



10th EURAPS RESEARCH COUNCIL MEETING

25-26 May 2022
Naples, Italy

ABSTRACT BOOK



SESSION 1

REGENERATIVE



Abstract No.: 14

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Is Upper Arm Post-Stroke Spasticity Related to Reduced Muscle Repair Potential? Comparison of Muscle Stem Cell Population between Stroke Patients and Control Group.

Introduction:

Satellite cells(SC), a group of self-renewing adult muscle stem cells are responsible for muscle regeneration. Previous studies demonstrated a reduced SC population in spastic hamstring muscles of children with cerebral palsy(CP) but it is still unknown whether this finding is secondary to muscle contractures or is primarily related to the disease itself. Our goal was to determine whether upper extremity spastic contracted muscles from stroke patients also present a reduced SC population, which could preclude them from sufficient functional recovery after spasticity reducing surgery.

Materials and Methods:

We compared the percentage of SC populations in pronator teres (PT) and flexor carpi ulnaris (FCU) muscle from stroke patients obtained during spasticity reduction surgery (n=4; age range 37-72y; post-stroke interval 2 - 5 years) and from control participants who underwent ulnar nerve release at the elbow (n=2; age 45 and 56y). After two-step enzymatic digestion, cell suspensions were stained with appropriate cell surface markers to differentiate from hematopoietic and stromal cell types using flow cytometry. The sorted SC population was expanded and differentiated in vitro. Seventy-two hours later, cells were fixed and stained for the differentiation marker alpha-actinin(ACTA2) and DAPI to label the nuclei.

Results:

In spastic PT and FCU muscles from stroke patients, SCs represented 0.6% (SD 0.3%) of the whole cell population, while in intact muscles SCs were 0.8% (SD 0.3 %), with no statistical difference between groups. Our preliminary data also suggest that sorted SCs from spastic muscles have maintained muscle growth and repair potential preserving their capacity to proliferate, expand and differentiate into multi-nucleated myotubes in vitro.

Conclusions:

In contrast to contractured muscles in children with CP, SC content of muscles involved in post-stroke spasticity seem to maintain their numbers and ability to proliferate and differentiate. Our findings provide a new insight in the pathophysiology of post-stroke spasticity and may guide appropriate treatment choice.

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Abstract No.: 18

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Enriched facial fat grafting to increase volume retention, a systematic review

Introduction:

Since decades, fat grafting has been used in clinical practice to restore facial volume. The main challenge of this technique is the variable volume retention. Currently, there is also a lack of adequate methods to objectify retention. Over the past years, studies reported increased volume retention by enriching fat grafts with ASCs, SVF and PRP. The aim of this systematic review is to investigate which fat graft enrichment increases volume retention in facial fat grafting as assessed with volumetric outcomes and patient satisfaction outcomes.

Materials and Methods:

Central, MEDLINE, EMBASE, Web of Science Core Collection and Google Scholar were searched until 30th of November 2020. Studies assessing volume after facial fat grafting with enrichment therapy in human subjects were included. Outcomes of interest were volume retention and patient satisfaction. Quality of the studies was assessed using the Effective Public Health Practice Project tool.

Results:

After removing duplicates, 3724 studies were screened by title and abstract. After reading 95 full-text articles, 27 studies were included for comparison. Studies included enrichment with platelet rich plasma (PRP), platelet rich fibrin, adipose tissue-derived stromal cells or bone marrow-derived stromal cells, cellular or tissue stromal vascular fraction (SVF) or nanofat. The overall quality of the studies was rated as weak for 20 of 27 studies and moderate for 6 of 27 studies.

Conclusions:

Our results show that it remains unclear if enrichment therapies contribute to facial fat graft retention while there is a need to standardize methodology.

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Abstract No.: 66

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Mesenchymal Stromal Cells from Adipose Tissue: comparison of three different extraction techniques.

Introduction:

Growing evidence suggests that adipose tissue extraction procedure and Mesenchymal Stromal Cells (MSCs) harvesting protocol affect the yield and type of subpopulations isolated which, ultimately, are responsible for the engraftment and regeneration over time. The aim of the study was to compare the immunophenotype of MSCs obtained from the same adipose sample with three different processing techniques: Coleman lipoaspirate, Nanofat and Stem Graft. For Coleman lipoaspirate samples further objective was to evaluate the evolution over time of the immunophenotypic expression of the isolated subpopulations.

Materials and Methods:

Subcutaneous adipose tissue was obtained by liposuction from the lower abdomen of 4 healthy female patients and was processed with three techniques: Coleman lipoaspirate, Nanofat and Stem Graft. MSCs were cultured and analyzed with flow cytometry for the expression of the following markers: CD90, CD73, CD105, CD146, CD45, CD34, and HLA-DR.

Results:

The analysis of Coleman lipoaspirate over time has confirmed that the culture conditions induce dynamic changes in the expression of surface markers. At day 5 it was possible to observe three distinct not hematopoietic cell subpopulations based on the co-expression of CD34 and CD105. Furthermore, it was possible to distinguish a CD146+ and a CD146- subpopulation. The analysis at the 15th and 25th day showed the acquisition of the commonly described MSC phenotype. For Nanofat and Stem Graft samples the values of all markers were found to be overlapping with those of the Coleman lipoaspirate samples, except for the expression of CD146 that was higher in Nanofat and Stem Graft compared to Coleman lipoaspirate (Nanofat vs Coleman lipoaspirate ($p = 0.016$), Stem Graft vs Coleman lipoaspirate ($p = 0.019$)).

Conclusions:

This study confirms the heterogeneity of the cell population of MSCs and suggests which of the three methods may generate the most useful product for clinical applications.

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Abstract No.: 33

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : AROMATASE INHIBITORS CLINICAL AND BIOLOGICAL EFFECT ON AUTOLOGOUS FAT GRAFT IN BREAST CANCER PATIENTS: A PILOT STUDY

Introduction:

Autologous fat grafting (AFG) is a procedure used for the correction of soft tissue deformities. The efficiency of AFG is attributed to the presence of adipose-derived stem cells (ASCs), which differentiate into different cell lines and secrete angiogenic factors such as VEGF. AFG is widely used in patients undergoing reconstructive surgery following quadrantectomy for breast cancer (BC). However, these patients are often treated with aromatase inhibitors (AIs). The aim of the study was to evaluate the ex-vivo biological effects of AIs on ASCs and their effect on cellular functions of ASCs.

Materials and Methods:

We selected 12 female post-menopausal patients; 6 of which were breast cancer patients treated with quadrantectomy and AIs. Control group included 6 female post-menopausal patients treated with quadrantectomy. Patients' age ranged between 45 and 80 years. ASC's were obtained from side lipoaspiration. The levels of ASC's multilineage differentiation were assessed using culture media. ER- α ; and ER- β ; expression was assessed using qRT-PCR analysis. VEGF-A secretion was studied using ELISA. IL-10, PTGS2, and TNF- α ; expressions levels were studied using qRT-PCR analysis.

Results:

ASC's from AI-treated patients exhibit a higher capacity for osteogenic differentiation when cultured with the specific induction media. ASCs from AI-treated patients had a higher level of ER- α ; comparing to the untreated group, while no differences were found in ESR2 (ER- β ;) mRNA levels. ASCs from AI-treated patients showed a higher VEGF-A secretion at both timings; the ASCs of untreated patients released lower levels of VEGF.

Conclusions:

This study found, that AIs do not impair the cellular functions of ASCs. AI increases osteogenic differentiation, ESR1 expression, VEGF secretion, and IL-10 secretion of ASCs, while not affecting adipogenic differentiation, TNF- α ;; and PTGS2 secretion. Despite the differences described above, these data suggest that AI's treatment should not contraindicate AFG in post-menopausal BC patients.

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Abstract No.: 77

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The effect of macrophage inflammation on human adipose-derived stem cells and its role in human wound healing

Introduction:

After skin injury, inflammation is initiated and is crucial to subsequent repair. During wound healing, activated cells of the immune system such as macrophages (MQ) dominate the inflammatory microenvironment by releasing signaling molecules to interact with a subset of different cells. Recent studies have shown that adipocytes and adipose-derived stem cells (ASC) are involved in skin repair and may exert positive effects on skin regeneration. Therefore, this study investigates the interaction of differentially activated macrophages and ASCs and its role in human wound healing.

Materials and Methods:

Human granulation tissue was gained from chronic wounds and analyzed by microscopy and FACS. Additionally, A an in-vitro macrophage polarization model based on the acute monocytic leukemia (AML) cell line THP1 was established to generate conditioned media resembling a pro-inflammatory (macrophages activated by IFNG/LPS = MQ(IFNG/LPS)) and an anti-inflammatory (macrophages activated by IL4/IL13 = MQ(IL4/IL13)) microenvironment. Human ASCs were exposed to conditioned media (CM) from differentially activated macrophages (MQ) for 72 hours. Subsequently, ASC physiology was phenotypically and molecularly assessed using microscopy, viability assays, quantitative real-time-PCR, immunoblotting and FACS. CM of THP1 cells served as control.

Results:

Macrophages and ASCs were found in close proximity in human chronic wounds. In-vitro experiments indicated that pro-inflammatory and anti-inflammatory macrophages exerted different effects on ASC properties. Pro-inflammatory MQ(IFNG/LPS)-CM induced expression of pro-inflammatory cytokines secreted by ASCs. Cytoskeleton changes with an increase in focal adhesion and stress fiber formation resembling a myofibroblast-like phenotype were detected. Inhibition of pro-inflammatory effects were observed after addition of the IL1B inhibitor IL1-RA to MQ(IFNG/LPS)-CM suggesting that observed effects involve IL1B.

Conclusions:

ASC physiology is affected by differentially activated macrophages. In chronic wounds, an inflammatory microenvironment may cause resident stem cells to show a myofibroblast-like phenotype promoting wound contraction. Vice versa, Inhibition by IL1-RA may present a future treatment option for excessive wound healing with hypertrophic scarring.

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Abstract No.: 54

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Adipose derived SVF improves texture, erythema and pigmentation in surgical scars

Introduction:

The regenerative properties of adipose derived stromal vascular fraction (SVF) are being explored in clinical studies to investigate their role in wound healing and scar formation. So far, there is no evidence on this matter based on randomized, double blinded, within-patient controlled clinical trials.

Materials and Methods:

Twelve patients who had either abdominoplasty or DIEaP flap breast reconstruction were included in this study. SVF was mechanically obtained intraoperatively from the lipoaspirate from patient's flanks. At the end of the procedure, the closed abdominal surgical wound was intradermally infiltrated with SVF at either the left or the right side. The side to be infiltrated was randomized and the opposite side that served as control was left untreated. Both sides of the scar were sutured by the same surgeon. The abdominal scar was clinically evaluated with the Patient and Observer Scar Assessment Scale (POSAS), while erythema and pigmentation were measured with a reflectance spectrophotometry device (Mexameter®). The follow up ranged between six and thirty-two months.

Results:

The treated side of the scar showed significantly less erythema and pigmentation at the six month follow up visit. 58,3% of patients reported a higher satisfaction score on the treated side of the scar with better texture and color on the POSAS evaluation. None of the patients reported a worse clinical result at the treated side. There was no difference in the occurrence of adverse events between both sides.

Conclusions:

Infiltration of SVF shows promising results in surgical scar maturation with less erythema and pigmentation and better texture. More clinical trials with a larger sample size should be performed to better understand the mechanisms and possible benefits of stromal vascular fraction on surgical scar formation.

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Abstract No.: 74

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Effects of Recipient Area pH Changes on Fat Graft Survival

Introduction:

Adipose tissue graft has many advantages over artificial materials; however failure to predict the long term persistence of adipose tissue graft is one of the problems that plastic surgery deals with most. It survives with mechanisms similar to wound healing, is expected to be affected by factors that disrupt wound healing. In the literature, there is no experimental study showing the effect of pH on fat tissue graft survival. The aim of this study is to determine whether the pH value has an effect on the survival of fat cells and if so, to evaluate those effects.

Materials and Methods:

In this study, fat graft was taken from the infraumbilical region of a single patient was used. Adipose tissue graft was distributed evenly as 30 cc per group. Isolated preadipocytes were incubated in cultures at different pH values between 1-13. Survival of preadipocytes were evaluated with MTS test. Preadipocytes in pH 6, 8, 10, 12 valued culture media were analyzed by PCR; inflammation and apoptosis rates were evaluated.

Results:

In more than two independent groups, one-way analysis of variance (ANOVA) was used since the numerical variables in the groups provided the normal distribution condition. Preadipocyte survival rates in media with pH 8, 6 and 9 respectively, were found to be significantly higher than the control group. Subgroup analyzes were performed with Tukey test. In PCR gene analysis, IL-6, COX-2 and Caspase-3 gene expressions were found to be lowest at pH 8.

Conclusions:

Survival of adipose tissue graft with mechanisms similar to wound healing is affected by different pH values. In our study, the highest preadipocyte survival, lowest inflammation and apoptosis rates were observed at pH 8. The aim of this study is to pioneer further studies on in-vivo alteration of recipient area pH values in order to increase the success rates in adipose tissue grafting.

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Abstract No.: 89

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Towards Standardization In Mechanically Isolated Stromal Vascular Fraction Research - Preliminary Results From A Methodological Analysis

Introduction:

Mechanically isolated adipose tissue-derived stromal vascular fraction (SVF) is a potent regenerative emulsion, increasingly implemented in clinical practice. However, insufficient experimental reporting has hampered comparison and optimization. We argue that the SVF field requires more transparent reporting, subsequently facilitating reproducibility and standardization. We performed a methodological evaluation of existing reports, describing all relevant steps from patient preparation and fat harvesting to SVF isolation and characterization.

Materials and Methods:

A systematic review was performed according to the PRISMA guidelines. Embase, PubMed, WoS and CENTRAL were used. Studies describing mechanical SVF isolation for clinical implementation were included. Following data were extracted: infiltration solution, method of aspiration, cannula specifics, SVF isolation procedure, end-to-start-volume ratio, SVF analysis.

Results:

Of 4939 studies, 14 comparative and 28 non-comparative articles were included, comprising a total of 66 experiments. Infiltration solution was specified in 27 (40.9%) experiments. Machine- and syringe-aspiration were performed in 48 (72.7%) and 18 (27.3%) experiments, respectively. Of those performing machine-aspiration, 39 (81.3%) did not report the vacuum pressure during aspiration. Cannula diameter was reported in 38 (57.6%) experiments, whereas hole size was only reported in 15 (22.7%). Sixty-one different SVF isolation procedures were identified, with 38 (57.6%) using a commercial kit. Fifteen (22.7%) experiments reported sufficient details allowing to deduce the total SVF isolation duration and in only 22 (33.3%) the end-to-start-volume ratio could be calculated. While 55 (83.8%) performed cell counts, only 24 (36.4%) evaluated cellular vitality. Although 64 (96.9%) experiments performed some form of phenotypic analysis, this was mostly superficial and the markers were often arbitrary.

Conclusions:

Identified knowledge gaps highlight pivotal opportunities for research design. The rate at which the SVF field is growing necessitates the introduction of rigor and standardization in a timely fashion. These results form the first step towards the formulation of SVF research guidelines, underlining the importance of evidence over hype.

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SESSION 2

HAND/NERVES



Abstract No.: 6

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Composite Classification and Algorithmic Reconstruction of Fingertip Defects with Lateral Great Toe Flaps

Introduction:

The aim of this study is to classify fingertip defects according to dimensions and composite content, and to present aesthetic and functional outcome of algorithmic reconstruction with free lateral great toe flaps.

Materials and Methods:

Thirty-three patients underwent free lateral great-toe flap transfer to full-thickness defect of hand fingertip were reviewed retrospectively. The patients were divided into 4 groups according to dimension and content of defects. Groups 1 to 4 were classified as isolated soft tissue defect affecting less than 50% of pulp(n:11), isolated soft tissue defect affecting 50% and more of pulp(n:8), composite defect affecting less than 50% of fingertip that pulp defects accompanied by bone, nailbed and/or tendon defect(n:8), and composite defect affecting 50% or more fingertip that pulp defects accompanied by bone, nail bed and/or tendon defect(n:6). Functional losses of upper extremities, limitations of donor foots, and finger cosmetics, flap sensation, and grip strength were evaluated with "Disabilities of The Arm, Shoulder and Hand", "Foot Function Index", "Likert satisfaction" scales, static two-point discrimination, Semmes-Weinstein monofilament, and pulp pinch test, respectively. All data were compared statistically.

Results:

The dimensions of transferred flaps were statistically different between groups(p:00). Also, as the composite content of the flaps increased regardless of the dimensions, operative duration, return to work, and donor site complications increased significantly (p:0.00). Postoperative hand function and recovery of flap sensation were similar in all groups(p<0.005). Sensation test scores were significantly correlated with each other(p:0.78). All patients and observers were significantly satisfied with the finger cosmetic (p<0.005).

Conclusions:

Classical classifications are insufficient to describe dimensions and content of fingertip defects, as they only determine distal to proximal amputation levels of tfingertip. We divided fingertip defects into 4 groups, when dimensions and content of defects increase, complex surgical skills are required, duration of surgery and return to work is delayed, and donor site complications increase.

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Abstract No.: 7

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Targeted Sensory Reinnervation in bionic reconstruction: an experimental animal model

Introduction:

The field of bionic reconstruction has seen many improvements regarding motor control in the past years, however, the restoration of sensory feedback remains elusive. Targeted sensory reinnervation (TSR), the clinically observed reinnervation of skin overlying a muscle after targeted muscle reinnervation, has demonstrated impressive potential for restoring sensation. We present an experimental rat model for investigating TSR in this ongoing study.

Materials and Methods:

Male Sprague-Dawley rats were used in this study. In one group, the ulnar nerve was transected proximal to the cubital tunnel and transferred to the biceps muscle's long head. In a second group, the nerve was labeled with a retrograde tracer for a sequential labeling procedure before being transferred. A glabrous skin graft was harvested from the hind limb and sutured to the long head's epimysium. After 12 weeks, animals either underwent electrophysiological recording of the transferred nerve while applying tactile stimuli to the graft or injection of a second tracer intradermally. The skin-muscle complex or the dorsal root ganglia C8/T1 were harvested. Skin-muscle samples were subjected to a whole mount immunohistochemical staining procedure, while the ganglia were sectioned and evaluated.

Results:

All animals survived the surgical procedure and the follow-up without any major adverse events. Upon surgical exploration, all grafts were fully engrafted and revascularized. Whole mount staining revealed reinnervation with nerve fibers crossing through the muscle into the overlying skin. The electrophysiological investigation demonstrated reproducible afferent nerve signals after tactile stimulation. Evaluation of the dorsal root ganglia revealed that 10% of the ulnar nerve's sensory nerve population was double labeled.

Conclusions:

The first results of this study demonstrate both the model's surgical feasibility, reproducibility and use for further investigating TSR. The electrophysiological, immunohistochemical and retrograde labeling evidence of nerve ingrowth suggests that glabrous skin grafts may have the potential to create a high-resolution sensory feedback interface in bionic reconstruction.

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Abstract No.: 13

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Axonal components of nerves innervating the lower limb.

Introduction:

Nerve transfer surgery is a well-established and commonly used surgical treatment option for peripheral nerve injuries and root avulsion injuries when direct coaptation is not possible. The motor fiber count of the recipient as well as the donor nerve is an important prerequisite for successful nerve transfers. While a quantitative analysis of the brachial plexus' motor and sensory axons has been recently reported, similar data for the innervation of the lower extremity does not exist. In this study we aimed to analyze the motor and sensory fiber count of nerves innervating the human lower limb

Materials and Methods:

The 4 major peripheral nerves innervating the lower limb (femoral, obturator, tibial and common peroneal nerve) were investigated at multiple levels including muscular and sensory branches of clinical importance. All nerve samples were harvested in 6 human cadaver specimens within 24 hours post-mortem. The samples were then processed and subjected to a double immunofluorescence staining protocol using antibodies against choline-acetyltransferase (ChAT) and neurofilament (NF). NF labels all axons, while ChAT identifies motor axons, thus making it possible to distinguish motor and sensory axons in nerve cross sections.

Results:

Our results demonstrate the axonal composition of the femoral nerve (total axons 62389 ± 14823 , motor axons 5003 ± 642), the obturator nerve (total axons 19628 ± 2736 , motor axons 2881 ± 144), the tibial nerve (total axons 63732 ± 7964 , motor axons 5169 ± 1204), the common peroneal nerve (total axons 36028 ± 5314 , motor axons 2348 ± 675) and their major branches.

Conclusions:

The presented data contributes to the advanced understanding of the axonal composition of peripheral nerves innervating the lower limb. Our results may help to estimate the axonal load of the donor and recipient nerve in nerve transfer surgery. This could greatly aid surgical planning and avoiding mismatching.

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Abstract No.: 15

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Structural and Biochemical Alterations on Stroke Muscle Contractures

Introduction:

Stroke is a leading cause of adult disability worldwide. After stroke, hemiparesis, increased stretch reflex and contractures are relatively common. Both the upper motor neuron (UMN) lesion and altered neural input may affect muscle properties. We previously reported dramatic changes in muscle structural properties after UMN in cerebral palsy (CP) which was accompanied by muscle fibrosis. However, it was not clear whether the muscles were “born” with these properties that led to contracture or whether they developed over time. We hypothesized that the UMN in stroke would lead to a similar altered sarcomere structure and collagen content in adult muscle that we observed previously in children.

Materials and Methods:

During contracture release surgery, we obtained pronator teres (PT) muscle biopsies from stroke patients (n=3) of mean age ~60 years; all had received at least two doses of botulinum toxin. Control biopsies were obtained from patients undergoing surgery for ulnar nerve decompression (n=2) with mean age ~37 years. Sarcomere length was measured by laser diffraction of fixed tissue. Collagen concentration was measured using hydroxyproline assay on frozen tissue obtained intraoperatively.

Results:

Sarcomere length was significantly longer by over one micron in stroke patients. Given that sarcomeres are only a few microns in length, this is a large effect with an effect size (d) over three. Similarly, stroke muscle was clearly fibrotic as total collagen content was dramatically increased in stroke muscle compared to controls. Specifically, stroke muscle collagen concentration (~30 µg/mg tissue) was over six times that of control muscle.

Conclusions:

Contracture muscle from patients demonstrate dramatic structural alterations as indicated by a dramatic sarcomere length increase and are fibrotic as indicated by a six-fold increase in collagen content. Thus, UMN results in dramatic muscle alterations even in adults. These data have surgical implications since surgical releases and lengthenings will be affected by these altered muscle properties.

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Abstract No.: 44

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : EXPERIMENTAL AND CLINICAL COMPARISON BETWEEN NERVE AUTOGRAFTING AND SYNTHETIC CONDUITS IN PERIPHERAL NERVE GAPS REPAIR

Introduction:

The actual gold standard for the treatment of peripheral nerve lesions without indication to tensionless primary repair is the autologous nerve graft despite the consequent secondary morbidity of the donor site. The aim of the study is to evaluate and compare, both in an animal model and in a series of patients, the efficacy of nerve gap regeneration among different nerve conduits and nerve grafts.

Materials and Methods:

In the animal model, the efficacy in restoring sciatic nerve gap by means of Reverse Autograft or different types of nerve conduits was compared. 18 animals were randomized to 6 groups, the control one in which the Reverse Autograft was used and the other 5 characterized each one by a different type of nerve conduit employed.

After 6 weeks, explantation was performed and the repaired sciatic nerves were processed for histological and immunohistochemical examinations.

Furthermore, a retrospective analysis was conducted in all patients in whom peripheral sensory nerves gaps were repaired with autologous grafts or nerve conduits. An ultrasound evaluation of the reconstructed nerves and a clinical evaluation by DASH score, Semmes-Weinstein, monofilament Test and Two-points discrimination test were performed.

Results:

All animals showed functional recovery and outcomes comparable to those of the reverse nerve autograft. Histology and immunohistochemistry confirmed the presence of evident myelinated axons within all nerve conduits and a minimal inflammatory infiltrate. No significant differences were found in the recovery of sensitivity between patients treated with autologous reconstruction and nerve conduits.

Conclusions:

In the animal models, OxPVA conduits (simple and enriched) showed better regenerative results compared to nerve autografts.

Besides, no significant differences were found regarding the recovery of patients' sensitivity. Nerve conduits can thus be considered a valid alternative with research still focused on developing new techniques and materials to address the actual shortcomings of available options.

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SESSION 3

ERC TALKS

VISUAL ABSTRACTS



Abstract No.: 11

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : A Double-Blind Comparison of the Effects of Local Anesthesia Nerve Block on Postoperative Pain, Edema, and Ecchymosis in Rhinoplasty

Introduction:

Local anesthetics can be used at the last stage of the surgery to increase postoperative patient comfort in rhinoplasty. Different local anesthetic drugs can offer different postoperative experiences. In this study, we compared the effects of Bupivacaine and Lidocaine plus epinephrine (LPE), which are most commonly used for this purpose.

Materials and Methods:

A total of 60 patients who underwent primary open rhinoplasty surgery were randomized and double-blinded into three equal groups. Peripheral nerve block to the nasal area with 2cc infiltration solution was applied to each group at the last stage of the surgery, LPE (20/0.0125mg/ml) was applied to Group 1, Bupivacaine (5mg/ml) to Group 2, and saline to Group 3. The pain, ecchymosis, and edema levels were followed up for 24 hours postoperatively. Systemic painkillers were administered when necessary, depending on the level of pain.

Results:

Local anesthetic infiltration was effective against postoperative average pain in the experimental groups and there was no statistically significant difference between the experimental groups. In the bupivacaine group, the pain started later than the other two groups, and patients in this group did not need opioids. Although both local anesthetics were effective against ecchymosis, LPE was superior. There was no statistically significant edema difference between the experimental groups.

Conclusions:

Local anesthetic injection at the end of rhinoplasty surgery decreases the levels of pain, edema, and ecchymosis. Bupivacaine injection provides longer post-operative pain control and decreases the need for opioids versus LPE injection. However, LPE is more effective to decrease ecchymosis.

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Abstract No.: 24

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Carotid Artery Involvement in Metastatic Recurrent Head and Neck Cancer- Three interesting cases and their surgical management

Introduction:

Advanced metastatic Head and Neck carcinomas with carotid artery involvement hold controversial surgical management with high morbidity and mortality. However, aggressive wide resection that includes the carotid artery yields a chance of improved prognosis.

Materials and Methods:

We present a small case series of 3 patients who underwent surgical management of Recurrent Metastatic Head and Neck Cancer at the Plastic Surgery Department of our Hospital. We used clinical examination, close follow-up and duplex scanning for carotid graft patency in order to analyze the complications, disease recurrence and survival.

Results:

The 1st patient was a 45-year-old man with a fixed massive metastatic cervical SCC. The tonsillar fossa, lateral pharynx and cervical tumour were resected and a Javid™ shunt was used between CCA and ICA . Reconstruction was performed with a composite compound ALT and vastus lateralis free flap to cover the vessels and the intraoral defect. To date, the patient had patent CCA and ICA.

The 2nd patient was a 67-year-old man with a recurrent metastatic neck tumour after laryngectomy for primary glottic cancer. CCA was grafted with a saphenous vein graft, and a Javid™ shunt was used. A pectoralis major flap was used for vessel and cervical coverage. His recovery was satisfactory, limited to a surgical site infection treated conservatively, and his CCA was viable.

The 3rd patient was a 30-year-old man with metastatic malignant melanoma of an unknown primary tumour. CCA was grafted with a saphenous vein graft. The same patient had a recurrence within a year, allowing the study of graft adoption, which was satisfactory. Another saphenous vein graft was used to replace the carotid artery with good postoperative results.

Conclusions:

Internal carotid artery invasion by malignancy portends a poor prognosis. Surgical management is exceptionally challenging results show but may provide an opportunity for prolonged survival and reasonable palliation.

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Abstract No.: 39

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Melanoma and COVID-19: Refining and Innovating Melanoma Management in a Regional Melanoma Service during the Early COVID-19 Pandemic

Introduction:

The aim of our study was to audit our experience of diagnosis and managing melanoma during the COVID-19 Pandemic of 2020 and the results of the new “See and Treat Clinic” model on the patient’s melanoma journey compared to a cohort of patients presenting at a corresponding time prior to the pandemic in 2019.

Materials and Methods:

A retrospective review of all newly diagnosed melanomas for a 7-week period in the early COVID-19 pandemic 2020 and those of the corresponding 7-week period in 2019 were collected using our local Skin Multi-disciplinary Team database. We compared time to diagnostic biopsy, histological diagnosis, wide local excision (WLE, including staged WLE for the COVID-19 cohort) and Sentinel Lymph Node Biopsy (SLNB). We also compared Breslow depth and stage at presentation.

Results:

During the early pandemic 26 patients were diagnosed compared to 28 patients the year before. Interestingly, histological turnaround was faster during the pandemic and time to definitive WLE was reduced by on average 26 days. However, the average Breslow thickness of patients presenting during the COVID-19 pandemic was 3mm compared with 1.8mm in 2019)

Conclusions:

Despite conflicting reports from some units managing melanoma we had no decrease in the number of melanoma diagnosis during the early COVID-19 pandemic. The development of our combined plastics and dermatology See and Treat Service has shortened the patient journey by 23 days whilst maximising patient safety during the pandemic. By utilising a ‘clean’ hospital site during the pandemic we were also able to continue to offer WLE and SLNB with minimal disruption.

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Abstract No.: 53

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Buccal fat pad and facial fat grafting

Introduction:

In recent times, the number of buccal fat pad removal procedures has increased. Knowing the correct anatomy, buccal fat pad removal can be performed safely and fat removed can be used as facial fat grafting

Materials and Methods:

Between 2019 and 2020 , 11 females aged between 40 and 55 years (mean age 46.4) underwent this procedure. The mean volume of fat removed was 4 cc. (range 3-5 cc). Procedures were performed in local anesthesia (mean time 1 h and 30 minutes). Buccal fat pads removed were processed and then injected as a facial fat grafting.

Results:

No complications such as infection, fat necrosis, skin necrosis were reported. However, one patient did present monolateral hematoma due to buccal fat pad removal at 1-day postoperative follow-up. At 1-year follow- up, patients were evaluated according to: 1) FACE -Q satisfaction with cheeks; 2) FACE-Q satisfaction with skin; 3) FACE- Q satisfaction with lips; 4) FACE- Q satisfaction with out comes. Scores recorded (EQUIVALENT RASCH TRANSFORMED SCORE): 1) 91-100 for FACE-Q satisfaction with cheeks; 2) 88-100 for FACE-Q satisfaction with skin; 3) 89-100 for FACE-Q satisfaction with lips; 4) 87-100 FACE-Q satisfaction with out comes. These results testify a high satisfaction rate among patients.

Conclusions:

Bichat's fat pad removal is indicated for improving facial contour in selected patients. In many cases, though, these patients may also need facial fat grafting in other regions, e.g., (zygomatic region and lips). Bichat's fat pad is a viable option for surgeons who would like to perform fat grafting simultaneously,

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Abstract No.: 48

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Chin augmentation by individual made implant

Introduction:

Reduced chin, which in science is called microgeny, is a significant aesthetic problem. There are several methods for assessing a poorly protruding chin, but most of them are inaccurate when it comes to choosing the right size and shape of the implant. The choice is also complicated by the standard sizes of commercially available chin implants. Most implant manufacturers offer only three or four categories of implants that vary in size from one company to another. Our paper discusses a new approach to accurately determining the size and shape of the chin implant, based primarily on the creation of a CT scan of the skull and the manufacture of individual chin implants. This technique allows you to create the most harmonious shape of the chin.

Materials and Methods:

The study was conducted in 14 patients, women - 9 (64.3%), men - 5 (35.7%). The mean age of the patients was 25.2 ± 5.3 years, it was the main group who underwent chin augmentation by using 3D imaging and printing to create a custom fit PEEP implants that was fixed by titanium screws. The control group - 38 patients who underwent chin augmentation by standart silicone implants. In both groups we used intraoral incision, that closed by Vicryl 5-0.

Results:

The average duration of surgery was 49.3 ± 4.8 minutes in the control group, 56 ± 5.5 minutes in the main group. During 1 year follow up in the main group there was no implant displacement and no another complication (0%). In the control group main complications developed in 12 patients (23.7%) ($p < 0.05$). The complication was dislocation and visible movement of implants in all 12 cases, and all patients were unsatisfied.

Conclusions:

Individual produced chin PEEP implants can be used to produce very nice aesthetic result with minimal complications and very high satisfaction rate.

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Abstract No.: 64

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Pretibial injury patients benefit from early plastic surgery consultation

Introduction:

Pretibial injuries (PI) caused by low energy traumas are a distinct medical entity in the morbid elderly population. They present in the anterior leg as wounds; pretibial lacerations (PL) or closed hematomas; pretibial hematomas (PH). Acute wounds such as PIs are being increasingly referred to plastic surgery departments. Despite common, previous knowledge on the treatment and outcome of PIs is sparse.

Materials and Methods:

We reviewed the treatment, outcome and demographics of patients aged >65 years treated for a PI during 2015-2019. We focused on wound healing, surgical treatment, and skin graft donor site healing.

Results:

We recorded 176 patients (116 PL and 60 PH). The population was mostly female, 71.6%, with a mean age of 79.9 years. We found prolonged wound healing in the PL group, mean 75.2d (range 0-356), and numerous follow-up visits, mean 18.9 (range 0-200). Decisions on surgical treatment were rare, only 6 patients were treated with a STSG.

With PH only 9 patients were treated with a STSG. The mean time from hematoma evacuation to skin grafting was long, 32.9d (range 8-121). The mean time from injury to healing was 90.4d (range 14-181). Mean number wound care nurse visits was 14.8 (range 0-153).

From 15 STSG treated patients three were lost in follow-up and six healed within the normal range of donor site healing time (<21 days). In two patients healing took 25 days and in four 37-97 days. All donor sites healed with local wound care without re-grafting.

Conclusions:

Our study showed that pretibial injuries are mostly treated conservatively leading to prolonged wound healing. Skin graft donor site healing among morbid patients is relatively uncomplicated. Early debridement and STSG/FTSG application in plastic surgery departments could facilitate healing.

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Abstract No.: 65

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The association of anxiety disorders and depression with facial scarring: a population based, data linkage, matched cohort analysis of 358,158 patients.

Introduction:

Psychological support for patients that sustain facial scarring is limited. The aim of this study is to strengthen the call for improved services by determining the incidence and risk factors for anxiety and depression disorders in patients with facial scarring.

Materials and Methods:

A matched cohort study was performed. Patients were identified using secondary care Patient Episode Database for Wales (PEDW) and Emergency Department Data Set (EDDS) using clinical codes for conditions resulting in facial scarring. Controls were matched according to age at facial scarring, socioeconomic status and sex. A diagnosis of anxiety or depression were determined using linkage with patient's primary care general practice data. Incidence was calculated per 1,000 person years at risk (PYAR). Cox-regression analysis was used to determine risk factors for developing anxiety and depression.

Results:

Between 2009-2018, 179,079 patients met the study criteria and were identified as having sustained a facial scar and were matched to 179,079 controls. The incidence of anxiety in the facial scarring group was 10.05 per 1000 PYAR compared to 7.48 per 1000 PYAR in the matched controls. The incidence of depression in the facial scarring group was 16.28 per 1000 PYAR compared to 9.56 per 1000 PYAR in the matched controls. Age at time of scarring, previous history of anxiety or depression, female sex, deprivation and history of assault were associated with an increased risk of depression and anxiety.

Conclusions:

This is the largest analysis of the association of anxiety disorders and depression in facial scarring patients in the worldwide literature. There is a high burden of anxiety and depression in this patient group, supporting the need for psychological support. Further research will focus on developing effective multidisciplinary management strategies.

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|----------------------|-------------------------------------|
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Abstract No.: 70

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The search for the ideal candidate bioink in extrusion-based 3-dimensional printing for reconstructive surgery

Introduction:

3d bioprinting, the accurate deposition of biological material within a geometric pattern, has become a recent avenue for research in regenerative medicine. Bioprinting in the field is on the rise in reconstructive surgery and becoming increasingly important in the specialty due to the need of a variety of tissue types for reconstruction. The current hurdle facing the field is identifying the ideal material (dependant on a multifactorial mechanical attribute selection) to be printed. To recognise the most suitable 'bioink' would be invaluable to the future of the discipline.

Materials and Methods:

The systematic search was performed on EMBASE, PubMed, Scopus and Web of Science using keywords such as 'bioprinting', 'extrusion-based' and 'bioink'. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used and followed to carry out the systematic review. Studies were then subsequently collected and collated; followed by a screening and exclusion process with a final full-text review for further clarification in regards to the selection criteria.

Results:

From the initial 9720 identified studies, 123 were deemed to fulfil all selection criteria and selected for meta-analysis. The studies ranged in moduli determination and clinical applicability i.e. tissue type being recreated. A blend of synthetic and natural bioinks exhibited the greatest versatility in printability while producing the greatest rheological advantage. There are clear trends in the type of ink used and the development of the technology alongside the tissue type aimed to be reconstructed.

Conclusions:

There are clearly many factors that affect the printability of bioinks and their potential at being ideal for a given role. Mechanical attributes are a credible way of measuring this ability, though there has been some debate as to which modulus is the most acceptable.

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Abstract No.: 69

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Holographic augmented reality for a DIEP flap harvest

Introduction:

During a deep inferior epigastric perforator (DIEP) flap harvest, the identification and localization of the epigastric arteries and its perforators are crucial. Holographic augmented reality is an innovative technique that can be used to visualize this patient-specific anatomy extracted from a computed tomographic scan directly on the patient. This study describes an innovative workflow to achieve this.

Materials and Methods:

A software application for the Microsoft HoloLens was developed to visualize the anatomy as a hologram. By using abdominal nevi as natural landmarks, the anatomy hologram is registered to the patient. To ensure that the anatomy hologram remains correctly positioned when the patient or the user moves, real-time patient tracking is obtained with a quick response marker attached to the patient.

Results:

Holographic augmented reality can be used to visualize the epigastric arteries and its perforators in preparation for a deep inferior epigastric perforator flap harvest.

Conclusions:

Potentially, this workflow can be used visualize the vessels intraoperatively. Furthermore, this workflow is intuitive to use and could be applied for other flaps or other types of surgery.

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Abstract No.: 72

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The epidemiology, healthcare and societal burden of basal cell carcinoma in Wales 2000-2017, a retrospective population-scale analysis.

Introduction:

Basal cell carcinoma (BCC) represents the most commonly occurring cancer worldwide within the Caucasian population. Rates are predicted to result in 380,000 cases of non-melanoma skin cancer (NMSC) in the UK in 2025, and projected economic impact to the NHS of £338-465 million¹. Despite the morbidity, societal and healthcare pressures that manifest, routinely collected healthcare data and global registration within cancer registries remains non-representative due to the associated workload, synchronicity, metachronicity, and non-integration of clinically diagnosed and treated lesions.

Materials and Methods:

The Secure Anonymised Information Linkage databank (SAIL), the largest repository of anonymised health and social care data in Wales was utilised alongside advanced data linkage techniques to crosslink routinely collected healthcare databases with cancer registry data between 2000-2017. Epidemiology, healthcare utilisation and cost of BCCs were analysed.

Results:

54,057 histologically proven BCC were identified during the study period. The median age of onset was 70.5 for Males and Females. The European age standardised incidence (EASR) in 2017 was 235.9 per 100,000 (World age standardised 117.7 per 100,000). A negative association between deprivation and incidence was noted with a higher incidence in the least socially deprived and amongst urbanites. Estimated NHS costs of surgically managed lesions for the 17-year study period was £91.7-126.5 million.

Conclusions:

Robust epidemiological data which is internationally comparable, and representative is scarce for BCC. The rising global incidence coupled with struggling healthcare systems in the post Covid-19 recovery period only serves to intensify the likely societal and healthcare impact. Our study demonstrates the highest validated incidence of BCC to our knowledge not only in the UK but also Europe² and the resulting financial burden. In the modern era of health informatics and advanced analytics it is imperative that we capitalise on routinely collected healthcare data. To this end it must be accurate, comprehensive, and accessible to meet future demand.

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Abstract No.: 87

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The role of the plastic microsurgery on the experimentation of new embolization technique with interventional radiologist.

Introduction:

The use of living animal models for training is well established in several subspecialties of surgery.

In particular, Swine offer several advantages when constructing saccular aneurysm models: their neck vessels are large enough to manipulate surgically with ease. Furthermore, pig has fibrinolytic and coagulation systems whose activity is relatively similar to those in man. In this article we describe a novel strategy and setting to create aneurysm in a swine model. The principal advantage of this technique was the rapidity of the procedure and the opportunity to create two aneurysms with one large vein segment. Furthermore, it's possible to shape the neck of the aneurysm as the radiologist wanted to resemble at the best a human's aneurysm.

Materials and Methods:

The research was carried out between 2019 and 2020.

We created 30 aneurysms on the common carotid artery (CCA) of 15 Pigs.

For each animal the dedicated surgical team was composed by one anesthetist, two experienced microsurgeons and one resident trainee.

The animals weighed 40 to 70kg. the subclavian vein was used to create the aneurysms which were anastomoses with posterior wall first technique on carotid artery on either side of the neck. We obtained 2 saccular segments that emulated the wall of our aneurysms.

Results:

The surgical creation of aneurysms was successful at every attempt. All the aneurysms were small-necked.

Two animals were sacrificed just after the procedure due to problem with the density of the embolization solution

One pig was sacrificed for the rupture of the aneurysm during the embolization., while another for the rupture of the Balloon.

One pig deceased after 24h for unknown reason.

The follow up of the other animals ranged from 7 to 30 days.

Conclusions:

Our model allowed to experiment new procedures and substances to embolize the aneurysms . Furthermore it has been a hands-on training for residents,

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Abstract No.: 95

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Gender inequalities in leadership. An investigation in plastic surgery for Germany, Austria, and Switzerland.

Introduction:

In the last 50 years the plastic surgery in the GSA region has grown into a well acknowledged department, despite this significant success the gender quota lags. In a sharp contrast to the lag of leading women in plastic surgery, over 86 percent of the patients who underwent an intervention were women, and the share of the male patient only reached around 12 percent. The phenomenon is referred to as the "glass ceiling effect" and has been demonstrated in various industries, including plastic surgery in the USA; there is currently no such analysis for German-speaking countries.

Materials and Methods:

The data were gathered from the websites of the relevant universities, private hospitals, and independent specialists. A total of 326 institutions with 391 employees in the university sector and over 750 employees in the non-university sector were included. To increase the reliability of the data, the universities were contacted, and the collected data were compared.

Results:

The results show that only 11 percent of the program managers are female (6.5% for the universities). This effect can also be shown for attendings, residents and interns. Only 33 percent of attendings are female and 45 percent of residents and interns. In terms of the entire collective, the percentage of women is 33.5 percent, underscoring the underrepresentation of women in program leadership positions. The largest percentage of women are employed as interns or residents.

Conclusions:

The study indicates a need for action to promote women in management positions. In the USA, it was shown that female program managers promote the advancement of women at an above-average rate. A global study by McKinsey shows that a higher quota of women in management positions can significantly increase the success of the entire company.

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Abstract No.: 96

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Safety and effectiveness of surgical excision of medium, large, and giant congenital melanocytic nevi: a systematic review and meta-analysis

Introduction:

Medium-to-giant congenital melanocytic nevi (CMN) can have a severe impact on life, due to their abnormal appearance, and association with melanoma and neurological complications. During the last decade, treatment has shifted from prevention of malignant transformation towards improvement of appearance and psychosocial health. To enable shared decision-making about appropriate treatment, comprehensive information on treatment outcomes is needed. Therefore, we assessed the safety (complications) as primary outcome and effectiveness (satisfaction and all six CMN core domains) as secondary outcome, of surgical excision.

Materials and Methods:

PubMed, EMBASE, and CENTRAL were searched for studies evaluating safety of excision of medium-to-giant CMN and/or CMN requiring reconstruction or serial excision. Meta-analyses of safety per patient were conducted and pooled outcomes of safety and effectiveness were presented in summary-of-findings tables. Evidence certainty was assessed using GRADE.

Results:

1444 articles were found, of which 22 were included, evaluating 643 eligible patients. Study quality was generally low and reporting of baseline characteristics and outcomes was heterogeneous. Overall, pooled proportions were 9.8% for major wound-related complications, 1.2% for minor wound-related complications, 1.2% for scar-related complications, and 4.3% for anatomical deformations. For large/giant CMN, complication rates were respectively 23.1%, 2.9%, 12.9%, 2.4%, and for CMN with eyelid involvement 0.5%, 3.3%, 0.4%, 54.2%. Cosmetic outcome was rated by patients as excellent in 24.4%, good in 71.0%, and poor/moderate in 4.6% of cases. Thirty-five different outcomes for core domains were summarized. However, most were rarely reported. Evidence certainty was very low for all outcomes.

Conclusions:

Surgical excision of CMN appears to be safe and effective in many cases. Wound-related and scar-related complications occurred more frequently with large/giant CMN and anatomical deformations occurred with the majority of CMN with eyelid involvement. Furthermore, we showed that harmonization of baseline characteristics and outcomes is needed in CMN research. This could be achieved by implementation of a core outcome set.

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SESSION 4

WOUND HEALING



Abstract No.: 81

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Scar treatment with occlusion and hydration of scars: moisturizers versus silicone gels.

Introduction:

The mainstay of post-burn scar management consists of pressure garments combined with silicone inlays, hydration and UV protection. It is accepted that scar dehydration as expressed by increased trans epidermal water loss (TEWL), can lead to intensified fibroblast activity. However, there is no consensus on how optimal scar hydration is best provided: with silicone sheets or gels, or well-balanced moisturizers with humectant and occlusive properties. Sheets have many drawbacks such as cumbersome application, frequent irritation and maceration. Gels are designed to prevent these complications and facilitate application. We investigated whether moisturizers can provide comparable levels of occlusion and hydration as the widely accepted gels and therefore could be used as an easier and more cost-effective alternative in scar treatment.

Materials and Methods:

Thirty-six volunteers were included. Increased TEWL was simulated by skin stripping with Corneofix®. Three moisturizers and a silicone gel were tested: Dermacress, Alhydran, Lipikar and BAP scar silicone gel respectively. TEWL reducing capacities, absolute (AAH) and cumulative (CAAH) absolute added hydration was assessed using a Tewameter® TM300 and a Corneometer® CM825 at different time points for up to 4 hours post-application.

Results:

The mean percentage reduction (MPR) in TEWL kept increasing over time with Alhydran and Dermacress in contrast to BAP silicone gel which never reached the minimal occlusion of the moisturizers and provided significantly worse occlusion compared to Alhydran and Dermacress ($p=0.006$ and $p=0.005$ respectively). Hydration capacity assessed through CAAH was significantly worse with BAP silicone gel compared to the moisturizers ($p=0.0003$ and $p=0.006$). Lipikar provided hydration comparable to Alhydran and Dermacress, but showed significantly worse occlusion 4 hours post-application ($p=0.002$ and $p<0.001$ respectively).

Conclusions:

Silicone gels do not provide significant hydration and provide inferior occlusion compared to the moisturizers used in this study. This study suggests that moisturizers can be used as a scar hydration therapy that potentially replaces silicone products.

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Abstract No.: 35

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : A methodological analysis on the use of extracellular vesicles in cutaneous wound healing

Introduction:

Extracellular vesicles (EV) are currently being probed in clinical trials for their beneficial effects in cutaneous wound healing. EV research is however challenging, as separation is complicated due to the presence of contaminants with comparable physical properties, and different protocols enrich for distinct subpopulations with diverse composition and variable purity. Furthermore, the field is plagued by a hype-over-evidence paradigm. Ensuring that evidence is built on reproducible research is indispensable, and should therefore be strictly monitored. Here, the aim was to assess the methodological rigor and reproducibility of literature investigating EVs in preclinical in vivo wound healing studies.

Materials and Methods:

A systematic review was performed following the PRISMA guidelines. A search strategy was designed for Embase/PubMed/CENTRAL (inception-31/12/2020). The EV-METRIC was obtained by submitting the included studies to the EV-TRACK knowledgebase (evtrack.org). The EV-METRIC quantifies reproducibility of the experiments within individual studies based on the reporting of nine essential experimental components. In vitro and in vivo functional tests were appraised using the Minimal information for studies of extracellular vesicles 2018 (MISEV2018) guidelines.

Results:

Seventy-five studies were included, consisting of 157 experiments. The mean EV-METRIC was 20% (range 0-67%), reflecting a lack of reproducibility throughout all aspects of EV separation/characterization. Although negative controls were uniformly implemented in functional tests, comparison of EVs to other fractions such as soluble proteins (14% in vitro, 12% in vivo) and dose-response evaluation (26% in vitro, 3% in vivo) were significantly neglected.

Conclusions:

A general lack of reproducibility was observed in the literature. While these findings might not be representative for the entire field, they raise awareness of potential misattribution of functional properties to EVs, mainly resulting from insufficient EV separation/characterization and inadequate controls. Successful clinical translation can only be achieved through rigorous and transparent research, which can be facilitated by early adherence to the MISEV2018 guidelines and the EV-TRACK knowledgebase.

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Abstract No.: 94

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Objective bio-parametric evaluation of regenerated skin: a comparison of two acellular dermal substitutes.

Introduction:

Artificial dermal substitutes have been widely used to treat full thickness skin defects over the last 30 years. Although we have witnessed the manufacturing of different kinds of biopolymers, there is no precise indication that helps surgeons choose the proper dermal substitute. Few studies have tried to compare histologically and subjectively different xenogeneic bioengineered products, but no objective bio-parametric comparison has been made yet.

Materials and Methods:

16 patients who underwent soft tissue reconstruction with Integra™ (8 patients) or Pelnac™ (8 patients) between 2013 and 2020 were retrospectively evaluated. After at least 12 months of follow-up, an objective and quantitative assessment of the reconstructed skin was made and it was compared with the surrounding skin and the donor site. Skin biophysical properties such as colour, texture, elasticity, hydration, glossiness and trans-epidermal water loss were measured with non-invasive skin measurement devices under controlled environmental conditions. Intragroup and intergroup analyses with t-Student ($p < 0.05$) were performed.

Results:

Intergroup comparison on reconstructed skin showed no statistically significant differences. Trans-epidermal water loss showed a tendency to lower values in both groups, while the stratum corneum hydration was reduced in the Integra™ group. Melanic and haemoglobin pigmentation were higher in comparison to the donor site in both groups, while a melanic pigmentation increase versus the surrounding skin was seen just with Integra™. The skin was smoother and more elastic when reconstructed with Integra™, while it was brighter and scaling with Pelnac™.

Conclusions:

Skin barrier appeared to be intact in both groups, hence these substitutes are viable means to skin regeneration. The differences seen with Integra™, probably related to a higher water retain in the dermal layer due to GAGs presence, may indicate that this product would be a better mechanic cover when structure like bone and tendons are exposed. Pelnac™, instead, may be more suitable to reconstruct seborrheic, photo-exposed, aesthetic areas.

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Abstract No.: 26

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Retrospective clinical evaluation of Incisional Negative Pressure Wound Therapy for prevention of wound healing complications in cosmetic breast surgery.

Introduction:

Patients undergoing breast reduction and mastopexy surgery are at risk of developing different wound complications such as delayed healing, infection, hematomas and eventually wound dehiscence with or without implant exposition. There is growing evidence that prophylactic application of incisional negative pressure wound therapy (iNPWT) to a closed incision may decrease the incidence of wound complications.

Materials and Methods:

The aim of the study is to evaluate the clinical outcomes of incisional negative pressure wound therapy (iNPWT) application for wound complications prevention following cosmetic reduction surgery. In this retrospective study, 111 patients who underwent breast reduction and mastopexy surgery between January 2018 and November 2021 have been included. Sixty-seven patients were treated with prophylactic application of Prevena™ (KCI USA, Inc., San Antonio, TX) in order to prevent wound problems, while in the remaining 44 patients conventional wound dressings were used. Complications such as wound dehiscence with delayed healing, localized infection, subcutaneous hematoma, partial or total loss of nipple areola complex (NAC) have been analyzed and compared in the two groups.

Results:

In the iNPWT group, only 5 patients (7.4%) had minor wound complications. In the control group, 12 patients (27.7%) had delayed wound healing including two cases of full thickness dehiscence and three cases of partial NAC loss. The iNPWT group had a significantly decreased infection, dehiscence and necrosis rate, compared with the control group. (p value $p < 0.05$)

Conclusions:

The application of iNPWT immediately in complex cosmetic breast surgery procedures has proven to be an effective and reliable method for preventing major wound complications.

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Abstract No.: 34

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : A clinical-grade acellular matrix derived from decellularized human diaphragm for skeletal muscle repair

Introduction:

The traumatic or surgical loss of at least 20% of a given muscle is defined as Volumetric Muscle Loss (VML), which causes both aesthetic damage and functional impairment. A therapeutic alternative to current surgery may be represented by the preparation of biocompatible acellular scaffolds that promote muscle regeneration. In this work, the human diaphragm was decellularized and investigated for the development of muscular allografts highly resembling the structural features of the target tissue.

Materials and Methods:

Experimental procedures were performed under sterile conditions. Human diaphragm was decellularized by four different detergent-enzymatic protocols involving 1) sodium dodecyl sulfate (SDS), 2) SDS + TergitolTM, 3) sodium deoxycholate and 4) TergitolTM. The resulting diaphragmatic matrices were characterized for the efficiency of the decellularization process (histology, DNA quantification), the preservation of specific microstructure, protein composition (histology, immunohistochemistry, glycosaminoglycan quantification, second harmonic generation-SHG imaging), absence of cytotoxicity, and in vivo biocompatibility.

Results:

After decellularization, cells, DNA (50 ng/mg of tissue), and muscle fibers were efficiently removed, while collagen, elastin, and glycosaminoglycan components were correctly preserved. The detergent-enzymatic treatments did not affect the expression of muscular matrix markers (Collagen I and IV, Laminin) while causing the loss of HLA-DR expression to obtain non-immunogenic allografts. SHG microscopy confirmed the preservation of the collagen component whereas the cytotoxicity assay measured 80-90% viability of adipose-derived stem cells grown by indirect co-culture with decellularized samples. Following subcutaneous implant in BALB/c mice, the acellular diaphragm did not elicit a severe immune reaction, integrating with the host tissues.

Conclusions:

Tested protocols were quite equivalent in achieving efficient decellularization, assuring for the preservation of tissue structure/composition and no cytotoxicity of the acellular muscular matrix. The resulting diaphragmatic grafts satisfied clinical grade criteria, showing not to be immunogenic after pre-clinical implant.

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Abstract No.: 16

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : STRIAE SLPSDISTENSAE: IN VITRO STUDY AND ASSESSMENT OF COMBINED TREATMENT WITH SODIUM ASCORBATE AND PLATELET-RICH PLASMA ON FIBROBLASTS

Introduction:

Striae distensae (SD) appear clinically as parallel striae, lying perpendicular to the tension lines of the skin. SD evolve into two clinical phases, an initial inflammatory phase in which they are called "striae rubrae" (SR) and a chronic phase in which they are called striae albae (SA). Fibroblasts seem to play a key role in the pathogenesis of stretch marks. This study was aimed at describing and analyzing stretch marks-derived fibroblasts (SMF), the differences between SR and SA-derived fibroblasts (SRF, SAF), testing two treatments in vitro (sodium ascorbate and PrP) on SAF.

Materials and Methods:

We conducted a prospective, randomized single-blind study in sixty-nine women, presenting with SR in the abdominal region and an equal number of women with SA. These patients had voluntarily sought a conventional abdominoplasty procedure. For each abdominoplasty-derived skin sample 4 primary cell cultures of SMF were obtained. To characterize the SMF, the expression of alpha smooth muscle actin (alpha SMA) was investigated. Type I collagen expression was measured in SAF, before and after adding different PrP concentrations and sodium ascorbate in the culture medium. Results were processed through statistical analysis models using the Student's t-test.

Results:

A significant increase in alpha SMA ($P < 0.001$) was observed in SRF. SAF treated with PrP and sodium ascorbate showed a resumption of their metabolic activity by an increase in collagen type I production and cell proliferation. After 24 h of incubation with PrP 1% and PrP 5% + sodium ascorbate, cell viability was increased by 140% and 151% and by 156 and 178% after 48 h, respectively, compared to the control.

Conclusions:

Our study shows that a biologically mediated improvement in SMF metabolic activity is possible. Our promising results require further trials to be able to confirm the reproducibility of this combined treatment, particularly in vivo.

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Abstract No.: 45

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Hypoxia Preconditioned Serum (HPS)-Hydrogel can Accelerate Dermal Wound Healing in Mice—An In Vivo Pilot Study

Introduction:

The ability to use the body's own resources to promote wound repair is increasingly becoming an interesting area of regenerative medicine research. The primary stimulus of the wound healing angiogenic response, hypoxia, is used to stimulate peripheral blood cells (PBCs) to produce angiogenesis and lymphangiogenesis factors. Several in-vitro experiments have validated the effectiveness of this approach in promoting an angiogenic and lymphangiogenic response in PBCs. Given these promising in-vitro findings, we sought out to demonstrate the effects of HPS-Hydrogel in an in-vivo murine excisional wound model.

Materials and Methods:

Crl:NU(NCr)-Foxn1nu immunocompromised athymic nude mice were used in a splinted full-excisional wound model with the following numbers per group: HPS-10% and HPS-40% group with each 7 mice (14 wounds) and no treatment (NT) group (only rinsing with sterile saline solution) with 5 mice (10 wounds). Time to full wound closure was assessed by digital image analysis. Healed tissue was stained HE and Masson-Trichrom and with immunohistochemistry for vascularization (CD31), lymphangiogenesis (LYVE-1) and proliferation activity (Ki-67).

Results:

On average, both HPS-10% and HPS-40% -treated wounds healed 1.4 days faster than no treatment (NT). We achieved a significant dose-dependent wound area reduction after 5 days in HPS-treated groups compared with NT. Healed tissue samples were investigated on post-operative day 15 (POD 15) by immunohistology and showed an increase in lymphatic vessels (LYVE-1) up to 45% with HPS-40% application, while at this stage, vascularization (CD31) was comparable in the HPS-treated and NT-groups. Furthermore, the expression of proliferation marker Ki67 was greater on POD 15 in the NT-group compared to HPS-treated groups. Collagen deposition was similar in all groups, indicating lack of scar tissue hypertrophy as a result of HPS-hydrogel treatment.

Conclusions:

These findings show that topical HPS application is safe and can accelerate dermal wound healing in mice.

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Abstract No.: 50

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The use of dermal regeneration template (DRTs) in full thickness defects of the scalp after skincancer surgery

Introduction:

The need to perform radical excision of skin tumors of the scalp often requires removal of the cutaneous, galeal and periosteum lining resulting in complete exposure of the cranial bone. Eventually, this situation does not allow any type of immediate local skin grafting, usually requiring local or even microsurgical flaps for defect reconstruction.

Dissection of local flaps generally involves extensive detachments of the scalp, whereas microsurgical flaps require time-consuming surgery and create a collateral damage at the donor site.

Materials and Methods:

DRTs allows the repair of full-thickness skin defects with two subsequent operations that can be carried out under local anesthesia.

Fixation of DRT requires particular measures, which if not applied, lead to not entirely satisfying results.

This work describes our rigorous protocol, as result of a constant internal review, for the use of DRTs in the repair of full-thickness skin lesions.

In particular we identified three important technical refinements leading to better results:

• continuous Ford interlocking suture with “double pass” in the DRT ;

• tie-over compression fixed by sutures anchored approximately 5-8 mm externally to the margins of the main suture (8 points);

• antibacterial ointment sealing.

Results:

From 2015 to 2021 DRTs were used for 130 full-thickness skin defects in 109 patients.

A total of 48 defects were reconstructed, including 27 on the scalp, 11 in the frontal area and 10 in the temporal area. Mean age: 80.91 y, important comorbidity in 82.97%. The results were evaluated using a precise rating scale

Conclusions:

A correct and accurate surgical technique and extreme attention in postoperative management allow to reduce time to final skin-grafting from 6 to 4 weeks and to obtain excellent functional and aesthetic results.

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Abstract No.: 67

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Collagen/Chitosan dermal substitute enriched by hyperstable FGF2, 4 years of development

Introduction:

Dermal substitutes play an important role in the treatment of full-thickness skin loss defects. Process of prothesis neovascularization is crucial for so-called neoderms formation, improves metabolic and oxygenation conditions of the healing tissue, allows the migration of growth factors, etc.

Materials and Methods:

The unique bilaminar skin prosthesis consists of a porous biopolymer foam enriched with hyperstable FGF2 and a layer of polymeric nanofibers. Two different models were used to measure dermal prosthesis neovascularization. The first was the Chick Chorioallantoic Membrane (CAM) assay, the second was a pig animal model and subsequent mathematical analysis of capillary density in histological samples stained with markers of neovascularization, α -SMA (α -smooth muscle actin) and anti-FVIII. The cutometry and clinical image assessment according to Yeong were performed.

Results:

Full biocompatibility of the dermal matrix was demonstrated in both parts of the experiment. Increased neovascularization and fibroproliferation with autologous collagen production were demonstrated by CAM assay and experiment on an animal model.

Conclusions:

Bilaminar skin replacement in conjunction with hyperstable FGF2 demonstrated biological activity by neovascularization in both the CAM assay and the animal model. Samples of dermal matrix containing hyperstable FGF2 showed clinical superiority.

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Abstract No.: 37

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Does ASC secretome-loaded decellularized extracellular matrix (ECM) hydrogels augment wound healing in a skin flap?

Introduction:

Impaired wound healing is a health problem with limited treatment options. Autologous fat grafting may improve wound- and scar treatment. We hypothesized that adipose tissue-derived stromal cells' secretome and their proficiency to bind to ECM underlies this regenerative effect. To test, we developed injectable ASC-secretome-loaded ECM-hydrogels to improve dermal wound healing in rats.

Materials and Methods:

Decellularized pigskin (ECM) was finely powdered and mildly pepsin-digested to yield liquid pre-gels that gelled at 37°C. Human ASCs from human lipoaspirates were used to prepare serumfree conditioned medium (ASCcme i.e. secretome). Full thickness dorsal skin flaps (3x10cm) were used to fill with ASCcme-loaded skin hydrogels. Gelation was within seconds. Controls were gel or ASCcme alone or saline. At 1, 2 and 4 w, explanted wounds were assessed by H&E (general histology), Masson's Trichrome (matrix remodelling and fibrosis) and CD68 staining (macrophages).

Results:

Decellularized skin ECM hydrogel contained negligible amounts of DNA (11.56 ± 0.63 ng/mg), was noncytotoxic and well-tolerated in rats. Irrespective of ASC secretome, ECM hydrogel application resulted macroscopically and microscopically in similar dermal wound healing in terms of proliferation and immune response as the control group. Collagen remodeling also showed similar patterns in fiber length and angle, except for fiber width, which was thinner in the ECM-hydrogel group. However, ASC CMe alone increased vessel density after seven days.

Conclusions:

Porcine skin derived ECM hydrogels loaded with ASC secretome are non-cytotoxic but demand optimization to significantly augment wound healing of skin flaps.

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SESSION 5

GENERAL AND LYMPHATICS



Abstract No.: 19

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Keystone perforator island flap for axillary, inguinal and sacrococcygeal soft tissue defects.

Introduction:

Surgery is the first choice of treatment for chronic, relapsing, intractable Hidradenitis Suppurativa presenting at late stages. The aim of this study is to investigate the effectiveness of keystone perforator island flap for the reconstruction of axillary, inguinal and sacrococcygeal soft tissue defects in Hidradenitis Suppurativa. It is accepted that wide local excision and local coverage is the crucial treatment to prevent recurrence of the disease.

Materials and Methods:

All patients presenting for surgical treatment of hidradenitis suppurativa between 2014 and 2019 were identified from the hospital database. Only patients with hidradenitis suppurativa confined to the axillary, inguinal and sacrococcygeal regions in Hurley grade II and III were included. We performed descriptive analysis of demographic data, comorbidities, topographic distribution of lesions, Hurley scoring, size of defect, specific type of reconstruction, complications, follow-up period, recurrences.

Results:

21 patients with localized axillary, inguinal or sacrococcygeal hidradenitis suppurativa were identified, and 22 KPIF was performed. All keystone perforator island flaps survived giving a durable cover to the affected regions. There were no complications. Functional and aesthetic results were satisfactory and there were no recurrences.

Conclusions:

These findings confirm that the keystone perforator island flap procedure can be effective for immediate defect reconstruction after wide local excision of advanced hidradenitis suppurativa of the axillary, inguinal and sacrococcygeal regions and provides excellent aesthetic results.

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Abstract No.: 21

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : THE INVERTED V-SHAPED FASCIOCUTANEOUS ADVANCEMENT FLAP EFFECTIVELY SOLVES THE TRACHEOSTOMAL STENOSIS

Introduction:

Tracheostomal stenosis following laryngectomy is a distressing progressive complication that it is associated with reduced airflow, turbulence, respiratory insufficiency, and difficulty in tracheal clearance. This study aimed to evaluate the effectiveness of the inverted V-shaped fasciocutaneous advancement flap as a reliable method for stomaplasty.

Materials and Methods:

From 2014 to 2020, we conducted a retrospective study on nine patients who underwent reconstruction of symptomatic tracheostomal stenosis with inverted V-shaped fasciocutaneous advancement flap. Successful outcome was considered a wide stoma functioned with no artificial stenting, avoiding surgical revision. Demographics, reconstructive features, fistula, pre- and post-stomaplasty vertical and horizontal stoma diameter, complications, outcome and follow up were recorded. Pearson Chi-Square, Fisher's Exact Test, Linear-by-Linear Association, and SPSS v.23 were used for analysis.

Results:

Follow up ranged from 12 to 36 months (24 mean). Seven patients (Group A) remained uncomplicated, whereas two patients (Group B) experienced complications (one required revision). Two patients from each group had post- laryngectomy fistula. The ultimate outcome was a significant increase in vertical stoma diameter by 8.34 mm (18.22 mm post- vs 9.88 mm pre-stomaplasty), and in horizontal stoma diameter by 4.44 mm (10.66 mm post- vs 6.22 mm pre-stomaplasty). Furthermore there was no need for further stenting. There were no statistical significant associations in complication rates among the pre-/post-stomaplasty vertical and horizontal diameter values for both groups (pVert=1.000, pHoriz=0.667 respectively). However the patients with pre-stomaplasty fistula had non-statistically significant higher complication rates (p=0.073).

Conclusions:

The inverted V-shaped fasciocutaneous advancement flap for stomaplasty is an effective procedure in solving tracheostomal stenosis as this provides an adequate large stoma for breathing with no need for further stenting, and low revision rates.

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Abstract No.: 27

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Research priority setting in plastic and reconstructive surgery: a systematic review

Introduction:

The health research agenda has historically been led by researchers; however, their research priorities may not necessarily align with those of patients and caregivers. Research priority setting initiatives identify and prioritise research topics which address the shared interests of relevant stakeholders. This is particularly important in plastic surgery, a specialty which lacks high quality evidence to definitively answer many common clinical questions. Research priorities direct research activity and funding, so it is important that their selection process is representative and transparent. This systematic review aimed to summarise and appraise priority setting initiatives in plastic surgery.

Materials and Methods:

OID Medline, EMBASE and CINAHL were searched from inception to 11/06/21 for studies which elicited stakeholder priorities for research in plastic surgery. Screening and data extraction were conducted by two authors, according to PRISMA guidelines. Data were extracted using the reporting guideline for priority setting of health research (REPRISE).

Results:

3899 de-duplicated citations were screened; 17 met inclusion criteria. Most (14/17) studies were conducted in national (14/17) and high income (16/17) settings. More priority setting initiatives focussed on burns (6/17) and hand surgery (4/17), than other subspecialty areas. The James Lind Alliance was the most common method of prioritisation (5/17), followed by qualitative approaches, Delphi techniques, and other surveys (all 3/17). Less than half of studies included patients (8/17) or multi-disciplinary professionals (7/17) as stakeholders. Most studies failed to report a strategy for implementing the research priorities (11/17) or measuring their impact (15/17).

Conclusions:

Stakeholders from non-Westernised, lower income countries are underrepresented in priority setting initiatives for plastic surgery. This is significant considering the global burden of disease in developing nations, particularly trauma and burns. All future studies should include patient and multidisciplinary stakeholders, to achieve meaningful consensus and reduce repetition of topics, such as burns. To maximise impact, clear implementation strategies for research priorities are required.

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Abstract No.: 38

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : A Survey of Lymphoscintigraphy Protocols for Sentinel Lymph Node Biopsy (SLNB) for Melanoma in Plastic Surgery Units in the UK and Northern Ireland.

Introduction:

There is no national consensus guide in the UK and NI with regards to lymphoscintigraphy for SLNB in melanoma, despite there being literature to suggest the superiority of SPECT-CT, particularly for head and neck melanomas. We surveyed UK and NI plastic surgery units to identify if there is a 'standard' practice.

Materials and Methods:

We identified 62 plastic surgery units using the BAPRAS website and performed a telephone survey using an Excel proforma to identify units performing melanoma SLNB and their protocols and experiences.

Results:

We had an excellent 76% (47/62) response rate. 66% (31/47) of the units perform SLNB for melanoma, 84% (26) units had a SPECT-CT scanner available for melanoma SLNB imaging with 23% of these units reserving SPECT-CT for melanomas of the head and neck area only. 48% of units perform SPECT-CT/lymphoscintigraphy on the same day as the SLNB procedure whilst the remaining 52% of units have a mix of same day and day before imaging. All units had formal protocols, including nanocolloid standards.

Conclusions:

Our survey identified differences in practice across the UK with regards to imaging modality and timing of the scan. Most significantly we found that most units use SPECT-CT for melanomas of the head and neck area. Citing the superiority of the scan at identifying the Sentinel Node and in transit nodes and facilitating operative planning. We aim to use the findings of this UK study to facilitate the implementation of SPECT-CT in our region for melanomas, specifically in the head and neck.

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Abstract No.: 41

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Identification by immunohistochemistry and electron microscopy of a glycocalyx-like endothelial structure in human lymphatics

Introduction:

Blood flow hemodynamics are translated into biochemical inflammatory or anti-inflammatory messages based on the type of shear stress through sensitive receptors located on the endothelium lining.

This process is known as "mechano-transduction," and it has been widely studied in both the arterial and venous systems. The interaction of shear stress and the glycocalyx leading to cellular events is known as "mechanoglycobiology".

This phenomenon is of paramount importance for advancing our understanding of the pathophysiology processes related to vascular remodeling.

The endothelial glycocalyx is a pericellular matrix, identified in both arteries and veins, acting as mechanical sensors responsive to the flow changes and involved in mechanotransduction. Veins and lymphatics physiology and pathology are strictly interconnected, and to our knowledge, a lymphatic glycocalyx-like structure has never been identified in humans.

This investigation aims to search for a glycocalyx-like structure from ex-vivo lymphatic human samples utilizing transmission electron microscopy (TEM) and immunohistochemistry (IHC).

Materials and Methods:

Five veins and lymphatics were harvested from patients undergoing lower limb plastic surgery procedures. The samples were fixed in 2.5% glutaraldehyde containing 0.05% Alcian Blue and then analyzed by TEM and IHC for podoplanin. TEM was set at 63.000x, 80.000x and 100.000x magnification.

Results:

The fixation technique allowed TEM identification of a glycocalyx-like ciliary structure in both veins and lymphatics samples, at all magnifications starting from 63.000x. A ciliary-like structure can be detected along the surface of both veins and lymphatics endothelial cells. IHC by podoplanin successfully characterized the lymphatic structure and signature markers.

Conclusions:

To our knowledge, this study is the first identification of a glycocalyx-like structure in the human lymphatic endothelial cells. Notably, the arterial and venous glycocalyx vasculoprotective action may have implications for targeted treatment in the lymphatic system in patients affected by lymphatic disorders, such as lymphedema.

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Abstract No.: 42

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : EVALUATION OF DIAGNOSTIC SENSITIVITY AND PREOPERATIVE APPLICATION OF INDOCYANINE GREEN (ICG) FLUORESCENT LYMPHANGIOGRAPHY AND SPECT/CT IN PATIENTS WITH UPPER EXTREMITY LYMPHEDEMA

Introduction:

Single-photon emission computed tomography (SPECT/CT) lymphoscintigraphy and indocyanine green fluorescent lymphangiography (ICG) represent the two advanced imaging modalities which are often used to diagnose, classify, and monitor lymphedema. In this study we compared their findings in patients with breast cancer associated upper limb lymphedema, been diagnosed after mastectomy, lymph node dissection and chemo- or radiotherapy.

Materials and Methods:

The study population consisted of a total of 47 adult women, who presented at the Lymphedema Clinic of our Department from January 2018 till December 2019. Nineteen patients underwent SPECT/CT lymphoscintigraphy, 14 patients had an ICG lymphangiography, 8 followed both examinations, and 6 refused to have an investigation. The findings were compared to depict the architectural model of the lymphatic system in the upper extremities.

SPECT/CT dermal back flow and absorption rate of Tc99 from the axillary lymph nodes were compared with Yamamoto's Classification stages.

Results:

Eight female patients with a mean age 48,6 years, had undergone both exams and included in the study. They had a mean volume difference 16,5% between the two upper extremities. The absorption rate of Tc99 from the axillary lymph nodes provided by SPECT/CT had a 87,5% correlation with a Stardust or Diffuse pattern in the ICG lymphangiography (Stage C and D according to the Yamamoto Classification). Moreover, there was a correlation between a progressed ICG pattern and the presence of dermal backflow (75%) in SPECT/CT.

Due to the small population, it was yet not possible to have a statistically significant result.

Conclusions:

In conclusion, when SPECT/CT lymphoscintigraphy and ICG lymphangiography are combined, their findings may provide more information to visualize the architecture of the deep and superficial lymphatic system, and therefore contribute significantly to the diagnostic and therapeutic approach of the patients with breast cancer-related lymphedema.

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Abstract No.: 51

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : RECONSTRUCTION OF STAGE 4 PRESSURE WOUNDS WITH PERFORATOR PROPELLAR FLAP

Introduction:

Pressure sores are wounds that occur on the ischemic background, especially on bony prominences, as a result of prolonged and repetitive exposure of tissues to pressure. While it can be treated with protective applications and wound care in the early stages, reconstruction becomes difficult in advanced pressure ulcers and flap reconstruction surgeries are required. In this study, our perforator propellar flap reconstruction results of pelvic region stage 4 pressure sores are presented.

Materials and Methods:

Twenty-two patients who were operated for stage 4 pelvic pressure ulcers between 2018 and 2020 were retrospectively investigated.

Patients' epidemiological information, comorbidities, medical and surgical history, etiology, defect location and dimensions, flap sizes, perforator location and number, postoperative complications, and length of hospital stay were recorded.

All patients were followed for at least 12 months.

Results:

16 patients were male and 6 patients were female. The mean age of the patients was 68.8 years. 13 patients were paraplegic, 5 patients were tetraplegic, and 4 patients were mobile patients with a history of intensive care. Defect widths after debridement ranged from 54 to 112 cm2. Flap sizes were between 72-144 cm2.. In the early postoperative period, partial necrosis of the distal flap developed in 1 patient, but it was closed with debridement and primary repair. No additional complications were observed during the follow-up period.

Conclusions:

Pressure sores have decreased perfusion and ischemic changes in the surrounding tissue. In local flap options, in which the tissues in the ulcer margins with decreased perfusion and fibrotic changes are transferred to the defect areas, dehiscence of the wound lips and rapid recurrence are common.

However, perforator propellar flaps, which remove these modified tissues from the periphery of the defect, ensure the repair of pressure sores with completely healthy tissues and prevent late complications.

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Abstract No.: 58

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Evaluation of V-Y versus rotational flaps for sacral pressure sore reconstruction: a comparative study

Introduction:

Coverage of pressure sores in the sacral area can be performed with different types of flaps. Little knowledge is available on which flap design is better than another. Available local flaps should be preserved as far as possible for these patients susceptible to pressure sore recurrence. The aim of this study was to compare the V-Y flap versus the gluteal rotation flap for sacral pressure sore reconstruction.

Materials and Methods:

All patients who had sacral pressure sores of grades III-IV underwent reconstructions with V-Y or gluteal rotation flaps were retrospectively reviewed. Patients were divided into two groups according to the flap performed. The primary outcome measure was the surgical site occurrence (SSO). Secondary outcome measures were the length of hospital stay (LOS), specific postoperative complications, and recurrence incidence.

Results:

A total of 75 patients were included in the study: 34 patients in V-Y group and 41 patients in rotational flaps group. No significant differences between the study groups were found in respect to demographics, comorbidities, defect sizes, and complications (according to Clavien-Dindo Classification). Similarly, no differences were noticed in the length of hospital stay. There was a similar rate of SSOs in both groups (38.2 % vs 39.0 %, $p = 0.944$). Although not statistically significant, a trend toward reduction of seroma occurrence, blood transfusion need, and longer time to recurrence was detected (0.0% vs 9.8%, $p=0.061$; 0.0% vs 12.5%, $p=0.058$ and 57 vs 48 days $p=0.846$, respectively), favoring V-Y flaps.

Conclusions:

Both flap patterns are safe and reliable for sacral pressure sore defect coverage. Gluteal rotational flaps seem to be associated to a higher seroma occurrence, blood transfusion need, and shorter time to recurrence. Complication rates are very comparable in both designs, thus they can be used at the surgeon's preference.

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Abstract No.: 73

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Effectiveness of Different Surgical Flap Delay Methods and Their Systemic Toxicities

Introduction:

The surgical flap delaying has been shown to be effective in preventing partial flap loss or in preparing larger flaps. However, there is no gold standard flap delay method in the literature. In this study, the authors aimed to compare 3 types of surgical delay methods to determine which model would increase more flap survival. The authors also investigated the effect of delay methods on circulating mononuclear leukocytes as a parameter of DNA damage.

Materials and Methods:

Twenty-four Sprague-Dawley male rats were divided into 4 groups. All subjects had a 10 × 3 cm modified McFarlane flap. Surface area measurements, biopsies, and blood samples were taken on the day of sacrifice; 7th day for the control group and 14th day for delay groups.

Results:

Between incisional surgery delay groups, a significant difference was found in necrosis and apoptosis in the bipedicle group, and only necrosis in the tripedicle group compared to the control. In terms of DNA damage, it was found higher in all experimental groups than in the control group.

Conclusions:

Both incisional surgical delay procedures' results were meaningfully effective when only incisions were made without the elevation of flaps. In conclusion, bipedicle incisional surgical delay seems to be the most effective method in McFarlane experimental flap model whereas two-staged surgeries may increase the risk of systemic toxicity.

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Abstract No.: 84

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Validation of a physicians and patient self-classification tool for congenital melanocytic naevi

Introduction:

Various cutaneous features of Congenital Melanocytic Nevi (CMN) may be predictors for surgical outcomes, psychological problems, neurological manifestations, and melanoma. Especially larger CMN (>20cm Projected Adult Size (PAS)) are rare and occur in 1:20,000 newborns. Therefore, standard and uniform classification is crucial. Krengel et al. developed a consensus-based standardized categorization of six cutaneous features of CMN. This tool was not yet validated in real-life patients. Moreover, a patient self-classification tool may be useful for triage, to increase patient's involvement, and to enhance communication between patients and physicians. This study aimed to evaluate the interrater agreement of the Krengel classification and to develop and validate a patient self-classifications tool.

Materials and Methods:

Two independent specialists with experience in CMNs classified medium-to-giant CMN patients according to the Krengel classification. The same patients or their parents, if younger than 16 years, used the self-classification tool. Interrater agreement among all raters was calculated with weighted kappa.

Results:

Seventy-one patients were included, with 22 medium (> 1.5 cm PAS), 22 large (>20 cm PAS) and 27 giant (>40 cm PAS) CMN. The mean age was 8 years (range 1 month - 39 years). Assessment of consistency among two specialists showed moderate to excellent interrater agreement for the six features (kappa 0.43 - 0.91). Fifty patients used the self-classification tool. The agreement between specialists and patients was excellent for size and satellite naevi number (kappa 0.8 and 0.67) moderate for hypertrichosis (kappa 0.49) and fair for rugosity, noduli and color heterogeneity (kappa 0.21 -0.38).

Conclusions:

Both the Krengel CMN classification for clinicians and the patient self-classification tool showed excellent interrater agreement for the most important predictors for melanoma and neurological manifestations i.e. size and satellite naevi number. Moderate and fair agreement was shown for the other features. Such standard reporting of patients facilitates treatment comparison and eventually facilitating guidance on management.

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SESSION 6

BREAST



Abstract No.: 4

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The Impact of Delayed Wound Healing on Patient-Reported Outcomes After Breast Cancer Surgery

Introduction:

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

Materials and Methods:

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

Results:

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

Conclusions:

Our study confirms that OBS leads to significantly more DWH and short-term complications (Clavien-Dindo grades I-IIIb) than conventional breast surgery. However, neither QoL nor PROs following state-of-the-art OBS at a specialized center are compromised by an increased rate of DWH.

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Abstract No.: 30

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Which Breast side is the Finest? Microsurgical vs Implant-based Reconstruction

Introduction:

Breast reconstruction following mastectomy presents great impact in patients' psychology and well-being. Implant-based is the most common method followed by the microsurgical reconstructions. Previous outcome studies comparing the 2 techniques have been limited by the lack of rigorous comparable patient-reported outcome data. In the present study, we compare the 2 methods in patients with bilateral reconstructions, who had implant-based on the one side and microsurgical reconstruction on the other side.

Materials and Methods:

We reviewed all breast reconstructions the period January 2010- January 2020, operated by a single surgeon. Inclusion criteria were women who underwent microsurgical reconstruction on the one side, and implant-based reconstruction on the other with satisfactory outcome (no further corrective surgery required). We compared the two methods using patient-reported outcomes, and each patient completed the recognized Breast-Q questionnaire twice. First thinking the breast reconstructed with autologous tissue and then thinking the breast reconstructed with an implant.

Results:

Twenty-six patients fulfilled the inclusion criteria. No patient had bilateral mastectomies simultaneously. Twenty patients received DIEP flap and 6 PAP flap. Regarding the implant-based, 10 were two-stage and 16 direct-to-implant reconstructions. All patients received post-mastectomy and prior reconstruction radiation on the one side, whilst no patient had bilateral radiation therapy. All radiated sides were reconstructed with a free flap. Microsurgical reconstructions achieved statistically significant higher score in 10 out of 15 questions of Breast Reconstruction Module, Version 2.0. Remarkably, in the questions: The softness of your reconstructed breast, how naturally your reconstructed breast sits/hangs and how much your reconstructed breast feels like a natural part of your body, the difference was statistically highly significant.

Conclusions:

This is the first retrospective study to compare patient-reported outcomes of implant-based and autologous breast reconstruction, by the same patient. We found that autologous reconstruction yields a higher satisfaction with overall outcome and breast.

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Abstract No.: 36

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : ADIPOSE TISSUE ENGINEERING TRANSLATED INTO BREAST RECONSTRUCTION

Introduction:

Adipose tissue engineering research holds promise for generating three-dimensional, vascularized fat constructs. Those substitutes can - in theory - be used in breast reconstruction. However, the challenge in adipose tissue engineering is the inclusion of vascular support and the annoying hitch of (volume) upscaling. We have been doing adipose tissue engineering in a xenograft transplant mouse model and were able to generate three-dimensional, vascularized adipose tissue constructs. The main observation of this research is that in order to generate vascularized fat constructs we need to include an appropriate environment, vascular source, supportive matrix and a well-defined space.

Materials and Methods:

The lipofilling technique is a minimal-invasive technique that allows us to remove ample amounts of fat tissue without the need for ex vivo cultivation. The technique is indicated to reconstruct small volumes but applying the observations of our adipose tissue engineering research we have been able to translate those findings to the clinical setting of breast reconstruction. The surgical technique is based on tissue expansion that induces the formation of a vascularized capsule followed by serial sessions of fat grafting. The capsule itself also creates a well-defined, stretchable space that can easily be augmented with fat grafting to reconstruct the breast.

Results:

Patients underwent breast reconstruction with the protocol of tissue expansion and serial fat grafting. We have been successful in reconstructing three-dimensional prepectoral tissue constructs that approximate a breast mound with long-lasting results. In those cases, in need for additional projection a small breast implant was used in aesthetic breast reconstruction.

Conclusions:

The principles of our adipose tissue engineering research can be translated into a clinical setting of breast reconstruction. Consistent results can be achieved to generate a natural looking, dynamic breast mound.

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Abstract No.: 43

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Tissue expanders are not a requisite for total breast reconstruction with lipofilling

Introduction:

Breast reconstruction after mastectomy often improves the woman's health-related quality of life. Lipofilling can be used to reconstruct a breast without additional implants or autologous composite grafts. However, methods to maximize the retention of the transferred fat remain under debate. We present our experience of breast reconstruction with serial lipofilling after traditional mastectomy, without the use of internal or external tissue expanders.

Materials and Methods:

We performed a cross-sectional study on patients who had completed breast reconstruction with lipofilling between June 2010 and June 2016. Only patients able to attend follow-up MRI imaging were included. MRI images were evaluated for the reconstructed volume and the quality of the transferred fat. Details of the lipofilling operations were obtained from the patient records. The patients were invited to fill a purpose-built questionnaire assessing the appearance and sensitivity of the reconstructed breast, the recovery time, and any adverse effects at the fat donor area.

Results:

A total of 38 women with 41 reconstructed breasts were included in the study, a median 2.1 (range 0.4-0.68) years after the last lipofilling operation. The median age at follow-up was 62(48-78) years. They had undergone a median 4(2-6) lipofilling procedures with a total volume of 690(369-1350)ml. Median 58(14-119)% of the fat was retained and the achieved reconstructed breast volume was 76(17-100)% of the contralateral breast. Oil cysts larger than 10mm were detected in 7%. The questionnaire was returned by 25(66%) women, most reporting highly similar appearance and consistency of the reconstructed breast and the contralateral breast, and few adverse effects during the reconstruction process.

Conclusions:

Breast reconstruction with lipofilling can be performed without preoperative skin expansion with an acceptable number of procedures and high rates of fat retention. Thus, it is an option of autologous breast reconstruction for women unsuitable for major reconstructive surgery.

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Abstract No.: 80

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Accepting The Torch: Assessing Breast Implant Prevalence In The Italian Population Using Chest Radiographs

Introduction:

To date, breast Implant prevalence remains elusive. Yet it represents the denominator for the assessment of any breast implant-related complication. Primary endpoint of this manuscript is assessing breast implant prevalence for women between 20 and 70 years in the Lazio Region of Central Italy. Secondary endpoints include identifying laterality, indication for implant placement and indication for chest x-ray.

Materials and Methods:

Eight aspiring reviewers, with a mean sensitivity of 87.0% and specificity of 97.0%, were recruited for large-scale retrospective analysis to identify breast implants on chest x-rays. Three were selected, and they assessed all eligible chest x-rays collected between 01/01/2019 and 31/12/2019. Breast Implant Estimated Prevalence was calculated as function of presumed true prevalence (p), specificity (spec) and sensitivity (sens) of the reviewers: Estimated prevalence= $(1-p) \times (1-spec) \pm p \times sens$.

Results:

We identified 3,448 chest x-rays which yielded 140 implants, with an overall breast implant prevalence of 4.1% for women aged 20-70 years. Estimated prevalence was 2.1% between 20-30 years, 4.4% between 31-40 years, 5.2% between 41-50 years, 4.9% between 51-60 years, and 2.9% between 61-70 years. Implants were bilateral in 76% of cases and unilateral in 24%. Implants were placed cosmetically in 47.1% cases, and used for reconstruction in 52.9% cases.

Conclusions:

We assessed breast implant prevalence in central Italy, which will hopefully serve as a new benchmark denominator for implant-related complications. This study is first of its kind in Italy, and has the potential of spreading across regional and national borders for improved understanding of breast implant epidemiology, with multicentric studies.

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Abstract No.: 55

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : IMPACT OF RADIATION THERAPY IN IMPLANT-BASED AND AUTOLOGOUS BREAST RECONSTRUCTION

Introduction:

The use of radiation therapy (RT) in selected breast cancer patients is an important adjunct treatment to improve survival rates and oncologic outcomes. Nonetheless, it can hamper the results of the breast reconstruction. The purpose of this study is to evaluate the impact of post-mastectomy RT in autologous and implant-based breast reconstruction and its complications.

Materials and Methods:

This retrospective study sampled 100 patients with breast cancer that were subjected to breast reconstructive surgery between January 2018 and December 2020. It was taken into consideration timing of RT and its immediate complications, if the breast reconstruction procedure was immediately post-mastectomy or if it was delayed, type of reconstruction and complications such as fat necrosis, flap necrosis, infection, exposed breast implant, capsular contracture, and the necessity of a new surgical intervention. A p-value less than 0,05 was considered statistically significant.

Results:

The median age was 46,5 years old. Half of the sample was exposed to post-mastectomy RT. These patients were shown to have more complications after reconstructive breast surgery than the group that did not require RT (66% and 32%, $p < 0,05$). In this group, immediate breast reconstruction was associated with more complications (88,2% and 54,5%, respectively, $p < 0,05$), a higher rate of breast implant removal and a higher percentage of secondary reconstructive interventions when compared to delayed reconstruction. Patients with autologous reconstruction had lower infection and surgical reintervention rates. Reconstructions with prepectoral breast implants had tendentially higher removal rates comparing to reconstructions with subpectoral implants (53,8% and 40% respectively) although this correlation was not statistically significant.

Conclusions:

Breast reconstruction in patients subjected to post-mastectomy RT should be carefully planned in terms of timing and technique. Delayed reconstruction as well as autologous breast reconstruction should be strongly considered as treatment options as they are associated with lesser infection and secondary surgical intervention rates.

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Abstract No.: 57

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Breast Implant Illness

Introduction:

Since the 1960s, there have been repeated speculations describing a correlation between breast implants and systemic diseases. The problem still exists today and has been named “breast implant illness”. Our study describes the systemic diseases that have occurred after the augmentation and the changes in the symptoms after explantation.

Materials and Methods:

Over a period of 3 ys, we performed an explantation of implants including the capsule en bloc on 170 patients. No new implants were inserted. Data collection was carried out with a questionnaire that the patients filled out pre-operatively and 6 months after the operation. Data collection included questions concerning the symptoms, whose intensity was to be indicated on a scale of 0 to 10. It was also noted whether the augmentation was performed for aesthetic or reconstructive purposes.

The capsule was histologically examined for ALCL, CD 30 and CD117.

Results:

During data collection 6 months after surgery, 92% of all patients who had undergone surgery reported a considerable improvement. Over 95% of patients suffered from a fatigue syndrome with exhaustion, tiredness, listlessness and frequently recurring infections of the nose and throat region. 30% of patients had Hashimoto thyroiditis preoperatively, which improved postoperatively. 43% of the patients had increased hair loss, which normalised completely postoperatively.

53% of the patients were tattooed.

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

Conclusions:

Due to the multiple symptoms, the patients had consulted several different doctors before the explantation. A clinical laboratory correlation to their symptoms could not be demonstrated. The correlation to the breast implants therefore always remained the diagnosis by exclusion and the ultima ratio for the patients to alleviate their symptoms. However, the existence of a positive CD117 test might be indicative of an immunological correlation.

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Abstract No.: 62

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Long term patient-reported outcomes following mastectomy with or without breast reconstruction: the Swedish Breast Reconstruction Outcome Study (SweBRO)

Introduction:

Despite a large number of studies on breast reconstruction (BR) and quality of life (HRQoL) we could not find any paper evaluating HRQoL in a longtime perspective on a national level.

The aim of this survey was to assess long-term HRQoL among women in Sweden who had had a mastectomy, with or without breast reconstruction, 5-15 years earlier.

Materials and Methods:

All women diagnosed with breast cancer who underwent a mastectomy in Sweden during the years 2000, 2005, and 2010 were eligible (n=5853). A commercial survey provider was responsible for the management of the validated questionnaires; EORTC QLQ-C30, QLQ-BR23, EQ-5D. Socio-demographic characteristics and treatment data were also retrieved.

Results:

In total, 2904 women responded to the questionnaires, of these 895 (31%) reported having undergone BR; of whom 516 (58%) with implants, 281 (31%) autologous tissue and 98 (11%) with a combination of the techniques. The timing of BR was immediate in 20% (176/895) and delayed in 80% (719/895) women.

The QLQ-C30 showed that reconstructed women reported higher levels of global health (78.8 vs 74.9%), physical- (90.0 vs 81.4%) and role functioning (88.8 vs 84.7%), all $p < 0.001$, compared to non-reconstructed women. They also reported to experience less fatigue (21.2 vs 25.5%), less pain (17.1 vs 21.3%), less dyspnea (16.5 vs 21.6%), all $p < 0.001$.

The EORTC-BR23 results revealed that reconstructed women perceived favourable sexual functioning (26.3 vs 14.5%, $p < 0.001$) while the non-reconstructed scored higher for body image (76.7 vs 72.9%, $p < 0.001$).

The EQ-5D showed that reconstructed women scored higher than non-reconstructed women for mobility (88 vs 74%) and usual activities (92 vs 86%).

Conclusions:

This study found that 5-15 years postmastectomy, women who have had a breast reconstruction reported higher levels of HRQoL compared to women with no reconstruction, except for some aspects of body image. Informing patients and caregivers of these long-term outcomes may be beneficial.

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Abstract No.: 63

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Influence of polyacrylamide hydrogel on the occurrence of local inflammatory reactions and general symptoms from the ASIA (autoimmune syndrome induced by adjuvants) spectrum

Introduction:

The trend towards minimizing the invasiveness of plastic surgery procedures prompts the use of materials with an uncertain effect on the tissues. One of them is polyacrylamide hydrogel (PAAG), which has been periodically gaining popularity over the past decades. Autoimmune syndrome induced by adjuvants (ASIA) covers the spectrum of diseases in which the substances considered inert to the body induce autoimmune reactions and inflammation. The aim of this study was to evaluate the effect of PAAG on the surrounding tissues as well as its potential to trigger clinical features of ASIA.

Materials and Methods:

We enrolled 50 patients after PAAG injections, mainly to the breast tissue and in individual cases to the buttocks, upper and lower limbs, in the study. The study protocol included: a physical examination including ASIA symptoms (among others: myalgia, arthritis, chronic fatigue, neurological manifestations), blood inflammatory markers levels, shear wave elastography of involved tissues, and histopathological examination.

Results:

84% of patients presented symptoms consistent with major diagnostic ASIA criteria. Elastography revealed the vast dispersion of the material within areas distant from the sites of its original administration, lymph nodes included, surrounded by area of post-inflammatory fibrotic response. All patients undergoing an extensive debridement have experienced a partial or total symptoms resolution. In all cases, histopathological examination of debrided tissues showed features of nonspecific inflammation, with the presence of macrophages, muscle and fat tissue necrosis.

Conclusions:

Our initial observations supported by imaging and histopathological examinations confirmed the influence of prolonged tissue contact with PAAG on the development of the inflammatory and autoimmune response. Removal of PAAG may alleviate the symptoms and therefore is required in many cases. Tendency to migrate and disperse may increase this potential due to larger contact area. Although this trend requires further research, we believe our study can significantly contribute to increasing plastic surgery procedures' safety.

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Abstract No.: 46

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Patient Selection for Prepectoral Versus Subpectoral Direct to Implant Immediate Breast Reconstruction

Introduction:

Prepectoral direct-to-implant (DTI) breast reconstruction was re-introduced to overcome animation deformity and postoperative pain associated with subpectoral reconstruction; however, the benefits are not well-documented. The purpose of the present study is to compare the two techniques and define the ideal patient selection

Materials and Methods:

This is a retrospective review of patients who underwent DTI breast reconstruction, prepectoral vs subpectoral in the period 2018-2020. Porcine-derived acellular dermal matrix (Braxon-Decomed in prepectoral and Native-Decomed in subpectoral reconstructions) and shaped silicone implants were used in all patients. Demographics, clinical characteristics, complications, and patient-reported outcomes (BREAST-Q) were compared.

Results:

Twenty-three patients (35 breasts) underwent prepectoral DTI (group-A), and 35 patients (45 breasts) underwent subpectoral DTI (group-B). In group-A 2-patients presented without ptosis, 12-patients with ptosis grade-I and 9-patients with ptosis grade-II, whilst in group-B 2 patients presented without ptosis, 19 patients with ptosis grade-I and 14-patients with ptosis grade-II. The number of breasts with preoperative ptosis was not significantly different between groups. Mean follow-up was 11 and 12 months in the prepectoral and subpectoral groups, respectively. Average mastectomy weight was 355g and 362g. Average implant size was 400cc and 410cc in the prepectoral and subpectoral groups, respectively.

Unplanned re-surgery was noted in 1 patient in group-A and in 4 patients in group-B, whilst implant loss occurred in 1 patient in group-B. Incidence of revision (lipomodelling) was 25% in group-A. BREAST-Q demonstrated mean patient satisfaction was similar among groups in patients without ptosis. In patients with ptosis grade-I, satisfaction was significantly higher in subpectoral, whilst in ptosis grade-II was higher in prepectoral reconstructions.

Conclusions:

Based on these findings, we believe that subpectoral reconstruction is still a method of choice for ptosis up to grade-I due to higher patient satisfaction and less revision rate. Nevertheless, for ptosis grade-II prepectoral reconstruction reproduces better results.

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Abstract No.: 3

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : The Impact of Neoadjuvant Chemotherapy on Postoperative Complications in Breast Cancer Surgery

Introduction:

Nowadays neoadjuvant systemic treatment is regarded as the standard of care for stage II-III, HER2-positive or triple negative breast cancer patients in order to enable de-escalation of surgical treatment and to observe how well the cancer responds to the treatment. Due to the immunosuppressive effect of systemic treatment, there has been concern that it may increase postoperative complications. As a result, these complications may delay the commencement of adjuvant radiotherapy.

Since postoperative complications are believed to be increased after neoadjuvant systemic treatment, surgical treatment of breast cancer is usually scheduled not earlier than three weeks after the last chemotherapy.

Systemic treatment regimens have though evolved over the last decades with often less toxicity. This calls for a better understanding of the actual impact of modern neoadjuvant systemic treatment on surgical outcomes. With this study, we want to demonstrate that neoadjuvant systemic treatment has no negative impact on different types of oncoplastic and conventional breast cancer surgeries.

Materials and Methods:

Retrospective analysis from a prospectively maintained database. We will compare patients with and without neoadjuvant systemic treatment, as well as different subgroups according to the surgical procedure (conventional breast conserving surgery with different oncoplastic procedures). Evaluation of postoperative complications will be analyzed, as well as established risk factors like diabetes and smoking.

Results:

Among 549 patients with breast cancer, 65 (11.8%) received neoadjuvant systemic treatment, while 476 (88.2%) underwent a primary surgery. In comparison, both groups showed no significant difference relating to postoperative complications (infections, necrosis, seroma, lymphedema, axillary web syndrome, chronic pain). Adjuvant therapy was not delayed in the neoadjuvant group of patients.

Conclusions:

Breast cancer patients with a history of neoadjuvant systemic treatment do not have more postoperative complications compared to breast cancer patients without.

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SESSION 7

BURNS



| | | |
|------------------------|-----------------------------------|----------------|
| Abstract No.: 5 | Category: General Research | Time: - |
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| Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022 |
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|---|
| Title : Camouflage of Post-burn Scars with Follicular Unit Transplantation |
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Introduction:

Deep burns destroy skin appendages and hair follicular units, thus scarring alopecia is inevitable in facial aesthetic units containing hair. This cause social and psychological problems in patients. Although stem cells, fat injection, scar revisions, laser and their combination are used in treatment, the most effective technique is camouflage of the scarring alopecia with follicular unit transplantation. The aim of this study is to present treatment results of post-burn scarring alopecia by using follicular unit transplantation.

Materials and Methods:

Between 2018 and 2020, eighteen patients who underwent follicular unit hair transplantation for post-burn cicatricial alopecia were reviewed. The patients were evaluated about previous surgeries, medical history, dimensions and localization of alopecia. 12 months after transplantation, follicular graft survival rate, patients satisfaction, and scar improvement were evaluated by mustache densities, Patient and Observer Scar Assessment Scale (POSAS), and patient satisfaction scale, respectively, and then statistically compared.

Results:

The mean age of the patients was 24.4 ± 4.9 (16-34). Twelve patients in beard area, three patients in mustache area, and three patients in sideburn area had cicatricial alopecia. Patients had previously operated on burned sites an average of 1.33 ± 0.48 times. Improvements of patients and observers scar scores were statistically significant ($p < 0.05$). Patients were significantly satisfied with the result. The hair densities were reached at standard scores in all patients.

Conclusions:

Transplantation of hair follicular units to cicatricial alopecia carries epidermis, dermis, hair follicle, skin appendages and various stem cells. Depigmented scar tissue in the area of alopecia is reduced and camouflaged. Follicular unit transplantation is one of the most effective methods in the treatment of cicatrizing alopecia.

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Abstract No.: 25

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Use of Fish Skin in Management of Partial and Full-Thickness Burn Injuries following Military Drone Assaults in Field-like Hospital Conditions

Introduction:

The 2020 Nagorno-Karabakh war prompted a surge of new military tactics, including drone use. Compared with traditional warfare, drone assaults resulted in more deep partial and full-thickness burns and blast injuries.

Civilian hospitals were adapted to manage the inflow of burn victims. Newly injured soldiers were directly transported to these. In these institutions, partial burn excision was the standard, leading to delayed skin grafting and increased infection risk. Patients would have to wait over a week for surgery. During that time, the burns would be managed with regular dressing changes. There was a need for efficient time and labor techniques for burn management in a limited resource environment.

Materials and Methods:

In a humanitarian mission, intact fish skin was used in patients where stabilization and improvement in the burn wound bed were required before skin grafting. The secondary goals were to improve healing time, achieve earlier skin grafting and have better cosmetic outcomes upon healing.

Results:

13 patients were managed with intact fish skin, 3 large-area full-thickness burns, and ten blast injury patients with intact fish skin product combined with negative pressure wound therapy (NPWT). The age of the wounds was between 3 to 5 days old with initial debridement prior to the first application of intact fish skin graft. Intact fish skin graft was applied, followed by NPWT. A week later, it was assessed if the patient was ready for skin grafting at follow-up. Intact fish skin graft management induced wound granulation sooner in all cases by several days, allowing for earlier skin grafting procedures. No infections were reported in the cases where intact fish skin was used.

Conclusions:

Intact fish skin graft, in a military context, has shown portability, and management with intact fish skin has demonstrated faster granulation rates in burn wounds for skin grafting, resulting in improved patient outcomes with no infections.

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Abstract No.: 29

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Enzymatic debridement: a retrospective study to evaluate the accuracy of burn depth diagnosis before and after treatment

Introduction:

The most common technique to determine burn depth is clinical assessment by experienced burn surgeon, although this has been shown to be accurate in only 60-75% of the cases.

Enzymatic debridement (ED) is considered one promising alternative of non-surgical option for eschar removal and results suggested that the use of this technique reduces need for surgery and autografting. We present a retrospective study to evaluate the accuracy of burn depth diagnosis before and after enzymatic debridement.

Materials and Methods:

Between January 2018 and June 2020, we collected the data regarding burn depth of patients with thermal burns treated with enzymatic debridement. For each patient a target burn was identified. Senior burn specialists were asked if the burns required graft or no before ED and after ED. Using the final treatment as a gold standard, the sensitivity, specificity, positive and negative predictive value of the clinical diagnosis (both pre- and post-treatment) were calculated.

Results:

The study sample consists of 69 burn patients and 31.9% of the sample (n = 22/69) underwent skin grafting; analysing K-agreement, a 40.6% discrepancy between the pre and post-treatment is observed ($\kappa = 0.3$; $p = 0.000$). The sensitivity of the clinical assessment pre- treatment is 86.4%, the specificity 40.4%, the positive predictive value 40.4% and the negative predictive value 86.4%. The sensitivity of the clinical assessment post-treatment is 86.4%, the specificity 100.0%, the positive predictive value 100.0% and the negative predictive value 94.0%.

Conclusions:

The use of enzymatic debridement can positively affect burn depth clinical assessment, increasing its specificity and sensitivity, without any need for delay. This can lead to a significant change in clinical practice, minimizing the use of surgery, therefore increasing quality and precision of the reconstructive phase.

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Abstract No.: 60

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : WIRELESS MICROCURRENT STIMULATION IMPROVES BLOOD FLOW IN BURN WOUNDS

Introduction:

Skin breakdown, as in wounds, leads to an electric potential, defined as current of injury with the intent of wound closure. Burn wounds are defined by different zones of perfusion having a direct influence on further therapy (e.g. conservative management or skin grafting). We studied immediate, quantifiable effects of electric stimulation on skin perfusion in burn wounds.

Materials and Methods:

Wireless Microcurrent Stimulation (WMCS) was utilised as an adjunct therapeutic modality in 10 patients with partial thickness burn wounds. Microcirculation in the skin was quantified with a Laser Doppler (LDI) before and after WMCS treatment. We included a control group of 10 healthy individuals.

Results:

A single application of WMCS significantly increased mean flow, velocity and subsequently, haemoglobin and oxygen saturation in partial thickness burn wounds. In healthy skin these parameters increased, but were far less pronounced than in thermally injured skin.

Conclusions:

This study revealed, for the first time that non-contact WMCS improves blood flow in critically perfused partial thickness burn wounds without disturbing the wound or systemically affecting the patient and may represent a promising adjunct tool in burn treatment, with the potential of faster healing by enhanced perfusion of burn wounds and reduction of the zone of stasis.

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SESSION 8

HEAD AND NECK



Abstract No.: 52

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Surgical management of Skull base tumors. A 20 years single centre experience

Introduction:

There is a wide variety of skull base tumors with treatment options depending on histopathology characteristics, location into the skull and patient's general status. Apart from chemotherapy and radiotherapy, surgical treatment offers good survival rates and raises a technical challenge for the surgeon.

Materials and Methods:

A total of 31 patients were identified, of which 23 male and 8 female, with a mean age of 57 years. Primary tumor location was in the midface in 8 patients, in the anterior base /ethmoids in 4 patients, in the orbit and the maxilla in 11 patients, in the anterior fossa in 8 patients and there was 1 patient with anterior and middle fossae involvement.

Surgery involved bilateral maxillectomy, rhinectomy and resection of the anterior fossa in 3 patients, orbitectomy, maxillectomy and resection of the Pterygopalatine fossa in 12 patients, resection of the infratemporal fossa, mastoidectomy and/or petrosectomy in 13 patients.

The reconstruction involved (in various combinations) anterolateral thigh flap and vastus lateralis transfer in 3 patients, vastus lateralis flaps in 3 patients, rectus abdominis flap transfer in 4 patients, latissimus dorsi flap and scapular bone transfer in 4 patients, radial forearm flap in 2 patients, pectoralis major flap transfer in 12 patients, dynamic temporalis flap transfer in 8 patients and scalp flaps in 2 patients.

Histopathology showed 10 cases of basal cell carcinoma, 19 cases of basosquamous carcinoma and 2 cases of Squamous Cell Carcinoma (SCC).

Results:

With a mean follow up of 15 years 14 patients are alive and disease free.

Conclusions:

Wide surgical resection, combined with post-operative radiotherapy and/or chemotherapy when indicated, and reconstruction with microvascular techniques can.

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Abstract No.: 82

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Core outcome set for medium-to-giant congenital melanocytic naevi

Introduction:

Congenital melanocytic naevi (CMN) impose a psychosocial burden on patients and families and are associated with a risk of developing melanoma or neurological complications. Comparison of (surgical) treatment efficacy is currently hindered by the lack of standard and uniform outcome reporting; this impedes guidance on optimal management policy. To address this, the OCOMEN project was initiated to develop a Core Outcome Set (COS) for CMN clinical practice and research. A COS is the minimum set of outcomes to measure and report in all clinical practice and clinical trials of a specific health condition.

Materials and Methods:

The study was performed according to the guidelines of the COMET initiative and received methodological support from the CS-COUSIN initiative. The research steps were: 1) a systematic review to identify outcomes reported in previous studies; 2) seven focus groups with patients identified outcomes important for patients; 3) classification of outcomes into domains 4) e-Delphi surveys with 144 relevant stakeholders (patients, parents, dermatologists, plastic surgeons, neurologist, pathologist, and researchers) from 27 countries rated the importance of domains and outcomes 5) two consensus meetings with relevant stakeholders to reach consensus on the core domains and outcomes.

Results:

Consensus was reached on the following domains and outcomes for both clinical practice and research: 1) Skin morphology: size, colour, texture of the CMN and the number of satellite naevi. 2) Quality of life: emotional distress. 3) Neoplasms: the presence of melanoma. 4) Nervous system: neurological symptoms and signs. 5) Adverse events: wound problems, scar problems. The domain and outcome pathology: molecular characteristics, was specified for the COS of research.

Conclusions:

Uniformity and standardization of outcomes are of utmost importance to compare management strategies. The next step will be to reach consensus on the specific instruments that should be used to measure these domains and outcomes.

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Abstract No.: 56

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Management of Arteriovenous Malformations of the Ear: A Multidisciplinary Treatment Algorithm

Introduction:

Arterio-venous malformation (AVMs) of the ear are extremely rare and the treatment of this condition has unique features. Inadequate management of AVMs may lead to the loss of structure. The aim of this study was to classify ear AVMs according to the extent of the disease, and to present a treatment algorithm comprising techniques such as percutaneous/endovascular embolization, radiotherapy or surgical resection followed by reconstruction.

Materials and Methods:

Eighteen patients who were treated for ear AVMs between 2012 and 2020 were retrospectively reviewed and lesion distribution, treatment methods and posttreatment status were extracted.

Results:

Five patients had partial and 2 patients had total ear involvement while 11 patients also had extraauricular extension. Six of the patients had cartilage involvement. Endovascular treatment, percutaneous sclerotherapy and radiotherapy were the techniques used for treatment of the study group. Seven patients were treated with a single modality, and the rest (n=11) were treated with a combination therapy. Five patients needed surgical excision, while 13 patients received only non-surgical treatment. Three of these patients underwent postsurgical reconstruction in the late course. After the treatment, 15 AVMs were graded as “controlled”, and the rest were graded as “improved”. No clinical or radiological persistence or progression were observed in any of the patients.

Conclusions:

Multidisciplinary approach is paramount to achieve acceptable clinical outcomes for treatment of ear AVMs. Outcomes of our study shows that ear AVMs can also be controlled with non-surgical treatments as well. Surgical treatment is indicated when non-surgical treatments are ineffective. Sacrification of the ear may be indicated, especially in patients with cartilage involvement or extra-auricular extension.

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Abstract No.: 61

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : EXTRAMAMMARY PAGET DISEASE OF THE SCALP - A CASE REPORT

Introduction:

Extramammary Paget disease (EMPD) is a rare type of adenocarcinoma presenting in skin areas rich to apocrine glands, usually as an erythematous plaque covered by flakes, crusts or corrosion that gradually alters to nodules. EMPD in skin without apocrine glands is extremely rare and in scalp are described only 7 cases in bibliography.

Materials and Methods:

Female patient, 75 years old of Greek origin came to Plastic Surgery clinic having a tumor of 5x4cm in the scalp. She mentioned that the lesion had appeared 3 years ago and was growing gradually. Clinical examination didn't reveal other similar skin lesions or swollen lymph nodes in neck, axilla or groin. The patient had an excisional biopsy with margins of 2 cm and the deficit was covered with split thickness skin graft.

Results:

The pathology examination reported a EMPD that was extended to the epidermis and the dermis in same degree. Despite the 2cm margin the lesion was extended to the surgical borders. Immunohistochemistry shown CK7(+), GCDFP-15 (+), CEA(+), ERBB2(+), GATA3(+), Cam5,2(+), EMA (+), but S100(-) and HMB45(-). Not found participation of other organs. Another excision, donut type, took place and the deficit was covered with split thickness skin graft. The patient is on regular follow up without recurrence.

Conclusions:

EMPD in non - Asian people is more common in women and is most found on the face, head and extremities. Its biology seems more benign than the typical EMPD. Wide surgical excision (margins of 2-3cm) and the use of MOHS are considered treatments of first choice because of the need for clear margins and due to the frequent appearance of satellite lesions.

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Abstract No.: 23

Category: General Research

Time: -

Event : 10th EURAPS Research Council Meeting, NAPLES, Italy, 26-28 May 2022

Title : Head & Neck sarcomas. A single-institution 15 years of experience

Introduction:

Head and Neck sarcomata are rare tumours, and a multidisciplinary approach is required for their management and reconstruction. Our centre is the only Plastic Surgery Department specialising in sarcoma surgery in Greece. This review of our Institution evaluates our head and neck sarcomata experience.

Materials and Methods:

During the last 15 years, a total of 15 patients presented at our Head and Neck Sarcoma Clinic, of whom 13 were men and 2 women with an average age of 50 years. The tumour types included 2 leiomyosarcomata, 5 malignant fibrous histiocytomata (MFH), 1 malignant peripheral nerve sheath tumour (MPNST), 3 dermatofibrosarcomata (DFS), 2 osteosarcomata, 1 angiosarcoma and 1 solitary fibrous tumour (SFT). Surgical resection involved maxillectomy, craniectomy and mandibulectomy, while modified radical neck dissection was performed in all patients. The tissue defects after tumour resection were reconstructed using: 1 rectus abdominis flap, 5 radial forearm flaps, 2 latissimus dorsi, 1 vascularised fibula flap, 3 temporalis flaps, 1 nasolabial and 4 scalp flaps (5 years mean follow-up).

Results:

The overall postoperative patients' course was uneventful. All patients received postoperative radiotherapy. Out of 14 patients, 11 are still alive and disease-free. However, 3 patients had a recurrence and were treated with palliative radiotherapy.

Conclusions:

Wide surgical resection, combined with postoperative radiotherapy and appropriate reconstruction, especially when using microsurgical techniques, offers improved prognosis and quality of life.

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