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ABSTRACT BOOK

# SESSION 1

# RESEARCH



# Title : Investigation in Axonal Distribution after Reinnervation of Multisegmented Peripheral Nerves

## Introduction:

Peripheral nerve lesions in the upper extremity or brachial plexus significantly impair motor and sensory functions, reducing quality of life. Advances in microsurgical techniques have enabled nerve transfers to restore function, yet clinical outcomes remain inconsistent. Especially in the reinnervation of nerves that innervate several consecutive muscles, the reinnervation of distal muscles often shows insufficient outcomes. This study investigates axonal regeneration patterns in the upper extremity comparing two different types of injury using a rat model, focusing on the musculocutaneous nerve and its branches to the coracobrachialis muscle and biceps muscles.

## Materials and Methods:

Ninety-one male Sprague Dawley rats were divided into three groups: nerve crush (A), cut and repair (B), and control (C). The proximal musculocutaneous nerve is either crushed (A) or cut and surgically repaired (B). After a 3 month recovery period, samples of the branches to the coracobrachialis and the biceps muscle, and the distal musculocutaneous nerve are harvested for axon quantification and qualitative analysis via immunohistochemical staining. Retrograde triple labeling of the reinnervated nerve and branches is performed to trace the regenerated axons into the motor neurons in the spinal cord. EMG measurements and muscle weight analysis are conducted to evaluate functional reinnervation.

## Results:

The surgical feasibility of this novel model has been proven. No adverse events related to the surgical procedure were observed. We expect to see hyper-reinnervation of the proximal coracobrachial muscle. The results of the immunofluorescent evaluation and retrograde triple labeling will be presented at the conference.

## Conclusions:

We demonstrated a model for the investigation of reinnervated multisegmented nerves using immunohistochemical staining and retrograde labeling of individual reinnervated muscle branches. The findings of this study may provide a better understanding of the neurobiological processes occurring in the reinnervated distal muscles as well as gain a deeper knowledge of the importance of distal nerve transfers and targeted muscle reinnervation.

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Title : Transcriptome and proteome of capsular contracture around breast implants mimics allograft rejection: a matched case-control study

#### Introduction:

Capsular contracture remains one of the most common and severe complications following breast implant surgery. Despite various theories, the exact molecular mechanisms driving capsular contracture remain poorly understood. This study aimed to characterize the transcriptome and proteome of capsular contracture to identify key signaling pathways and involved immune cells.

#### Materials and Methods:

Biopsies of the breast implant capsule were collected from women undergoing implant replacement after breast augmentation. Patients with capsular contracture (Baker III/IV) and healthy controls (Baker I) were included in equal numbers and matched based on implant brand, surface, plane, and rupture status. Gene expression and protein profiles were analyzed using whole transcriptome RNA-sequencing and mass spectrometry-based proteomics.

#### Results:

Analyses of biopsies from 51 breasts of 50 women revealed 1,500 differentially expressed genes and 721 differentially expressed proteins between the capsular contracture and control group. The signaling pathways upregulated in capsular contracture mimicked those in allograft rejection, involving both the innate immune system (e.g., IL1A/B, CXCI9, TREML4, CR1) and the adaptive immune system (e.g., CD80 and IFN- $\gamma$ ). Capsular contracture was associated with increased expression of macrophages, CD4+ T cells, B cells, and plasma cells, alongside upregulation of several immunoglobulins (e.g., IGHD/IGHE). Additionally, several fibrosis-related genes and proteins were significantly upregulated (e.g., MMP1, MMP7, MMP12) and downregulated (TIMP4) in breasts with capsular contracture.

#### Conclusions:

Our findings suggest that B cells play a more important role in the development of capsular contracture than previously assumed. The disease mechanism of capsular contracture resembles allograft rejection, implying that capsular contracture is a form of immunological rejection of the breast implant. Moreover, the study identified key genes associated with capsular contracture, suggesting potential therapeutic targets such as MMP1 inhibitors.

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## Title : A Comprehensive Ontology of Flaps in Reconstructive Surgery

### Introduction:

Surgical flaps play a vital role in reconstructive surgery, enabling the restoration of form and function after trauma, oncologic resection, or congenital anomalies. The variety of flap types and their corresponding anatomical, physiological, and clinical nuances present challenges for standardization in clinical practice, research, and education. Ontology modeling offers a structured approach to formalizing the diverse knowledge associated with surgical flaps by organizing the relationships between key entities such as flap composition, anatomy, and outcomes.

### Materials and Methods:

We applied the principles of ontology engineering, leveraging domain-specific knowledge from surgical literature, clinical expertise, and the Foundational Model of Anatomy (FMA) ontology. Key concepts related to surgical flaps, including tissue composition, vascular supply, donor site location, and innervation, were extracted and modeled. Logical relationships between these entities were defined to ensure comprehensive representation and facilitate interconnectivity within the ontology. The model was refined through expert review and iterative validation to ensure clinical relevance and accuracy.

### Results:

The developed ontology comprises over 50 thoroughly modelled flaps. The classification system captures the full range of flap types, from simple local random pattern V-Y flaps to complex chimeric and supercharged free flaps. The flap ontology is structured hierarchically, linked to anatomical structures and restricted logically to show necessary and sufficient conditions of every flap. Thus, every complex variation of the the same flap can be expressed in a unique flap identifying number (FIN).

### Conclusions:

This ontology provides a standardized framework that enhances the structured representation of surgical flaps. It has the potential to boost interoperability, enhance multicentric research and facilitate the help of artificial intelligence in decision making. Future developments will focus on expanding its functionality to support ongoing research and clinical workflows.

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Title : In vivo perforasome perfusion of Super-Thin and Ultra-Thin DIEP Flaps evaluated with ICG fluorescence angiography: a proof of concept

#### Introduction:

Elevation of perforator flaps in their superficial plane has become a routinary procedure in reconstructive microsurgery. Nevertheless, the safety of using thin DIEP flaps in the clinical practice has yet to be demonstrated.

The aim of this study was to evaluate in vivo perforasome perfusion of Super-Thin and Ultra-Thin DIEP Flaps using intraoperative Indocyanine Green Fluorescence Angiography (ICG-FA) in a pre-clinical setting.

#### Materials and Methods:

20 patients candidate to direct abdominal panniculectomy were enrolled in this prospective cohort study. The abdominoplasty specimen to be resected was islanded on the dominant medial row DIE perforator piercing the abdominal fascia in a circle extending 5 cm lateral and 5 cm caudal to the navel. Intraoperative ICG-FA was performed to define the baseline surface of perfusion (SOP=cm<sup>2</sup>) 90 seconds after dye injection. The flap was thinned at the level of superficial fascia (superthin group=10 patients; ST) or subdermal layer (ultrathin group=10 patients; UT), maintaining a full thickness cuff of soft tissues around the perforator 4 cm in width. ICG-FA was repeated 30 minutes after the thinning procedure to document changes in SOP.

#### Results:

Mean distance from the perforator to the midline was 3.5 cm. Flap thickness was significantly reduced in both groups regardless of the thinning method (passing from 38.2 mm to 19.3 mm and from 39 mm to 8.5 mm, respectively;  $P < 0.001$ ). Flap weight reduction showed a similar statistical significancy ( $p < 0.001$ ). Thinning at the level of the superficial fascia produced a minimal drop in SOP (from 212.34 cm<sup>2</sup> to 196.17 cm<sup>2</sup>;  $p > 0.05$ ), while UT flaps showed a statistically significant drop in SOP (from 205.75 cm<sup>2</sup> to 163.04 cm<sup>2</sup>;  $p < 0.001$ ).

#### Conclusions:

Superthin DIEP flaps can be reliably harvested at the level of the superficial fascia including the superficial venous system in the flap without significant vascular impairment. Ultrathin DIEP flaps should be carefully planned with pre-operative and intra-operative vascular imaging.

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Title : Socioeconomic factors and region of residence affect the risk of locally advanced keratinocyte carcinoma: a population-based register study

#### Introduction:

In case of delay in diagnosis and treatment of keratinocyte carcinoma, the lesions may become locally advanced and infiltrate the local tissue, causing severe damage and necessitating extensive surgery to manage. Socioeconomic factors might influence the risk of delay. This nationwide, register-based cohort study aimed to examine the association between demographic factors, educational level, disposable income, cohabitating status, comorbidity, and region of residence with tumor (T) category at the time of diagnosis.

#### Materials and Methods:

All patients with a first-time incidence of invasive basal cell carcinoma (BCC) or squamous cell carcinoma (SCC) from 2007-2021 were included and divided into two groups: non-advanced (T category of T1) and locally advanced (T category of  $\geq T2$ ) disease. Information on sociodemographic factors, comorbidity, and region of residence was obtained from several national registers and merged using the Danish unique personal identification number. We then used multivariate logistic regression to analyze the associations between risk factors and locally advanced disease at the time of diagnosis.

#### Results:

We identified 166,467 patients with BCC and 36,609 patients with SCC in the 15-year period. Being male, older, having a lower educational level and disposable income, living alone, and having a higher comorbidity burden were linked to higher odds of a T category of  $\geq T2$  at the time of diagnosis. Additionally, residence outside the Capital Region was associated with an increased risk of locally advanced BCC, while the risk of locally advanced SCC was higher for patients living in the Zealand, Central, and Northern regions.

#### Conclusions:

The study revealed significant associations between socioeconomic challenges, region of residence, and the risk of locally advanced disease at diagnosis in both BCC and SCC. Efforts to enhance early detection should focus on vulnerable individuals. Furthermore, exploration of regional differences in diagnostic delays should be the focus of future studies.

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## Title : Optimal preoperative glycemic control in diabetic patients undergoing surgery

### Introduction:

The presence of diabetes and the level of glycemic control, as indicated by glycated hemoglobin (HbA1c), significantly affect perioperative morbidity and mortality. Current evidence comes from small, single-center studies with varying analytical approaches. We aimed to examine the relationship between glycemic control based on HbA1c levels, and surgical complications across different procedures. We also sought to determine the prevalence of undiagnosed diabetes and assess whether improved glycemic management is associated with lower short-term postoperative complications.

### Materials and Methods:

This study used data from the 2021-2022 American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database. Adult patients with recorded HbA1c values were included and categorized into eight groups based on diabetes diagnosis and HbA1c levels. A variety of preoperative, surgical, and postoperative variables were extracted and analyzed using multivariate regression models.

### Results:

The study included 502,478 patients. Among diagnosed diabetics (n=179,697; 35.8%), HbA1c levels varied widely, with 4.6% having HbA1c  $\geq 9\%$ . Among non-diabetic patients (n=322,781; 64.2%), 18.1% had pre-diabetic HbA1c (5.7-6.4%) and 5.1% had diabetic HbA1c ( $>6.4\%$ ). Multivariate analysis revealed that undiagnosed pre-diabetics had a lower risk of surgical complications, while undiagnosed diabetics had higher odds of medical complications. Diagnosed diabetics with either near-normal or very poor glycemic control were more likely to experience complications. Longer hospital stays were seen in undiagnosed diabetics and diagnosed diabetics with suboptimal or poor control. Transfusion risk was lower among undiagnosed diabetics and pre-diabetics.

### Conclusions:

Glycemic variability strongly influences morbidity and mortality in surgical patients. The 23% prevalence of undiagnosed (pre-)diabetes underscores the need for routine preoperative HbA1c screening. Both low and high HbA1c levels are linked to complications, with moderate control (HbA1c 7-8%) identified as optimal. These results support the need for personalized preoperative diabetes management plans.

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# Title : Clinical and Genetic Variability in Craniosynostosis: Impact of Pathogenic Variants on Symptomatology and Comorbidities

## Introduction:

Craniosynostosis is a complex craniofacial disorder characterized by the premature fusion of cranial sutures, resulting in diverse clinical presentations and comorbidities. While many cases are labeled "non-syndromic," significant clinical variability and associated anomalies complicate this classification. This study aims to characterize the clinical and genetic profiles of craniosynostosis patients and to evaluate differences between those with and without recognized pathogenic genetic variants.

## Materials and Methods:

A retrospective review was conducted on 719 patients diagnosed with craniosynostosis over 16 years. Clinical and family histories, as well as genetic testing results, were collected. Craniosynostosis was classified into isolated, variable, or syndromic based on clinical evaluation and genetic findings. Statistical analyses included t-tests and  $\chi^2$  tests to assess clinical differences between cohorts, and logistic regression identified predictors of genetic findings.

## Results:

Among the patients, 81.25% were asymptomatic at presentation. Common symptoms included obstructive sleep apnea (10.42%), headaches (5.9%), and emesis (3.82%). Subtypes were predominantly sagittal (55.9%), metopic (25.35%), multi-suture (19.4%), and lambdoid (11.11%). Comorbidities were present in 78.47% of cases, with congenital anomalies in 68.75%. Genetic testing was performed in 288 patients, revealing pathogenic variants in 52.7%. Patients with pathogenic variants were more likely to be symptomatic at presentation, have a maternal history of miscarriage, and a higher burden of comorbidities. However, no significant differences in surgical complications were observed between those with and without genetic findings.

## Conclusions:

Patients with craniosynostosis who harbor pathogenic genetic variants experience a higher clinical burden and more comorbidities, emphasizing the importance of routine genetic testing. These findings suggest that earlier genetic evaluation may improve diagnostic accuracy and guide timely interventions, particularly in patients presenting with more complex clinical profiles.

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# Title : Macroscopic, Biomechanical, and Histological Evaluation of Nasal Septum Cartilage in Different Anatomical Regions

## Introduction:

In rhinoplasty surgeries, cartilage grafts are widely used to optimize surgical outcomes and can be obtained from various parts of the body. Among these options, nasal septum cartilage stands out due to its location in the same surgical area and its similarity to the repaired tissue. The aim of this study is to compare the elasticity, durability, and histological characteristics of different regions of the nasal septum and to evaluate whether these characteristics differ from each other, thereby providing guidance during graft harvesting.

## Materials and Methods:

In the study, nasal septum cartilage from 20 fresh-frozen cadavers was used. The nasal septum was divided into 9 equal regions. The separated sections were labeled A, B, C, D, E, F, G, H, I, starting from the dorsum and moving caudally to cranially, and from the dorsum to the septal base. The thicknesses of each section were measured. In these 9 regions, bending distances were measured by applying a pushing force using a dynamometer to bend the cartilage by 1, 2, and 3 mm. For histological evaluation, the amounts of extracellular matrix, chondrocytes, and collagen in each section were analyzed.

## Results:

The differences between the 9 regions and the pairwise comparisons were statistically significant in the evaluations. In the biomechanical assessment, regions A and B bent with lower forces, while higher forces were recorded for regions E, F, and I. In the histological evaluation, cell counts were lower in regions A, B, and D, with increased cloning observed. Regions C, E, F, and I were associated with higher collagen levels and extracellular matrix.

## Conclusions:

It has been demonstrated that different regions of the nasal septum show variations in durability, elasticity, and histological characteristics when used as cartilage grafts. Therefore, considering regional differences during graft selection is important.

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Title : Three-dimensional microscope skill acquisition: a randomised controlled study comparing laboratory tabletop microscope training, video gaming and virtual reality gaming

#### Introduction:

Mastering fine microsurgical motor skills presents considerable challenges. Approaches to microsurgical skills acquisition have evolved in line with technological advancements. Research indicates that conventional training using 2D microscopes in the laboratory setting significantly improves novices' microsurgical abilities. It remains unclear whether these skills are transferable to the 3D microscope or if gaming dexterity could play a more crucial role in skill acquisition. We present a randomised control trial comparing three interventions: conventional laboratory microscope training (LM), high-fidelity video gaming (Sony PlayStation 4 console; VG) and high-fidelity virtual reality gaming (Sony PlayStation VR console; VR), against a control group.

#### Materials and Methods:

40 medical students with no prior experience were block randomised to four groups of 10 students each: control (no intervention), LM, VG, and VR n = 10. Participants performed chicken femoral artery anastomosis using the Aesculap Aeos® 3D microscope system before and after their assigned intervention. Performance evaluation criteria included a modified structured assessment of microsurgery skills (mSAMS) score, total anastomosis time and suture placement duration, assessed by two independent, blinded evaluators.

#### Results:

Pre-intervention assessments showed no significant difference between groups. Post-intervention, the LM group demonstrated statistically significant improvements in mSAMS scores and suture placement speed compared to their baseline performance. Conversely, the VG, VR and control groups showed no statistically significant changes.

#### Conclusions:

During early stages of microsurgical training, an intensive laboratory-based training programme significantly improves a novice's anastomotic performance on a 2D microscope. Importantly, these skills appear transferable when transitioning to 3D anastomosis. In contrast, focused gaming interventions had no significant effect, with results comparable to the non-intervention group.

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# SESSION 2

## LYMPHATIC SURGERY & LOWER EXTREMITY

Title : The ideal donor and recipient sites for vascularized lymph node transfer (VLNT) for upper and lower extremity lymphedema: a retrospective cohort study

Introduction:

Vascularized lymph node transfer (VLNT) involves the autologous transplantation of healthy lymph node flaps to a lymphedematous region of the body. Despite various proposed donor and recipient sites, their long-term effectiveness and complication rates remain inadequately studied. Therefore, the goal of this retrospective study was to identify optimal donor and recipient site combinations for VLNT in upper and lower extremity lymphedema.

Materials and Methods:

Patients treated with unilateral VLNT for chronic extremity lymphedema between January 1st, 2016, and December 31st, 2023 were identified from a prospectively maintained database. Surgical effectiveness was assessed using limb circumferential measurements over time, and complications were classified using the Clavien-Dindo system.

Results:

A total of 161 patients met the inclusion criteria, comprising 132 (82.0%) patients with upper extremity lymphedema and 29 (18.0%) patients with lower extremity lymphedema. All donor sites, including 129 (80.1%) groin-based, 16 (9.9%) lateral thoracic, 13 (8.1%) mesenteric and three (1.9%) omental lymph node flaps, showed comparable long-term reductions in limb circumference for both upper and lower extremity lymphedema. For upper extremity lymphedema, axillary placement (n=125, 94.7%) yielded greater and more rapid reductions in limb circumference compared to the distal forearm (n=6, 4.5%). For lower extremity lymphedema, the lower thigh (n=18, 62.1%) was more effective than the groin (n=10, 31.0%) or the upper thigh (n=1, 3.5%) recipient sites. Complications occurred in a total of 14 (8.7%) patients and were exclusively observed in patients undergoing groin-based or thoracic-based VLNTs.

Conclusions:

Donor site selection should prioritize reducing patient morbidity given their comparable long-term effectiveness. In contrast, recipient site selection significantly affects outcomes, with axillary placement favored for upper extremity lymphedema and the lower thigh preferred for lower extremity cases. Scar tissue release may have a more significant impact on VLNT outcomes than previously recognized.

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Title : Long-term comparative analysis of the effectiveness of vascularized lymph node transfer (VLNT) and lymphaticovenous anastomosis (LVA) for the treatment of chronic lymphedema of the upper versus lower extremities

Introduction:

Efficient treatment algorithms are crucial in personalized medicine to optimize outcomes and minimize complications. While there is growing evidence supporting the effectiveness of lymphaticovenous anastomosis (LVA) and vascularized lymph node transfer (VLNT), the differences in outcomes between the upper and lower extremities remains inadequately studied. Therefore, the aim of this study was to explore this knowledge gap.

Materials and Methods:

Patients with unilateral chronic lymphedema of the upper or lower extremities treated with VLNT or LVA between 2015 and 2023 and a minimum follow-up of one year were identified from a prospectively maintained database. Patient-specific variables, including circumference measurements at predefined points on both extremities, were taken preoperatively and at 3, 6, 12, 18, and 24 months postoperatively.

Results:

A total of 264 patients met the inclusion criteria, of whom 112 (42.4%) had upper extremity lymphedema treated with VLNT (n=70, 62.5%) or LVA (n=42, 37.5%). In the lower extremity group, 152 patients (57.6%) were identified, with 29 (19.1%) treated with VLNT and 123 (80.9%) with LVA. Both VLNT and LVA led to significant improvements in outcomes for both extremities. However, lymphatic reconstruction in the upper extremity achieved significantly greater reduction rates compared to the lower extremity. Interestingly, VLNT of the upper extremity gradually lost effectiveness over time, while VLNT in the lower extremity showed improvements over time. Complications occurred in 10 (14.3%) upper extremity patients, all in the VLNT group, and in three (2.0%) lower extremity patients. Most (76.9%) complications were classified as minor ( $\leq$  Clavien-Dindo grade II).

Conclusions:

Both VLNT and LVA demonstrate reduced effectiveness in the treatment of chronic lower extremity lymphedema, possibly due to gravity-induced lymphatic fluid stasis in the lower extremity. The underlying reasons and potential implications for treatment algorithms should be further investigated.

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# Title : Utilizing the Complete Plastic Surgery Toolbox to Treat Chronic Lymphoceles and Lymphatic Fistulas

## Introduction:

Lymphoceles and lymphatic fistulas are frequent and persistent complications following surgeries near lymphatic pathways. Various conservative and surgical approaches have been described, but they often have low success rates. Clipping the lymphatic pathways can exacerbate existing lymphedema or even cause new instances of lymphedema.

## Materials and Methods:

We retrospectively analyzed patients with lymphoceles and lymphatic fistulas treated from 2016 to the present. We enhanced our standard procedures, incorporated another imaging tool, and developed a therapeutic algorithm.

## Results:

Since January 2016, we have operated on a total of 42 patients with lymphoceles or lymphatic fistulas. In 40% of these cases, prior lymph node dissection due to cancer therapy was the underlying cause. We performed between one and three procedures per patient to achieve a curative outcome. In 71% (n=30), we solved the problem with one surgery. The first step is always the reconstruction of the lymphatic pathways via supermicrosurgical lymphovenous anastomosis (LVA). Six patients required an additional flap in a second procedure. By enhancing imaging techniques with functional MR lymphography, we have refined the method of localizing the lymphatic channels that really need intervention. Following an old plastic surgery principle of performing microsurgical anastomoses outside the trauma zone, we conduct the supermicrosurgical LVA approximately 10 cm distal to the lymphocele in healthy tissue. After we have safely redirected the lymphatic inflow away from the fistula, we aim for primary wound closure. Particularly after radiotherapy, additional local or free flap surgery is often necessary to repair the damaged region.

## Conclusions:

With these improvements, we were able to simplify the microsurgical procedure and shorten the operating time. With our algorithm, we could offer a safe, well-planned option for these patients. Additionally, reconstructing the lymphatic pathway via LVA helps improve existing lymphedema or prevents the development of new lymphedema.

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# Title : RECONSTRUCTION OF BONE DEFECTS AFTER ONCOLOGICAL RESECTION WITH FREE FIBULA FLAP SUPPORTED WITH DECELLULARIZED BONE SCAFFOLD

## Introduction:

Reconstructing bone defects after oncological resections poses challenges in limb-sparing surgeries. The fibula flap is frequently preferred due to its versatility and for addressing both complex bone and soft tissue defects. Research into decellularized bone scaffolds derived from tumoral tissue shows potential for improving structural and functional outcomes. This study evaluates the oncological safety and functional recovery of fibula flaps with decellularized scaffolds compared to fibula flaps alone.

## Materials and Methods:

34 patients treated between 2010 and 2022 for oncological femoral and tibial bone defects were included in this study. Patients were divided into two groups: fibula flap (F) alone (n=19) and fibula flap supported by a decellularized bone scaffold (FS) (n=15). Surgical details, defect sizes, and postoperative outcomes were collected. Functional recovery was assessed via MSTTS scores, while bone union and hypertrophy were evaluated via RUST scores. Statistical analyses compared outcomes between groups.

## Results:

The FS group had significantly larger defects (18.6 cm vs. 12.8 cm;  $p < 0.05$ ). Functional scores were significantly higher in the FS group at 3 and 6 months post-surgery ( $p < 0.05$ ), although similar at 12 months. Bone union scores followed the same pattern. Complication rates, including infection, contracture, and union issues, and bone hypertrophy at 12 months were similar between groups, with no local recurrence or limb loss reported.

## Conclusions:

The combined use of fibula flaps with decellularized bone scaffolds offers comparable oncological safety and superior early functional recovery compared to fibula flaps alone. Further studies with extended follow-up and cohort groups are warranted.

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Title : Long-term outcomes from 149 free fibula flap reconstructions in extended bone defects of the limbs: A multicenter European study

#### Introduction:

Free vascularized fibula flap is the flap of choice for the management of segmental long bone defects after oncological resection or traumatic injury. The present study represents the most extensive retrospective multicenter data collection on free fibula flap (FFF) for orthoplastic reconstruction of extremities. The aim is to highlight surgical practice in Europe and to set the basis for updating current surgical indications.

#### Materials and Methods:

From 2009 to 2022, prospectively collected data were collected from eight European University hospitals and retrospectively analyzed. Patients who underwent free fibula flap reconstruction after traumatic injury in an acute (A-F) or late setting (L-F), as well as oncological resection (O-F), were included. Surgical data such as bone defect size, hospital stay and surgical intervention time were collected. Time to union and complications rate were considered as clinical outcomes.

#### Results:

149 patients were included in the study. The O-F group underwent significantly less surgical intervention compared to the A-F group and the L-F group, with an average of  $1.03 \pm 0.22$  surgical interventions vs  $3.75 \pm 0.64$  ( $p^{**}$ , mean  $\pm$  SEM) in the A-F group and  $5.15 \pm 0.62$  ( $p^{****}$ , mean  $\pm$  SEM) in the L-F group. Fibula loss was under 2%. No significant differences were found regarding bone healing time between the groups, with an overall time to union of 8.1 months. After FFF, 30% of patients presented bone complications (e.g non-union, refracture), with recurrent non-union most common in the L-F group (26%). After surgical revision of non unions by debridement-reimpaction, 91% of patients healed completely. 54% of non-unions could be correlated to skin paddle vascular issues and initial take backs.

#### Conclusions:

Free fibula flap reconstruction is a definitive solution for long bone defects that come with a relatively high complication rate, especially in patients who underwent multiple surgical procedures before undergoing an FFF after a traumatic injury.

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Title : Risk factors associated with adverse long-term functional outcomes in free flap reconstructions of the lower extremity

Introduction:

Lower limb reconstruction, whether needed for sequelae of severe trauma, cancer ablation or other indications, remains a significant challenge, often requiring free tissue transfers. However, the goal is not only flap survival and limb salvage, but long-term coverage of vital structures and restoration of function. Ultimately, the primary goal of surgical reconstruction of the lower extremity is to restore or maintain independent ambulation. Therefore, the goal of this study was to review our experience with free tissue transfer for lower limb reconstruction and to identify risk factors associated with adverse long-term functional outcomes despite initial microsurgical success.

Materials and Methods:

A retrospective 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 outcome was stratified using the Lower Extremity Functional Scale (LEFS). Multivariate regression analysis was used to identify risk factors for adverse functional outcomes.

Results:

466 consecutive patients undergoing 516 free flap procedures were included, recording a 95.7% microsurgical success rate. Mean follow-up was 46 months. In most cases, preoperative ambulatory status was restored postoperatively, resulting in 86.4% unassisted ambulation (12.9% assisted, 0.5% wheelchair). Evaluation of 251 LEFS-scores (average follow-up 7.8 years) showed a mean value of 55.4 points. 4 % of patients underwent secondary amputation. The most significant risk factors associated with secondary amputation were flap failure and postoperative infections, while lower LEFS-scores significantly correlated with secondary amputation and obesity.

Conclusions:

Lower extremity reconstruction remains a challenging endeavor for reconstructive surgeons, where flap survival should not be regarded as the endpoint. Functional restoration and independent ambulation should constitute the main goal, and patient specific factors should be considered for an individualized approach.

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**Title :** Revisiting the variants of the Anterolateral Thigh Flap based on 3D Microscopic Vascular Investigations

**Introduction:**

The anterolateral thigh (AL) is a versatile donor site for reconstructive surgery, well-known to be supplied by perforators from the lateral circumflex femoral artery (LCFA). However, a more detailed understanding of its microvascular architecture throughout the different tissue layers, from the deep fascia (FL) to the skin could lead to the description of useful surgical variants. This study provides a comprehensive and quantitative 3D-assessment of the vascular microarchitecture of the full-thickness flap and explores its potential implications.

**Materials and Methods:**

Twenty-two FL-to-skin flaps were harvested from fresh frozen cadaver limbs. The investigations encompassed LCFA distribution (N=11), vascular microarchitecture (N=5), and perforasomes (N=6). Using Angiofil-latex injection and X-ray microfocus computed tomography (microCT), perforator origin and distribution were evaluated, alongside quantification of vascular volume in each tissue layer and branching patterns at a microscopic level.

**Results:**

After confirming the predominance of LCFA-derived perforators in the ALT, microCT revealed four distinct interconnected vascular networks in the subfascial, intrafascial, suprafascial and subdermal planes. Strikingly, perforator vessels give rise to a dense network inside the FL, featuring arterioles with a mean radius of  $55.4 \pm 28.5 \mu\text{m}$  and a volumetric density of  $0.031 \pm 0.032 \text{mm}^3/\text{mm}^2$ . This often neglected intrinsic plexus complements the well-known suprafascial and subdermal plexuses. Quantitative evaluations demonstrated a microvascular density of  $67.5 \pm 23.2\%$  in the deep FL and suprafascial fat, with the most abundant vessels in the intrafascial and subdermal plexuses. The fascia superficialis (FS) was consistently localized between the territories supplied by suprafascial and subdermal plexuses, respectively.

**Conclusions:**

This refined understanding of the 3D-microvascular architecture of the ALT donor site supports the potential design of adiposofascial flaps with a preserved perfusion of the FL and deep fat layer. This latter vascular carrier, including both a thick mechanical supportive tissue (FL) and filling fatty tissues, has potential applications for tissue engineering, with minimal donor site morbidity.

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# SESSION 3

## BURNS AND SKIN

# Title : Cutaneous Cold Burn Injuries from Laughing Gas Cannisters: A Rising Trend of a Preventable Burn Injury

## Introduction:

Nitrous oxide, or laughing gas, was initially used as an anaesthetic and within the food industry. However, its recreational use has recently surged in the UK due to its short-term psychoactive effects. Nitrous oxide gas can cause cold burn injuries when released from its canister and contacts the skin. This study aims to highlight the increasing incidence and severity of these injuries in the context of recreational drug use within the UK.

## Materials and Methods:

A retrospective search of the International Burn Injury Database identified patients with cold burn injuries caused by nitrous oxide cannisters from 2008 to October 2024 within the UK.

## Data

on injury date, location, patient demographics, burn pattern, time to presentation was collected and analysed. Cases involving work-related injuries, assault, or irresponsible act by others were excluded, focusing on injuries from recreational use.

## Results:

199 patients sustained cold burn injuries from recreational nitrous oxide use. Number of cases increased from 1-2 per year (2011-2019) to 62 in 2022 and 64 in 2023. Greater Manchester had the greatest number of recorded cases (42). Most patients injured (74%) were aged 15-24 with an equal gender distribution. All burns resulted from recreational use. The inner thigh was the most affected area (28%), followed by a burn pattern of face, hands, feet, perineum (15%). In 66% of cases, total body surface area burned was  $\leq 1\%$ .

## Conclusions:

Nitrous oxide abuse is a growing concern with cases rising sharply within the last 2 years, particularly among teens and young adults, who may lack awareness of the risk of potential burn injuries. Many patients delayed seeking treatment, possibly due to social embarrassment. Most injuries resulted from recreational use and despite the British Government's plan in 2023 to ban nitrous oxide under the Misuse of Drugs Act 1971, these burns continue to rise.

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# Artificial Intelligence-Enhanced Multispectral Imaging for Burn Wound Assessment: Insights from a Multi-Centre UK Trial

## Introduction

Accurate burn wound assessment is essential for effective treatment, yet it remains heavily dependent on clinical judgment, which is subjective and prone to error. While various optical-based instruments have been developed to address this issue, their clinical utility has been limited due to the complexity of data interpretation, penetration depth, and feasibility.

The integration of artificial intelligence (AI) with multispectral imaging (MSI) represents a significant advancement. MSI's ability to collect complex data, providing a deeper and more accurate understanding of wound conditions, combined with AI's capacity to interpret this data and produce clear, objective, consistent, and easily reproducible outputs.

This study examines the application of AI-enhanced MSI for burn wound assessment in a Multi-centre UK setting.

## Method

We conducted a Multicentre prospective cohort study at two UK burns centres, which included patients over 18 years old with superficial to full-thickness burns that did not undergo surgery. Multispectral imaging and clinical assessment were performed on admission, and the patient followed up for 21 days. The primary outcome was the reliability and reproducibility of healing prediction, whilst the secondary outcome was the instrument's feasibility. The AI's prediction was compared to the clinical healing assessment by 21 days as the reference standard. Image J was used to analyse the images, and the statistical analyses were performed using R (version 4.4.1)

## Results

The study included 35 patients and 73 burn images, generating approximately 13 million data points. The mean age of the patients was 51, with an average Total Body Surface Area (TBSA) of 4.06%. Most burns were scalds (n=29). The AI-enhanced multispectral imaging system demonstrated a sensitivity of 80.7% (95% CI: 51.8%–100%) and a specificity of 95.5% (95% CI: 93.3%–97.8%). The overall accuracy of the system was 95.3% (95% CI: 93.2%–97.6%). The mean time from scan to result was five minutes and twelve seconds, indicating the system's high efficiency. The device was portable and effectively utilized in clinics, operating theatres, and emergency departments.

## Conclusion

Our study demonstrates that the AI-enhanced multispectral imaging (MSI) system offers high accuracy compared to clinical healing outcomes as the ground truth. Its combined attributes of diagnostic precision, operational efficiency, and portability position this device as a transformative tool for revolutionizing current clinical practices in burn wound assessment.

# Multicenter Study on AI-Assisted Burn Wound Prognosis and Optimized Treatment After Enzymatic Debridement

## Introduction:

Burn injuries, particularly deeper burns (grades IIb and III), require accurate and consistent prognosis assessments to guide treatment decisions. Enzymatic debridement offers a less invasive alternative to surgery; however, wound healing assessments are often subjective and clinician-dependent. The integration of artificial intelligence (AI) into burn care has the potential to bring standardization, objectivity, and improved treatment outcomes.

## Methods:

This multicenter, prospective study enrolled fifty burn patients from multiple German centers. Wound images were captured after enzymatic debridement and again 21 days later to track healing progression. These images were used to train a neural network that predicted wound healing, optimizing its accuracy through a loss function comparing AI predictions with clinician-annotated outcomes. AI-generated recommendations for optimal wound dressings, such as Suprathel and Kerecis, were provided to guide treatment.

## Results:

The AI system achieved a Dice Score of 0.85 in predicting wound healing, leading to enhanced agreement with clinician judgment, more precise dressing recommendations, and a reduction in operative interventions. Improved healing outcomes and streamlined dressing selections were noted, reducing healing time and minimizing complications.

## Conclusion:

AI-driven prognosis assessment post-enzymatic debridement standardizes wound care, improving precision, patient outcomes, and reducing surgical interventions.

# Title : Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis: A 15-year Regional Burn Center Experience

## Introduction:

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) constitute rare and potentially life-threatening dermal hypersensitivity reactions marked by epidermal necrosis and skin blistering. They present a substantial health care burden and a challenge to burn units. In order to advance our understanding of the rare conditions of TEN/SJS and the patient cohort at risk for mortality, we hereby report our long-term experience with the management of TEN/SJS patients.

## Materials and Methods:

For this purpose, intensive care TEN/SJS patients admitted between 2007 and 2022 to a single major burn unit in Germany were assessed. Clinical, demographic, and mortality data were collected and examined. A total of 92 patients were included.

## Results:

Mortality was 46.7%, with non-survivors being significantly older, more frequently female, and having markedly higher percentages of total body surface area (TBSA) affected. The mean age was 63 years and the mean percentage of TBSA affected was 52%. The most frequent culprit drugs that were found to have caused TEN/SJS were allopurinol and metamizole, followed by various antibiotics. In 5.4% of all cases, no TEN/SJS inducing suspect drug could be identified.

## Conclusions:

TEN/SJS present severe adverse cutaneous reactions that are marked by high in-hospital mortality rates. Age and TBSA were associated with poor prognosis in our large single-center cohort. The range of possible trigger drugs that we found associated with TEN/SJS should be considered in clinical practice.

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## It's written in the Clot: a pilot study on Burn Coagulopathy estimated by Rotational Thromboelastometry (ROTEM)

**Introduction:** Burn coagulopathy has been well-documented and is multifactorial. The sooner we detect it, the more effectively we treat it. Viscoelastic Coagulation Assays (VCAs), like Rotational Thromboelastometry (ROTEM), have already proved their superiority in the early detection of coagulopathy in trauma patients. These methods provide information for the entire coagulation pathway based on the analysis of the viscoelastic properties of clotting blood. However, their application on burns is still limited. Our study aims to evaluate coagulation disorders during the early post-burn period using ROTEM and to identify parameters that detect patients at high risk.

**Materials and methods:** This prospective study included patients admitted within the first 24 hours to the Burn Intensive Care Unit. Blood samples were taken immediately upon admission and for the next 5 post-burn days. Three ROTEM tests were performed: EXTEM; evaluating the extrinsic coagulation pathway, INTEM; evaluating the intrinsic coagulation pathway, FIBTEM; evaluating fibrinogen function. Conventional coagulation assays (CCAs), including prothrombin time (PT), activated partial thromboplastin time (PTT), international normalized ratio (INR), complete blood count (CBC), and coagulation factors were also measured during this period. Patients were divided in two groups according to their survival status.

**Results:** Seventeen survivors and ten non-survivors, with a mean total burn surface area of 33.78% ( $\pm 14,56$ ), were analyzed. FIBTEM measurements increased for non-survivors at day 2 ( $p=0,04$ ) and remained augmented for the whole post-burn period. Furthermore, EXTEM measurements on day 5 took pathological values for the same group ( $p<0,05$ ). These changes were underlined through abnormal measurements of coagulation factors for the same days, whereas CCAs were within normal rates.

**Conclusions:** CCAs are considered poor indicators of coagulation status in burn injury. In contrast, VCAs are more sensitive markers, demonstrating a hypercoagulable status in non-survivors and indicating patients at greater risk of mortality.

Title : The long-term intercorrelation between post-burn pain, anxiety and depression: a post hoc analysis of the "RE-ENERGIZE" double-blind, randomized, multicenter placebo-controlled trial

Introduction:

With innovations in burn critical care and burn survivors becoming more prevalent, a gap in the understanding of the long-term psychosocial effects of acute burn trauma became apparent. This study aimed to examine the prevalence of chronic pain, anxiety, and depression in extensive burn survivors compared to the general population, and to identify factors linked to these outcomes.

Materials and Methods:

The RE-ENERGIZE trial, an international, double-blinded, randomized controlled study, involved 1,200 patients with partial or full-thickness burns requiring surgery. For this post-hoc analysis, we excluded participants who did not complete the SF-36 questionnaire. Normative data were obtained from the 2021 National Health Interview Survey. Propensity score matching was performed, comparing chronic pain, anxiety, and depression between the burn and general population cohorts. A multivariable analysis was conducted to identify predictors of post-discharge pain, anxiety, and depression in burn patients.

Results:

The study included 600 burn patients and 26,666 individuals from the general population. After matching, both groups had 478 participants, primarily male, white, overweight, and aged 20 to 60. Burn survivors were significantly more likely to experience moderate or severe pain ( $p = 0.002$ ), higher anxiety levels ( $p < 0.0001$ ), and less likely to report being free of depression ( $p < 0.0001$ ). Chronic pain, anxiety, and depression were interrelated. Key risk factors included TBSA, female sex, and history of depression.

Conclusions:

Burn injuries are associated with chronic pain, anxiety, and depression. TBSA and history of depression strongly predict these outcomes. A multidisciplinary approach is needed for early intervention to address these psychosocial challenges in burn survivors.

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## Bloodstream Infections in Burn Patients: A Predictor of Mortality or Morbidity?

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**Introduction:** Bloodstream infections (BSI) are severe complications in burn patients, which could lead to sepsis, organ failure, and death. This study was designed to evaluate the role of BSI in predicting mortality in burn patients, while identifying key factors influencing patient outcomes. The goal is to identify high-risk patients and modify patient care strategies to mitigate these risks.

**Methods:** A retrospective analysis was conducted on 353 adult burn patients ( $\geq 18$  years old) admitted to a single Burn Center Intensive Care Unit between 2014 and 2022. Multivariate logistic regression analysis was employed to determine the impact of various clinical factors on mortality and morbidity.

**Results:** 145 severe burn patients (41%) developed a BSI and of those, only 4 (2.7%) died. In contrast 23 patients (11.2%) died in the non-BSI group indicating higher mortality rate in non-BSI patients ( $p=0.004$ ). Non-survivors were older (median 79 vs. 49 years,  $p<0.0001$ ), had higher Abbreviated Burn Severity Index (ABSI) scores (median 10 vs. 7,  $p<0.0001$ ), and larger total body surface area (TBSA) (median 35% vs. 13%,  $p<0.0001$ ). Inhalation trauma was more frequent in non-survivors (37.0% vs. 19.0%,  $p=0.043$ ), but depth of burn (IIb-III) did not differ significantly between the groups ( $p=1.000$ ). Multivariate analysis identified higher ABSI (OR 2.903, 95% CI 1.920–4.338,  $p<0.0001$ ) and age (OR 1.118, 95% CI 1.064–1.174,  $p<0.0001$ ) as strong independent predictors of mortality. Female gender, higher ABSI, and longer hospital stays increased the likelihood of developing BSI in those patients.

**Conclusion:** The analysis of these clinical variables showed that while BSI contributes to extended hospital stays, other factors play a more significant role in determining mortality. ABSI, particularly its age component, was the strongest predictor of mortality, highlighting the need for focused care in older patients and those with higher burn severity.

Title : Retrospective evaluation of survival rate from the Italian Burns National Database (anacaulase vs. standard of care) in 2577 patients and proposal for a new scoring system: the Italian Burn Score

#### Introduction:

Enzymatic debridement agent anacaulase is emerging as minimally invasive alternative to surgical escharectomy in burn injury management. However its impact on patient survival compared to the early escharectomy, the standard of care (SOC), remains unclear. This study aims to evaluate survival outcomes comparing patients treated with anacaulase to those receiving SOC.

#### Materials and Methods:

A retrospective analysis was conducted using data from the Italian Burns National Database (April 2018-May 2023), with 2577 patients included (462 anacaulase; 2115 SOC). Prognostic indices, including revised BAUX (rBAUX), Abbreviated Burn Severity Index (ABSI), Taiwan Burn Score (TBS), Prognostic Burn Index (PBI), and Belgian Outcome in Burn Injury (BOBI) score, were calculated for each patient and used for stratification into subgroups with similar burn injury severity.

Survival outcomes were analyzed using Chi-square and Mann-Whitney U tests. Univariate and multivariable logistic regression analysis were performed to create a new prognostic scoring system, the Italian Burn Score (IBS), considering age, %TBSA, %fTBSA, inhalation injury, and treatment.

#### Results:

Mortality was higher in the anacaulase group (15.60%) vs. SOC (11.80%) ( $p=0.029$ ). Patients treated with enzymatic debridement had higher %TBSA (27.18% vs. 20.47%,  $p<0.001$ ) and inhalation injury (24.2% vs. 13.9%,  $p<0.001$ ), indicating more severe conditions. Stratification into prognostic groups showed no significant survival differences between anacaulase and SOC subgroups. The IBS model estimates how enzymatic debridement impacts survival while accounting for potential overestimation.

#### Conclusions:

Although mortality was higher in the enzymatic debridement group, likely due to more severe baseline conditions, anacaulase remains a safe option for burn care. Including treatment in prognostic scores like IBS could tailor treatment strategies and improve resources allocations in burn units. Further prospective studies are required to optimize anacaulase use and validate the IBS prognostic model.

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## Title : The Buccal Mucosa Graft- a Promising Novel Treatment for Ear Keloids

### Introduction:

Keloids are historically challenging lesions which can cause a multitude of problems from functional impairment, pain, pruritus to psychological stress and poor quality of life. Treatment remains frustrating due to high rates of recurrence and lack of consensus regarding treatment strategies especially for pediatric patients. Since there has been no report of keloid formations in mucous membranes this seemed a possible new treatment method to avoid radiation and cortison injections in pediatric patients.

### Materials and Methods:

Between 01/2011 and 11/2014 six children/adolescents with ear keloids were treated by keloid excision and defect coverage with a buccal mucosa transplant. The tie-over dressing with fatty gauze was left in place for 5 days. Sutures were removed after 8 days. Because of the good results this procedure has been used for the treatment of ear keloids recalcitrant to cortison injections in adults since 2021.

### Results:

In total 17 ear keloids were resected in 14 patients. Patients age ranged from 10-60 years with the majority being female (9:5). Piercings were the most frequent cause of keloid formation (70,6 %), other causes were burn injuries (17,6%) and previous otoplasties (10,5%). The average size of resected keloids was 2,86 cm<sup>2</sup> (1-6,2cm<sup>2</sup>). Follow-up ranged from 6-165 months. So far no recurrence of the keloids was seen. One male patient needed a secondary closure of the donor site and two patients experienced increased shedding of a squamous layer of skin for three months.. All patients were pleased with the cosmetic results and experienced no further pain or pruritus.

### Conclusions:

This study demonstrates that surgical excision and transplantation of buccal mucosa is a promising new way to treat ear keloids. So far the limited availability of buccal mucosa is the only drawback of this method.

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# Title : Does Re-Epithelialization Allows for Abdominal Muscles Regeneration in Type 5 Aplasia Cutis Congenita? A Case Analysis with Ultrasound Assessment

## Introduction:

Aplasia cutis congenita (ACC) is a condition of diffuse or localized absence of skin layers. Frieden classified ACC into nine subgroups: type 5, is associated with multiple gestation and the intrauterine death of one twin, resulting in a condition known as fetus papyraceus. It has been documented in only 44 cases. We present a severe case of type 5 ACC managed conservatively and monitored for 24 months, achieving complete re-epithelialization and regeneration of the abdominal musculature, documented at ultrasound assessments for the first time in the literature.

## Case Report:

Q.Y. was born at 32 weeks via cesarean section, as surviving twin in a pregnancy complicated by loss of the co-twin. At birth, a butterfly-shaped ventral abdominal wall defect was observed, sparing the umbilicus, extending bilaterally with dimensions of 16 cm transversely and 9 cm craniocaudally. Abdominal musculature was absent, and viscera were visible. Treatment included dressings with hydrogels, later replaced by collagenase-based ointment, achieving full re-epithelialization at 3 months. Follow-up included monthly assessments of weight, abdominal and chest circumference, and ultrasound imaging. Results were compared to age- and ethnicity-matched controls, and a review of the literature and of our case serie was performed.

The patient remained stable around the 15th percentile for chest circumference and the 25th percentile for abdominal circumference. Clinical evaluations showed good body proportion, ability to maintain upright position was achieved at 12 months, and independent walking by 18 months. Monthly ultrasound examinations documented the progressive regeneration of abdominal wall muscles.

## Conclusions:

This case adds valuable insight into the effectiveness of conservative treatment for type 5 ACC, as documented in the literature and in our case series (32 patients treated in five years). To our knowledge this represents the first case with a follow-up prolonged over 18 months and documented complete regeneration of the abdominal wall at ultrasound assessment.

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## Title : Accuracy of Convolutional Neural Network Diagnosis Model in Skin Lesions

### Introduction:

The transition from machine learning to "deep learning" has introduced convolutional neural networks (CNNs) for visual data analysis, showing promise in diagnosing various medical conditions, particularly skin cancer. Han et al. developed Model Dermatology (<https://modelderm.com>; Build2021), an AI algorithm for detecting skin cancer and lesions. In this study, we retrospectively compared the preliminary diagnoses from ModelDerm for skin lesions excised in a tertiary hospital with pathological diagnoses. Additionally, ModelDerm's success was evaluated across primary and tertiary healthcare providers in a different population.

### Materials and Methods:

An archive of photographs was screened for 358 patients aged 9 and older post-2020. A total of 392 photographs were uploaded to ModelDerm, with preliminary diagnoses and risk scores recorded. ModelDerm data were compared with definitive pathology reports and analyzed using SPSS.

### Results:

ModelDerm achieved 29.74% accuracy for the first diagnosis and 55.52% for the top five preliminary diagnoses. The false positive rate was 6.23% and the false negative rate was 4.81%. It accurately identified 24.30% of benign and 43.13% of malignant cases. Risk score data did not follow a normal distribution, revealing a significant difference ( $p < 0.05$ ) between benign and malignant cases.

### Conclusions:

Convolutional neural networks (CNNs) demonstrated moderate accuracy in the preliminary diagnosis of skin lesions, providing useful insights even though limitations exist. The results indicate that deep learning-based AI models like CNNs can support the identification of malignant lesions, aiding clinicians in risk assessment and decision-making. The significant difference in risk scores between benign and malignant lesions highlights CNNs' potential for aiding preliminary evaluations. However, given their current accuracy limitations, these models should be viewed as complementary tools to clinical expertise and pathological analysis, rather than standalone diagnostic solutions. Further studies with larger, diverse datasets are needed to enhance the diagnostic precision of CNN-based systems in clinical practice.

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**SESSION 4**  
**FACIAL NERVE,  
HEAD & NECK AND  
CRANIOFACIAL**

## Title : Paediatric Corneal Neurotization

### Introduction:

Corneal neurotization is a fast-evolving surgical procedure for the treatment of moderate to severe neurotrophic keratopathy. The technique aims to restore surface sensation by transferring healthy nerves to the anaesthetic cornea. We present our experience as the largest European case series of paediatric corneal neurotization.

### Materials and Methods:

All patients who underwent corneal neurotization surgery were reviewed from 2016-2023. Data collected included patient demographics, primary pathology, any previous surgical or non-surgical management, extent of corneal damage, operative time, surgical method used, post-operative corneal sensation, and any complications. All cases were evaluated and performed as joint procedures within our established paediatric corneal neurotization multi-disciplinary team.

### Results:

19 paediatric corneal re-innervations were carried out in a total of 14 patients (9 males, 5 females): there were 5 bilateral cases. There were 6 cases of congenital corneal anaesthesia due to anterior segment dysgenesis, trigeminal aplasia, pontine tegmental cap aplasia or Stuve-Wiedemann syndrome. Acquired causes included tumour resection, brainstem haemorrhage and infection. Indirect corneal neurotization was performed in all cases, mainly with retrograde sural nerve grafts or medial antebrachial cutaneous nerve graft (n=1). Donor nerves were the ipsilateral or contralateral supraorbital and supratrochlear nerves (n=12), great auricular nerve (n=6) and infraorbital nerve (n=1). All patients had corneal sensation restored and/or an objective reduction in the need for lubricants and improvement in ocular surface. Complications included infection (n=4), recurrent ulcerations requiring surgical management (n=1), and donor nerve tethering due to previous surgery (n=1).

### Conclusions:

Our results demonstrate that paediatric corneal neurotization is a safe, effective and transformative surgical technique. In the paediatric population, the primary pathology is varied and complex, therefore this surgery should only be considered within the context of an experienced multi-disciplinary team.

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# Title : Molecular Alterations in Nociceptive and Mechanosensitive Properties of the Trapezius Fascia in Occipital Neuralgia Patients

## Introduction:

Headache surgery has now been well-established as a viable option for those suffering from chronic head pain or occipital neuralgia refractory to conventional treatment modalities. The surgery involves decompression or neurectomy of the affected nerves, namely the major or minor occipital nerves. While occipital neuralgia surgery shows promising reduction in painful perception, the causal neurobiological mechanisms of occipital neuralgia or potential nerve compression remain scarcely explored. We analyzed fascial tissue in patients undergoing neurolysis of the occipital nerves using specific molecular markers for nociceptive or mechanosensitive perception.

## Materials and Methods:

Eleven patients (mean age 43; 54% female) with occipital neuralgia were enrolled in the study. Tissue samples (major and minor occipital nerves and trapezius fascia) were harvested during decompression and neurectomy procedures. Additionally, uninjured trapezius fascia samples from patients with no history of chronic headaches (n=5) undergoing spinal closure procedures were harvested as a control. The specimens were processed for multicolor immunofluorescence staining using specific molecular markers (neurofilament, PGP9.5, CGRP, Piezo2, S100). The images were acquired using a confocal microscope, and z-stacked images were compiled for 3D-reconstruction.

## Results:

All patients' major (n=4) and minor (n=7) occipital nerves showed signs of nerve compression based on the axonal architecture. Fascia tissue specimens demonstrated a vast neural network encompassing axons of different calibers (0.2-3  $\mu\text{m}$ ). Additionally, the fascia of headache patients showed high CGRP expression levels within the neural components compared to the control samples, indicating an adrenergic nociceptive nature of these axonal populations. Moreover, specific fluorescence staining of consecutive slices of the fascia samples revealed mechanosensitive entities resembling Meissner corpuscles across the fascia samples.

## Conclusions:

The findings of this study suggest that pathological fascia tissue contributes to the nociceptive perception in occipital neuralgia patients. Moreover, the nociceptive and mechanosensitive neural network within the fascia tissue may shed light on the intrinsic neurobiological pathomechanism responsible for occipital neuralgia.

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Title : Evaluating functional reanimation combined with static and aesthetic resymmetrization of the paralyzed face in 67 patients

#### Introduction:

Leading to functional and aesthetic deficits facial palsy severely impairs quality of life of affected patients. To determine treatment and outcome in our tertiary multidisciplinary facial nerve center, a retrospective observational study was performed of all patients treated between 2019 to 2024.

#### Materials and Methods:

Observer-based analysis of facial function House-Brackmann-Score (H&B) was compared to facial palsy-specific patient reported outcome measure (PROM) gradings of the FACE-Q scale. Descriptive statistics for all assessed measurements were analyzed and correlations were calculated to compare facial palsy-specific instruments, as well as observer-based grading.

#### Results:

Sixty seven patients (80% female, median age 49 years) with acute and chronic facial palsy were included. A severe palsy (H&B °V-VI) was recorded in 59% while moderate palsy (H&B °III-IV) was treated in 19%. Etiology of palsy was facial nerve affection by neuroma resection in 68%, other etiologies were neurofibromatosis, idiopathic palsy, cavernomas and meningiomas. Thirty five peripheral nerve transfers were conducted and in twenty five cases combined with ancillary symmetrizing static or cosmetic procedures such as bullhorn liplift, blepharoplasties or browlift procedures. Reconstructing the motor unit by functional muscle transfer was required in eight cases. Revisions of three cases were due to unfavorable lid chains and sufficient reinnervation. Patient satisfaction was highest in patients receiving invasive treatment for mild palsy (H&B ° I-II), followed by patients with severe impairment. PROM of social function and satisfaction was lowest in the moderate palsy group despite improvements in smiling and eating distress functional scores.

#### Conclusions:

To fully assess the burden of disease of facial palsy patients, validated disease-specific assessment should be applied in addition to standardized observer-based ratings. Along with physical function of the facial nerves and muscles, effects of social and psychological function highly influence the quality of life. All functions need to be considered in reconstructing, reanimating and resymmetrizing the paralyzed face.

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# Title : Optimizing Facial Palsy Treatment: Masseteric Nerve Transfer and Neuroplasticity in Achieving Spontaneous Smile

## Introduction:

Facial nerve palsy can lead to significant impairment of facial dynamics, particularly affecting spontaneous smiling. Among reanimation techniques, masseteric nerve transfer has shown potential due to its proximity to the facial nerve in cortical motor areas. This study aims to evaluate the functional outcomes and neuroplastic changes associated with the use of the masseteric nerve in smile restoration for patients with facial paralysis.

## Materials and Methods:

Our study included 49 patients with short-term facial paralysis, treated with masseteric-to-facial nerve transfer. Functional outcomes were evaluated using the House-Brackmann scale and the Facial Clima system, while spontaneous smiling was assessed subjectively and through post-surgical follow-up. Neuroplastic changes were explored using functional MRI (fMRI) to assess cortical activation patterns during smiling and jaw-clenching tasks.

## Results:

The cohort showed a 90% success rate in achieving a strong, symmetrical smile. The Facial Clima system demonstrated significant improvement in commissure displacement and contraction speed. Notably, 85% of patients exhibited spontaneous smile recovery, aligning with hypotheses of cortical reorganization. fMRI results supported cortical overlap between the facial and masseteric motor areas, indicating neuroplastic adaptation.

## Conclusions:

Masseteric nerve transfer effectively restores smile function in facial paralysis patients, with a high rate of spontaneous smile recovery. The observed cortical overlap between the masseteric and facial nerves indicates that neuroplastic adaptation plays a crucial role in this recovery. These findings support masseteric nerve transfer as a reliable and efficient method for dynamic facial reanimation, offering significant functional and aesthetic benefits.

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Title : Can a spontaneous smile be surgically created in Moebius syndrome?

#### Introduction:

Moebius syndrome is a rare congenital syndrome characterised by absent function of the facial nerve, usually bilateral. Reanimation surgery using a free gracilis muscle connected to the nerve to masseter (NTM) is commonly used. This paper assesses the success of this approach in producing a spontaneous, emotionally driven smile in this cohort. A review of methods to assess of spontaneity of smile is included.

#### Materials and Methods:

A retrospective, case note review looked at a consecutive series of patients with Moebius syndrome treated with a free muscle transfer using NTM as a motor for primary reanimation surgery. Clinical assessment; standard photo and video and patient/ family interview were used to assess smile spontaneity. This was defined as a smile which the patient and/ or family members feel is triggered spontaneously, and the subject is not aware of teeth clenching to initiate the smile. An independent assessment of the patients clinically and using video images was also made. A control group of non Moebius patients were similarly assessed.

#### Results:

10 patients were assessed from the Moebius syndrome group of whom 7 felt they had a spontaneous, emotionally driven smile and 7 were independently assessed as having a spontaneous smile. Of the control group, 16 patients were assessed of whom 7 felt their smile was spontaneous and 8 were independently assessed as having a spontaneous smile. There were no flap failures and one post operative haematoma in this series.

#### Conclusions:

A significant proportion of patients with Moebius syndrome had a smile created surgically which was used spontaneously. The proportion in this small series is greater than that in a control group of different aetiologies who had the same surgery. We postulate that Moebius syndrome could be a group of patients where reanimation with the NTM has a high chance of creating a spontaneous smile.

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## **The free serratus anterior musculocutaneous flap: from 'simple' facial coverage to functional total lower lip reconstruction.**

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**Introduction:** Free flaps are essential in addressing complex reconstructions, but the serratus anterior musculocutaneous flap remains underutilized compared to more common options. This flap offers notable advantages, including a long pedicle, pliable skin, minimal donor site complications, a well-concealed scar in the inframammary fold, and the possibility of reinnervation. However, concerns about skin paddle vascularization limit its popularity. This study aims to evaluate the consistency of the cutaneous component and its effectiveness in functional facial reconstruction.

**Material and Methods:** We conducted a retrospective review of patient records from our department, focusing on cases involving serratus anterior musculocutaneous free flap reconstructions between 1997 and 2023. We analyzed data on patient demographics, surgical indications, flap success rates, and complications.

**Results:** Out of 57 cases, three muscular flaps in chimeric constructs were excluded. The remaining 54 cases involved musculocutaneous free flaps for facial reconstruction, mainly addressing Noma-related defects. Nearly 74% of cases involved pediatric patients. The serratus anterior flaps demonstrated a 98% survival rate with a 92% reconstructive success rate. Two flaps were used for functional lower lip reconstruction with neurotization of branches of the facial nerve and the submental nerve. Complications included one complete flap failure, one instance of near-total skin paddle necrosis, and two cases of partial necrosis linked to flap harvesting issues.

**Conclusions:** The serratus anterior musculocutaneous flap is a reliable and adaptable option for facial reconstruction, offering potential for reinnervation. Its versatility may allow for expanded use in other anatomical regions. Further research is needed to refine its application in functional facial reconstruction, particularly regarding its potential for reinnervation.

# Title : Supraclavicular Artery Island Flap for Head and Neck Oncologic Reconstruction: 15-year Experience, Past, Present, Future

## Introduction:

Head and neck reconstruction poses unique challenges due to the complex structure of the region. Primary goals include soft-tissue coverage, adequate color and texture match, and minimal donor-site morbidity. Local and musculocutaneous regional flaps have largely been replaced with microvascular free flaps (MVFF) over recent years. The supraclavicular artery island flap (SCAIF), a locoregional, fasciocutaneous, axially-based flap, has been shown to produce similar outcomes to FFF. We present our 15-year experience using the SCAIF for head and neck reconstruction, discuss its evolution, and provide case examples for its range of indications.

## Materials and Methods:

Retrospective chart review identified 128 patients who underwent reconstruction of the head and neck with the SCAIF between the years 2006-2021. Patient demographics, lengths of stay, operative times, surgical indications, and complications were recorded.

## Results:

The cohort mean age was 66.9 years. Mean lengths of stay and follow-up times were 6.9 days and 9.1 months, respectively. The most common indications for SCAIF reconstruction were recurrent radiated neck disease (n=27, 21.1%), pharyngeal wall defects (n=23, 18.0%), and parotidectomy defects (n=21, 16.4%). Overall complication rate was 17.2%. Partial thickness flap loss (5.5%), contained pharyngeal leak (3.2%), and distal tip necrosis (2.4%) were the most common complications. No functional donor site morbidity was encountered.

## Conclusions:

The SCAIF is a versatile, fasciocutaneous, axially-based flap able to produce similar outcomes to microvascular free flap cases in the reconstruction of the head and neck region while reducing costs in lengths of stay, operative times, and donor site morbidity. Working closely with the head and neck oncologic team in team approach is also paramount for patient selection and planning.

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## Title : An Algorithmic Approach to Skin Incisions in Alloplastic Microtia Reconstruction

### Introduction:

In porous polyethylene (PPE) microtia reconstruction, since the framework used is prefabricated, the primary focus shifts to the proper placement of the soft tissue coverage. The planning of the surgical incision is critical to ensure the aesthetic coverage of the framework in alignment with the ear's aesthetic subunits.

This study aims to establish an algorithmic approach for determining appropriate skin incisions based on microtia subtypes in PPE microtia reconstruction and to evaluate the surgical outcomes.

### Materials and Methods:

Patients who underwent PPE ear reconstruction between October 2023 and June 2024 were retrospectively reviewed, recording the microtia subtype, laterality, incision type and complications. Glasgow Benefit Inventory (GBI) scoring was performed preoperatively and at 6 months postoperatively, while the Akter scale was administered at the 6th month.

### Results:

Fifteen patients (16 ears) were included: 14 with unilateral microtia and one with bilateral microtia. Microtia types were classified as two type 2, nine type 3, and five type 4 cases.

Type 1 (midline) incisions were used for nine unilateral type 2 and 3 patients, while type 2 (perimastoidal) incisions were used for five type 4 cases and both ears of the bilateral microtia patient. Postoperative GBI scores significantly improved ( $p < 0.05$ ). Akter scale scores (0-5) averaged 4.3 for ear appearance, 4.1 for aesthetic subunits, 4.4 for donor site, 4.8 for psychosocial evaluation. Mean follow-up was 7 months (6-13). One implant was removed due to extensive exposure and three patients required revision surgery (two occipital fascia, one deep temporal fascia flap).

### Conclusions:

In this study, the described algorithm allows for skin incisions to be determined based on microtia subtypes. This enables the soft tissue (fascia and skin grafts) coverage to be planned according to the ear's aesthetic subunits and contributes to the reconstruction of the postauricular sulcus depth during the same stage, one of the key advantages of PPE reconstruction.

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Do you have any disclosures? No

# Title : CT-Based Orbitometrics in Crouzon Syndrome: Establishing Normative Data and Surgical Implications

## Introduction:

Soft tissue landmarks for the orbital rim relative to the apex cornea have been described in syndromic craniosynostosis since the 1990s. However, recent studies lack true preoperative data and focus primarily on bony landmarks. This study aims to quantify the orbital rims and adjacent soft tissue relative to the globe in Crouzon syndrome patients and establish normative data from healthy controls.

## Materials and Methods:

CT scans from a multi-institutional craniofacial imaging database of unoperated patients with Crouzon syndrome under 18 years of age were analyzed. A cohort of control subjects with head CT scans was used to establish normative data. Using 3D Slicer, 32 unique anatomical landmarks in the periorbital region were marked across all subjects. A custom Python script was developed to generate 27 measurements, including linear, angular, and ratios.

## Results:

Data were collected from 42 patients with Crouzon syndrome and 78 control subjects. Significant midface retrusion was observed in patients with Crouzon syndrome, particularly at the inferior orbital rim, which was positioned 15.82 mm posterior to the apex cornea (vs. 5.91 mm in controls). The superior orbital rim was retrusive by 7.24 mm (vs. 2.57 mm in controls). Other notable retrusions were observed at the nasion (4.54 mm), superior (4.66 mm), inferior (9.91 mm), and lateral orbital rims (6.21 mm) compared to controls. Soft tissue measurements followed similar trends.

## Conclusions:

Utilizing freely available 3D modeling software and CT data allowed for comprehensive bony and soft tissue analysis in patients with Crouzon syndrome. These findings suggest that, on average, a minimum advancement of 10 mm for the infraorbital rim, 5 mm for the superior orbital rim and nasion, and 6 mm for the lateral orbital rim is recommended. This objective framework provides a valuable reference for determining the extent of frontal-facial surgery and monitoring long-term outcomes.

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## Title : Evaluation of the Effect of Midface Suspension in Tripod Fractures

### Introduction:

Tripod fractures, or zygomaticomaxillary complex fractures, involve breaks in the frontozygomatic, zygomaticomaxillary sutures, and zygomatic arch, typically resulting from high-energy trauma. These injuries can cause significant aesthetic and functional impairment. Open reduction and plate-screw fixation are standard treatments, but complications like midface sagging and lower eyelid ectropion may arise due to midface dissection. Various techniques, including facial taping and canthopexy, have been attempted to prevent midface sagging, but their effectiveness remains limited. In our clinic, midface suspension to the infraorbital plate has been introduced to address these issues. This study aims to evaluate the long-term outcomes of this technique.

### Materials and Methods:

This retrospective study examined patients treated for tripod fractures from January 2022 to January 2024. Inclusion criteria were clinical and radiological diagnosis of tripod fractures, lower lid infraorbital dissection, and a follow-up period of at least six months. Patients with additional facial injuries, pediatric cases, or missing data were excluded. Patients were divided into suspension (n=16) and control (n=22) groups. All underwent open reduction and fixation. The suspension group received midface soft tissue suspension using fusible sutures. Data, including CT images and standardised photographs, were analysed at six months postoperatively. CT-derived measurements and Schoenrock analysis evaluated malar projection and soft tissue suspension efficacy.

### Results:

A total of 38 patients (16 with suspension, 22 without) were studied. No significant differences were found between groups for age, gender, or preoperative soft tissue ratios ( $p>0.05$ ). However, postoperative soft tissue ratios (YM2/YM1) were significantly higher in the suspension group ( $p<0.001$ ). Schoenrock analysis also showed a significant difference between groups ( $p<0.001$ ). Complications like ectropion were less frequent in the suspension group.

### Conclusions:

Midface suspension in tripod fractures effectively prevents ectropion and midface sagging, providing both functional and aesthetic benefits.

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# SESSION 5

## BREAST RECONSTRUCTION

# Title : Reuse of the Internal Mammary Vessels as a Recipient Site in Secondary Autologous Breast Reconstruction: A Retrospective Analysis

## Introduction:

Secondary breast reconstruction following a failed autologous procedure presents unique challenges, particularly with the use of recipient vessels. Traditionally, the internal mammary vessels (IMV) are favored as the primary recipient site but are often deemed unsuitable for secondary reconstruction due to prior anastomosis or ligation in the initial reconstruction. Alternative flaps often have shorter pedicle lengths, which can pose challenges such as lateralization of the breast mound when anastomosed to secondary recipient vessels. In this study, we review our experience with reuse of the internal mammary system as recipient vessels in salvage breast reconstruction.

## Materials and Methods:

A 12-year retrospective review (2012 - 2024) conducted at a single institution identified seven patients who underwent secondary autologous breast reconstruction after autologous flap failure. All flaps were anastomosed to the IMV, both during the primary reconstruction and during the salvage reconstruction. In the salvage reconstruction, the IMV were prepared at a rib level different than the index reconstruction. Patient characteristics, demographic data, perioperative details, and postoperative outcomes were collected and analyzed.

## Results:

Eleven flaps were used to reconstruct nine breasts in eight patients. One patient received bilateral reconstruction, and seven unilateral. The mean age was 56.3 years, mean BMI 27.9, mean flap weight 452.4 grams, and mean operative time of 306.1 minutes. Follow-up time averaged 243 days. Two cases required a return to the operating room for vascular compromise, both of which were successfully managed. There were no cases of flap loss.

## Conclusions:

Internal mammary vessels can be safely reused in salvage autologous breast reconstruction, even in the case of prior ligation, providing a viable option for patients facing complex reconstruction scenarios.

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# Title : Use of Diced Cartilage for Management of Internal Mammary Vessel Exposure Sites in Autologous Breast Reconstruction

## Introduction:

Exposure of internal mammary vessels in autologous breast reconstruction often requires removal of a rib cartilage segment, which can lead to contour deformity in the craniomedial breast pole. This study evaluated the use of diced cartilage (DC) to counteract substance loss in the microvascular anastomosis area, and investigated safety and suitability of the procedure to avoid postoperative deformities.

## Materials and Methods:

This retrospective, single-center cohort study included all breast reconstructions in which DC was used from October 2021 to June 2023. Reconstructions using DC were subdivided based on previous exposure to breast radiotherapy (DC vs. DCR). The control group consisted of an equal number of consecutive reconstructions performed prior to the use of DC. The effect of DC on breast contour preservation was investigated using breast magnetic resonance imaging (MRI; > 6 months post-op) and photographic documentation (6-month follow-up).

## Results:

Diced Cartilage was used in 114 of 173 included reconstructions (DC, n=55; DCR, n=59; Control, n=59). MRI analysis revealed less soft tissue sinking into resection zones in both DC groups (DC  $0.2 \pm 1.3$  mm vs. control  $6.0 \pm 1.6$  mm,  $p = 0.002$ ; DCR  $0.4 \pm 1.6$  mm vs. control  $6.0 \pm 1.6$  mm,  $p < 0.003$ ). Previous irradiation did not affect DC stability. The photographs indicated that there were no deformities after DC use, but deformities occurred in 13,6% of control group patients ( $p < 0.05$ ). Flap failure did not occur in any group.

## Conclusions:

DC is a safe procedure that prevents contour deformities associated with rib cartilage segment removal in breast reconstruction, regardless of prior breast irradiation.

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**Title :** Costal cartilage resection as a predictor of postoperative pain in DIEaP flap breast reconstruction

### **Introduction:**

Some studies suggest women experience more postoperative pain after rib cartilage resection in DIEP flap breast reconstruction compared to rib-sparing techniques. However, limited evidence supports this. This study investigates whether the rib-sparing technique results in less postoperative pain in a broader patient population.

### **Materials and Methods:**

Patients who underwent primary, secondary, or tertiary DIEP flap breast reconstruction (unilateral or bilateral) in a single center (between April 2018 and November 2019) were prospectively identified. The surgeon recorded whether a partial or total rib cartilage resection was performed.

Postoperatively, patients rated pain at the recipient site at three weeks and three months using the Visual Analogue Scale (VAS). Potential confounding factors (age, BMI, laterality, timing of reconstruction, previous chemotherapy/radiation therapy, flap weight) were analyzed.

### **Results:**

A total of 42 patients (34 unilateral, 8 bilateral) were included, with a mean age of 54 years (range 36-75). Rib cartilage resection was avoided in 72% of reconstructions (36/50), while 28% (14/50) underwent partial (3) or total (11) resection.

At 3 days post-op, the rib-sparing group reported a mean VAS score of  $0.6 \pm 0.6$  compared to  $3.0 \pm 1.5$  in the rib-resection group ( $p < 0.001$ ). By 3 weeks, the scores were similar:  $1.8 \pm 2.1$  (rib-sparing) and  $1.9 \pm 2.7$  (rib-resection), with no significant difference ( $p = 0.44$ ). At 3 months, the scores were nearly identical. BMI was weakly correlated with pain (correlation coefficient = 0.145,  $p = 0.316$ ). A significant difference was noted between patients with prior chemotherapy/radiation therapy and those without at 3 months ( $p = 0.045$ ).

### **Conclusions:**

The rib-sparing technique results in less postoperative pain at 3 days compared to rib resection. To minimize pain, rib resection should be avoided; however, further studies are needed to confirm these findings.

# Title : The Role of Neoadjuvant Therapy's Effect on the Histopathological Structure of Arteries in DIEP Flap Breast Reconstruction and Its Clinical Outcomes

## Introduction:

Radiotherapy (RT) and chemotherapy (CT) are vital in breast cancer treatment, improving survival and reducing recurrence. The Deep Inferior Epigastric Artery Perforator (DIEP) flap is the gold standard for breast reconstruction. However, the effects of neoadjuvant therapy on the histopathological structure of the Internal Mammary Artery (IMA) and Deep Inferior Epigastric Artery (DIEA) and its impact on flap success remain unclear. This study aims to evaluate the histopathological changes in arteries in patients undergoing DIEP flap reconstruction after neoadjuvant RT and/or CT and to analyze their effect on clinical outcomes, such as anastomosis time and flap success.

## Materials and Methods:

Patients who underwent DIEP flap reconstruction between 2019 and 2023 were included. Histological samples from the IMA and DIEA were analyzed for tunica media thickness, lumen area, intimal atherosclerosis, and elastic fiber fragmentation. Patients were divided into three groups: no treatment, CT only, and RT+CT. Age, anastomosis times, and flap survival were evaluated.

## Results:

Eighty-three patients were analyzed (27 no treatment, 34 CT, 22 RT+CT). No significant differences were found between groups regarding tunica media thickness, lumen area, or intimal atherosclerosis in the IMA and DIEA. Anastomosis times were significantly longer in the RT+CT group compared to CT only, but no differences in flap loss were observed.

## Conclusions:

Neoadjuvant RT and/or CT did not cause significant histopathological changes in the recipient or pedicle arteries, nor did it affect flap success. Therefore, DIEP flap reconstruction remains safe and effective in patients undergoing neoadjuvant therapy.

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## Introduction:

Nipple-sparing mastectomy (NSM) results in injury to intercostal nerves (ICNs) and decreased sensation to the nipple areolar complex (NAC). Neurotization at the time of implant-based reconstruction may preserve sensation to this area. Neurotization is typically done using allograft or branches of ICNs; however, autografts, using the main ICN, may offer an alternative approach with minimal donor site morbidity and the potential for superior outcomes.

## Materials and Methods:

Bilateral chest dissections were performed on two female, fresh frozen cadavers. Harvested nerves were measured and their lengths recorded.

## Results:

A total of 13 ICNs (T2-T5) were harvested from two female, fresh frozen cadavers. The average length of a harvested ICN was 9.5cm +/- 1.27cm. The longest nerve harvested was a T2 nerve measuring 12cm and the shortest was a T3 nerve measuring 7.5cm. The longest commercially available allograft nerve measures 7.0 cm in length. All ICNs reliably reached the NAC in vivo without a sizer in place. T2-T5 nerves also reliably reached the NAC with the 370cc MPX and 440cc MPX sizers in place. T3 and T4 nerves were able to reach the NAC under some tension with the 465cc HPX and 650cc UH sizers in place.

## Conclusions:

Successful neurotization and restoration of NAC sensation after NSM may prevent accidental injury and improve patients' quality of life. Based on this cadaveric study, ICNs can be harvested at the time of NSM to provide suitable autografts for immediate NAC neurotization, without adding significant operative time. This allows for NAC re-sensation in regions where cadaveric tissue may not be available due to expense or regulations. Evaluation, comparison and implementation of this technique coterminous to established neurotization techniques using allograft will expand future treatment options for patients.

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## Title : High BMI, Thin Abdominal Wall? An Adjunct Method of Determining DIEP Patient Eligibility

### Introduction:

BMI cutoffs ranging from 30.0 to 32.7 kg/m<sup>2</sup> have been recommended to mitigate post-operative complications in autologous breast reconstruction. Studies have reported conflicting results regarding complication rates when stratified by BMI. Notably, no prior studies have utilized this method of abdominal wall thickness measurements. This study employs a new measuring method and evaluates the relationship between abdominal wall thickness and post-operative complication using a large, multi-institutional, DIEP-specific database.

### Materials and Methods:

A retrospective chart review of 793 patients (1310 flaps) who underwent DIEP reconstruction from November 2017 to May 2024 at two medical institutions was conducted. Demographics, history, operative course, and complications were reviewed. Subcutaneous abdominal wall thickness was measured on CTA at four landmarks: one-third the distance from the umbilicus to the most lateral point of left and right abdominal wall, and 5 cm above and below the umbilicus.

### Results:

The mean age and BMI of included women was 50.54 years and 30.34 kg/m<sup>2</sup> respectively. BMI was strongly correlated with abdominal wall thickness ( $r = 0.68$ ,  $p < 0.001$ ), and both variables were strong predictors of complication rates ( $p < 0.001$ ,  $p < 0.001$ ). Patients were stratified by BMI (<25, 25-30, 30-35, and >35) and abdominal thickness (<20 mm, 20-40 mm, and >40 mm). In each BMI group, all patients with outlier abdominal thicknesses were analyzed. Three out of four patients with low BMI <25 and thick abdominal walls experienced complications. All four patients with high BMI >35 and thin abdominal walls had zero complications. Using logistic regression modeling, the threshold wall thickness was determined to be 29.16 mm.

### Conclusions:

Abdominal wall thickness may serve as a valuable tool in determining DIEP flap eligibility, particularly for patients with a high BMI and thin abdominal wall, or vice versa. Logistic regression model suggests a threshold abdominal wall thickness of 29.16 mm.

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Title : Limited impact of body mass index on the risk of postoperative complications after implant-based breast reconstruction: A retrospective cohort study of 1,847 patients

Introduction:

Elevated body mass index (BMI) has been linked to increased risk of complications following implant-based breast reconstruction, and previous studies suggest obese patients should undergo delayed rather than immediate breast reconstruction. However, the impact of increasing BMI within the normal to overweight range (18.5-30kg/m<sup>2</sup>) remains underexplored. This study aims to examine the association between BMI and complications and evaluate differences in risk of implant loss between patients undergoing immediate and delayed reconstruction.

Materials and Methods:

Consecutive patients who underwent implant-based breast reconstruction from 2010-2023 at three plastic surgical departments were analysed with BMI as a continuous variable. The primary outcome was implant loss stratified by immediate versus delayed reconstruction. Secondary outcomes included implant infection, seroma, hematoma, and flap necrosis. All outcomes were analysed with multivariate cox-regression. Additionally, pointwise comparisons using one-sample t-tests of the estimated absolute risks at BMI 23kg/m<sup>2</sup> versus 30kg/m<sup>2</sup> were made for all outcomes to analyse the magnitude of risk.

Results:

We included 1,847 patients (2,631 breasts) with a median BMI of 23.3kg/m<sup>2</sup> (IQR21.0-25.8, range 17.1-36.9). In immediate reconstruction, BMI was significantly associated with increased risk of implant loss (P=0.04), but not after delayed reconstruction (P=0.22). Overall, BMI was significantly associated with risk of implant infection (P=0.003) and seroma (P<0.001), but not hematoma (P=0.42) or flap necrosis (P=0.98). The absolute risk difference for implant loss between patients with BMI 23kg/m<sup>2</sup> (6.2%) and 30kg/m<sup>2</sup> (8.2%) was 2.0% (95%CI -2.9-6.8) for patients undergoing immediate reconstruction. The risk differences between BMI 23kg/m<sup>2</sup> and 30kg/m<sup>2</sup> were 2.9% for implant infection (P=0.008), 7.4% for seroma (P<0.001), -1.2% for hematoma (P=0.86), and -0.9% for flap necrosis (P=0.77).

Conclusions:

Small absolute risk differences for complications between patients with BMI 23kg/m<sup>2</sup> and 30kg/m<sup>2</sup> suggest that patients with BMI ≤30kg/m<sup>2</sup> should not be discouraged from implant-based breast reconstruction. However, delayed reconstruction may be a safer option for patients with higher BMI.

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Title : Effect of a multimedia-assisted informed consent procedure on the information gain of patients undergoing mastectomy and implant-based reconstruction

Introduction:

Implant-based reconstruction is the most frequent procedure after mastectomy. Effective preoperative counselling and a thorough informed consent process are crucial for informing patients about oncologic surgery, reconstruction options, and expected cosmetic outcomes. Recent studies indicate that a multimedia video-assisted informed consent procedure may enhance patient information retention compared to traditional methods. This study aims to compare the conventional informed consent process, supplemented with a written informational brochure, to a multimedia video-assisted approach.

Materials and Methods:

From January to June 2024, 265 consecutive breast cancer patients scheduled for mastectomy and implant-based reconstruction were enrolled in this controlled randomized prospective study. Of these, 200 patients completed evaluation questionnaires assessing information retention and anxiety. A six-minute video featuring simple schematic illustrations and automated text-to-speech narration in Italian was developed to enhance understanding of the risks, benefits, and alternatives of the surgical treatment. Patients were randomly assigned to two groups: Group A received the video presentation along with evaluation questionnaires via email, while Group B received only the questionnaires.

Results:

Patients in the multimedia video-assisted group demonstrated significantly higher overall comprehension compared to those in the control group. Although scores from the Spielberger State/Trait Anxiety Inventory (STAI) and the Decisional Conflict Scale (DCS) indicated greater anxiety and decisional conflict in the standard group, these differences were not statistically significant.

Conclusions:

The multimedia video-assisted informed consent process is an effective tool for enhancing patient knowledge and awareness regarding implant-based breast reconstruction. This method improves information uptake and retention, suggesting its superiority over traditional communication techniques in preoperative counselling. These findings support the integration of multimedia resources in patient education to facilitate better-informed decision-making.

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Title : The pharmacokinetics of intravenous and oral antibiotics for implant-based breast reconstruction

Introduction:

Intravenous and oral antibiotic prophylaxis is widely used in implant-based breast reconstruction. However, no study has investigated the pharmacokinetics of intravenous and oral antibiotics in the breast implant pocket.

Materials and Methods:

We prospectively included patients undergoing implant-based breast reconstruction at a single plastic surgical department, between October 2021 and September 2022, who received prophylactic intravenous cefuroxim and oral dicloxacillin as a standard. Samples were obtained from the breast drain postoperatively, and we analyzed the antibiotic concentration in the breast drain fluid using High-Performance-Liquid-Chromatography-Mass-Spectrometry. The primary outcome was the proportion of drain samples with antibiotic concentrations above the minimum inhibitory concentration (MIC) against Staphylococcus aureus. Secondary outcomes included the correlation between antibiotic concentrations and patients' weight and drain output.

Results:

We included 40 patients in the study. We obtained 23 breast drain samples from 21 patients who received intravenous cefuroxime, and 99 drain samples from 33 patients who received oral dicloxacillin. Intravenous cefuroxime resulted in 18/23 drain samples (78%) with antibiotic concentrations above the MIC for Staphylococcus aureus, while oral dicloxacillin resulted in 39/99 drain samples (39%) with antibiotic concentrations above the MIC for Staphylococcus aureus. We found no correlation between the antibiotic concentration in drain samples and drain output or patients' weight for neither intravenous cefuroxime nor oral dicloxacillin.

Conclusions:

This study suggests that intravenous antibiotics may achieve effective concentrations in the breast implant pocket, while oral antibiotics may not. Moreover, the patients' weight and the drain output does not seem to affect the antibiotic concentrations in the implant pocket, regardless of the administration form.

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# Title : Characterization of the Breast Microbiome in Surgical Site Infections in Implant Based Breast Reconstruction

## Introduction:

We hypothesized that quantification of the microbiome at the time of mastectomy and over the course of implant-based breast reconstruction (IBBR) will demonstrate the presence of microbial species that eventually result in surgical site infection (SSI) and provide insight into microbial populations that either promote or protect against IBBR infection.

## Materials and Methods:

Patients (n=64) undergoing IBBR were enrolled in 2021-2022. Tissue samples and swabs were taken at 14 intraoperative time points during index and secondary breast operations. Six (9%) patients developed culture confirmed infections, the focus of pilot analysis. Bacterial genomic DNA was isolated from each sample. DNA was analyzed via shotgun metagenomic sequencing. Filtered DNA reads were mapped to a reference database of complete genomes for bacteria, archaea, fungi, and viruses. Total DNA amount (ng) for each microbe was determined, quantifying the absolute cell number of each microbe within each sample.

## Results:

Analysis revealed microbes in every swab or tissue specimen analyzed. Additionally, when comparing skin swabs collected before and after surgical prep, results clearly demonstrated that most microbes not only remain after prep but demonstrated increased abundance for many of the microbes after surgical prep. Two patients demonstrated pre-mastectomy presence of bacterial species subsequently identified by culture at time of presentation with clinical infection

## Conclusions:

Data obtained support previous literature demonstrating that the breast and overlying skin are characterized by a broad and diverse microbiome and that surgical prep does not eliminate microbes present on the skin. However, our data contradict studies that demonstrate reduction in bacteria after surgical prep and to our knowledge is the first to assess this with shotgun metagenomic sequencing rather than culture data. While our pilot-feasibility study was not powered to demonstrate causality, it did produce data that both lead to novel questions related to IBBR SSI and provide new insights into existing unanswered questions.

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Title : Oncological safety of Autologous Fat Transfer (AFT) for total breast reconstruction - Data from the BREAST-trial

#### Introduction:

Total breast reconstruction via autologous fat transfer (AFT) improves quality of life compared to implant-based reconstruction (IBR). However, concerns about its oncological safety remain due to adipose-derived stem cells (ADSCs), which may potentially promote tumour recurrence. This study presents long-term oncological safety data from the BREAST trial, a prospective multi-centre RCT.

#### Materials and Methods:

This prospective cohort study is based on participants from the BREAST trial, comparing AFT to IBR. Female mastectomy patients were randomized 1:1 into the AFT group (intervention) or the IBR group (control). Oncological follow-up, including clinical exams and imaging, was conducted annually for five years post-reconstruction in the intervention group. Data on demographics, tumour characteristics, and treatment details were collected from medical records and national pathology databases. We present data with a median follow-up of 3 years.

#### Results:

Primary outcomes for analyses were local and regional breast cancer recurrence.

In total, 5 patients in the AFT group (total 85 patients) and 3 in the control group (total 99 patients) experienced local recurrence. One patient in the AFT group had a local recurrence prior to the first AFT procedure. The hazard ratio (HR) for local recurrence between AFT and the control group was 2.2 (95% CI: 0.46-9.05,  $p = 0.279$ ), and after adjusting for confounders, the HR was 0.95 (95% CI: 0.13-7.13,  $p = 0.956$ ). For regional recurrence, 4 cases occurred in the AFT group and 3 in the control group (HR = 1.44, 95% CI: 0.32-6.51,  $p = 0.635$ ). These findings indicate no significant difference in recurrence risks between the AFT and control groups

#### Conclusions:

In conclusion this data of the first RCT comparing AFT to IBR showed AFT to have no increased risk in local or regional breast cancer recurrence, when compared to IBR.

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# Title : Immediate Hybrid Breast Reconstruction: Dual-plane approach using prepectoral implants and retro-pectoral fat grafting

## Introduction:

The aim of the study is to evaluate immediate hybrid breast reconstruction (BR) with a dual-plane approach combining pre-pectoral breast implant and autologous fat transfer in the retro-pectoral space.

## Materials and Methods:

We prospectively enrolled patients scheduled for immediate BR using a hybrid approach (Group-A) and compared with a historical control group of patients who underwent immediate direct-to-implant BR without fat grafting (Group-B). Fat transplantation was performed between the pectoralis major and minor muscles. Fat survival rate was assessed 6-months postoperatively by MRI. Analysis of complications, hospitalization days, number of additional fat grafting procedures, aesthetic outcomes were performed with Student t-test and Welch correction for continuous variables, while Fisher's test for categorical ones. A propensity score weighted analysis was performed comparing the two groups on patients' and surgeons' evaluations.

## Results:

30 immediate BR were included in each group. Patients' follow-up was  $17.14 \pm 3.17$  months (Group-A) and  $17.50 \pm 4.89$  (Group-B) ( $p=0.389$ ). The average amount of retro-pectoral fat transfer was  $106.30 \pm 16.54$ cc and MRI assessment confirmed an average of  $47.90 \pm 0.14\%$  fat survival at 6 months postoperatively. Mean breast implant size was statistically smaller in Group-A ( $315.17 \pm 67.7$ cc versus  $384.50 \pm 81.2$ cc;  $p=0.00026$ ). No statistically significant differences were observed regarding complications ( $p=1.00$ ) and hospitalization days ( $2.05 \pm 0.49$  versus  $2.14 \pm 0.64$ ;  $p=0.308$ ). A significant difference was observed regarding additional fat grafting sessions needed in Group-B ( $0.17 \pm 0.38$  versus  $0.67 \pm 0.71$ ;  $p=0.00062$ ). After a propensity score weighted analysis, surgeons and patients assessment showed a significant higher overall satisfaction in Group-A ( $p=0.043$ ,  $p=0.0006$ ).

## Conclusions:

Retro-pectoral plane is a new recipient site of AFT in the setting of implant-based BR. Our study showed immediate hybrid approach for one-stage BR as an effective and safe approach for BR, enabling the use of smaller breast implants preventing step-off deformities, while decreasing the need of additional fat grafting procedures to final reconstruction with costs reduction, optimal breast shape and contour.

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# Title : Preoperative Models for Sentinel Lymph Node Macrometastasis and Related Postmastectomy Radiotherapy Risk: A Tool to Enhance Decision-Making in Breast Reconstructive Options

## Introduction:

Postmastectomy radiotherapy (PMRT) can negatively impact the outcomes of immediate breast reconstruction (IBR) in breast cancer patients. Sentinel lymph node (SLN) status is a critical factor in determining the need for PMRT. This study aimed to develop predictive models and corresponding nomograms to preoperatively stratify the risk of SLN macrometastasis in clinically node-negative (cN0) T1-T2 breast cancer patients, assisting shared decision-making on breast reconstruction options.

## Materials and Methods:

Data from the Swedish National Quality Register for Breast Cancer (2014-2017) were used to identify women with cN0 T1-T2 breast cancer. Adaptive LASSO logistic regression was employed to develop models using preoperative patient and tumor characteristics. Nomograms were constructed based on these models to estimate the risk of  $\geq 1$  or  $> 2$  SLN macrometastases (macro-SLNMs), following current PMRT guidelines and ongoing trials aimed at de-escalating locoregional radiotherapy in patients with 1-2 macro-SLNMs. Predictive performance was assessed using the area under the receiver operating characteristic curve (AUC) and calibration plots.

## Results:

A total of 18,185 women were included, with 13,656 in the development cohort and 4,529 in the validation cohort. The models predicting  $\geq 1$  and  $> 2$  macro-SLNMs demonstrated AUCs of 0.708 and 0.740, respectively, with good calibration. The nomogram for  $\geq 1$  macro-SLNMs allowed the pre-test population prevalence of 13% to be refined to a personalized post-test probability range of 2-75%, providing tailored risk assessments.

## Conclusions:

These models and nomograms could assist in shared decision-making by providing individualized estimates of clinically relevant macrometastatic nodal involvement and the potential need for PMRT. By offering personalized risk assessments, these tools may help guide discussions on breast reconstruction options, allowing patients with cN0 breast cancer to make more informed choices regarding their reconstructive plan.

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# SESSION 6

## BREAST & BEYOND



**Title: Reverse flow Thoracodorsal Artery: An additional perfusion strategy for breast microsurgical flaps**

**Introduction:**

In microsurgical breast reconstruction, the axillary and internal mammary vessels are commonly used for flap revascularization. This study reports the first series of abdominal-based perforator flaps revascularized in complex scenarios using a novel approach, the retrograde flow perfusion from the thoracodorsal artery (TDA).

**Materials and Methods:**

We present a case series of 7 microsurgical abdominal-based breast reconstructions, performed between January 2021 and February 2023, using a novel approach for flap revascularization, the retrograde flow perfusion from the thoracodorsal artery (TDA). This technique was employed in scenarios where axillary vessels were compromised or unavailable and the thoracodorsal artery had been previously divided or rendered anterogradely unusable, showcasing its potential as an alternative approach for flap revascularization. Demographics, procedures' data, complications and days of hospitalization were collected and analyzed. Intraoperative blood reverse-flow rate through the TDA after microvascular anastomoses was measured using a vessel flow probe.

**Results:**

Patients' mean age was 50.83 years, mean BMI was  $23.32 \pm 0.98$  kg/m<sup>2</sup>, preoperative mean breast volume was  $422.27 \pm 45.44$  cm<sup>3</sup>. The procedures performed included 3 DIEP, 2 SIEA and 2 Lympho-DIEP flaps for 2 primary and 5 secondary breast reconstructions. Mean flaps' weight was  $498.9 \pm 87.92$  g, mean operative time was  $321.45 \pm 45.11$  minutes, mean postoperative days of hospitalization were  $3.86 \pm 0.71$ . Intraoperative mean blood reverse-flow through the TDA was  $6.22 \pm 0.55$  ml/s. No

partial nor total flaps necrosis occurred.

Based on our experience, we outlined three challenging scenarios with an algorithm for vessels selection that ensures both flap perfusion and preservation of LD flap harvesting.

**Conclusions:**

The availability of reverse-flow TDA as a recipient vessel provides an additional new option offering a solution for flap reperfusion in cases of surgical revisions after failed flap revascularization or in scenarios involving fibrosis, damage or vessel unavailability in the axillary area, still preserving the possibility of performing a salvage Latissimus Dorsi (LD) flap reconstruction.

Do you have any disclosures?

No

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Title : Long-term breast morphological analysis after ergonomic FALD flap reconstruction

#### Introduction:

The Fat-Augmented Latissimus Dorsi (FALD) flap is an autologous flap that combines LD flap with intraoperative autologous fat transfer (AFT) in order to improve breast reconstruction (BR) volume. We described the ergonomic FALD flap, an evolution of this technique which helps to achieve a complete BR in a single surgical step. In this long-term study, we analyze morphological variations of the breast after ergonomic FALD flap reconstruction compared to the traditional transverse FALD flap.

#### Materials and Methods:

Between 2020 and 2022 we prospectively enroll patients undergoing BR using FALD flap into 2 groups: Group-A included ergonomic FALD flap, Group-B included traditional FALD flap. The primary endpoint was to compare the two groups in terms of breast projection (BP), breast width (BW) and breast height (BH), while the second endpoint concerned the aesthetic analysis.

#### Results:

32 FALD flaps (23 patients) were performed for the Group-A and 31 FALD flaps (25 patients) for Group-B. There were no significant differences regarding demographic variables. We did not observe statistically significant differences regarding preoperative BP, BW and BH (respectively  $6.38 \pm 0.74$  vs  $6.42 \pm 0.77$  cm,  $p=0.408$ ;  $11.36 \pm 0.77$  vs  $11.21 \pm 0.95$  cm,  $p=0.247$ ;  $11.13 \pm 1.16$  vs  $11.37 \pm 1.01$  cm,  $p=0.147$ ). After propensity score weighting analysis, Group-A showed a statistically significant superior breast projection compared to Group-B ( $6.05 \pm 0.56$  vs  $5.60 \pm 0.65$  cm;  $p < 0.0001$ ). Conversely, post-operative BW and BH had no statistically significant differences between the two groups, respectively  $11.00 \pm 0.84$  vs  $11.03 \pm 0.74$  cm,  $p=0.477$  and  $10.63 \pm 1.22$  vs  $10.47 \pm 0.96$  cm,  $p=0.390$ . Final aesthetic analyses showed to be superior in Group-A concerning breast shape ( $p=0.001$ ) and global score evaluation ( $p=0.004$ ).

#### Conclusions:

The ergonomic FALD flap represents a valid alternative for autologous breast reconstruction with a good long-term aesthetic outcome. This technique allows to obtain a significantly superior breast projection and aesthetic results with less mean additional AFT sessions compared to the traditional FALD flap, maintaining an equal range of complications.

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Do you have any disclosures? No

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Title : Breast Reconstruction: first experiences with cryopreserved fat

#### Introduction:

Regenerative medicine has reached a key role in plastic surgery. Everyone knows the utility in regenerative surgery of fat tissue transplant for many reasons.

Today with the LIPOBANK? system of cryopreservation, certified and validated by the CNT (National Transplant Centre) and controlled by the Public Bank of Tissue, autologous fat grafting procedures, with one stage wider liposuction, are better provided.

We present our preliminary experience with cryopreservation in Modena University Hospital.

#### Materials and Methods:

We have evaluated the amount of lipofilling procedures in our department, during the year 2022, considering first, second and third session of surgery and the number of patients that have undergone to RT. Administration office have compared the total costs between the standard day surgery admission procedure and the cryoconserved adipose tissue one, observing a reduced amount with this second one.

#### Results:

We performed 145 breast reconstruction procedures in 2022, 74 of them undergone to post operative RT. When patients need postoperative RT, we need further lipofilling sessions to improve the tissue actinic injuries.

Nowadays, we have performed 64 liposuction with cryoconservation and 20 defrosting for lipofilling provided in outpatient clinic. Thanks to this outpatient setting, we have saved a lot of surgery theatre hours.

The clinical aspects of the breast after cryoconserved adipose transplant were satisfying and comparable to the traditional fresh one.

#### Conclusions:

The cryopreservation of adipose tissue is a real innovation in regenerative surgery. This method gives important technical and practical advantages to patients, to surgeons and to hospitals too, making the whole treatment more effortless.

It could represent the new gold standard in future regenerative surgery, amplifying widely its utility and feasibility, reducing hospital admissions, patients waiting lists, surgical invasiveness and hospital costs.

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**Title:** Immediate Direct to Implant Prepectoral Breast Reconstruction Using Smooth Round Implants Fully Wrapped with ADM – A Prospective Observational Cohort Study

**Authors list:** Fabio Santanelli di Pompeo, Michail Sorotos, Guido Firmani, Ceccaroni Alessandra

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**Introduction:** Direct to implant (DTI) prepectoral breast reconstruction (PBR) using acellular dermal matrices (ADMs) is well-established. We designed a prospective observational cohort study to analyze patients undergoing immediate prepectoral DTI-BR using smooth round implants fully wrapped with ADM. The primary aim was to assess mastectomy-related and reconstruction-related complication rates, while the secondary one was to identify related risk factors.

**Materials and Methods:** Females aged 18-80 undergoing immediate PBR were included from April 2019 to July 2024. Patient demographics, tabagism, prior radiotherapy, neoadjuvant chemotherapy, surgery details (surgeons, type and weight of mastectomy) were considered risk factors for complications. Data regarding number of drains, drains' volume, day of drains removal, and breast implant characteristics were collected. Complications were divided into mastectomy- (bleeding, mastectomy skin flap necrosis) and reconstruction-related (seroma, infection, red breast syndrome). Data were analyzed with the Kruskal-Wallis H and binary logistic regression tests.

**Results:** Ninety-two patients (154 breasts) received 30 unilateral and 62 bilateral procedures with mean age 48,1 yrs and mean BMI 22,7 kg/m<sup>2</sup>. Twenty-five patients were smokers and 10 breasts received radiotherapy prior to mastectomy. Mean drain collection was 375,8 cc and were removed at 13,7 days post-op. We report 59 complications, 51 mastectomy- and 8 reconstruction-related, 22 patients needed reoperation, of whom 7 wound revision under local anaesthesia, and 15 explanations, with an implant loss rate of 9,7%. The binary logistic regression analysis for mastectomy-related and reconstruction-related complications did not identify any variable with a statistically significant impact ( $p > 0.05$ ) on the incidence of complications.

**Conclusion:** This is the first prospective study analyzing patients with DTI-PBR with smooth round implants fully wrapped with ADM. Our results showed that the success of the technique is not influenced by the surgeons' experience and/or other risk factors. Drains' volume is comparable to other reconstructive techniques, but drains are left in place for longer.

## Title : The S-Index: Benchmarking Value in Breast Plastic Surgery Education

### Introduction:

Assessing the academic value of breast surgery conferences has been subjective, challenging the quantification of return on investment for attendees and sponsors. This study introduces the total H-index and S-index as novel metrics to objectively evaluate the academic impact relative to the financial cost of attending these conferences.

### Materials and Methods:

We identified breast surgery conferences from Europe and the US online. Data from the latest editions were collected from conference programs and websites. The Total H-index was calculated by summing the H-index of all faculty members per conference. The S-index was determined by dividing the total H-index by the average number of presentations per speaker, and then dividing this value by the conference fee (€/ \$) per day. One sample T-Test was used for statistical analysis, with  $p < 0.05$  considered significant.

### Results:

The analysis included 9th International Breast Surgery Workshop (IBSW), Rome-Dubai Breast Meeting 2023, MBN Milan 2024, Barcelona Breast Meeting 2024, London Breast Meeting 2024, International Breast Symposium Dusseldorf 2024, Botti's Best Breast 2023, and the 39th Annual Atlanta Breast Surgery Symposium. The S-index ranged from 0.28 to 30.9 (€) or 0.26 to 28.3 (\$), with the 9th IBSW exhibiting the highest S-index for residents and MBN Milan 2024 the lowest for physicians ( $p < 0.001$ ).

### Conclusions:

While the total H-index of the faculty is a useful metric for assessing the academic value of a conference, the S-index provides a more comprehensive measure by evaluating the efficiency and cost-effectiveness of conferences both for participants and sponsors. By quantifying the relationship between academic impact, average number of presentations per speaker, fees and duration of the conference, the S-index offers valuable insights into the overall value and return on investment of these events. This approach underscores the importance of using objective measures to make informed decisions that maximize both academic and economic returns.

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## Title : Body Dysmorphic Disorder and Aesthetic Plastic Surgery - How could Surgeons deal with it?

### Introduction:

The objective of the study was to investigate the prevalence and the comorbidity of body dysmorphic disorder (BDD) in patients seeking aesthetic plastic intervention. BDD is a severe and impairing disorder often resulting in disturbances of social relations and restrictions in the professional life. However, patients with BDD usually don't benefit from aesthetic interventions and might even sue the surgeon, if they are dissatisfied with their postoperative results.

### Materials and Methods:

109 patients participated in the study. Testing instruments consisted of a self-developed questionnaire for demographic and socioeconomic data and the standardized Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I). The severity of BDD was estimated with the Yale-Brown Obsessive-Compulsive Scale adapted for BDD (BDD-YBOCS). The severity of the flaws in physical appearance was evaluated on the basis of preoperatively taken digital pictures.

### Results:

The prevalence of BDD in the sample was 11.9% with a mean age of onset BDD in adolescence (20.1 years). Increasing values of BDD were found in liposuctions (22.2%) and facial aesthetic operations (19.2%). Individuals with BDD showed significant comorbidity rates with eating disorders and suspected post-traumatic stress disorder ( $p < 0.001$ ).

### Conclusions:

To determine the true motivation for surgical aesthetic intervention and accordingly avoiding aesthetic surgery in patients with psychiatric disorders the collaboration between the aesthetic surgeon and the psychiatrist is essential. Thus an appropriate procedure might be at first the "accurate assessment of the physical deformity by the surgeons" and the understanding of psychological implications associated with aesthetic surgery. However, best practice has to be still identified in terms of optimizing patient consultation and improving preoperative planning. The application of a short, valid screening instrument for BDD - that still has to be developed - could be very useful!

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## **Life Satisfaction, Self-Harm, Suicidal Thoughts, and Mental Health Among Transgender Women Following Gender-Affirming Surgery**

**Introduction:** Gender dysphoria causes significant psychological distress, often leading individuals to seek medical interventions such as hormone therapy and gender-affirming surgery. The psychological outcomes of these treatments, including life satisfaction and the prevalence of self-harm and suicidal thoughts, remain critical areas of research, especially for transgender women who have undergone genital surgery. Additionally, mental health concerns, such as neuropsychiatric disorders, further impact the quality of life in this population.

**Materials and Methods:** This retrospective study examines the experiences of 102 transgender women who underwent gender-affirming surgery between 2011 and 2021. The participants were surveyed using the Life Satisfaction Questionnaire (LiSat-11), the Gender Congruence and Life Satisfaction Scale (GCLS), and the RAND-36, alongside a general demographic health survey. A Mann-Whitney U test was used to assess group differences based on mental illness status.

**Results:** Of the 50 participants who completed the questionnaires, 28% reported experiencing suicidal thoughts or self-harm postoperatively, while the majority expressed overall life satisfaction and mental well-being. However, participants with mental illness reported lower health-related quality of life and gender congruence than those without mental illness.

**Conclusion:** While gender-affirming surgery improves life satisfaction and gender congruence for many transgender women, mental health challenges, including suicidal thoughts, persist in a significant proportion of individuals. These findings emphasize the need for continuous mental health support alongside surgical interventions to ensure the best possible outcomes for transgender individuals. Future research should focus on pre- and post-surgical assessments to better understand the long-term effects of gender-affirming surgery on quality of life and mental health.

Title : An novel autologous technique for complex and recurrent hiatal hernia repair using a pedicled rectus abdominis flap : technique & case series

#### Introduction:

Nowadays, the surgical management of complex or recurrent hiatal hernias remains challenging mainly because of the lack of consensus about the optimal approach to treat this pathology. Literature's high rate of hiatal hernia recurrence after surgical repair with conventional techniques imposes itself as a challenge for the surgeons. In this presentation, we propose a novel technique for recurrent hiatal hernia management using a superior pedicled Rectus Abdominis muscular (RAM) flap to fill the mediastinal cavity and esophageal hiatus after hernia reduction, and thus preventing hernia recurrence. We also enlighten the possibility to achieve this technique as a full laparoscopic procedure.

#### Materials and Methods:

Between August 2019 and May 2022, 5 patients have received the RAM flap technique to cure hiatal hernia recurrence. The procedure was only proposed to patient suffering from recurrent symptomatic hiatal hernia in whom classical techniques had already been used and would have given poor outcomes being used again.

#### Results:

Outcomes, based on surgeon evaluation and patient Self-Report Questionnaires GERD-HRQL, were very good regarding the improvement of preoperative symptoms, diminished use of PPIs and increased comfort postoperatively. 2 patients developed minor abdominal bulging, with no functional impairment and mild aesthetic discomfort. 1 patient developed an incisional hernia that needed a surgical revision.

#### Conclusions:

This technique proposes an innovative approach for management of recurrent or complex hiatal hernia with good and encouraging results.

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Do you have any disclosures? No

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Title : The perfect arc: redefining auricular reconstruction with the "mid-moon" flap - a multicenter prospective study.

#### Introduction:

Reconstructing medium-sized auricular defects presents unique challenges. Skin grafting is widely used, but it can lead to complications like scarring and contraction. The "mid-moon" flap technique offers a novel alternative that may overcome these limitations. This multi-center prospective study evaluates outcomes in patients treated with skin grafting versus the "mid-moon" flap for auricular defect reconstruction.

#### Materials and Methods:

A prospective analysis was conducted across three centers, involving 124 patients with medium-sized auricular defects after tumor excision. The cohort was equally divided: 62 patients underwent skin grafting, while 62 received the "mid-moon" flap. Both groups were followed postoperatively for up to 36 months, with a mean follow-up of 18 months. Outcomes measured included aesthetic results (using the Aesthetic Numeric Analog Scale, ANA), flap/graft viability, complications, and patient satisfaction.

#### Results:

Patients treated with the "mid-moon" flap reported significantly higher satisfaction rates, with an average ANA score of  $8.6 \pm 0.15$ , compared to  $7.8 \pm 0.22$  for the skin graft group ( $p < 0.01$ ). The "mid-moon" flap group also experienced lower complication rates: no major necrosis was observed, while 8% (5 patients) of the skin graft group presented graft contraction or delayed healing. Aesthetic outcomes were judged as "very satisfactory" in 90% of the mid-moon flap cases, versus 75% in the skin graft group. Additionally, the mid-moon flap demonstrated better integration with surrounding tissues, maintaining auricular symmetry and contour more effectively.

#### Conclusions:

This study highlights the superior aesthetic and functional outcomes of the "mid-moon" flap technique over traditional skin grafting for medium-sized auricular defects. The "mid-moon" flap not only presents lower complication rates, but also achieves better patient satisfaction. These findings suggest that the "mid-moon" flap should be considered a first-line option for auricular reconstruction in such cases.

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Title : Thalidomide as (neo-)adjuvant treatment to reduce postoperative recurrence of extracranial arteriovenous malformations.

Introduction:

Thalidomide, a non-specific VEGF inhibitor renowned for its anti-angiogenic and anti-inflammatory effects, has exhibited important efficacy in treating patients with arteriovenous malformations (AVMs) refractory to conventional therapies. Given the common occurrence of post-operative recurrences within the first year following AVM surgery, we postulated that incorporating (neo-)adjuvant thalidomide treatment could effectively reduce early recurrences of these fast-flow vascular malformations.

Materials and Methods:

We conducted a prospective case series at our Center for Vascular Anomalies. Thalidomide was administered either before and/or after the operation, with a standardized dose of 50 mg per day.

Results:

We included 14 patients, 8 males and 6 females. The mean age was 33.1 years old (ranging from 21 to 55 years). All had stage 2 or 3 AVMs, predominantly located in the head and neck region (n=12/14). Thalidomide initiation occurred either 3.7 months prior to surgery (range: 1 to 11 months; n=11) or on the day following the operation (n=3), continuing for a mean duration of 9.9 months (range: 1 to 24 months). One patient exhibited early recurrence after 5 months but remained asymptomatic under thalidomide. The mean follow-up duration was 29.2 months (range: 10 to 59 months). No post-operative complications were observed.

Conclusions:

Patients undergoing thalidomide treatment before surgery as a neoadjuvant therapy reported significant preoperative clinical improvement, manifested by a reduction in pulsatility or pain, confirming thalidomide's efficacy on extracranial AVMs. The antiangiogenic property of thalidomide did not cause any healing problems in the post-operative phase, indicating its safe use in the peri-operative setting. Within our limited series, we encountered only one early postoperative recurrence. We anticipate that these promising initial findings, from the combination of surgical resection and peri /postoperative thalidomide administration will be substantiated through an extended follow-up of at least five years.

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Title : Regenerative Closure of Facial Wound Defects by Percutaneous Mesh Expansion.

#### Introduction:

Closure of larger skin cancer excisional defects with flaps and grafts is often a disfiguring scar patchwork. Since one-millimeter punctures leave essentially no scar, a staggered pattern of needle punctures can therefore mesh expand tissues without a scar. We present our 12-years-experience with a novel minimally invasive scarless technique for closing large facial wounds by percutaneously mesh-expanding the tissues around the defect.

#### Materials and Methods:

After tumescent anesthesia we place the wound edges under extreme tension using a tissue approximator. Then, with 1mm needles that preferentially sever tensed tissues, we inflict a staggered alternating pattern of full-thickness needle punctures about 1.5mm apart. Each puncture nicks the tight tissues to release a tiny amount of tension. We start peripherally and, as meshing relieves the tension, we move towards the edges till a totally tensionless closure is achieved. We avoid undermining and meshing close to the wound edges.

#### Results:

We treated 3500 facial wound defects that would have required flaps (2cm<sup>2</sup>-70cm<sup>2</sup>, Av.9cm<sup>2</sup>). The tiny needle punctures left no scars but their mesh expansion pattern generated enough tissue to reconstruct larger defects without anatomic distortion and only straight-line closures. We learned to avoid this procedure when the defect involved the alar rim. Wounds healed uneventfully as long as we meshed at least 3cm for every 1cm of required tissue gain. Complications were seen when the expansion ratio exceeded 30% and when the tension could be completely relieved. The blind needle punctures caused no nerve damage and the meshed tissues stretch-expanded in a two-dimensions to flatten the standing cones.

#### Conclusions:

Percutaneous mesh expansion is a useful and versatile regenerative wound closure alternative that essentially replaced flaps and grafts in our practice. The sum of tiny scarless gap defects generates enough tissue to advance the wound edges beyond their viscoelastic property and close large facial wounds without any additional scars.

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Do you have any disclosures? No

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# SESSION 7

## UPPER EXTREMITY



## Title : Regenerative Closure of Palmar Wound Defects

### Introduction:

Palmar skin is difficult-to-replace specialized skin. Conventional treatment “borrows from Peter to pay Paul”. Could we instead regenerate Paul? From the observation that 1mm palmar wound gaps heal without a scar, we hypothesized that stacking up many 1mm gaps might close sizeable wounds without donor defects.

### Materials and Methods:

Using lead hands for contracture release or approximating clamps for open wounds, the defects are placed under extreme tension. Tension is crucial to the differential cutting ability of the needle, it preferentially snaps the tensed fibers and spares the looser neurovascular structures. Then, with a 1mm needle we perform a pattern of staggered alternating punctures on both sides of the defect starting distally and progressively moving proximally. This generates a mesh pattern (similar to the mesh expansion of a skin graft) that expands the surrounding tissues to completely release the contracture or achieve a completely tensionless wound closure. To regenerate the subcutaneous fat in cases of full thickness tissue loss we occasionally inject sedimented lipoaspirate under the meshed skin.

### Results:

We released 82 scar contractures and closed 33 open wounds that would have otherwise required flaps or grafts. (105 defects: 78 digital, 16 first webspace, 11 palmar). All wounds healed uneventually and contractures released fully as long as we meshed at least 3cm for each 1cm of required tissue gain. Aggressive needling and trying to mesh expand >30% caused occasional necrosis. No nerves or tendons were severed, no digits became ischemic, and 6 neuropraxias resolved completely. Without scars from the needle punctures, percutaneous mesh expansion safely generated a substantial amount of tissue.

### Conclusions:

Regenerative closure is based upon our capacity to heal tiny gaps without scars. Percutaneous mesh expansion of the tissues surrounding a defect is a safe and versatile regenerative wound closure and contracture release alternative. Adjunctive fat transfer might be useful.

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## “Arthroscopic Vs. Open Surgery For Scaphoid Pseudarthrosis: A Retrospective Case-Control Study Comparing Clinical And Radiological Outcomes”

### Introduction:

Scaphoid pseudarthrosis is a complex condition requiring surgical intervention to prevent long-term complications such as wrist osteoarthritis and scaphoid non-union advanced collapse (SNAC). While open surgery with bone grafting has been the traditional approach, recent studies suggest that arthroscopic treatment may offer similar or superior outcomes with less invasiveness. This retrospective case-control study compares the clinical and radiological outcomes of arthroscopic versus open surgery for scaphoid pseudarthrosis.

### Materials and Methods:

The study included 42 patients treated within our institution for scaphoid pseudarthrosis between October 2015 and March 2023. Of these, 22 underwent arthroscopic surgery, and 20 underwent open surgery. Primary endpoints included wrist range of motion, grip strength, and pain, measured at 3 and 12 months postoperatively. Secondary outcomes included consolidation rates, complication rates, and reoperation rates. Radiological consolidation was assessed via computed tomography (CT), with consolidation defined as trabecular bone bridging >50%.

### Results:

The arthroscopic group demonstrated a significantly higher consolidation rate at 3 months (81.8%) compared to the open group (45%,  $p = 0.031$ ), though rates were comparable at 12 months (86.4% vs. 75%,  $p = 0.175$ ). Both groups showed similar improvements in wrist range of motion, with no significant differences in flexion, extension, or grip strength at 3 and 12 months. The mean operating time was slightly shorter in the arthroscopic group (151 minutes) compared to the open group (157 minutes). Pain scores (VAS) and complication rates were similar between the two groups. Reoperation rates were 5% in the arthroscopic group and 10% in the open group.

### Conclusions:

Arthroscopic surgery is a viable and minimally invasive alternative to open surgery for scaphoid pseudarthrosis, offering faster consolidation with comparable functional outcomes. This technique may reduce operating time and healthcare costs, making it an attractive option for treating scaphoid pseudarthrosis, particularly in outpatient settings.

Title : Long-term evaluation of hemi-hamate arthroplasty for chronic PIP fracture-dislocations: stability and functional maintenance beyond one year

#### Introduction:

Fracture-dislocations of the proximal interphalangeal (PIP) joint pose challenges due to persistent stiffness, pain, and joint angulation, especially when more than 50% of the joint surface is affected. Hemihamate arthroplasty, offering advantages in restoring stability for unstable PIP injuries, remains a technically demanding treatment. This study was conducted with the primary objective to conduct a comprehensive long-term evaluation (over one year) to assess the functional recovery, joint stability, and complications following hemi-hamate arthroplasty in cases of chronic PIP fracture-dislocations with over 30% joint involvement.

#### Materials and Methods:

Fifteen hemi-hamate arthroplasties were performed since 2021 on patients with chronic PIP fracture-dislocations (>30% joint involvement). Long-term follow-ups with radiological assessments extended beyond one year at regular intervals. A standardized post-operative protocol was implemented. Data collection involved pre- and post-operative flexion-extension limitation, pain perception (VAS), post-operative grip strength, subjective stability assessment, and alignment at PIP imaging.

#### Results:

The mean bone segment grafted was 0.97 cm, fixed with 2-3 screws. Patients showed sustained functional improvement (maximum flexion deficit of 15°) and minimal pre- and post-operative pain (mean VAS 1). No graft mobilizations or recurrent dislocations occurred during the extended follow-up period beyond one year. One case of partial bone resorption had no clinical impact, and no complications were noted at the harvest site.

#### Conclusions:

Hemi-hamate arthroplasty demonstrated long-term reliability and efficacy in treating chronic PIP fracture-dislocations with over 30% joint involvement. The sustained functional improvement and absence of complications or recurrent dislocations during the extended follow-up beyond one year endorse its recommendation as a primary treatment option for such lesions.

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# Title : Trapeziectomy vs. Carpometacarpal Prosthesis: An In Vivo Side-by-Side Comparison of Two Techniques

## Introduction:

This study compares the outcomes of trapeziectomy with suspension arthroplasty and CMC (carpometacarpal) I prosthesis in patients with advanced thumb basal joint osteoarthritis. All patients had undergone both procedures, allowing a direct, in vivo comparison. The aim was to assess postoperative satisfaction, functionality, and quality of life.

## Materials and Methods:

Ten patients, each having undergone trapeziectomy on one hand and a CMC-I prosthesis on the other, were studied using a mixed-methods approach. Quantitative data on grip strength, pinch strength, and range of motion were collected. Semi-structured interviews provided qualitative insights. Statistical analyses revealed significant differences between the two techniques, supported by qualitative statements.

## Results:

The median pain duration was significantly shorter for the CMC-I prosthesis (12.8 days) compared to trapeziectomy (57.2 days,  $p < 0.01$ ). Postoperative therapy lasted 1.2 months for prosthesis patients versus 3.2 months for trapeziectomy patients ( $p < 0.01$ ). Prosthesis patients achieved greater grip strength (26.5 kg vs. 19.7 kg,  $p = 0.019$ ) and key pinch strength (5.5 kg vs. 4.1 kg,  $p = 0.043$ ), although there was no significant difference in precision grip strength ( $p = 0.08$ ). Qualitatively, patients expressed greater satisfaction with the prosthesis, citing faster recovery and improved aesthetics. One patient noted, "I have more strength on the side with the prosthesis," while another person preferred the natural appearance of the prosthesis without the sunken thumb.

## Conclusions:

The CMC-I prosthesis showed clear advantages over trapeziectomy, particularly in terms of faster pain relief, shorter therapy duration, and improved strength. Patients overwhelmingly favored the prosthesis for its functional and aesthetic benefits. Importantly, our results were derived from patients who experienced both techniques, providing a unique, in vivo comparison. This study supports the CMC-I prosthesis as the preferred treatment for thumb basal joint osteoarthritis, with trapeziectomy serving as a secondary option, especially in cases of prosthesis failure.

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Title : Dorso-ulnar reverse flow pedicled osseous flap for bone defects of the thumb

#### Introduction:

Reconstruction of osseous defects of the distal phalanx of the thumb is usually addressed with free bone grafts or free vascularized bone flaps. Some reports demonstrated the possibility to harvest an osteo-cutaneous flap in the dorsoulnar side of the first metacarpal bone. In the same manner, no reports are present in the literature in which bone gaps were reconstructed with this flap elevated as an exclusively osseous flap.

We report our successful experience with five cases of distal phalanx reconstruction of the thumb with the dorsoulnar reverse flow pedicled osseous flap; the flap harvesting technique and review of literature.

#### Materials and Methods:

Five patients underwent bone resection at the thumb level, two cases for tumor resection and three cases due to osteomyelitis of the thumb. Different techniques were proposed to restore thumb functionality and aesthetic appearance. To overcome patient's apprehension on the donor site area and decrease the risk of resorption of bone grafts, we proposed a dorso-ulnar reverse flow pedicle osseous flap.

#### Results:

No complications occurred and excellent functional result was evaluated at 12 months follow-up. The x-ray evaluation demonstrated complete bone consolidation and healing of the donor site area at the first metacarpal without recurrence of osteomyelitis or instability at the level of the reconstructed bone area. Patients returned to heavy manual work 12 weeks after surgery with a complete restoring of ROM, pinch grip and Kapandij score

#### Conclusions:

This flap may be considered as an alternative to free bone grafts in situations in which perilesional tissues may jeopardize the process of free graft taking and in cases in which free vascularized bone flaps are not feasible for patient or surgeon decision. As the anatomy of the flap is well established and documented in the literature, we believe that this flap is a valid option for distal phalanx bone reconstruction of the thumb.

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Title : Comparison of Functional Outcomes of Extensor Digitorum Longus and Palmaris Longus Tendon Grafts Used in Flexor Tendon Reconstruction

Introduction:

Flexor zone 2 injuries are challenging due to their anatomy and difficulty in achieving good outcomes. Palmaris Longus (PL) is the preferred graft for single/double-stage tendoplasty, but Extensor Digitorum Longus (EDL) can be an alternative. Our study compared the functional outcomes of EDL and PL tendon grafts using Strickland's formula.

Materials and Methods:

In our study, 27 patients with flexor zone 2 injuries treated between 2018 and 2023 were included. They underwent tendon reconstruction using EDL or PL grafts. We recorded patient gender, age, dominant hand, occupation, injury type, single/double-stage tendoplasty, graft type, history of physical therapy, and Strickland Formula score at 3 months postoperatively.

Results:

The mean Strickland Score was significantly higher in patients who underwent single-stage tendoplasty compared to those with two-stage procedures ( $t=2.968$ ;  $p=0.007$ ). No significant difference was found in the mean Strickland Score based on the type of tendon graft used, regardless of procedure stages ( $p>0.05$ ). However, patients with EDL grafts in single-stage procedures had a significantly higher mean Strickland Score ( $t=2.701$ ;  $p=0.024$ ). Additionally, patients who received physical rehabilitation had better Strickland Scores ( $t=3.898$ ;  $p=0.001$ ).

Conclusions:

Our study is the first to compare the mean active range of motion in tendoplasty cases using EDL and PL tendon grafts, with the highest number of patients (10) using EDL grafts. The Strickland score was significantly higher for EDL grafts in single-session tendoplasty. Based on these findings, EDL tendons may be preferred for single-session flexor tendon reconstruction, though patients should be informed about potential complications and morbidities in the lower extremity.

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Do you have any disclosures? No

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# Title : Evaluation of Replantation, Primary, and Revision Reconstruction Outcomes for Finger Amputations Operated in Our Clinic Over the Last 5 Years

## Introduction:

This study assesses the surgical outcomes of finger amputations treated in a single clinic over a five-year period, with a focus on replantation, primary repair, and revision surgeries. The primary goal is to evaluate the functional and aesthetic outcomes of these surgeries, which play a critical role in restoring hand function and quality of life. Factors such as the level of amputation, time to surgery, and the conditions under which the amputated part was preserved were considered, as they significantly affect replantation success rates, which the literature cites as around 90%. When replantation is not feasible, other reconstructive options are considered, depending on the patient's occupation and needs.

## Materials and Methods:

Patients who underwent surgery between January 1, 2019, and January 1, 2024, were categorized into three groups: successful replantation, failed replantation followed by stump repair, and acute primary stump closure. Quality of life was assessed through EQ-5D-5L and QuickDASH questionnaires. The study also included Semmes-Weinstein monofilament sensory testing and cold intolerance assessments. Data such as age, gender, hand dominance, comorbidities, and occupation were recorded to better understand patient outcomes.

## Results:

A total of 150 patients were included in the study, with 50 in each group. The majority of patients were male, and most injuries occurred in the non-dominant hand. The health scores were highest in patients who underwent stump reconstruction following failed replantation. Cold intolerance was more common in the replantation group, while DASH scores were also higher in this group. Sensory test results did not show significant differences between the groups.

## Conclusions:

The study found that finger amputations frequently occurred in the non-dominant hand, with the third finger being most commonly affected. Replantation resulted in higher levels of cold intolerance and DASH scores, while stump reconstruction patients reported higher health satisfaction. Individualized treatment plans are essential for optimal functional and aesthetic outcomes.

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Do you have any disclosures? No

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Title : Correlation of ultrasound (US) and intrinsic muscle regeneration after supercharge end to side (SETS) nerve transfer in proximal ulnar nerve palsy

Introduction:

Introduction:

There is little information of sonographic evaluation of muscle regeneration after nerve palsy. With successful nerve regeneration after SETS, intrinsic muscles should increase their volume and improve their sonographic appearance.

Aim: To evaluate ulnar nerve innervated intrinsic muscles by US in ulnar nerve palsy after SETS anterior interosseus (AIN)?ulnar nerve transfer

Materials and Methods:

Material & Methods:

9 US images of 13 patients (age, 11-80 years, median 55.6) who suffered from a muscle atrophy of the intrinsic muscles of their involved hand with massive clinical and sonographic intrinsic muscle waste, were analyzed. They all were surgically treated with ulnar nerve decompression, anterior transposition combined with SETS AIN transfer to the motor branch of the ulnar nerve in the distal forearm. US measurements included height or width of the first interosseous muscle (IOD) and the abductor digiti minimi (Abdm) muscle in 2 planes as well as gray scale measurements (histograms). US finding of structure and volume changes were correlated to clinical improvement postoperatively over time and compared to the non-involved side using pinch- and 3pod grip, as well as muscle function (British Medical Research Classification (MRC) classification (M0-M5).

Results:

Results:

6 of 9 patients improved clinical markedly between 12 and 24 months. The clinical changes with increase of grip and muscle strength correlated with a sonographic increase of muscle height and mass as well as improved US morphologic structure. The gray scale measurements were statistically different between healthy and affected side but only with a trend in the affected side over time.

Conclusions:

Conclusions:

Clinical improvement with increase of grip and muscle strength in the intrinsic muscles correlated with sonographic increase of muscle height and mass as well as improved morphologic structure. The sonographic measurements are helpful in cases without clear clinical improvement

Author : Esther Vögelin

Institution : Plastic and Hand Surgery

Do you have any disclosures? No

Co Author 1 : RÃ©my Liechti

Title : The CSAP flap: updated anatomy, surgical technique, and outcome of 71 flaps

#### Introduction:

Based on cadaveric and colour duplex ultrasound studies, the CSAP flap was first described by our group in 2008. Surgical knowledge built over the ensuing 16 years is presented to encourage widespread uptake of this excellent flap.

#### Materials and Methods:

Cadaveric & radiological investigation, and single centre clinical series of 71 flaps in 70 patients, median age 43 (range 3-75).

#### Results:

A dominant class III perforator arises within 10mm (SD11.8) of the CSA bifurcation; others can be incorporated into larger flaps. A flap of thick or thin dermis, up to 15x22cm, can be raised either full thickness or thin (3-5mm thick), with multiple chimeric options (vascularised bone, adipofascial islands, muscle, split skin paddles). Pedicle length is 8-12cm, and diameter 2-4mm (well preserved in paediatric cases). The flap can be combined with all variants of LD/TDAP flap on the subscapular axis. It is an excellent pedicled flap for axillary resurfacing (tumour, hidradenitis, contracture), or defects in the posterior/lateral shoulder or upper arm. As a free flap it provides a relatively hidden donor site, minimal morbidity, no intramuscular dissection, flowthrough options, and in oncological surgery may allow direct closure of larger flaps than the ALT donor site. Surface markings and pencil Doppler allow highly predictable design. It can be raised in Scarpa's layer. CSAP flaps have been applied to axilla, shoulder, head & neck, facial, upper & lower limb, Achilles / sole of foot, hand, and digital defects (including oncoplastic digital reconstruction) for congenital, traumatic, cosmetic, and oncological indications. Four re-explorations and minimal secondary revisions were required; no flap loss occurred. Technical advice on flap design and elevation, surgical modifications, and indications will be given.

#### Conclusions:

The CSAP flap has become a workhorse flap in our service, particularly for indications requiring hairfree skin, chimeric reconstruction, or pedicled coverage of the axilla / proximal upper limb.

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Do you have any disclosures? No

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# SESSION 8

## AESTHETIC BREAST

# Title : A Decade of Change: Trends in Permanent Breast Implant Explantation from The Swedish Breast Implant Registry (BRIMP)

## Introduction:

Breast Implant Illness (BII) refers to a variety of symptoms experienced by some individuals with breast implants. While breast implants are generally considered safe, a subset of patients is seeking permanent explantation, with or without capsulectomy due to BII. This study aims to compare the rates and types of these surgeries between private and public healthcare settings.

## Materials and Methods:

Patients who underwent reoperation after breast implant surgery between January 2014 and 2024 were identified from The Swedish Breast Implant Registry (BRIMP). Logistic regression models were employed to assess the association between surgeries, symptoms of BII, and the context of surgical settings.

## Results:

A total of 21,484 breast implant reoperations were identified, of which 4,761 were recorded as permanent explantations. Changes in size and shape were the most common indications for reoperation, with permanent explantation occurring in 23% of private care patients and 18% of public care patients. A linear increase in permanent explantations was observed over time ( $p < 0.01$ ), along with rising rates of total capsulectomy. Reported incidences of BII were significantly more frequent among private patients undergoing permanent explantation (16%) compared to those in public care (1%) (OR, 12.8; 95% CI, 6.8-24.0;  $P < 0.001$ ). Furthermore, BII was identified in 30% of private patients undergoing total intact capsulectomy compared to 4% in public care (OR, 6.17; 95% CI, 2.5-15.3;  $P < 0.001$ ).

## Conclusions:

.There has been a notable increase in permanent breast implant explantations over the past ten years in Sweden. Given current evidence, the significantly higher proportion of patients undergoing total intact capsulectomy with BII as the primary indication in private settings warrants further discussion.

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Do you have any disclosures? No

Co Author 1 : Birgit Stark

#### Introduction:

Since the 1960s, there have been repeated speculations describing a correlation between breast implants and systemic diseases. Most studies up to now have neither been able to confirm nor refute this correlation. The problem still exists today and has been named "breast implant illness".

The difference to the patients of the 60s and 70s is the patients' current global interconnectedness and communication via social media.

Our study describes the systemic diseases that have occurred after the augmentation and the changes in the symptoms after explantation.

#### Materials and Methods:

Over a period of 60 months, we performed an explantation of the implants including the capsule en bloc on over 320 patients. No new implants were inserted. In 49% of the patients, a breast lift was carried out during the same session.

Data collection was carried out with a questionnaire that the patients filled out pre-operatively and 6 months after the operation.

Data collection included questions concerning the symptoms, whose intensity was to be indicated on a scale of 1 to 10.

The capsule was histologically examined for ALCL, CD 30 and CD117. A blood, urine and stool test on leukotriene, ECP, histamine and tryptase was done pre- and postoperatively.

#### Results:

During data collection 6 months after surgery, 92% of all patients who had undergone surgery reported a considerable improvement.

In 5% of cases, the CD30 test was positive without the presence of ALCL. In 80% of cases, the CD117 test was positive. In 98% the urine test was positive for leukotriene.

#### Conclusions:

Due to the multiple symptoms, the patients had consulted several different doctors before the explantation. The doctors excluded all kinds of differential diagnoses. The question remains what caused the symptoms. However, the existence of a positive CD117 test and the positive urine test on leukotriene might be indicative of a mastcell activation syndrome (MCAS).

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Do you have any disclosures? No

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# Title : The Impact of Breast Implant-Associated Anaplastic Large Cell Lymphoma on Breast Implant Surgery: a European Survey-Based Study

## Introduction:

In the 27 years that followed the first report of Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL), significant changes have been made in breast implant surgery trends. Our aim was to determine breast implant selection changes among European plastic surgeons.

## Materials and Methods:

The European Association of Plastic Surgeons (EURAPS) promoted a digital survey to 31 national plastic surgery societies across Europe, which spread it to their members. The survey included 37 questions covering demographics, BIA-ALCL perception, current clinical practices, implant selection considerations, and satisfaction with information from health authorities and scientific societies. Anonymous responses were collected from February to April 2024.

## Results:

A total of 904 surgeons from 33 countries participated, 41.5% reported that BIA-ALCL concerns affected patient decisions. Awareness of BIA-ALCL was high (97.2%), with more than 85% approving the quality of information from European scientific societies. The awareness influenced implant texture preference in both aesthetic and reconstructive breast surgery ( $p < 0.001$ ), in the first with a notable drop in the use of macrot textured implants from 32.6% to 1.8% and an increase in smooth implants (ISO 14607:2018) from 11.3% to 44.6%. Similar trends were observed in reconstructive surgery regarding implant texture, but 33.1% of surgeons considered performing autologous reconstruction more often than using implants. Surgeons who encountered BIA-ALCL were more prone to using smooth implants. The recognized causal relationship between implant texture and BIA-ALCL is the main explanation to these changes.

## Conclusions:

Efforts in BIA-ALCL education by scientific societies have increased surgeon awareness, which may have enhanced patient education. This heightened awareness and improved patient communication led surgeons to consider more consistently smooth or textured implants with a  $Sa < 10\mu\text{m}$  and to give more consideration to autologous reconstruction. However, further studies are needed to assess whether BIA-ALCL management in small centers should be recommended as opposed to specialized referral centers.

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Title : Clinical safety and outcomes of drainless cosmetic breast surgeries combined with tranexamic acid - a case control study

#### Introduction:

Drainless cosmetic breast surgery remains an area of contention. Haematoma formation may affect healing processes, aesthetic outcomes, and capsular contracture risk. Surgical drains are often inserted as a preventative measure, but these increase patient discomfort, can lengthen recovery time and provide additional entry points for bacteria, increasing the potential for surgical site infections. Tranexamic acid (TXA) reduces haematoma and seroma formation, owing to its antifibrinolytic and anti-inflammatory properties. We aim to determine clinical safety and outcomes of drainless cosmetic breast surgeries, combined with intraoperative intravenous (IV) and topical TXA.

#### Materials and Methods:

We conducted a case-control study, examining 567 breasts (326 patients). Surgical indications included cosmetic breast procedures performed by consultant plastic/oncoplastic surgeons. Reconstructive procedures and patients with a BMI >30.0 and <18.5 were excluded. Prospective data was retrospectively collected in Excel, examining incidences of major complications (haematoma and seroma formation, readmission rates) and length of hospital stay in our case group (419 breasts: drainless, with IV TXA) and our control group (148 breasts: with drains, without TXA). Topical TXA was examined as an additional intervention in the case group. Data significance was tested with Chi-square tests and Mann-Whitney-U tests using SPSS software.

#### Results:

We found a significant reduction in major complications between our case and control group (1 and 8 respectively,  $p < 0.001$ ). Topical TXA had no significant effect on major complication rates ( $p = 0.81$ ). The mean length of stay was significantly lower in the case group than in the control group (0.13 and 1.15 days respectively,  $p < 0.001$ ).

#### Conclusions:

The analysed data suggests that drainless cosmetic breast surgery combined with IV and topical TXA, is safe and effective. It showed a reduction in major complication rates in this case-control study, acknowledging the limitations of this study.

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# Title : LONG-TERM BREAST SENSATION FOLLOWING BREAST AUGMENTATION AND THE INFLUENCING FACTORS

## Introduction:

Breast augmentation is associated with high patient satisfaction, but preserving breast sensation remains challenging. This study aimed to evaluate long-term breast sensation and identify factors affecting sensation following breast augmentation.

## Materials and Methods:

This study included breast augmentation patients (experimental group) and an unoperated control group to evaluate sensory changes following surgery. Sensory assessments were conducted using the Semmes-Weinstein monofilament test at nine specific points on each breast, measuring central, peripheral, and total sensory values. Comparisons of sensory outcomes were made between the experimental and control groups, as well as within the experimental group. Factors such as smoking, systemic diseases, pregnancy, breastfeeding, implant plane, implant size and type, and complications were analyzed for their impact on sensation.

## Results:

The study included 55 breast augmentation patients (110 breasts) and 20 controls (40 breasts). Sensory outcomes were significantly better in controls than in the operated group. Smoking, systemic diseases, implant size, and type showed no significant impact on sensation. Pregnancy and breastfeeding were associated with better central sensation, while peripheral sensation was unaffected. Subglandular placement preserved central sensation better than dual-plane 2 and 3 placements but reduced peripheral sensation. Postoperative complications were linked to decreased central sensation.

## Conclusions:

Breast augmentation is associated with lower sensation compared to controls. Subglandular placement preserves central sensation better than dual-plane placement. Smoking, systemic diseases, implant size, and type were not significantly related to sensory outcomes, while postoperative surgical complications were associated with diminished central sensation.

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# Title : Tissue Preservation through the IMF. The concept of Atraumatic Blunt Breast-preserving Augmentation

## Introduction:

Four-micron, biocompatible implants instigate a thin capsule formation and do not interact with their surrounding tissue through ingrowth or friction, hence increasing the risk of malpositioning over time. Atraumatic Blunt Breast-preserving Augmentation (ABBA), retaining and preserving the breast's natural existing tissue supporting system such as the Cooper's ligaments, establishes a stable pocket reducing the risk of implant malpositioning, while maintaining a soft breast. In this report, we describe the technical process of breast implant stabilization by tissue preservation (TP).

## Materials and Methods:

The surgical procedure involves using a 2.5-3.5 cm inframammary fold (IMF) incision, blunt hydro dissection and balloon expansion to produce a subglandular pocket while preserving the breast-tissue, keeping the nerves, vessels and Cooper's suspensory ligaments intact. This technique relies on a limited blunt dissection of a subglandular pocket that minimizes trauma to the surrounding tissues while creating sufficient space for the implant.

## Results:

200 breast augmentations were performed between December 2022 and October 2024 in 2 centers (Victoriakliniken in Sweden and Clinic One in Thailand) using the ABBA technique. No acute complications (hematoma, seroma, or infection) and neither rippling nor implant edge visibility, pain, capsular contracture, lateralization, or bottoming out were observed at 6-12-month follow-up visits.

## Conclusions:

Atraumatic Blunt Breast-preserving Augmentation is a standardized, reproducible, and reliable technique with a short learning curve that can be performed under general or local anesthesia. The concept of tissue preservation presented ensures implant stability with the fastest possible recovery with the least pain due to less trauma. It also provides an environment for less consumption of analgesics and antibiotics.

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Title : Hematoma Prediction in Gender-Affirming Mastectomies: A Single Surgeon Experience With 267 Patients.

#### Introduction:

Gender affirming mastectomies are a pivotal step in the gender confirmation process. these procedures represent the concordance between an individual's appearance, as seen by the environment, and his/her perception of themselves.

hematomas are a growing concern in gender affirming mastectomies, as they carry the risk for re-operation, increased length of hospital stay and sub-par esthetic outcomes.

Recognition of factors contributing to the development of hematomas in gender-affirming mastectomies can improve surgical outcomes and patient satisfaction.

#### Materials and Methods:

Medical records of all gender affirming mastectomies performed by the senior author between 2004-2024 were included in the study.

Relevant demographic, clinical, and surgical characteristics were collected from patients' medical files.

patients were stratified based on whether or not they developed post-operative hematoma. Univariate and multivariate analysis was performed to determine the impact of various factors on the development of post-operative hematoma.

#### Results:

Groups were found to be similar in most baseline demographic and surgical characteristics. Statistically significant differences were in terms of mean BMI, use of combined TRT and estrogen blockers, surgical technique, previous reduction mammoplasty and intra-operative tissue resection weight (p value= 0.007, 0.03, <0.001, 0.02, <0.001).

Multivariate logistic regression was performed for the prediction of post-operative hematoma. Covariates in question were statistically significant variables the differed between the groups. Previous reduction mammoplasty was found to be a statistically significant independent predictor of post-operative hematoma with an OR of 41.55 (95% CI 4.2-408.3) and a "Free NAC" surgical technique was found to decrease the incidence of post-operative hematoma with an OR of 0.015 (95% CI 0.003-0.064).

#### Conclusions:

History of reduction mammoplasty is a substantial risk factor for the development of post-operative hematoma in gender affirming mastectomies. Of the various surgical techniques, the use of a "Free NAC", can in some degree reduce the risk for hematoma development.

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# Title : STUDY OF SATISFACTION AND DISCREPANCIES BETWEEN PATIENTS AND SURGEONS IN PLASTIC, AESTHETIC AND RECONSTRUCTIVE SURGERY AND THEIR LEGAL IMPLICATIONS

## Introduction:

Patient satisfaction has recently become a key quality indicator in healthcare. In Plastic Surgery, this holds particular importance, as patients can directly assess the results of procedures affecting external body structures.

## Materials and Methods:

This study examined patient satisfaction following four different surgeries using validated BREAST-Q and FACE-Q questionnaires, alongside assessments by surgeons and external evaluators. The degree of discordance between patients, surgeons, and evaluators was also analyzed. Additionally, legal cases related to plastic surgery in Spain from 2018 to 2022 were reviewed, and legal experts were interviewed.

## Results:

A total of 220 patients participated in the study. Higher satisfaction was reported for breast and aesthetic surgeries, with no significant differences based on patient age, sex, economic status, complications, or surgeon choice. The greatest disagreements arose between patients and surgeons, whereas strong concordance was observed among external evaluators and between them and the surgeons. Of the 199 legal cases analyzed, most involved breast implants. These cases were primarily filed by women dissatisfied with surgical outcomes or lack of information. Forty-two percent of rulings favored the patients, with average compensation of 30,615 euros. The plaintiffs were mostly middle-aged women (30-40 years), many on psychiatric medication and receiving free legal aid. Based on these findings we developed a novel acronym for the identification of patients with high risk of litigation in Plastic Surgery: FATIMA.

## Conclusions:

In conclusion, patient satisfaction was higher for aesthetic and breast surgeries, with notable discordance between patients and surgeons. Preoperative information, patient selection, and caution with patients having mental health issues or limited resources are recommended to improve outcomes. Furthermore, the introduction of the novel acronym FATIMA to identify high-risk litigation patients in Plastic Surgery could assist surgeons in making better patient selection and reducing the risk of medical liability.

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# SESSION 9

## AESTHETIC FACE & BODY

## Introduction:

Aesthetic forehead reduction, also known as primary hairline lowering is still a relatively unexplored procedure, although it is rapidly gaining popularity for patients with disproportionately large foreheads. The objective of this study was to review a large single surgeon experience, describing technical evolution, objective and subjective outcome and complications.

## Materials and Methods:

This was a prospective cohort study of patients seeking aesthetic forehead reduction since 2010. Individuals with a primary high forehead (<6cms) were included. Exclusion criteria were: an actively receding hairline, cutaneous disease of the scalp, heavy smokers, and patients with unrealistic expectations. All patients were operated with the same protocol, with minor individualized modifications. Objective forehead reduction was measured comparing pre- and postoperative standardized forehead distances. The Forehead Face-Q and the Vancouver Scar Scale were used to assess perceived improvement in the first 50 patients (presented in a prior study). All complications were registered and patients were followed for a minimum of 6 months.

## Results:

400 consecutive individuals were included, 393 female and 7 male, aged 14-67 years (mean 25 years). The average reduction was 21mm (95% confidence interval: 19-23). Both the forehead FACE-Q and the Vancouver Scar Scale showed significantly positive results. Of interest 5 patients suffered from stable frontal fibrosis and 55 combined the foreheadplasty with other facial procedures. Complications included scalp numbness in 100% of the cases, that resolved between 2-9 months, hypopigmented scar in 25%, minor areas of hairloss in 2 patients and small seroma in 2.

## Conclusions:

Aesthetic forehead reduction is straightforward and safe procedure with less than 1% complication rate and yields a high degree of satisfaction.

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# Title : Long-Term Stability in Endoscopic Brow Lift: A Systematic Review and Meta-Analysis of the Literature

## Introduction:

Long-term stability and recurrent ptosis are among the most debated topics in endoscopic brow lifts. Although there are many publications on endoscopic brow lifts, more research is needed on long-term brow elevation and stability. This systematic review aims to evaluate the amount of elevation and stability achieved by endoscopic brow lifts in the long term.

## Materials and Methods:

To evaluate the long-term outcomes of endoscopic brow lifts, the databases 'Pubmed', 'Web of Science', 'Scopus', and 'Google Scholar' were searched using the keywords 'endoscopic brow lift', 'endoscopic forehead lift', 'forehead lift', 'foreheadplasty', 'brow lift', 'endoscopic brow fixation', and 'brow fixation'. Studies published between September 1994 and May 2024, including isolated or combined endoscopic brow lift surgeries, were included.

## Results:

5324 articles were screened, and 85 full texts were reviewed. Of these studies, 12 (14.1%) were found suitable for systematic review and meta-analysis. Brow elevation values were evaluated separately for medial, central, and lateral parts. The pooled effect sizes for medial, central, and lateral brow elevations were found to be 3.25 mm (2.44-4.06), 3.86 mm (2.93-4.8), and 4.35 mm (3.06-5.64), respectively.

## Conclusions:

This study is the first meta-analysis to present the average elevation values that can be achieved in the long term in endoscopic brow lifts. These data guide a better understanding of the patient candidates and the technique for endoscopic brow lifts. Sharing more objective data over the long term with different fixation methods will contribute to a better understanding of the criteria related to the indication of this surgery.

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# Title : Is It Possible to Push the Boundaries of Facelift Surgery by Integrating SMAS Plication and Deep Plane Facelift Techniques into a New Method?

## Introduction:

In the field of facial rejuvenation surgery, SMAS plication and deep plane facelift techniques have each been recognized for their unique advantages and limitations. Integrating these two approaches holds the potential to optimize aesthetic outcomes in facelift procedures.

## Materials and Methods:

This study retrospectively evaluates the outcomes of 67 patients who underwent surgery using the Plicated Deep Plane Facelift method which is already published as a novel approach that combines SMAS plication and deep plane facelift techniques. The study analyzes patients' Wrinkle Severity Rating Scale (WSRS) scores before and after surgery, assesses the complication rates, and examines the management of these complications. The goal is to provide a comprehensive understanding of the effectiveness and safety of this integrated technique in achieving enhanced aesthetic results in facial rejuvenation.

## Results:

The senior author successfully performed the procedure on a total of 67 patients. The average preoperative WSRS score was  $4.4 \pm 0.61$ , which showed a significant reduction to  $1.31 \pm 0.38$  three months postoperatively ( $p < 0.05$ ). The facelift technique was implemented effectively in all cases, with no major complications observed.

## Conclusions:

This technique represents an integration of deep plane facelift and SMAS plication, harnessing the complementary strengths of both approaches to achieve targeted correction of nasolabial folds. This combined method yields substantial and aesthetically pleasing improvements in facial and neck rejuvenation, demonstrating its efficacy in enhancing surgical outcomes.

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# Title : The Long-Term Efficacy of BoNT-A for Lower Facial Rejuvenation in 400 Patients

## Introduction:

Botulinum toxin A (BoNT-A) is widely used for facial rejuvenation. We focused on the lower third of the face, including areas like the chin, jawline, cervicomental angle and platysma region. The aim is to demonstrate the long-term efficacy of BoNT-A and the muscular rebalancing through repeated treatments, despite its reversible effects.

## Materials and Methods:

We enrolled 400 patients (380 women and 20 men, aged 35 to 85) between 2018 and 2024. Participants received BoNT-A injections in the lower third of the face and neck, with treatments repeated at least 3 to 4 times every six months. Dosages ranged from 120 to 160 units per session at specific standardized injection sites. Outcomes were evaluated postoperatively using the FACE-Q Aesthetics scales, assessing areas like the overall face, lower face/jawline, chin, area under the chin and neck. Pre- and post-treatment outcomes were also evaluated by two independent surgeons using a 5-point VAS scale through standardized photo and video documentation. Patients who had other aesthetic procedures of the face, follow-ups shorter than one year, or contraindications were excluded.

## Results:

Both the FACE-Q and VAS evaluations indicated significant post-treatment improvement after the first session ( $p < 0.01$ ). Notably, the improvements were sustained when comparing initial post-treatment assessments with those after three or four treatments ( $p < 0.001$ ), supporting the hypothesis that results persist beyond the functional duration of BoNT-A after repeated sessions.

## Conclusions:

The study aimed to standardize BoNT-A injection techniques by optimizing dosage and injection points to minimize adverse events. It confirms the efficacy of BoNT-A for rejuvenating the lower third of the face and suggests that repeated treatments contribute to long-term stabilization of results. Additionally, BoNT-A offers not only temporary aesthetic benefits but also induces muscular plasticity, which may enhance the outcomes of future surgical interventions, such as facelifts, by helping maintain long-term results.

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Title : The influence of Pitanguy ligament on the supra tip break point in open rhinoplasty

#### Introduction:

The supratip breakpoint is paramount in nasal aesthetics. 'Polly beak deformity' refers to a swollen supra tip, which poses significant aesthetic concerns. The Pitanguy ligament facilitates tissue attachment and helps control fibrosis. This study investigates the impact of Pitanguy ligament repair on supratip depth during open rhinoplasty.

#### Materials and Methods:

This retrospective study conducted between May 2019 and July 2023 included 120 patients. Divided into three groups, each comprising 40 patients: Group I (No Touch Group): The Pitanguy ligament remained untouched. Group II (Excision Group): The Pitanguy ligament was excised. Group III (Repair Group): The Pitanguy ligament was sutured to the highest point of the caudal septum. Patient photographs were taken at the 3rd and 12th months post-operation. Supratip area depth was measured using Adobe Photoshop software. Changes in the supra tip breakpoint depth at 3 and 12 months, along with a comparison of the 12-month supra tip depths among the groups, were conducted.

#### Results:

The study included 120 patients (96 females and 24 males. Group II exhibited statistically significant differences when comparing the changes between 3 and 12 months postoperatively ( $p < 0.05$ ). By the 12th month, the depth of the repair group (Group III) significantly exceeded that of the other groups ( $p < 0.05$ ).

#### Conclusions:

This study demonstrates that performing Pitanguy repair in open rhinoplasty techniques significantly enhances supra tip depth and prevents pollybeak deformities.

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Title : Shaping precision in rhinophyma surgery: ultrasound approach in a multicenter prospective study.

#### Introduction:

Rhinophyma, a progressive condition characterized by hypertrophic growth of the nasal sebaceous glands, has traditionally been treated with electrocautery or laser techniques. These methods, while effective, are often associated with extensive tissue damage, prolonged recovery, and suboptimal cosmetic results. This multicenter prospective study systematically compares the outcomes of an innovative ultrasound-based surgical device with conventional methods for rhinophyma treatment, assessing both aesthetic and functional results.

#### Materials and Methods:

A total of 24 patients presenting moderate to severe rhinophyma were enrolled across two centers from 2020 to 2024. Patients were randomly assigned to two groups: one treated with the ultrasound-assisted device (12 patients), and the other with traditional methods such as electrocautery or laser (12 patients). Postoperative assessments were conducted at 1, 3, and 6 months, utilizing the SCAR-Q questionnaire for patient-reported outcomes and an external team of surgeons for objective evaluation. Key outcomes included healing time, aesthetic satisfaction, and complication rates.

#### Results:

Patients treated with the ultrasound device showed faster recovery times, with an average healing period of 2 weeks, compared to 4 weeks in the traditional methods group. SCAR-Q scores indicated higher patient satisfaction in the ultrasound group, with 90% of patients rating their results as "very satisfactory," versus 75% for the traditional methods group. The external surgical team rated 85% of ultrasound-treated cases as "excellent" or "very good" based on objective criteria, compared to 65% for the traditional methods. Complication rates were lower in the ultrasound group, with only 1 minor case of local delayed healing, compared to 4 cases of the traditional methods group.

#### Conclusions:

This multicenter prospective study demonstrates that ultrasound-assisted surgery offers superior outcomes compared to traditional methods for rhinophyma treatment. Patients treated with ultrasound experienced faster recovery, higher satisfaction, and fewer complications. These findings suggest that ultrasound technology may represent a new standard of care for rhinophyma surgery.

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Title : PATIENT SATISFACTION AFTER HYALURONIC FILLERS: DOES PATIENT PERCEPTION LAST BEYOND THE FILLER?

Introduction:

The efficacy and longevity of hyaluronic acid (HA) fillers is well supported by previous studies evaluating patient-reported outcomes (PROs). However, the longitudinal relationship between patient perceptions and physical volume retention remains unknown.

Materials and Methods:

A prospective study enrolled female patients ages 40 to 65 who were injected in four regions of the face bilaterally using 3 different dermal fillers. FACE-Q survey consisting and 3-D imaging was performed before and at 2 weeks, 4 weeks, and 3-month intervals after injection. Univariate analysis of the relative difference in volume and PRO scores was performed.

Results:

A total of 101 patients were included. Over the study period, the malar extended midface and upper perioral regions experienced immediate discordance between volume and PRO scores starting at 2 weeks post-injection. Lip PRO scores remained comparable to volume initially, though later diverged. The lower perioral region PROs decreased most proportionally to volume. In terms of the whole face, the psychological, appearance distress, and aging modules exhibited the most durability compared to volume. Social modules showed weaker alignment over time, while marionette lines and nasolabial folds demonstrated significant early variability between volume and PRO scores.

Conclusions:

Certain facial regions exhibit a disproportionate improvement and longevity of patient perception compared to the physical volume maintained. These results could guide patient-provider discussions on the frequency of treatment of different areas of the face due to perceived benefits lasting in some regions beyond that of the physical volume.

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Title : Body contouring surgery after bariatric surgery improves long-term health-related quality of life and satisfaction with appearance: an international longitudinal cohort study using the BODY-Q

Introduction:

The long-term impact of body contouring surgery (BCS) following bariatric surgery remains unclear. In many European countries, BCS is publicly funded or covered by health insurance, as it is classified as functional rather than aesthetic surgery, within certain criteria. However, there is limited evidence on how BCS affects patient outcomes and its prioritization from clinical, patient-centered, and health-economic perspectives. The BODY-Q, a validated patient-reported outcome measure, assesses changes in health-related quality of life (HRQL) and satisfaction with appearance in patients who have undergone bariatric surgery and BCS. This study aimed to examine long-term changes in HRQL and satisfaction with appearance in patients who underwent bariatric surgery, with or without subsequent BCS, using BODY-Q data and comparing these outcomes to normative scores from the general population.

Materials and Methods:

Prospective BODY-Q data were collected from six European countries between June 2012 and February 2022, in a cohort of patients who underwent bariatric surgery. Mixed-effects regression models were used to analyze changes in HRQL and satisfaction with appearance over time between patients who did and did not receive BCS, and to assess the impact of patient-level covariates on outcomes.

Results:

The study included 24,604 assessments from 5,620 patients. Bariatric surgery initially improved HRQL and satisfaction with appearance during the first postoperative year, but these scores gradually declined, falling below normative levels after 1-2 years. In contrast, patients who underwent subsequent BCS experienced sustained improvements or stabilization in both HRQL and satisfaction with appearance for up to 10 years, with scores at or above normative levels throughout.

Conclusions:

BCS plays a crucial role in maintaining long-term improvements in HRQL and satisfaction with appearance, preventing the declining scores observed after bariatric surgery alone. These findings emphasize the need to integrate BCS into post-bariatric care to optimize patient outcomes and health-economic decisions.

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## Title : An Efficient and Natural Method for Creating a Neoumbilicus: Second Intention Healing

### Introduction:

Abdominoplasty is a common surgical procedure that involves the resection of lower abdominal skin and the advancement of an upper abdominal flap to create a tighter abdomen. Traditionally, the umbilicus is cut around and left attached to the abdominal wall, then exteriorized and sutured. Various techniques have been proposed to achieve a more natural umbilicus, aiming to prevent scar contraction and improve cosmetic outcomes.

The umbilicus originates from the secondary healing of the site where the umbilical cord was attached. It can be completely resected at its stump, and reconstruction can be achieved by creating a wound on the skin sutured directly to the muscle fascia, leaving a small area of fascia exposed. This area undergoes secondary healing and retraction, resulting in a more natural umbilical appearance.

### Materials and Methods:

Retrospective analysis of abdominoplasties performed between January 2012 and August 2024 using the neoumbilicus technique by the same surgeon. A small transverse ovoid skin segment was resected in the midline, with underlying fat removed down to the abdominal wall. Sutures were placed from the skin to the muscle fascia, and these were removed two weeks post-surgery. Follow up of 6 months.

### Results:

During this period, 950 abdominoplasties were performed. The average time to create the neoumbilicus was three minutes. Scar retraction was minimized, as the scar is confined to the bottom of the umbilicus. Complications included a 3% rate of displacement requiring correction under local anesthesia, 2% infection necessitating oral antibiotics, and 1% granulomas. The overall appearance of the umbilicus was natural, without the stigma of a round scar or mismatched skin pigmentation.

### Conclusions:

The neoumbilicus technique provides a simple and efficient method for umbilical reconstruction. The resulting scar closely resembles the original formation of the umbilicus, offering a more natural appearance. Complications are infrequent and easily managed, making this technique an appealing option in abdominoplasty.

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Do you have any disclosures? No

Title : Impact of cosmetic tourism on the NHS: a single center retrospective study

#### Introduction:

Cosmetic tourism presents significant challenges for the National Healthcare System as complications lead to financial and resource burden on plastic surgery departments. This retrospective study quantifies the economic impact of cosmetic tourism on a London plastic surgery department and analyzes patients' motivations for undergoing surgery abroad.

#### Materials and Methods:

We reviewed 53 patients who required medical attention between January 2018 and January 2024. Data collection included patient demographics, healthcare usage, complications, and financial costs incurred by the department. Second stage of the study involved phone interviews with these patients. 28 women responded to questions about their motivation to undergo surgery abroad, how they chose their surgeon, and their satisfaction with the surgical outcome and follow-up.

#### Results:

Cohort patients were mostly females (51) with a mean age of 41.5 years. Turkey was first destination for cosmetic tourism (56.36%), followed by Brazil (9.09%) and Iran (7.27%). These 53 patients accounted for 407 hospital visits and 99 days of hospitalization. 21 (39.62%) required surgery. Total duration of care spanned 4,707 days, with an overall cost to the department of £118,677.02, averaging £2,239.19/patient.

21 patients' interviews revealed that 42.86% had consulted a UK surgeon before undergoing surgery abroad. Most of them chose their surgeon based on friends' recommendation (57.14%) or via social media (30%), and their motivation was the costs of cosmetic surgery in the UK (88.14%). 53.57% were displeased with surgical outcomes, and 50% dissatisfied with their follow-up care abroad. Despite complications encountered, 21.43% returned to their surgeon, and 39.29% would recommend cosmetic tourism to friends.

#### Conclusions:

Cosmetic tourism imposes a considerable financial burden on the NHS. Patients are driven to seek surgery abroad due to misinformation, often propagated through social media or personal networks. The low satisfaction rates and significant number of complications emphasize the need for enhanced patient education regarding the risks associated with cosmetic tourism.

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