiation.

In this case the patient was heavily smoking, had osteoporosis and did not follow strict partial weight-bearing immediately postoperatively. Despite difficult conditions, the patient was painfree, the transplant healed well and she circumvented amputation. Particularly in these border cases, interdisciplinary collaboration and good information to the patient about possible complications in a repeating manner is indispensable prior surgery.

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### Objective

Medical leech therapy is an option to treat surgically unsalvageable venous congestion in free flaps. Aeromonas hydrophila infection is a well-described complication of leech therapy in the literature. Ciprofloxacin is the most commonly recommended prophylactic antibiotic used to prevent A. hydrophila infections during leech therapy. We present a case report of a ciprofloxacin-resistant A. hydrophila infection following leech therapy.

### Methods

A 42-year-old patient with a chronic wound on the lower distal leg and a non-union of the distal tibia was presented at our department. Debridement, additional plate fixation and soft tissue reconstruction with a free anterolateral thigh flap was performed.

## Results

Postoperative venous thrombosis of the flap pedicle occurred. Two revisional procedures were performed and leech therapy was initiated after the second revision due to venous congestion. During leech therapy for five days the patient was treated with ciprofloxacin. The whole flap survived. Two days later a wound infection was seen. Swab cultures revealed Aeromonas hydrophila resistant to ciprofloxacin. The infection was successfully treated with surgical debridement and antibiotic therapy with cefepime.

### Conclusions

Infections after leech therapy are rare when using appropriate antibiotic prophylaxis and usually involve A. hydrophila. The current recommendation for antibiotic prophylaxis is ciprofloxacin. In recent years some case reports were published describing infections with ciprofloxacin-resistant Aeromonas. The potential risk for infections associated with leech therapy should not be underestimated. Based on the current literature, third-generation cephalosporins appear to be consistently effective against Aeromonas species. We therefore recommend ceftriaxone as a first-line choice for prophylactic treatment during leech therapy.

# Efficacy and safety of scar modulating combined laser interventions for the treatment of hypertrophic scars in children

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## Objective

Hypertrophic scars are particularly common in children despite all surgical progress. Management is challenging as they are frequently associated with significant morbidity: pain, functional impairment, aesthetic disfigurement and, potentially, a decreased quality of life and altered body image. Ablative fractional CO2 and pulse dye laser (PDL) have become more and more popular to improve scar quality and thus patients' subjective burden. Additionally, as those interventions are painful, they usually require general anesthesia or at least procedural sedation in the pediatric population. Only limited data is available for this patient group, for non-burn scars, patient reported outcome and procedural safety. We therefore aimed to investigate safety and outcome of repeated laser therapy for hypertrophic scars originating from burns and other conditions by means of patient and physician reported outcome measures.

### Methods

We performed a retrospective before-after analysis of laser interventions in children with hypertrophic scars. Outcome was measured using Patient and Observer Scar Assessment Scale (POSAS), Vancouver Scar Scale (VSS) and Itch-Man-Scale (IMS). Furthermore, safety with respect to either laser-related or anesthesia-related complications was assessed.

### Results

17 patients, aged 11.37  $\pm$  4.82 years with 27 scars underwent 102 distinct laser treatments, mainly combined CO2 and PDL (94%), few CO2 only (6%). VSS total score before the first and after the first session decreased significantly from 7.65  $\pm$  2.12 to 4.88  $\pm$  1.73, POSAS observer overall opinion also dropped from 5.88  $\pm$  1.57 to 4.25  $\pm$  1.70. Pruritus improved significantly. Patient age and timing of laser intervention did not have any impact on treatment response. Complication rate was low with 2% (wound infection, n=2) for laser-related and 4% for anesthesia-related (insignificant n=2, minor n=1) complications.

### Conclusions

Combined laser therapy significantly improves quality, pain, and pruritus of hypertrophic scars in children. Therefore it significantly reduces subjective burden of patients and families and may positively impact patients' body image. If provided by experienced laser and pediatric anaesthesia teams, such laser interventions are safe with a low rate of complications. Further prospective studies on ideal timing, number of interventions and ideal technical settings are necessary.

Reconstruction of soft tissue defects around the knee with free anterolateral thigh flaps using greater saphenous vein interposition grafts to the popliteal artery as recipient vessels

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### Objective

Extensive defects with a wide zone of injury or poor soft tissue condition around the knee often require microvascular tissue transfers for soft tissue coverage and closure of large cavities. However free tissue transfer to the knee can be difficult due to limited options for reliable recipient vessels. We present two cases of soft tissue defect reconstruction around the knee with free anterolateral thigh flaps using greater saphenous vein interposition grafts to the popliteal artery as recipient vessels.

### Methods

A 54-year-old patient with poor soft tissue quality around the anterior knee and proximal lower leg following multiple prior surgeries because of open tibia fracture and posttraumatic arthritis was presented at our department. Another knee replacement was planned but could not be performed due to the poor soft tissue quality. The Second case was a 40-year-old polytrauma patient presented with open proximal tibia fracture Gustilo IIIB.

In both cases soft tissue defect reconstruction around the knee was performed with an anterolateral thigh flap from the contralateral leg. A greater saphenous vein graft was harvested from the contralateral lower leg. The vein graft was used as interposition and anastomosed end to side to the popliteal artery as the recipient artery. The venous pedicle was anastomosed end to end to the ipsilateral greater saphenous vein.

### Results

Postoperative prophylactic intravenous heparin or low molecular weight heparin was given. Dangling was started on the fifth postoperative day according to our protocol. No major complications occurred postoperative. Minor complications like local wound healing disorders were treated conservative. Patients were discharged on postoperative day 8, respectively on postoperative day 20.

### Conclusions

Extensive soft tissue defect reconstruction around the knee is challenging due to the anatomical location and lack of appropriate recipient vessels for free flaps. Interposition vein grafts for arterial pedicle extension to anastomose to a major arterial vessel is a reliable option to gain adequate arterial inflow. Other options like arteriovenous loops should be considered in complex cases.



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