

SWISS PLASTIC SURGERY

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Rekonstruktive und Ästhetische Chirurgie

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ABSTRACTS AND POSTERS

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- Breast
- Regenerative surgery: facts and fiction
- Head and neck reconstruction

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FREE COMMUNICATIONS 1: REGENERATIVE SURGERY

(FR, 01.09.17 – 09:10 – 10:00)

Axially vascularized, hypertrophic cartilage derived bone scaffolds: a treatment option for complex bone defects

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Introduction

Complex bone defects are challenging clinical scenarios, especially in the maxillofacial region. The standard of care, vascularized bone grafts (VBG), is limited by donor site morbidity and restricted availability. Furthermore, shaping of complex, three-dimensional structures with available autologous bone can be cosmetically and functionally insufficient. The aim of this study was to create a tissueengineered, axially VBG with devitalized hypertrophic cartilage (HC), activated by stromal vascular fraction (SVF) cells from human adipose tissue.

Material and methods

HC pellets, generated from bone marrow were devitalized by lyophilization. The resulting constructs were inserted into devitalized bone cylinders, after embedding in fibrin gel with or without SVF cells, mimicking bone necrosis. A ligated central vascular bundle was inserted and the whole construct was subcutaneously implanted in nude rats. After 12 weeks, bone formation and vascularization were analyzed.

Results

The fibrin clot was replaced by connective tissue interspersed with vessels reaching into and filling the gaps in the surrounding cancellous bone cylinder. Human ALU+ cells were present after 12 weeks in the devitalized SVF+ group. Bone could be found not only in the SVF-seeded devitalized pellets groups, but remarkably also in the unseeded, devitalized constructs.

Conclusion

Hypertrophic cartilage can be remodeled into bone in an axially vascularized scaffold and used as a mold for any shape of bone defect of clinically relevant size. It creates the perspective of an off-the-shelf bone substitute, which may lead to a plethora of clinical applications.

Regeneration patterns influence hindlimb automutilation after sciatic nerve repair using stem cells in rats

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Introduction

Hindlimb autophagy is common after rat sciatic total axotomy and is considered as a sign of neuropathic pain. We applied adult stem cells in a fibrin conduit in a total sciatic axotomy model to improve nerve regeneration, investigating whether a correlation could be detected between stem cells effects on regeneration and limb autophagy.

Material and methods

After sciatic nerve section, a 1-cm sciatic gap was crossed using fibrin conduits. Experimental groups included empty fibrin conduits, fibrin conduits seeded with primary Schwann cells, and fibrin conduits seeded with Schwann cell-like differentiated mesenchymal or adipose-derived stem cells (dMSCs and dASCs). Controls were represented by autografts and by sham rats (tot n = 34). At 16 weeks, regeneration pattern was analysed on histological sections and related to even-tual autophagy. Hindlimbs were evaluated and scored according to autophagy Wall's scale and X-Rays radiological evaluation.

Results

All regenerative cell lines significantly improved myelination at the mid conduit level, compared to the empty tubes. However, dMSC could not significantly improve myelination at the distal stump, showing a more chaotic regeneration compared to both other cells groups and controls. Autophagy was correlated to this regeneration patterns, with higher autophagy scores in the empty and dMSC group.

Conclusion

Hindlimb autophagy can be used as index of neuropathic pain due to nerve lesion or on-going immature regeneration. dMSC group was characterized by a less targeted regeneration comparing to dASC and primary Schwann cells, which confirmed their effectiveness in regeneration and potential in future clinical applications.

VEGF and its effect on nerve regeneration: an in vitro study

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Peripheral nerve injuries associated with nerve damage often affect young people and most of them are confronted with lifelong disabilities. In order to find an equivalent therapeutic alternative to autologous nerve grafts, this in vitro study aimed at assessing therapeutic vascular endothelial growth factor (VEGF) for its neurotrophic capacity and suitability to be released in a slow manner from fibrin nerve conduits.

Experimental conditions included the evaluation of recombinant mouse VEGF 164 and recombinant human -nerve growth factor (NGF) which served as positive control. Growth factor concentrations of 1ng/ml, 10ng/ml, 20ng/ml and 50ng/ml were tested on 10 day old chicken embryonic dorsal root ganglions (DRG) for their effect on axonal outgrowth and Schwann cell migration. Influence of the treatments were analyzed microscopically after 48 hours of incubation by measuring the extent of neurite outsprout and glial cell migration.

In vitro analysis revealed the beneficial effect of both growth factors on axonal outgrowth at various concentrations. Glial cells from DRG proliferated and migrated in close association of the outsprouting axons. NGF appears to support significantly higher axonal regrowth and axonal branching in comparison with VEGF.

The results suggest that further evaluation of VEGF is recommended as it might develop its regenerative potential in synergistic combination with potent neurotrophic factors such as NGF. Considering also its strong activity as angiogenic factor an indirect neurotrophic effect for nerve regeneration is hypothesized. Further experiments are under progress to evaluate their effects on nerve regeneration in an experimental 15 mm rat nerve gap model.

First insights into human fingertip regeneration by echo-doppler imaging and wound microenvironment assessment

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Fingertip response to trauma represents a fascinating example of tissue regeneration. Regeneration derives from proliferative mesenchymal cells (blastema) that subsequently differentiate into soft and skeletal tissues. Clinically, conservative treatment of the amputated fingertip

under occlusive dressing can shift the response to tissue loss from a wound repair process towards regeneration. When analyzing by Immunoassay the wound exudate from occlusive dressings, the concentrations of BDNF, PDGF and LIF were higher in fingertip exudates than in burn wounds (used as control for healing wounds). VEGF-A was highly expressed in both samples in comparable levels. In our study, pro-inflammatory cytokines were relatively higher expressed in regenerative fingertips than in the burn wound exudates while chemokines were present in lower levels. Functional, vascular and mechanical properties of the regenerated fingertips were analyzed three months after trauma and compared the data to the corresponding fingertip on the collateral uninjured side. While sensory recovery and morphology (pulp thickness and texture) were similar to uninjured sides, mechanical parameters (elasticity, vascularization) were increased in the regenerated fingertips. Further studies should be done to clarify the importance of inflammatory cells, immunity and growth factors in determining the outcome of the regenerative process and its influence on the clinical outcome.

An important role of VEGF-C in promoting lymphedema development

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Secondary lymphedema is a common post-cancer treatment complication but the pathomechanisms underlying the disease remain unclear. Using a mouse-tail lymphedema model, we found an increase in local and systemic levels of the lymphangiogenic factor VEGF-C, and identified CD68+ macrophages as a cellular source. Surprisingly, overexpression of VEGF-C in a transgenic mouse model led to aggravation of lymphedema with increased immune cell infiltration and vascular leakage in comparison to wild-type littermates. Conversely, blockage of VEGF-C by overexpression of soluble VEGFR3 reduced edema development, diminishing inflammation and blood vascular leakage. Similar findings were obtained in a hind limb lymph node excision lymphedema model. Flow cytometry analyses and immunofluorescence stainings in lymphedematous tissue revealed that VEGFR3 expression was restricted to lymphatic endothelial cells. Our data suggest that endogenous VEGF-C causes blood vascular leakage and fluid influx into the tissue, thus actively contributing to edema formation. These data may provide the basis for future clinical therapeutic approaches.

Role of lymph nodes' transfer in vascularized composite allotransplantation

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Background

The lymphatic system plays an active role in modulating inflammation and autoimmune disease, along with organ immune-rejection processes: some consider the lymphatic circulation primarily harmful to allografts, while others consider that it can work bi-functionally, driving immunity versus tolerance according to demand. The aim of this study is to assess the role of regional donor lymph nodes (LNs) in vascular composite allograft (VCA) rejection.

Materials and methods

16 Lewis rats underwent hind-limb transplantations from Brown-Norway rats: 8 of them received grafts containing LNs (popliteal and inguinal), while the other 8 received LN-depleted grafts. The rats were treated for 21 days with Tacrolimus in order to allow lymphatic reconnection. After 35 days, rejection was evaluated macroscopically and spleen, popliteal and groin LNs of both origins were harvested in order to investigate donor/recipient lymphocyte composition by flow cytometry.

Results

There was no statistically significant difference between rejection scores in transplanted hind-limbs with and without LNs. A significantly higher frequency of donor B and T cells was observed in rats where hind-limbs with LNs were transplanted, while the frequency of donor DCs remained unvaried. We also observed a higher frequency of donor CD45+ cells in the spleen of rats receiving LN-containing transplant, with a significant increase of donor B cell frequency.

Conclusion

Hind-limb transplantations with LNs showed increased level of B and T cell chimerism in recipient LNs and spleen, but unchanged rejection scores. These results underline the potential of specifically targeting lymphatic vessels and LNs to influence VCA rejection.

FREE COMMUNICATIONS 2: HEAD AND NECK

(FR 01.09.17 – 11:10 – 12:30)

The digastric flap: a functional technique for soft palate reconstruction after tumorectomy

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Introduction

Oropharyngeal carcinoma excision of more than 50% of soft palate followed by static reconstruction may result in functional deficits, including velopharyngeal insufficiency, swallowing and speech difficulties. We describe a functional soft palate reconstruction technique to restore aeromechanical and acoustic functions, enabling swallowing without nasal regurgitation and speech without nasalance.

Material and methods

We performed a retrospective analysis of patients undergoing soft palate functional reconstruction after cancer resection between 01/2011 and 12/2013. Surgical technique included transfer of digastric muscle combined with folded radial forearm free flap. Efficacy of functional reconstruction was evaluated: objective voice analysis using PRAAT® (Software for phonetic voice assessment), sonography and analysis of formants; nasalance using Modell 6200 (Fa Kay Elemetrics) and «Der Nordwind und die Sonne»-test; swallowing ability was tested with fiberoptic endoscopic evaluation (FEES) and videofluoroscopy.

Results

We included 12 patients (6 m, 6 f) with a mean age of 62 yrs [44-72] affected by tonsil carcinoma (stage T2-4) infiltrating the soft palate. Reconstructed patients analysis showed: Formant analysis with mean F1 = 374Hz (SD 71Hz), mean F2 = 2037Hz (SD 427Hz) and mean F3/F4 = 2078 – 3777Hz; Mean «Der Nordwind und die Sonne» = 44% (SD 10%); FEES: complete closure during swallowing of liquids and no nasal regurgitation of liquids (only epipharynx) in all patients.

Conclusions

Our surgical approach provided a functional reconstruction with outcomes close to normality what makes it a suitable technique for patients with large soft palate defects.

Transverse cervical vessels as recipient site in vessel-depleted complex microsurgical head and neck reconstruction.

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Introduction

Free flap reconstruction is the gold-standard in oncologic head and neck reconstruction. Usually, branches of the external carotid artery are used as recipient vessels. If these are not suitable due to damage by previous surgery or radiotherapy, the transverse cervical vessels can be considered as valuable alternative.

Material and methods

A chart review of 237 free flap head and neck reconstructions in our institution from 2000 to 2017 was conducted. We focused our analysis on cases for which the transverse cervical vessels were used as recipient vascular site.

Results

The transverse cervical vessels were first used in 2005. We identified 10 patients corresponding to 11 free-flaps (one patient needed 2 flaps for oncological recurrence after 3 years). Of those, 6 were salvage procedures after previous free flap failure, 4 were secondary procedures after recurrence and 1 was primary reconstructive surgery. Nine had pre-operative radiotherapy. Used flaps were radial forearm (8), latissimus dorsi (2) and fibula (1). All flaps survived, none presented microsurgical complication but revision was needed for seroma/hematoma in 3 cases.

Conclusions

Our experience suggests the safe use of the transverse cervical vessels as second-line recipient vessels in depleted necks. Major advantages are their position outside of the oncologic dissection and radiation zone, similar diameter to donor-site vessels and their lower affinity for endovascular atherosclerotic damages compared to the external carotid branches. These elements make the transverse cervical vessels a reliable and accessible recipient site in complex microsurgical head and neck reconstruction.

Jaw reconstruction with the CAD/CAM technique: a multidisciplinary approach

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Introduction

Jaw reconstruction remains a challenge in modern maxillofacial surgery. It involves restoration of form and function, including chewing, swallowing, phonation, and facial expression. Fibular free flap and the deep circumflex iliac artery bone flap (DCIA) are considered the workhorse in jaw reconstruction. Correct shaping and placement of the microvascular bone graft is pivotal for success and quality of the reconstruction. The use of virtual simulation and surgical planning (CAD/CAM) to plan jaw reconstruction with microvascular bone grafts and the multidisciplinary approach improved surgical results and outcome.

Methods

In the last 3 years we had 24 cases of complex jaw defects which were reconstructed with a free fibula flap in 14 cases and DCIA Flap in 10 cases. We share our experience in jaw reconstruction with the CAD/CAM Technique, showing our multidisciplinary team approach in the planning and execution of these complex cases.

Results

Our experience demonstrated that CAD/CAM-assisted technique guarantees intraoperatively an exact shaping and placement of the microvascular bone graft and offers a very accurate anatomical reconstruction of the jaw. The multidisciplinary approach of the oral- and maxillofacial and plastic surgery is incorporated in our setting from the beginning of the planning phase to the surgery itself.

Conclusion

Planning and performance of the CAD/CAM-assisted reconstructive jaw surgery and the collaboration of our department with the oral- and maxillofacial colleagues has proven to be a very efficient method in these complex cases with reducing the surgery time and improving the treatment quality significantly.

Free medial sural artery perforator flap: a rising workhorse in head and neck reconstruction

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Defects after cancer resection in head and neck often require a thin pliable skin flap with a sufficient length of the pedicle. In small to moderate defects many surgeons choose the free radial forearm flap that is easy to harvest. Nevertheless the donor site morbidity on the forearm is a clear disadvantage: Sacrificing of one of two arteries to the hand resulting in discomfort in cold/warm perception or reduced pressure perception, and an unsightly scar where skin grafts are almost always required. Alternatively, the anterolateral thigh flap can be used. Its main disadvantage is the thickness of the flap. Although primary flap thinning is feasible, aggressive thinning can result in flap compromise and therefore constitutes an unnecessary risk. With the evolution of microsurgery and development of novel perforator flaps, more choices are now available to the reconstructive surgeon and donor site is becoming an important consideration. The medial sural artery perforator (MSAP) flap provides thin tissue from the calf. The sural artery runs with 2 venae comitantes and pedicle length is about 10 cm. In head and neck reconstruction the flap can easily be harvested in a two-team approach. Flap size of 5 – 6 cm in width can be closed directly. There is no functional restriction and patients are allowed to mobilize and bear weight on the donor leg from the first postoperative day. Due to its favourable donor site the free MSAP flap is rapidly evolving as a workhorse flap in head and neck reconstruction.

Is age a risk factor for free flap reconstruction in ENT cancer?

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Introduction

The surgical treatment of head and neck cancer generates large oromaxillofacial defects often requiring free flap reconstruction. Head and neck cancer is diagnosed more frequently after age 50. Comorbidities may put older patients at risk of increased surgical complications. We aimed to find out whether age was a risk factor for major complications in free flap reconstruction for head and neck cancer.

Material and methods

A retrospective study of the medical records of 179 patients gathered 204 free flaps between 2000 and 2015 at a single university hospital. Patients were divided into 2 groups, GrI<65y. and GrII>65y. The number and indications of reoperation within 30 days of the reconstruction were recorded, including wound dehiscence, bleeding, microsurgical revision, infection, seroma, or a new flap. The length of intensive care unit (ICU) stay, demographics and comorbidities were gathered. Statistical analysis was performed.

Results

In GrI<65y, n=138 pts, average age was 60.9±7.8 years and it was 72.4±5.6 years in GrII>65y, n=66 pts. The groups were comparable for all parameters except tobacco use, with a significantly greater percentage of smokers in the younger group. The microsurgical success rate was 98 %, all flap failures occurred in patients <65. Age 65 and above did not increase the risk of reoperation or the length of ICU stay. Hypertension increased the risk of both reoperation and ICU stay. Active smoking, osteocutaneous and tubularized flaps increased the risk of reoperation.

Conclusion

Comorbidities should be taken into consideration, rather than age alone, when selecting patients for head and neck cancer free flap reconstruction.

Handling of extraarticular ankylosis in noma patients

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Introduction

Extraarticular ankylosis occurs in survivors of noma disease as sequela of severe facial scarring after necrosis. In the last twenty years of treating noma sequelae, we observed high recurrence of mouth opening limitation. We therefore progressively changed our surgical strategy of soft tissue reconstruction. This study compares the impact of different surgical approaches on long-term mouth opening.

Patients and methods

This retrospective study includes 65 patients with ankylosis due to noma sequelae, operated over sixteen years. Soft tissue reconstruction evolved from local flaps in the beginning to large free flaps. Mouth opening was measured before and regularly after operation and different surgical techniques are compared. Patients had postoperative long-term physiotherapy and follow-up from the local humanitarian association.

Results

Mean postoperative gain of mouth opening was 19 mm. Patients had mean follow-up of 6.5 years, showing a trend of mouth opening diminution for most patients. Complete loss of mouth opening occurred in 10 patients after 5.2 [2-10] years, additional 15 patients had mouth opening below 11 mm after 5.4 [3-10] years. Overall recurrence rate was 46 %. Patients having local or pedicled flaps had higher loss of mouth opening (53 % and 59 %) compared to patients with free flaps (19 %).

Conclusion

Recurrence of extraarticular ankylosis is high with all of the used approaches. Free flap reconstruction provides better results. If no follow-up can be offered, patients should not be operated, as oral feeding may get impossible with a facial defect reconstructed. The importance of long-term physiotherapy is mandatory.

The obliquus capitis inferior muscle: a key anatomical structure along the course of the greater occipital nerve. Implications for migraine headache surgery

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Introduction

The greater occipital nerve (GON) is responsible for the sensation of the skin in the back of the head and neck and its compression has been identified as a possible trigger of occipital migraine headaches (MH). The intersection between the GON and the obliquus capitis inferior muscle (OCI) has not been described in the common compression topography yet.

Methods

Twenty fresh cadaveric heads (40 nerves) were dissected and the greater occipital nerve was followed from its emergence from the semispinalis capitis muscle to its passage around the OCI muscle. The intersection point, length of the muscle and thickness of the muscle and nerve were measured. In addition we noticed the tight or loose nature of the GON/OCI intersection.

Results

All nerves passed around the OCI muscle in a J hook fashion. The intersection point between the OCI and the GON was found at 68 mm from the occiput and 3.6 mm lateral to the midline. The thickness of the muscle at the intersection was 12 mm. The nerve and the muscle were loosely related in 7 specimens, while they appeared tightly attached with the nerve passing through the fascia in the other 33.

Conclusions

In whiplash traumas, when the neck flexes and extends strongly, the OCI remains immobile placing strain as a pivot point on the GON in particular when the nerve is entrapped in one of the other compression points (double crush). The description of the intersection between the GON and the OCI can be clinically useful in cases of posttraumatic occipital headaches for diagnostic and surgical scopes.

Alternatives to facial allotransplantation: lessons learned

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Introduction

Reconstruction of severe facial disfigurement is a challenging process and requires numerous staged procedures. The most promising solution seems to be facial allotransplantation (FAT). However, many fundamental problems remain, such as morbidity, donor mismatch, immune rejection, economic burden and ethical controversy.

Material and methods

An integrated method was applied for soft-tissue facial reconstruction, using «superthin» flaps, perforator flaps, prefabricated flaps and prelaminated flaps. To avoid the patchwork result seen in multiple flaps and skin grafts, one monoblock flap that has similar color, texture, and thickness might be an ideal option to minimize the incisional scars and several surgical procedures. The integrated method as well as postoperative results including functional and aesthetic outcome are presented on 42 patients.

Results

In 2 patients of total face reconstruction, bone marrow mononuclear cell transplantation was conducted. Each patient had facial reconstruction with a prefabricated flap (range 23 x 18 – 32 x 30 cm²) that resurfaced the entire defect. Tip necrosis occurred in 2 patients. The aesthetic and functional status scores were statistically improved. Good skin compliance, normal contours, and emotional expression were noted.

Conclusion

We present different reconstruction techniques, based on the following principles: (1) «matching, large size, and thinner thickness» (MLT); (2) reconstructive ladder ranging from the simplest technique to the complex technique; (3) aesthetic units of the face according to defect size and location. By using these principles, optimal functional and aesthetic outcomes can be achieved.

FREE COMMUNICATIONS 3: REGENERATIVE (FAT)

(FR 01.09.17 – 14:00 – 15:00)

The impact of different recipient site pre-conditioning techniques in fat grafting surgical outcomes

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Introduction

Among the four phases of fat grafting process, which includes harvesting, tissue processing, recipient site preparation and injection, the preparation of the recipient site is the less investigated. The aim of this work is to provide a comprehensive overview of the different recipient site pre-conditioning techniques with the resulting outcomes.

Methods

A search on PubMed/Medline was performed for studies involving the preconditioning of the recipient site in fat grafting using the following key words: «fat grafting» and «recipient site». Resulting articles were reviewed using a priori criteria.

Results

117 articles were initially identified, 33 of which met inclusion criteria: 18 clinical studies on 2361 patients, 14 animal studies, and one in vitro study. Eight techniques were applied: external expansion, internal expansion, implantation of alloplastic material (silicone sheets), injections of cell-proliferation factors, ischemia, percutaneous fasciotomies, tunnelization, and microneedling. The pre-clinical studies demonstrated a positive effect on cellular activity (cell proliferation and angiogenesis) achieved with all techniques. Improvement in fat graft survival was demonstrated by the majority of the clinical studies, and was consistently higher than 50% at 3 months to 1 year follow-up.

Conclusions

The pre-conditioning of recipient site in fat grafting provides positive outcomes with different techniques. This can be especially relevant in case of recipient site affected by contracted scars or radiation therapy, where improvement of vascular supply and expansion of soft tissue can be decisive for the success of the procedure.

Autologous lipotransfer for osteomyelitis: a report of a novel method and systematic review of the literature

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Introduction

Autologous bone grafting represents the clinical gold standard in patients with bone defects of any kind. However, this is associated with significant pain and donor-site morbidity. Application of autologous lipotransfer (fat grafting or lipofilling) in surgery has become very popular. Stem cells from adipose tissue are known for their regenerative and reparative effects. This study reports the use of autologous lipotransfer for treatment of chronic osteomyelitis in a 26 years old patient and a formal systematic review of the literature.

Material and methods

A 26 years old woman suffering from chronic tibial osteomyelitis was initially treated with surgical debridement and antibiotic treatment followed by autologous lipofilling. In addition, a formal systematic review of clinical trials investigating the use of autologous lipotransfer for osteomyelitis was conducted.

Results

The patient remained asymptomatic and showed no signs of recurrence of osteomyelitis. The bone defect cavity showed vascularized adipose tissue after 6 weeks with early signs of osteogenesis. The systematic review search initially identified 266 studies after duplicates removed. None met the inclusion criteria.

Conclusion

This is the first study reporting the successful use of lipofilling in a patient suffering from chronic osteomyelitis. This may replace bone grafting in the future in selected cases. Autologous lipotransfer appears to be simple, safe and a minimal invasive technique as an important alternative to current treatment algorithms. There is a need for further clinical as well as experimental research focusing on the mechanism of osteogenesis following autologous fatgrafting.

Prevascularization of Integra® with adipose tissue-derived microvascular fragments enhances early skin grafting

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Introduction

Bradytrophic skin defects are a clinical challenge. Dermal skin substitutes represent an effective treatment alternative. However, slow ingrowth of the recipient's microvessels prevents early skin grafting. In the present study we analyzed in a mouse wound model whether seeding adipose tissue-derived microvascular fragments (adMVF) onto Integra® accelerates matrix incorporation and allows early skin grafting.

Material and methods

Green fluorescent protein+ adMVF were isolated from C57BL/6-Tg(CAG-EGFP)10sb/J mice and seeded onto Integra® with subsequent implantation into full-thickness skin defects on the skull of CD1 nu/nu mice. Nonseeded matrices served as controls. Photo-acoustic imaging was used to analyze the oxygen saturation within the implants. Vascularization and incorporation of the matrices were studied with histology/immunohistochemistry. Additional implants were covered with autologous split-thickness skin grafts on day 10 to assess their engraftment.

Results

Photo-acoustic analyses on day 21 revealed that adMVF-seeded implants exhibited an improved vascularization, which was associated with significantly higher oxygen saturation when compared to controls ($13.5 \pm 1.5\%$ vs. $3.8 \pm 0.5\%$; $n = 9$, $P < 0.05$). Histological analyses showed enhanced cellular infiltration, indicating improved matrix incorporation. The skin grafts engrafted well onto adMVF-seeded matrices on day 10. In contrast, coverage of non-seeded control matrices resulted in graft necrosis.

Conclusion

adMVF improve the incorporation of Integra® matrices in bradytrophic skin defects and may contribute to the establishment of a well-vascularized wound bed for early skin grafting.

The fate of systemic and local administered adiposederived mesenchymal stromal cells to modulate wound repair

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Introduction

There is increasing interest in the use of adipose-derived mesenchymal stromal cells (ASCs) for wound repair. However, the fate of the administered cells is still poorly defined. This study set out to establish the location and survival of ASCs in vivo when administered either systemically or locally using both bioluminescence imaging (BLI) and histological analysis.

Methods

ASCs were transduced to express both firefly luciferase (Fluc) and green fluorescent protein (GFP). To determine the behaviour of ASCs, a model of physiological wounds in rats was used. ASCs were administered either systemically into the tail vein (2×10^6) or locally into the corners of the wound bed (10^5). ASC distribution and survival was followed in these animals.

Results

Systemically administered ASCs were detected in the lungs with a decrease in signal from 3h to 48h, but no signal was detected in the wound. When injected locally, the signal of ASCs remained strongly detectable for 7 days, and a few ASCs seemed to migrate into the wound centre as early as 48h post injection.

Conclusion

Using this model we observed that GFP/Fluc labelling allowed ASCs to be tracked in vivo. When administered systemically, ASCs were filtered out in the lungs, whereas locally administered ASCs remained and survived at the wound site for 7 days. Therefore, the systemic administration of ASCs for local wound repair in the clinical setting, is questionable. To fully understand the role of ASCs in the context of wound repair, further studies using different administration methods in pathological wound models of increased severity should be performed.

Improved cell viability in autologous fat grafting with ascorbic acid supplemented tumescent solution

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Introduction

In reconstructive surgery, fat volume augmentation is often necessary for aesthetic or functional reasons. As an alternative to synthetic and xenogenic materials, autologous fat grafting (AFG) based on liposuction is gaining popularity, yet successful transplantation and long-term volume maintenance are difficult. Standard tumescent solution formulations neglect adipocyte and stromal vascular fraction (SVF) cell survival during extraction, as well as SVF differentiation into adipocytes thereafter, all of which are crucial for the success of AFG. Here we hypothesized that addition of ascorbic acid (AA) to the tumescent solution could prevent liposuction-induced cell damage.

Material and methods

The effect of 0.1 mmol/l ascorbic acid in tumescent solution was investigated with a previously described ex vivo model of AFG. Briefly, excision fat was infiltrated with tumescent solution,

with or without AA, and incubated for 20 minutes at 37°C. Afterwards hand assisted liposuction was performed with a blunt cannula. Total cell viability, clonogenicity and differentiation capacity of the SVF were assessed.

Results

With AA, 10.3% more cells and in particular 14.9% more adipocytes and 5.7% more SVF survived liposuction. Clonogenicity and adipocyte formation by SVF were unchanged, though osteoblast formation was 1.4-fold better.

Conclusion

Addition of AA successfully improved survival of adipocytes and SVF during liposuction without affecting colony or adipocyte formation by SVF. This study therefore provides a useful supplement to the tumescent solution in order to improve AFG success.

Human platelet lysate (HPL) animal-free derivate supplemented medium improves survival, stemness and neurotrophic potential of human adiposederived stem cells

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Stem cell therapy is a potential tool in regenerative medicine. Unfortunately, animal derivatives used for cell culture have adverse effects when administered to human, and should be possibly avoided. Present work aims to replace common Fetal Bovine Serum (FBS) supplement medium with the animal-free serum HPL (human platelet lysate) in human adipose-derived stem cells (hASC) culture, analyzing its influence on cell properties, proliferation and viability.

hASC can easily be extracted in large amount from adult donors with minimal morbidity. We isolated hASC through both classical collagenase method and without enzymatic digestion. FACS analysis showed that, in both harvesting conditions; stemness markers were expressed more in hASC cultured with HPL than in cells cultured with FBS, with more effective differentiation towards adipogenic and osteogenic lineages. Similarly, cell proliferation assays showed that HPL can sustain cell proliferation better than FBS. Moreover, due to the observed morphological similarities between Schwann cells and hASC maintained in HPL we investigated level of secreted neurotrophic factors. Surprisingly, NGF and BDNF were secreted respectively three and five fold more in hASC cultured with HPL than in FBS-supplemented media, suggesting an improved neurotrophic potential. These properties could allow nerve regeneration and support without the need of SC-like differentiation or other manipulation steps.

These data show that hASC supplemented with HPL retain stronger proliferation and plasticity features, with particularly marked neurotrophic properties, suggesting a clear potential for clinical translation in nerve repair and regeneration.

Comparison of cell characteristics and immunomodulating function of adipose derived stem cells and bone marrow derived mesenchymal stem cells from paired donors across HLA barriers

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Background

Mesenchymal stem cells (MSC) derived from bone marrow (BMSC) and adipose tissue (ASC) have clinically useful immunomodulatory effects and low immunogenicity. Therefore, MSC have the potential to minimize immunosuppression in vascularized composite allotransplantation (VCA). Herein we assess and compare, characteristics and immunomodulatory capacities of BMSCs and ASCs isolated from the same human individual across defined HLA barriers.

Material and methods

Paired samples of omental (o.) adipose tissue, subcutaneous (s.c.) adipose tissue and bone marrow aspirate from 10 human organ donors were retrieved and MSCs isolated. Cells were characterized by flow cytometry and differentiated in three lineages. In mixed lymphocyte reactions (MLR), the ability of ASCs and BMSCs to suppress the immune response was assessed and compared within individual donors. HLA mismatched or mitogen stimulations were analyzed in coculture with different MSC concentrations. Supernatants were analyzed for cytokine contents.

Results

All cell types demonstrated individual differentiation potential and cell surface markers. The immunomodulating effects were dependent on dose and cell passage. Proliferation of responder cells was most effectively suppressed by s.c. ASCs and combination with BMSC resulted in a highly sufficient immunomodulation. Immunomodulation was not cell contact dependent and cells demonstrated a specific cytokine secretion.

Conclusion

Human ASCs and BMSCs isolated from the same individual, both showed effective immunomodulation across defined HLA barriers. This cell contact independent function underlines the potential of clinical systemic application of MSCs.

FREE COMMUNICATIONS 4: RECONSTRUCTION

(SA 02.09.17 – 08:00 – 09:00)

Bedside monitoring of free flaps using ICG-fluorescence angiography significantly improves detection of postoperative perfusion impairment

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Introduction

Free flaps require meticulous postoperative monitoring in order to detect any vascular compromise as early as possible. The purpose of this study was to evaluate the role of indocyanine green fluorescence angiography (ICG-FA) in bedside monitoring of free flaps postoperatively and whether it decreases revision rates and/or increases flap survival rates.

Patients and methods

Between February 2012 and October 2015 210 free flaps were analyzed in this study. The flaps were monitored bedside for vascular compromise by clinical examination and by ICG-FA in a standardized procedure in the first 3 postoperative days. Data was evaluated retrospectively with respect to which examination was decisive for going back to the operating theater after suspected vascular compromise. In addition, revision rates and flap survival rates were evaluated.

Results

In 41 cases (18.6%) clinical and/or ICG-FA examinations indicated revision surgeries of 40 free flaps. 76.9% of these flaps were salvaged due to early detection of vascular compromise. Vascular compromise was correctly identified in 91.6% of the cases indicating a high accuracy of the method. After introducing ICG-FA the flap loss rate dropped from 18.6% in 2005–2011 to 4.4% in 2012 and even further within the study period to 2.7% in 2015. Revision rates were reduced from 22.2% in 2012 to 11.7% in 2015 indicating less unnecessary take backs due to clinical suspicion only.

Conclusion

Adding ICG-FA monitoring to clinical examinations of free flaps is a reliable method to better detect vascular compromise and can easily be performed bedside by nursing staff. It decreases revision and flap loss rates.

Turnover sartorius flap: a reliable local coverage for exposed inguinal vessels

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Introduction

The here described Turnover Sartorius Flap is utilized in our unit as a standard solution for coverage of exposed inguinal vessels. The outcome of this technique with preservation of segmental perforators was retrospectively evaluated.

Methods

The authors retrospectively reviewed all patients who underwent surgery to cover inguinal wound cavities with a Turnover Sartorius Flap between May 2012 and May 2017. Various parameters were noted. Therapeutic outcome and flap reliability was analyzed.

Results

In this study 14 patients could be included (2 female, 12 male). 50% of the patients underwent previous lymphadenectomy, the other 50% had a vascular intervention. The mean age of the patients was 59 years (ranging from 28 years to 83 years). The mean BMI was 23.9 kg/m² (ranging from 15.0 to 30.0 kg/m²). Groin wounds healed in 11 of 14 patients without any complications. One patient suffered from a postoperative seroma. Another patient suffered from a persisting chronic fistulation and infection of the omniflow graft. The same patient suffered from a bleeding at the omniflow graft which was treated by the angiologists. In one patient despite wound coverage with a Turnover Sartorius Flap a gracilis flap was needed because of progressive skin necrosis. Intraoperatively, the Turnover Sartorius Flap was vital.

Conclusion

In our clinic Turnover Sartorius Flap proved to be a reliable flap. We advise to use this technique as a procedure for sartorius flaps. Flap necrosis was not observed in any of the included patients.

Sensate restoration of free gracilis muscle flaps

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Background

Little is known in the literature about spontaneous reinnervation in skin grafts over free, non-neurotised muscle flaps. The aim of this study was to evaluate the sensitivity of free muscle flaps and skin grafts in lower extremity reconstruction without nerve coaptation.

Methods

Patients who underwent lower extremity reconstruction using the free, non-neurotised gracilis flap with skin graft (mean flap size $115 \pm 85 \text{cm}^2$) in the non-weight-bearing area were included. Major and minor complications, flap contour and skin perception were assessed. The gracilis flap was divided into five zones, and sensate recovery was assessed using the Semmes-Weinstein (SW) monofilament examination, static 2-point discrimination (2-PD), vibration and thermal sensation, and the results were compared to the corresponding, surrounding side.

Results

Between September 2014 and October 2016, 13 consecutive patients (50 ± 18 years) could be included. Three patients presented with ulcerations at final follow-up. A good and satisfactory contour for both the patient and the surgeon was achieved. After a mean follow-up of 21 months (range 4 – 51 months), most patients indicated a normal skin perception, and there was no statistical difference between 2/5 (SW Monofilament) and 4/5 (2-PD) of the flap zones and the surrounding tissue. SW monofilament measurements reached 348% of the surrounding side, whereas 2-PD measurements reached 148% of the surrounding side. Moreover, 5/13 patients felt vibration whereas thermal sensation remained poor.

Conclusion

Our results indicate that satisfactory spontaneous reinnervation in skin grafts over free, non-neurotised muscle flaps can occur.

Reconstruction of penile shaft defects following the silicone injection by bipediced anterior scrotal flap

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Introduction

Numerous causalities including attempts of penile augmentation with silicone or paraffin can lead to extensive circular penile shaft defects. Reconstruction is challenging and skin grafting is a suboptimal option, despite its widespread use. This paper presents a surgical technique for penile shaft reconstruction with bipediced anterior scrotal flap.

Patients and methods

Retrospective data analysis was performed for patients treated for symptomatic penile siliconomas who underwent subsequent penile reconstruction with bipediced anterior scrotal flap between 2010 and 2015. The surgical technique is described and depicted in detail.

Results

43 men were treated by radical circular excision of penile siliconomas and extensive shaft defects were reconstructed with bipediced anterior scrotal flap. The mean age was 36.95 ± 11.27 years. The mean duration of follow-up was 10.69 ± 9.54 months. The mean duration of opera-

tion was 2.53 ± 0.46 hours. The operation proved uneventful in all cases. Only minor complications such as partial necrosis (9%), haematoma of the donor site (12%), and partial wound disruption (19%) were observed. The mean score of patient satisfaction was 4.37 on the scale of 5. All patients report postoperative erection ability and the ability to have sexual intercourse.

Conclusion

We present a surgical technique for the reconstruction of extensive penile shaft defects with axial scrotal flap, which provides well vascularized coverage with comparable donor skin quality and thickness. The results are associated with minor donor site morbidity, very good functional and aesthetic outcome, and high patient satisfaction.

Prognostic value of PET/CT for initial staging patients with thick primary cutaneous malignant melanoma (≥ 4 mm Breslow thickness)

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Introduction

The use of PET/CT as a clinical routine staging procedure in advanced malignant melanoma with high risk of occult metastases is suggested. Our aim was to determine the accuracy of preoperative PET/CT in the clinical management of patients with thick melanoma (≥ 4 mm Breslow thickness).

Material and methods

In a retrospective cohort (2001 to 2017), all cases of single, primary malignant melanoma of ≥ 4 mm thickness were evaluated. Data collected consisted of tumor location, tumor type, ulceration, Breslow thickness and sentinel lymph node biopsy (SLNB) result. In addition, preoperative PET/CT findings were assessed.

Results

A total number of 136 patients with a mean age of 68.42 ± 15.09 and mean Breslow index of 6.7 ± 5.19 mm were considered in this study. Among those, 32 patients (23.5%) presented a positive PET/CT result. Mean Breslow index in the patients with a positive and negative PET/CT were 12.08 ± 12.75 mm, and 5.72 ± 2.21 mm, respectively ($P < 0.001$). Nodal involvement in PET/CT was detected in 23 patients (16.9%). Out of the 23 patients histologically confirmed lymph nodes were positive in 19 (82.6%) patients and negative in 4 (17.4%) patients. 65 (70.65%) patients with a negative PET/CT had a negative SLNB, 27 PET/CT negative patients (29.35%) a positive SLNB (sensitivity 82.6% and specificity 70.7%, $P < 0.001$). PET/CT nodal positive involvement was significantly higher in the patients with clinically confirmed nodal disease ($P < 0.001$).

Conclusions

Preoperative PET/CT provides important prognostic information for the management and treatment of the patient with thick melanoma. Breslow index ≥ 4 mm is correlating positively with a positive PET/CT.

Polypropylene mesh repair of a traumatic hernia of the vastus lateralis

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Myofascial herniations of the lower limb are a rare cause of chronic nerve compression and pain. They may have congenital or traumatic origin and the tibialis anterior muscle is the most frequent localisation. A few cases will require operative management. An unusual case of symptomatic, acquired hernia of the vastus lateralis in a young male basketball player is reported. After drainage of a compressive haematoma, the patient developed chronic pain and myositis of the vastus lateralis by friction against the edge of tensor fascia lata muscle. Secondary surgical reconstruction involved a polypropylene mesh repair.

This procedure has been described in a small number of patients after iatrogenic lesions in total hip arthroplasty as well as on anterolateral thigh perforator flap donor site. Instead of denial and stoicism, this simple intervention could be proposed to patients as a therapeutic option.

FREE COMMUNICATIONS 5: BREAST RECONSTRUCTION

(SA 02.09.17 – 10:10 – 12:00)

Color doppler ultrasound and computed tomographic angiography for perforator mapping in DIEP flap breast reconstruction revisited: the Basel Breast Center experience

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Introduction

Preoperative imaging by Computed Tomographic Angiography (CTA) or Color Doppler Ultrasound (CDU) has been suggested as a valuable tool for perforator mapping in abdominally based breast reconstruction. CTA has been promoted as gold standard over the last decade. Recently prophylactic mastectomies have become more frequent and as such patient population younger. For the later X-ray exposure has to be taken into account. Magnetic Resonance Angiography (MRA) is postulated to be a good alternative while CDU has lost its popularity. In our center CDU has regained an important role for preoperative workup. The aim of this study was to compare the specificity and reliability of CDU and CTA in predicting intraoperative perforator selection.

Methods

We retrospectively analyzed 145 microsurgical breast reconstructions in 105 patients, 125 of which were DIEP flaps, between January 2015 and May 2017. Operating reports were analyzed for intraoperative perforator identification, size and quality and compared with preoperative CTA and CDU data, which were both performed in every patient preoperatively. Specificity and sensitivity were analyzed as well as postoperative flap complications.

Results

The correlation between CTA, CDU and intraoperative findings will be demonstrated. We expect the results to have implications for future patient workup at our institution favouring one or the other imaging study.

Conclusions

In our experience CDU and CTA both have an important role in the preoperative workup for DIEP flap based breast reconstruction. CDU might regain more importance as prophylactic mastectomy rates are rising and X-ray exposure might gain relevance.

Secondary angiosarcoma after breast-conserving therapy: a report of six cases

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Background

Breast-conserving therapy with radiation is the most common treatment for early stage breast cancer. Radiation can however induce secondary neoplasia and the angiosarcoma is the most common among the induced neoplasias of the breast.

Patients and methods

Between 2007 and 2017 a total of six patients were treated for secondary angiosarcoma following breast-conserving therapy in our breast center. The therapy, the clinical course of these patients and their survival were analyzed and compared with the current literature.

Results

All patients underwent breast-conserving therapy at an age between 49 and 74 years. Radiation therapy was performed with a total of 50 – 60 Gy in each patient. After an interval of 5.1 to 9.6 years the secondary angiosarcoma was diagnosed. Therapy of the secondary neoplasia included extensive mastectomy with reconstruction using a latissimus dorsi flap, a vertical rectus abdominis myocutaneous flap (VRAM) or split skin graft. All but one patient had secondary radiation therapy. Four out of six patients died after 0.6 to 9.2 years after diagnosis. The other two patients have a disease-free survival of 0.3 and 6.1 years until today.

Conclusion

Our experience with secondary angiosarcoma following breast-conserving therapy is in accordance with the results in literature. It is a very rare and devastating complication of radiation in breast-conserving therapy and has a poor prognosis. A crucial element of the surgical therapy is the wide resection with the goal for negative margins.

Preoperative detection of perforating vessels by means of a smartphone-based thermography device in breast reconstruction using abdominal-flap: a feasibility study

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Introduction

The deep inferior epigastric artery perforator (DIEP) flap has almost everywhere become the first choice for autologous breast reconstruction. Yet, preoperative mapping of the vasculature to detect perforating vessels preoperatively is still performed in a rather inconsistent manner. The study aim was to evaluate the value of a smartphone-based hand-held thermography device and compare it to MRangiography and Doppler-sonography.

Material and methods

Preoperative non-invasive thermography were performed using a hand-held device attached to the smart-phone (FLIR ONE, FLIR systems, USA) in 20 patients who underwent autologous breast reconstruction with DIEP flaps. Perforating vessels respectively their perforasomes were detected after five minutes cooling of the abdominal skin taking pictures at various time points for 30 minutes thereafter. The extent of the perforasomes were identified and correlated to Doppler-sonography and the calibre of the perforating vessels found in MR-angiography.

Results

Thermography was able to adequately detect the location of perforating vessels and identify the extent of perforasomes in a 2-dimensional way. However, thermography was not able to give any information on the calibre and the course of the vessels.

Conclusion

Smartphone-based thermography is a non-invasive, easy-to-use and economical add-on for pre- and intraoperative evaluation of DIEP-flap based breast reconstruction without giving any insight into 3-dimensional anatomy and course of perforating vessels.

Immediate breast reconstruction using acellular dermal matrix: to dare or not to dare? the Montreal experience

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Since 2005, the use acellular dermal matrix (ADM) has revolutionized the field of immediate prosthetic breast reconstruction reportedly providing inferolateral implant support, reducing capsule formation rate and improving aesthetic outcomes. Although we observe an increased use of ADM in breast reconstruction particularly in North America, its acceptance is not widespread as it is still considered controversial in many centres worldwide because of the high rate of potential complications reported by some teams, the variability of outcomes from surgeon to surgeon and the high cost. Following a short review of literature, we present our large case series (over 200 cases) of immediate breast reconstruction using acellular dermal matrix performed in our institution. We review our major and minor complications in comparison to other published series and determine potential risk factors. Careful patient selection following identification of risk factors as well as standardization of surgical technique are crucial in order to minimize complications and achieve reproducible outcomes.

Autologous breast reconstruction using the free vertical posteromedial thigh (vPMT) flap

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Introduction

Autologous breast reconstruction can be achieved by employment of various flap procedures. The vertical posteromedial thigh (vPMT) perforator flap represents a novel flap design known for its versatility. Here, we report on our experience with the use of the free vPMT flap for breast reconstruction.

Material and methods

Free vPMT flaps were employed for unilateral breast reconstruction (n=7). The flaps were raised based on the first medial perforator of the profunda femoris artery (PFA). The internal mammary artery and vein were dissected as recipient vessels.

Results

The flap size was 30 × 10 cm in average with a weight of the flaps between 310 g and 330 g. The pedicle length ranged from 10.4 cm to 12.5 cm with an arterial diameter between 1.8 mm and 2.6 mm. All flaps showed complete survival after surgery. The donor sites were primarily closed without any major morbidity. The follow-up of 9 months was uneventful with adequate cosmetic results and subjective satisfaction of the patients with the reconstruction.

Conclusion

In our preliminary experience, the free vertical posteromedial thigh flap represents an alternative for breast reconstruction suitable for women with small to moderate breast sizes. The vertical pattern of the PMT flap may avoid problems that can be associated with flaps with a transverse pattern.

The strictly vertical inseting of the DIEP-flap: the ideal approach?

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Background

Now-a-day, deep inferior epigastric perforator (DIEP) flap breast reconstruction is the standard. The aethetical result is very important in breast reconstruction and its improvement is mandatory for plastic surgeons.

Materials and methods

The crucial point is the inseting of the DIEP flap. The literature doesn't show any documented technical notes about the DIEP-flap inseting. So most of plastic surgeons shape the breast by oblique inseting of the flap.

Frequent problems, we have observed in DIEP flap reconstruction are breast asymmetry in terms of volume and shape, the bulkiness of the inferior lateral quadrant of the new breast, the loss of volume of the upper pole and the lack of projection of the inferior pole. Often in skinny patients more projection and slight ptosis in the lower pole would be ideal.

We present our personal experience with a vertical in-set technique to improve the aesthetical result in DIEP flap breast reconstruction.

Results

The method with a vertical set-in of the DIEP flap for improving the breast shape reported good results in all cases.

Conclusion

The aim of our work is to describe our personal techniques in order to correct the mentioned problems and improve the final aesthetical outcome in DIEP flap breast reconstruction.

Key words

Breast reconstruction, deep inferior epigastric perforator flap, shape, vertical set-in, aesthetic refinements

Rolle der Plastischen Chirurgie bei T4 Mammakarzinomen

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Einleitung

Die Anzahl der Patientinnen, welche mit T4 Mammakarzinom eine Brustrekonstruktion erhalten, ist gering. Allgemeinhin besteht die Annahme, dies «lohne sich nicht». Darüber hinaus gibt es die Patientengruppe, die ein die Haut oder Thoraxwand ausgedehnt infiltrierendes Tumorgeschehen hat, dem mit einer Ablatio mammae allein nicht beizukommen ist. Über Therapieregime zur Deckung solcher Defekte gibt es wenige Daten. Ziel unserer Studie war eine Standortbestimmung der Rolle der Plastischen Chirurgie bei T4 Mammakarzinomen.

Methoden

Es wurden die Daten der Patientinnen, welche in den vergangenen 10 Jahren am Brustzentrum des Luzerner Kantonsspitals behandelt wurden mit T4 Mammakarzinom bei Diagnosestellung, evaluiert. Ergebnisse: 34 Patientinnen mit T4 Mammakarzinom bei Diagnosestellung wurden behandelt. Hiervon wurden 5 Patientinnen (14,7%) plastisch-chirurgisch operiert (Durchschnittsalter: 59 Jahre). 3 Patientinnen, hierunter eine nach ausgedehnter knöcherner Thoraxwandresektion, erhielten einen DIEP Lappen. Bei 2 Patientinnen wurde ein gestielter Latissimus dorsi Lappen verwendet, eine davon wurde zusätzlich mittels Split Breast gedeckt.

Schlussfolgerung

Ausschliesslich bei grossem Defekt und damit Notwendigkeit der Deckung-und nicht im Sinne einer Brustrekonstruktion-wurde die Plastische Chirurgie hinzugezogen. Aktuelle Studien belegen, dass eine Brustrekonstruktion nicht mit der Detektion eines Rezidivs interferiert. In Anbetracht der beachtlichen 5-JahresÜberlebensraten und dem nicht geringen Beitrag zur psychischen Gesundheit dieser Patientinnen könnte die Indikation zur Brustrekonstruktion bei weit fortgeschrittenem Mammakarzinom ausgeweitet werden.

Breast reconstruction: economic impact on swiss health insurance system

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Introduction

Breast reconstruction has a considerable impact on the health system. We retrospectively investigated charges to the Swiss healthcare system for different breast reconstruction procedures at the Centre Hospitalier Universitaire Vaudois (CHUV).

Material and methods

We selected patients in the Reconstructive Surgery unit who underwent a «total» breast reconstruction, meaning from main intervention following total mastectomy to nipple reconstruction and tattoo, from January 2012 to December 2015. Analysis included 76 women who underwent Deep Inferior Epigastric Perforator (DIEP) flap reconstruction, Tissue Expander followed by Implant (TE/I), pedicled Latissimus Dorsi (LD) flap with or without tissue expander and implant (LD +/- TE/I). Costs of the different procedures, as well as the number of required operations, the total operation time, and the duration of the main surgeries were statistically compared.

Results

Global costs for DIEP reconstruction were $29'728 \pm 1'892$, while TE reconstruction reached an average of $44'313 \pm 5'553$ CHF. LD showed a similar cost, comparing to the DIEP ($29'813 \pm 3637$ CHF), rising when including an implant ($37'688 \pm 4'840$ CHF). Despite a significantly longer operation time, DIEP flap resulted to be significantly cheaper than TE/I. No significant differences in the number of interventions were detected.

Conclusion

These data show that the intervention with the best cost-benefit ratio is DIEP, considering its lower rate of complications and lower overall costs. Implantbased reconstructions show, more complications and re-intervention, globally creating superior costs when compared to autologous reconstruction.

Breast cancer: physical activity improves survival and reduces recurrences: myth or reality?

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Physical activity in breast cancer patients induces a better life and reduces the number of recurrences. Regular physical activity improves the quality of life and psychological behaviour of female patients with breast cancer. Scientific studies have demonstrated that patients having regular physical activity even during neo-adjuvant treatment and/or between surgical operations have less recurrences. However, nowadays in Switzerland, the patients and the medical staff involved in breast cancer should be aware of this new paradigm and it should be included in the global approach in the treatment of breast cancer.

FREE COMMUNICATIONS 6: BREAST (AESTHETIC)

(SA 02.09.17 – 14:20 – 15:30)

Silent breast implant rupture: explantation or not?

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Introduction

Implant rupture in newer generation implants are significantly less frequent. Most ruptures present without any clinical symptoms. The MRI is considered the diagnostic gold standard and has a pooled sensitivity and specificity of 87 % and 89.9 % respectively. The diagnostic accuracy is 14-fold higher in symptomatic versus asymptomatic patients. Current studies examine mostly symptomatic patients, which leads to higher diagnostic accuracy estimates. The aim of this study was to measure the accurate implant rupture rates and to establish a therapy concept for the particular subgroup of silent implant ruptures.

Material and methods

All articles relevant to the topic of implant rupture and MRI diagnostic in 4th and 5th generation implants were included in this systematic review of the medline database.

Results

We included 14 studies with a total of 10'395 patients. Mean implant age was 6 years (range 2 to 10 years). Mean rupture rate was 2.4 % per implant (range from 0 % to 7.7 %). 2'334 patients (4'422 implants) were screened with an MRI as diagnostic method. In this group, rupture rate were 8 % per implant (15 % per patient) with a mean implant age of 3.4 years (range 0.3 to 7.7 years). Only 65 % of all suspected implants were explanted and 35 % implants were left in situ. At explantation 25 % of the implants showed no damage.

Conclusion

Our findings showed that MRI has probably a much lower specificity in detecting silent implant ruptures of the newer generation implants than generally believed. We suggest that radiologically diagnosed but asymptomatic implant ruptures can be left in situ with a radiological follow up after a year or earlier if clinical symptoms occur.

Implant bottoming out in breast augmentation: «double bubble»

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In my personal experience of 370 breast augmentation procedures, most of them bilateral, I observed 7 bottoming out situations. Three of them were late deformations, occurring all of a sudden more than 6 months after the procedure. Reports in literature about risk factors and corrective procedures are scarce and reduced to case reports.

In my presentation I discuss my personal experience and my corrective approach and compare it to the literature.

Mastopexy techniques: a comprehensive literature review

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Background

Mastopexy is one of the most performed cosmetic surgery. Many studies of mastopexy techniques have been published in the past decades, including case reports, retrospective reviews, and prospective studies. However, to date, no study addressed overall complications or satisfaction rates associated with the broad spectrum of techniques.

Objectives

This comprehensive review aims to assess the outcomes of the various mastopexy techniques, including associated complications and to provide a simplified classification system.

Methods

PubMed database was queried in search of clinical studies describing mastopexy techniques. Articles identified initially were reviewed according to a priori criteria.

Results

Forty-one studies, published from 1980 through 2016, were included, representing 1928 treated patients. 4 main surgical categories were identified from these studies: dermal reshape, glandular reshape, glandular reshape associated to perforator flaps and mesh-supported mastopexy. Satisfactory results, at clinical examination, were observed with all mastopexy techniques, with unsatisfactory breast shape accounting for only 1.3%. The overall complication rate was 10.8%. The most represented were scars (3%) and nipple-areola related complications (2.8%, including both distortion, asymmetry and sensation).

Conclusions

Mastopexy techniques allow high patient satisfactions with relatively low morbidity and complications. However a significant number of issues related to scars, asymmetry and potential ptosis recurrence should be considered in patient information.

Mastopexy with autoimplant: an alternative to breast implants?

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Introduction

Autoimplant-mastopexy aims to redistribute breast tissue to increase fullness of the upper pole and enhance the central breast projection. Whilst the use of silicone implants is marred by limited life-span and capsular fibrosis, this technique utilizes an autologous parenchymal pedicle. Beside the surgical approach, complication rate and bottoming out, we aimed to evaluate the patient's satisfaction by BREAST-Q score after autoimplant-mastopexy.

Material and methods

Between 2015 and 2016 fifteen patients underwent autoimplant-mastopexy. Eight patients received a centrally pedicled autoimplant, whereas four patients underwent a superior-based pedicle after implant removal. Dermal suspension mastopexy was performed in three patients. During follow-up, the BREAST-Q was assessed in six patients using the BREAST-Q post augmentation module.

Results

Mean age was 40 (SD=±13). Indications for autoimplant-mastopexy were primary ptosis (n=8), silicone implant removal (n=4) and breast asymmetry after mastectomy/segmentectomy (n=3). Regarding complications, wound healing was impaired in two patients. Mean BREAST-Q scores were: Satisfaction with breasts, 67±13 and with outcome 67±12; psychosocial well-being, 67±17; sexual well-being, 59±22; physical well-being 85±11.

Conclusion

Autoimplantmastopexy represents an adequate alternative for women refusing breast implants and is effective for the salvage of breasts after implant removal. However, breast volume augmentation can only be achieved by breast implants or additional lipofilling. Considering the published normative BREAST-Q data, the assessed BREAST-Q was comparable to women not actively seeking breast augmentation.

Dealing with complications of aesthetic surgery performed abroad: cost analysis for the Swiss system

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Background

Aesthetic surgery tourism is a growing phenomenon, with a steady increase of people traveling abroad. In our unit, we noticed an increase of patients operated in foreign countries of cosmetic surgery consulting in the emergency department for complications. These lead to multiple outpatient clinic consultation and, eventually to reoperation. This work aims to give a review of the general care costs, falling on the swiss insurance system, from outpatient treatments to surgical and hospital care.

Methods

Between May 2014 et May 2017, patients arriving in the emergency department with a complication after aesthetic surgery performed abroad were included in a prospectively maintained database. Complications and cost-analysis (both outpatient and hospital care) was performed.

Results

12 patients were included in the study (11 women, 1 men). Out of 18 total undergone procedures, 12 led to a complication. The reported complications were infections (41.7 %), wound dehiscence (41.7 %), infected wound dehiscence (8.33 %), grade IV premature capsular contracture (8.33%). 7 of them required a reoperation (58.3 %). Cost analysis was performed.

Conclusion

The attractive cost of aesthetic procedures performed in foreign countries pushes a growing number of patients to surgical tourism. Complications are covered by the compulsory basic health insurance, with non-negligible costs.

Is the free nipple graft technique still justified in gigantomastia?

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Introduction

Gigantomastia (GM) is commonly defined as a benign disorder with breastvolumina exceeding 1500 cm³. For surgeons this physical condition often proves to be challenging as choosing the ideal technique to obtain an aesthetic satisfactory result may be demanding. The free nipple graft (FNG) was first described by Thorek in 1922. In literature FNG has since been the recommended method for breast reduction in GM. Due to disadvantages such as poor breast projection and nipple asensitivity other methods should be assessed.

Methods

From 2005 to 2015, 1160 reduction mammoplasties were conducted at Kantonsspital Luzern, Lucerne. Hereof 20 cases matched the definition of GM. The inferior pedicle (IP) technique was invariably performed in all these cases.

Result

In the GM group no major complications were detected. Postoperatively all patients had viable nipples. No significant loss of sensitivity to the NAC was encountered. The aesthetic results were satisfactory in all cases.

Conclusion

The IP reduction mammoplasty efficiently reduces extremely large breasts while preserving the vascular integrity and sensation of the NAC. We state this technique to be equivalent or even superior to the FNG for resections greater than 1500 mg.

Objektive Evaluation in der Brustchirurgie

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Das Vectra® System kann durch Photogrammetrie die Dokumentation und Operationsplanung bei form-modulierenden Eingriffen ergänzen. Obwohl für lasergestützte Verfahren bereits validiert, liessen unterschiedliche Publikationen dabei den Nutzen von Kamerasystemen bei Volumenveränderungen fraglich. Mit dieser Arbeit überprüfen wir diesbezüglich die Zuverlässigkeit des Vectra® Kamerasystems. Die 3D Volumenveränderung prä- zu postoperativ bei Mammaaugmentationen, Mammareduktionen, sowie bilateraler subkutaner Mastektomie mit Liposuktion bei Gynäkomastie wurden 3D erfasst und ausgewertet. Als Analysesoftware wurde MIRROR® genutzt. Zusätzlich wurde der Nutzen der 3D Simulation von Mammaaugmentationen evaluiert.

Die 3D Evaluation bei Mammaaugmentation und moderater -reduktion zeigte zufriedenstellende Ergebnisse. Hohe Abweichungen zeigten sich für ausgeprägte Mammareduktionen bei starker Ptosis und hohem BMI. Die Evaluation der operativen Behandlung der Gynäkomastie

zeigte starke Abweichungen und insgesamt geringere 3D Veränderungen im Vergleich zum abgesaugten Fett. Die 3D Simulation von Mammaaugmentationen zeigte eine gute Übereinstimmung für einfache Augmentationen bei schlanken Patienten und geringem Implantatvolumen. Das Vectra® System wurde erfolgreich evaluiert. Insbesondere für stabile Volumenveränderungen wie die Mammaaugmentation und moderaten Mammareduktionen zeigten sich präzise Ergebnisse. Die Limitierungen des Systems zeigten sich bei ausgeprägter Mammahypertrophie und individuell hoch variablen Volumenveränderungen wie der Liposuktion. Eine Beratung durch 3D Simulation von Patienten bei Mammaaugmentation ist durch den Morphing-Prozess nur eingeschränkt möglich.

Long term follow-up of breast augmentation in male-to-female transsexuals

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Introduction

Breast augmentation in Male-to-Female (MTF) transsexuals requires special consideration due to challenging anatomical differences from biologic females. We present our long-term experience in MTF breast augmentation as part of the sexual reassignment surgery.

Patients and Methods

MTF transsexuals who underwent breast augmentation in the last 22 years were reviewed for primary surgery, type of incision, implant site, implant size and shape and revisions.

Results

138 patients were included with a mean age of 37.8 ± 11.6 years. Mean followup was 7.4 ± 6.6 years. In 121 patients (89.0%) the submammary incision was chosen. The subpectoral implantation was performed in 80 patients (58.9%) and the epieptoral technique in 56 patients (41.1%). The mean primary implant size was 324.0 ± 105.6 cc. Round breast implants were used more frequently compared to anatomical implants (83 patients, 61.0% vs. 53 patients, 39.0%). Request for larger implants was the most common indication for revision in 13 patients (9.4%) after a mean time interval between the operations of 14.9 ± 17.9 months. The new mean implant size of 337.2 ± 108.8 cc showed a mean increase of 106 ± 45.9 cc. The continuous increase in implant size over time was associated with a significant drop in revision rates ($p < 0.05$).

Conclusion

Round, low projection implants with a mean size of 363 cc in the epieptoral pocket showed to reduce the request for early revision procedures due to implant size and provide patients with an accented décolleté and reduced intermammary gap.

POSTERS

(FR 01.09.17 – 13:00 – 14:00)

Nodal involvement in squamous cell carcinoma of the head and neck: a retrospective chart analysis

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Introduction and goal

Cutaneous squamous cell carcinoma (cSCC) is responsible for 15 – 25 % of all skin tumors and is the second frequent non-melanoma skin cancer (NMSC). High risk cutaneous squamous cell carcinoma (HRcSCC) are known to metastasize loco-regional. The treatment algorithm and outcome of these patients treated in our unit was analyzed and compared with the current literature.

Material and methods

A retrospective chart analysis of all patients treated for cSCC in our Skin cancer center between 1.1.2014 and 31.12.2015 was performed. Nodal involvement was evaluated in a 3 year follow up. Only patients with cSCC in the head and neck area were included.

Results

182 Patients were treated for squamous cell carcinomas during the above named period. 80 % suffered from cSCC the other from mucosal SCC. In 65 % of the cases the cSCC were located in the head and neck. 67 % of the patients had a HRcSCC. 19 % in the overall group presented with lymph node metastasis in the three years follow up. 29 % of the patients with HRsCC presented with lymph node metastasis. All patients developing metastasis had a HRcSCC. Patients suffering from HRcSCC showed significant higher rates of loco-regional metastasis in this three years follow up.

Conclusion

Our data implies a high rate of lymph node metastasis for patients with HRcSCC in the head and neck. These patients should receive mandatory staging of loco-regional lymph nodes. The ideal method for the staging is still to be evaluated in future studies. Clinicians should be aware of the high rate of metastasis and include this knowledge in the decision making process.

Von Chimären an den Unterschenkeln-Mythos, Hirngespinst oder mehr?

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Einleitung

Die Chimära ist ein feuerspeiendes Mischwesen aus Löwe, Ziege und Schlange der griechischen Mythologie, sie lebte in Chimaira im heutigen Südwesten der Türkei. Dem Helden Bellerophon gelang mithilfe des fliegenden Pferdes Pegasus das Unmögliche, die Chimära niederzustrecken. Noch heute ist in Chimaira ein seltenes, jahrtausendealtes Naturphänomen zu beobachten: Aus dem felsigen Boden eines Berghangs schlagen Flammen. Dieses Wesen war namensgebend für eine Art der kombinierten Lappen, welche aus mehreren abgetrennten oder trennbaren Gewebeanteilen mit jeweils unabhängigen Pedikeln, die aber in einen gemeinsamen Lappenstiel münden, bestehen, und sich somit besonders gut eignen zur Deckung ausgedehnter dreidimensionaler Defekte.

Methoden

Es wurden die Daten der Patienten evaluiert, welche in den vergangenen 14 Jahren am Luzerner Kantonsspital bei ausgedehnten, mitunter zirkumferentiellen Defekten der unteren Extremität mit chimären Lappenplastiken versorgt wurden.

Resultate

Bei allen sieben Patienten konnten sämtliche Defekte erfolgreich gedeckt und alle Extremitäten erhalten werden.

Schlussfolgerung

Chimäre Lappen sind indiziert zur Deckung grosser, multidimensionaler Defekte: Ein Falten oder Eindrehen, welches die Durchblutung kompromittieren könnte, kann vermieden werden, zudem ist nur ein einziges Anschlussgefäss notwendig.

Evaluation of platelet-rich fibrin in deep dermal burns: a case study

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Introduction

Platelet-rich fibrin (PRF) in regenerative medicine is increasingly recognized for its ability to promote wound healing. In burn injuries, PRF could be a valuable adjunct to conventional treatments including split skin grafts (SSG) and autologous keratinocytes. In this case study, we compared wound healing with a cell-spray combined with PRF and skin grafting versus skin grafting alone.

Methods

A 70-year-old female suffered 2nd-3rd degree burns to the thorax, upper extremities and the left lower extremity. Immediate management consisted of hydrotherapy, escharotomies and epifascial excisions of the upper extremities, waist, neck and thorax. After successful wound bed preparation using allo-skin, we applied SSG to the upper extremities (Mesh 1:1.5) and thorax (Mesh 1:3). The left hemithorax was sprayed with cells only (ReCell, Avita Medical). The right hemithorax received a combination of cellspray and PRF (Vivostat). We assessed wound conditions and epithelialization starting on the 4th postoperative day. Follow-up was 2 months.

Results

On day 4, the right hemithorax showed less wound secretion and more stable wound conditions than the left side. Up to 2 weeks postoperatively, wound conditions and epithelialization were better for the right hemithorax. At week 3, wound conditions were similar for both sides.

Discussion

This case study revealed more stable wound conditions and earlier rates of epithelialization of the wounds treated by a combination of spray keratinocytes and PRF than keratinocytes alone. Although limited to proof-of-concept, keratinocytes combined with PRF shows potential to accelerate wound healing in acute burns.

Plastic Surgery meets augmentation with bioactive material

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After the loss of soft tissue due to tumor evisceration, after diabetic foot syndrom or ulcus cruris the defect in general can be reconstructed by a flap or with a prosthetic device or, in some cases, there is no reconstructive opportunity because of chronic infections. However, it is possible, to rehabilitate chronic defects in its shape and function with surgery using augmentative bioactive glass for reconstruction and woundhealing?

We developed a bioactive granulate, which can be applied in a chronic wound for wound-healing or it can be implanted as a scaffold for augmentation.. We have seen, that the material acts bioinductive and the soft tissue grows after two weeks and its going to fill the defect within some weeks, depending on the volume of the defect. In a number of pilotcases the healing of chronic wounds could be achieved, even when the diagnosis was for amputation. Nevertheless with the therapie with the mineralic granulate the wounds could be cleaned after a few days and after three weeks the groth of soft tissue was clearly seen. In our cases the healing and remodelling of the defects was successfully done after two or three months.

We could see in vitro and in vivo, that the physiological groth of tissue was bioinductive and bioconductive stimulated and that chronic infected wounds could be cleaned after a few days.

However we yet could not make a study, to prove the functions of this material and how it works in interaction with the tissue. Maybe this is a new challenge for the plastic and reconstructive surgery and medicine.

Fulminant wound infection with clostridium perfringens in a healthy five year old boy

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Background

Trauma related localized soft tissue infections with Clostridium perfringens and Bacillus cereus in children are rare. We report a case of a healthy fiveyear old boy with a posttraumatic fulminant localized necrotising facial soft tissue infection.

Case presentation

A five-year old healthy boy was admitted after a sledging accident. He presented with a laceration of the right cheek. The wound was rinsed and primarily closed under sedation and local anaesthetics. Within 12 hours he developed severe pain locally and developed fever. On admission further local signs of inflammation were present. There was no sign of nerve lesions. Immediate wound revision under general anaesthesia revealed necrotic subcutaneous tissue with an abscess cavity. After surgical debridement the wound was initially left open. An empiric antibiotic therapy with amoxicillin/clavulanate was initiated. A facial bone fracture was excluded by computed tomography. Clostr. perfr., Bac. cereus, Bac. licheniformis and Bac. pumilus were recovered. An i.v. combination therapy was initiated followed by a secondary wound closure. The local situation and general condition of the boy improved markedly and no further intervention was necessary. Antibiotics were administered for 12 days in total.

Conclusion

Primary soft tissue infections with Clostr. perfr. and Bac. cereus are rare in healthy children. Both pathogens can cause fulminant necrotising infections with an incubation period of less than 24 hours. Sudden severe pain at the site of injury should rise a high suspicion of necrotising infection. Immediate aggressive surgical debridement in combination with correct antibiotic treatment is crucial.

Evaluation of the neo-umbilicus cutaneous sensitivity following abdominoplasty

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Background

Abdominal cutaneous sensitivity loss after abdominoplasty is an undesirable outcome. However, little is known in the literature about sensitivity changes of the neo-umbilicus after abdominoplasty. The aim of this study was to evaluate postabdominoplasty cutaneous sensitivity of the neo-umbilicus using clinical, quantitative, and reproducible methods.

Methods

Patients who underwent abdominoplasty were included, whereas the control group consisted of healthy volunteers with similar demographic characteristics but who did not undergo abdominoplasty. The umbilicus was divided into five zones, and superficial tactile sensitivity and spatial orientation were assessed subjectively (score 1-4) and objectively (Semmes-Weinstein monofilament examination).

Results

Between April 2014 and April 2017, 13 consecutive female patients in the study group (47 ? 12 years) and nine female healthy volunteers in the control group (42 ? 10 years) could be included. Although there were statistically significant differences ($p < 0.0001$) in the average cutaneous pressure thresholds between the control group (0.07 g/mm^2 , range $0.07 - 2 \text{ g/mm}^2$) and the study group (0.4 g/mm^2 , range $0.07 - 4 \text{ g/mm}^2$), patient satisfaction after a mean follow-up of 28 ? 11 months was acceptable (mean satisfaction score 1.9 ± 0.8). Furthermore, spatial perceptions were precise in all patients and similar to the control group.

Conclusion

Our long-term results indicate that spontaneous reinnervation of the neo-umbilicus after abdominoplasty together with accurate spatial orientation can occur.

MR lymphography at 9.4 tesla using a gadolinium-based nanoparticle in a rat lymphedema model

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Introduction

Preclinical magnetic resonance lymphography (MRL) in small animals is challenging. In this study, we compared the Gadolinium (Gd)-based nanoparticle AGuIX with Gd-DOTA for MRL in healthy rats and in a chronic hindlimb lymphedema model.

Material and methods

AGuIX and Gd-DOTA for interstitial MRL were compared in healthy Lewis rats ($n = 6$). After simultaneous contrast injection in the hindlimbs, repetitive 3D MRL sequences were acquired over a period of 90 min at 9.4 Tesla. In a proof-of-principle study, AGuIX-based MRL was investigated in a hindlimb lymphedema model ($n = 4$). Chronic lymphedema was induced by means of popliteal and inguinal lymphadenectomy and irradiation. Six, 10, and 14 weeks after surgery, MRL investigations were performed. Finally, skin samples of operated and control hindlimbs were analyzed by means of histology and immunohistochemistry.

Results

AGuIX-based MRL resulted in high-resolution anatomical depiction of the hindlimb lymphatic system. Signal-to-noise ratio and contrast-to-noise ratio of the popliteal lymph node were increased directly after injection and remained significantly elevated for up to 90 min after application. AGuIX provided significantly higher enhancement as compared to Gd-DOTA. Furthermore, we demonstrated lymphatic regeneration in a chronic lymphedema model. Six weeks after lymphadenectomy, collateral lymphatic vessels were detectable.

Conclusions

AGuIX is a suitable contrast agent for preclinical MRL in rodents with anatomical imaging of lymphatic vessels. Moreover, it resides in the lymphatic system for a prolonged time. Thus, AGuIX may be a promising candidate for imaging-guided therapy of lymphatic metastases.

Large neurovascular pedicled myocutaneous lower limb fillet flap for pelvic and abdominal soft tissue reconstruction after hip exarticulation and open abdomen

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Introduction

Tissue of amputated or nonsalvageable limbs may be used for reconstruction of complex defects. The advantage of fillet flaps is little or no donor site morbidity. Here, we present the case of a large neurovascular pedicled myocutaneous lower limb fillet flap for pelvic and abdominal soft tissue reconstruction after hip exarticulation and open abdomen.

Case Report

A 67-year old, female patient was referred with acute thrombotic obliteration of the aortic bifurcation. An aortic bifemoral prosthesis was implanted and fasciotomies of the lower extremities were performed. The open abdomen was treated with VAC therapy after covering the small bowel with a mesh graft. Soft tissue necrosis developed over the periprosthetic fracture leaving the left femur and parts of the hip prosthesis uncovered.

Procedure

All components of the total hip prosthesis were removed. The flap was raised with the ventral incision down to the fibular head where continued anterocaudally to the ankle where the foot was amputated. Superiorly the femur and its remaining periosteum was lifted. The tibia was removed after dissecting the posterior tibial artery and nerve bluntly and freeing the tibia from its periosteum. The fibula was stripped, carefully sparing the anterior tibial and peroneal vessels. The flap was folded proximally with the hamstring musculature being sutured into the dead space. The fillet flap was set into the defect by suturing the deep fascia to the recipient fascial layer.

Conclusion

A large pedicled neurovascular myocutaneous fillet flap of the lower extremity is a safe, effective, durable and functional treatment to reconstruct combined pelvic and abdominal soft tissue defects.

Patient information for breast augmentation: is there enough comprehensive patient information and where can it be found?

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Background

Recently published data show that a large number of women interested in breast augmentation (BA), actively search the Internet for information. Nowadays the Internet represents the main-source of information. However, little is known about quality of available information on the Internet concerning BA. The aim of our study was to evaluate available information regarding BA on the Internet.

Two staged treatment of recurrent keloid of the upper limb by use of integra and post-surgery radiotherapy following extralesional excision

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Background

The management of recurring keloids presents a considerable challenge and requires an interdisciplinary approach. Despite the wide range of therapeutic strategies radiotherapy shows a decrease in recurrence rates. Large defects that require a reconstruction with a flap or a split-thickness skin graft are more prone to failure in the setting of radiation.

Methods

We present the case of a 28-year old female patient with a history of recurrent immense keloids at the right and left upper torso and anterior chest wall, most likely as a result of symptomatic acne conglobata, who after repeated intralesional corticosteroid injections and cryotherapy underwent extralesional excision of a keloid with a size of 18x17x4cm in the largest dimension at the right upper torso. Integra was used to cover the resultant exposed subcutaneous tissue and on post-operative days 1 to 4 radiotherapy (300cGy) was applied with a margin of 1cm around and within the lesion, following split – thickness skin graft transplantation 3 weeks later. Application of a compression garment was instituted for 1 year thereof.

Results

Postoperative course was uneventful. There was no evidence of new keloid formation in the ten months follow-up, neither the recipient nor at the donor site. The patient experienced no side effects from radiotherapy.

Conclusion

This case report suggests that surgical treatment combined with radiotherapy can prevent keloid recurrence resulting in good cosmetic and functional outcome. In order to avoid wound healing problems associated with radiotherapy provisional coverage with Integra® as a bridging to definitive closure could be a valuable option and should be investigated further.

Kostengutsprache für Konturverbessernde Operationen nach massivem Gewichtsverlust abhängig vom Versicherungsanbieter?

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Die postbariatrische plastische Chirurgie kann nach massiver Gewichtsreduktion durch funktionelle Rekonstruktion und Wiederherstellung der Körpersilhouette die Lebensqualität steigern.

Die Kostenübernahme durch die Krankenversicherung ist in erster Linie ein Problem der Patienten, welches sich aber zumindest mittelbar auch auf die Ärzteschaft auswirkt, da von dort zum einen regelmäßig medizinische Gutachten angefragt werden und zum anderen oftmals auch beim Antragsverfahren dem Patienten zur Seite gestanden wird. Bis heute fehlen objektive Kriterien welche eine Kostengutsprache garantieren würden. Von Januar 2015 bis April

2017 haben sich 108 PatientInnen in unserer Sprechstunde für Konturverbessernde Eingriffe (Abdominoplastik, Fettschürzenresektion an Bauch und Rücken, Oberarm-, Oberschenkel- bzw. Gesäßstraffung und Liposuction) vorgestellt. Davon wurde bei 58 ein Krankheitswert angenommen und ein Antrag auf Kostenübernahme gestellt. Von den 58 Gesuchten wurden unter anderem durch die Versicherungen, Visana (0/7), Swica (1/6), Sanitas (5/12), Helsana (4/5) und Easy Sana (2/3) akzeptiert bzw. abgelehnt.

Wie hier an Beispielen gezeigt werden soll, kann von einem Zusammenhang zwischen einer Kostengutsprache und einzelner Versicherungsanbieter ausgegangen werden.

Successful treatment of epidermolysis bullosa acquisata with Suprathel®

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Introduction

Epidermolysis bullosa acquisata (EBA) is a rare blistering autoimmune disease. We present a case of successful wound therapy in a 71 year old female with EBA using Suprathel®.

Description

The patient was admitted with developing blistering of the skin, oral and genital mucosae (6 % body surface). Biopsies and serologies confirmed EBA. Blisters were punctured, permanganate bathes and topical steroids used daily. Wound exsudation required painful dressing changes twice daily. Based on observations and experience in burn medicine we debrided blisters and applied Suprathel to involved areas of hands and feet. After surgery a single dressing change was performed POD 2, dressing removal as planned POD 5. Mobilization was performed starting POD 2. We noted the rapid epithelialization of wounds covered with Suprathel while pain was reported by the patient in areas not covered.

Discussion

Consensus in blistering skin diseases (a heterogenous group comprising EBA) advises to puncture blisters and leave their roof in place to avoid exsudation and provide a moist «biological dressing» minimizing pain and accelerating healing. After application of Suprathel the patient had less pain, less dressing changes, no painful wound baths and could mobilize early. Blister debridement is a central pillar in burn medicine. Although pathophysiology differs, infection, delayed healing and scarring also occur in EBA. We infer that blister debridement and Suprathel might be appropriate in EBA.

Conclusion

Suprathel is used in grade IIa burns, toxic epidermal necrosis, actinic ulceration and dystrophic epidermolysis bullosa, and appears to be an adequate wound therapy for exposed dermis also in EBA.

Surgical reconstruction of complex groin defects: an evidence-based review of the literature

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Introduction

Groin region contains key anatomical structures that can be harmed following oncological resections or debridements. This work aims to comprehensively evaluate outcomes and complications of groin reconstruction to optimize surgical management

Methods

From 1996 until 2016, a systematic search of the literature was performed interrogating PubMed engine following PRISMA statements. Demographic data, surgical indication, coverage technique and outcomes were reported, analysed and compared.

Results

63 articles were included for data extraction and quantitative analysis, 816 patients underwent groin reconstruction (Male 57.66 %, mean age of 55.7 ± 14.25 y.o). In 255 patients reconstruction indication involved neoplastic-related groin defects, 538 patients underwent reconstruction after vascular surgery complication. Other causes mainly involved trauma, infections and burns. Pedicled myocutaneous flap represented the first choice of treatment in 65 % of neoplastic patient. Rectus Abdominis (27.8 %) and Anterolateral thigh (24.7 %) flaps were the most used. In vascular patients, muscle flaps represented the preferred choice in 95.3 % of cases. Sartorius (54.5 %), Rectus Femori (21.7 %) and Gracilis (18.2 %) muscles were the most used. Oncologic reconstructions showed higher risk of infection (24 % vs 14 %), and higher incidence of seroma over (30 %). Global reintervention rate reached 20 % in both investigated groups.

Conclusion

Groin reconstruction can be optimized adapting the reconstruction algorithm according to defect etiology and anatomical features. Indications and comorbidities should be kept in mind influencing the technical aspects of reconstruction.

Fulminanter Handinfekt nach Kontakt eines an nekrotisierender Faszitis erkrankten Patienten

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Einleitung

Erreger einer nekrotisierenden Fasziiitis können durch direkten Hautkontakt eines Erkrankten auf ein gesundes Individuum übertragen werden, sofern eine Eintrittspforte besteht und die Immunlage des Empfängers dies zulässt. Wir beschreiben den Fall einer Kontaktübertragung mit anschliessendem fulminanten Handinfekt beim Empfänger.

Fallbeschreibung

24h nach Versterben ihres Gatten an einer nekrotisierenden Fasziiitis am Unterschenkel stellt sich eine 82-jährige Patientin mit Schmerzen und einer lividen Schwellung am rechten Daumen und begleitender Lymphangitis am Unterarm auf der Notfallstation vor. Die Patientin hatte in den Tagen zuvor den Mann am Patientenbett gepflegt, kaum gegessen und wenig geschlafen. Klinisch fehlen Hinweise für Sepsis bei laborchemisch erhöhten Entzündungswerten (Leukozyten 24 G/L, C-reaktives Protein 73 mg/L). Es erfolgte notfallmässig das chirurgische Weichteildébridement des Daumens, an dem sich eine auf das subkutane Gewebe begrenzte Nekrose zeigte. In den folgenden Tagen waren wiederholt Débridements an der Hand nötig, da sich der Infekt weiter in den Arm ausbreitete, bis dieser schliesslich unter Kontrolle war. In den entnommenen Biopsien gelang der Nachweis von Streptokokken der Gruppe A, entsprechend der Erregertypisierung des Ehemanns.

Konklusion

Nach Hautkontakt mit Erregern einer nekrotisierenden Fasziiitis kann bei Immuninkompetenten durch Streptokokken der Gruppe A ein fulminanter Infekt ausgelöst werden, obwohl hier keine Faszien vorliegen. Rasche und grosszügige chirurgische wiederholte Débridements sind unabdingbar zu Kontrolle des Infekts. Ein Vergleich mit der Literatur wird vorgestellt.

Allergic contact dermatitis due to green permanent marker: a case-report

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Introduction

We want to demonstrate the case of a woman who presented herself with skin lesions on her left breast after nipple sparing mastectomy and immediate reconstruction with a DIEP-flap. Important anatomical landmarks were initially marked with a green permanent marker (EDDING 3300) one day prior to surgery. The second day after surgery, pruritic, erythematous plaques, strictly limited to the surgical markings, developed. Mometasone furoate ointment was applied as therapy for several days. The patient recovered completely.

Methods

Standardized patch testing was performed with the declared contents of the pen, which were provided by the manufacturer. The readings were performed on day two and day three.

Results

During testing, the patient presented with a strong eczematous reaction on day two and day three on the site where alkyd resin was attached.

Conclusion

At our department, we usually use permanent markers to mark prior to surgery. Allergic reactions due to ingredients of permanent markers are rare, and this is the first time that alkyd resin was identified as the allergy-causing component. According to the WHO, preoperative markings preventing «wrong side, wrong patient»-surgery should be made with a permanent marker. On the other hand, the Association of perioperative Registered Nurses does not recommend using such standard office-type pens. There is no real consensus about what kind of marker pen should be used. While permanent markers typically contain nontoxic inks that are considered to have no long-term toxicity effects, they technically are not approved for direct, intentional use on human skin. We recommend using specialized skin markers whenever possible.

The «Nugget Design»: a modified segmental gracilis free flap for small-sized defect reconstruction on the lower extremity

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Background

Little attention has been given to the segmental free gracilis muscle flap supplied by secondary proximal pedicles. We introduce a technical refinement for small-sized three-dimensional defect reconstruction on the foot.

Methods

Between November 2013 and August 2016, three patients with a mean age of 66 years (range 47-70years) were included. A segmental gracilis free flap supplied by the most proximal secondary pedicle was harvested according to a modified «nugget design» to treat small-sized defects on the lower extremity requiring dead space reconstruction. Minor and major complications, sensitivity with Semmes-Weinstein monofilament test, soft tissue stability and patient satisfaction at final follow-up were recorded.

Results

In one case, a segmental gracilis muscle was used for dorsal foot reconstruction after debridement of metatarsal phalanx I with osteomyelitis. In two cases, the segmental gracilis free muscle was harvested for defect reconstruction on the right plantar foot after excision of a melanoma. The first patient required revision after partial failure of the initial segmental gracilis

free muscle flap. Overall, good results in foot function and a high degree of patient satisfaction was achieved (Likert scale 9.7, range 9-10) after a mean follow-up of 13 months (range 3-24 months).

Conclusions

Taken from the very proximal dorsal part of the gracilis muscle supplied by the most proximal secondary pedicle and leaving the vast majority of the muscle intact preserves the option to harvest a normal gracilis flap. This technique is especially suitable for small, three-dimensional defects on the lower extremity.

The bipediced medial plantar flap: vascular enhancement of a reverse flow Y-V medial plantar flap by the inclusion of a metatarsal artery perforator for the reconstruction of a forefoot defect- a case report

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Introduction

The pedicled Medial Plantar (MP) flap is an optimal solution for defects involving the weight-bearing areas of the foot. However, venous congestion is a frequently encountered complication, especially with the reverse-flow variants of the flap, and several strategies have been reported in literature both to prevent and to manage it. In this report, we present the use of a Medial Plantar flap based distally on the lateral plantar artery with the adjunct of an extra metatarsal perforator from the dorsalis pedis artery as a vascular enhancement to avoid the venous congestion and to improve the overall circulation.

Materials and methods

This bipediced flap was successfully advanced to cover a 5 x 3 cm defect of the plantar fore-foot above the head of the first metatarsal bone resulted from the excision of a squamous cell carcinoma in a 80 years old male patient.

Results

The postoperative course was uneventful, the patient was discharged 7 days after the operation and was able to walk after 6 weeks wearing normal shoes.

Conclusion

We believe that preserving plantar metatarsal perforators during the harvesting of a MP flap based distally on the lateral plantar artery may be a precious adjunct since it increases blood supply and especially the venous drainage of the flap.

Drei freie simultane mikrovaskuläre Lappenplastiken zur Unterkiefer- und Weichteilrekonstruktion: eine Erstbeschreibung

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Einführung

Die Inzidenz von Lippenkarzinomen liegt bei 12:100 000. Wegen der Lokalisation an der Grenze zwischen Haut und Schleimhaut und wegen der vielfältigen Funktion des Mundes nimmt das Lippenkarzinom eine besondere Stellung ein. Die lokale Exzision führt meistens zur kurativen Therapie, da dieser Tumor nur selten rezidiert oder metastasiert. Unser Fall ist eine Erstbeschreibung einer Tumorresektion im Gesicht- und Halsbereich eines metastasierten Plattenepithelkarzinomrezidivs der Lippe, wobei der grosse, multifokale Defekt mittels drei simultanen mikrovaskulären Lappenplastiken gedeckt wurde.

Methode

Bei unserem Patienten wurde 2012 ein wenig differenziertes Plattenepithelkarzinom der rechten Unterlippe diagnostiziert. Wegen Rezidiven wurde mehrfach nachreseziert, sodass eine Defektdeckung mittels Pectoralis major Lappens notwendig und eine Radio- und Chemotherapie initiiert wurde. 2016 infiltrierte der Tumor die Mandibula und das umliegende Gewebe. Daraus entstand eine anspruchsvolle Ausgangslage für eine Rekonstruktion. Wegen der Komplexität des Defekts wählten wir eine Kombination aus einem freien Arteria radialis Lappen, einem osteokutanen Fibulalappen und einem ALT Lappen. Viele Fälle zweier simultaner Lappen zur Defektdeckung sind beschrieben – das Verwenden von drei simultanen freien Lappen ist hingegen eine Erstbeschreibung.

Resultat

Die Kombination aus 3 simultanen freien mikrovaskulären Lappen zeigt in unserem Fall eine Erstbeschreibung auf. Die freien Lappen zeitgleich zu heben, zu anastomosieren und eine multifokale Defektdeckung zu erreichen stellt eine Herausforderung dar, die wir auch in Zukunft in spezifischen Fällen als geeignet betrachten.

Die Zykloppenbrust als Ergebnis nach Defektdeckung eines ausgedehnten

Mammakarzinomrezidivsf: eine seltene Falldarstellung

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Einleitung

Zur Defektdeckung nach Resektion ausgedehnter Mammakarzinome oder deren Rezidive kann in seltenen Fällen die kontralaterale Brust verwendet werden. Voraussetzung für dieses als «split breast»- bzw. als «Zykloppenbrust»-Verfahren bekannte Vorgehen ist, dass die betroffenen Patientinnen eine grosse und vor allem ptotische, kontralaterale Brust aufweisen und ein postoperatives Resultat akzeptieren können, das geringen ästhetischen Ansprüchen genügt.

Methode

Eine Patientin mit einem ausgedehnten Rezidiv eines seit 4 Jahren bekannten invasiv duktales Mammakarzinoms der linken Brust wurde uns von einem auswärtigen Spital zugewiesen. Wegen Exulzeration des Tumors wurde 2015 eine radikale Mastektomie links mit Teilresektion des M. pectoralis durchgeführt und der Defekt mittels thorakoepigastrischem Schwenklappen gedeckt. Wegen erneutem Lokalrezidiv war der entstandene Defekt wiederum sehr ausgedehnt. Die kontralaterale Brust der Patientin war gross und ptotisch. Auf Wunsch der Patientin, eine pragmatische Lösung anzustreben, war die Deckung des Defekts mittels «split-breast»-Verfahren eine gute Option und Lösung.

Diskussion

Zur Defektdeckung nach Exzision von Mammakarzinomen und deren Lokalrezidiven eignen sich eine Vielzahl von gestielten und freien mikrovaskulären, fasziokutanen und muskulokutanen Lappenplastiken. Die Verwendung der kontralateralen Brust stellt dabei eine äusserst seltene Operation dar. Seit der Erstbeschreibung durch Maier 1947 sind keine 10 Fälle in der Literatur beschrieben. Solange die Patienten ein moderates ästhetisches Resultat akzeptieren und das Ziel der Operation eine gute Defektdeckung ist, kann diese Methode der Zykloppenbrust angewendet werden.



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