ADSCs were then injected to contralateral lateral thoracic artery territories where the flap necrosis usually occurs. At postoperative day 7, flap viability measurement and tissue harvest for histologic and immunocytochemical assessment were performed in all groups.

RESULTS: The flap viability increased in ADSCs injected group compared with PBS and non-injected group small but not statistically significantly increase in vessel count per field.

CONCLUSIONS: These findings suggest that ADSCs have a potential for enhancing the blood supply of potential territories of perforator flaps.

12.00 EFFECT OF NON-EXPANDED ADIPOSE STROMAL VASCULAR FRACTURE ON VIABILITY OF TRANSVERSE RECTUS ABDOMINIS MUSCULOCUTANEOUS FLAP AFTER ABDOMINOPLASTY: EXPERIMENTAL STUDY

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INTRODUCTION: A prior abdominoplasty is generally considered as an absolute contraindication to transverse rectus abdominis musculocutaneous (TRAM) flap surgery. The aim of this study is to investigate the effect of non-expanded adipose stromal vascular fracture (ASVF) on viability of TRAM flap after abdominoplasty.

MATERIALS AND METHODS: 35 male Sprague Dawley rats were divided into 5 groups; each group consisted of 7 rats. Reverse abdominoplasty model was used in all groups except group 1 (Only TRAM flap). Right inferior epigastric artery pedicled, 5x2.5 cm sized TRAM flap was performed 2 weeks after abdominoplasty in groups 2 and 4 and 4 weeks after in groups 3 and 5. ASVF cells were injected locally during abdominoplasty in groups 4 and 5. The viable flap area percentage was assessed by pixel count, newly formed perforators by surgical microscope, vessel count by microangiographic imaging, capillary density and fibrosis gradient by histopathological analysis and ASVF cells marked with DiI by fluorescent microscope. Additionally, plasma VEGF levels were measured.

RESULTS: The mean viable flap area to total flap area was measured as 82.90±7.59 %, 3.31±3.29 %, 9.40±6.18 %, 31.92±9.29 %, 64.98±10.95 % in group 1, group 2, group 3, group 4 and group 5 respectively (p<0.05). The number of newly formed musculocutaneous perforating arteries were 0.29±0.49, 1.14±0.69, 2±0.82 for groups 3, 4 and 5 respectively (p<0.05). Mean capillary density was 6.86±0.50, 0.67±0.13, 2.79±0.53, 3.71±0.47, 7.01±0.70 in groups 1, 2, 3, 4 and 5 respectively (p<0.05). There was a statistically significant increase between the baseline VEGF values and the second VEGF values in groups 4 and 5.

CONCLUSIONS: The results of this experimental study showed that local injection of ASVF increases viability of TRAM flap after abdominoplasty.

12.10 REPAIR OF CRITICAL SIZE DEFECTS USING BIOACTIVE GLASS SEEDED WITH ADIPOSE-DERIVED MESENCHYMAL STEM CELLS

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INTRODUCTION: Bioactive glass has been demonstrated as a biocompatible bone substitute. However bone healing process can be prolonged due to late resorption of the material. Adipose derived stem cells (ASC) have osteogenic differentiation potential and therefore can be a cell source for bone regeneration. The aim of this study was to assess whether a biocompatible construct such as bioactive glass with osteoconductive and osteostimulatory properties would be a suitable delivery carrier for ASCs and hence increase bone regeneration.

MATERIALS AND METHODS: Following creation of critical sized defects on the calvaria of 32 Wistar rats, the animals were randomly divided into four groups: Group C (control); Defects were left untreated; Group G: Defects were covered with autologous bone graft; Group BG: Defects were
formed musculocutaneous perforating arteries

3.71 ± 0.47, 7.01 ± 0.70 in groups 1, 2, 3, 4 and 5.

Density was 6.86 ± 0.50, 0.67 ± 0.13, 2.79 ± 0.53, 3, 4 and 5 respectively (p<0.05). Mean capillary were 0.29 ± 0.49, 1.14 ± 0.69, 2 ± 0.82 for groups.

% 9.40 ± 6.18, 31.92 ± 9.29, 64.98 ± 10.95

Adipose tissue from wound healing disorders showed increased MIF expression whereas DDT was down-regulated. MIF is localized in adipocytes and infiltrated macrophages. DDT, by contrast, is primarily found in macrophages. While adipose tissue-derived MIF inhibited fibroblast proliferation, DDT supported fibroblast proliferation. Both family members recruited macrophages but the effect of MIF was more pronounced.

CONCLUSIONS: MIF and DDT show a hitherto unknown reciprocal role in adipose tissue adjacent to non-healing wounds, which may gain importance in therapeutic strategies (e.g. MIF antibodies / recombinant DDT) in the future.

12.20 THE MIF SUPERFAMILY IN ADIPOSE TISSUE INFLAMMATION AND WOUND REPAIR

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INTRODUCTION: Impaired wound repair represents a major health risk and a substantial burden to healthcare systems worldwide. While the factors that may facilitate wound repair may be manifold, subcutaneous adipose tissue plays a central, yet underappreciated role as it is a dynamic organ situated in immediate proximity to the skin and participates in wound repair inter alia by the secretion of soluble factors. The macrophage migration inhibitory factor (MIF) is a pro-inflammatory cytokine that was earlier described in the context of chronic adipose tissue inflammation. D-dopachrome tautomerase (DDT, MIF-2) was only recently added to the MIF protein superfamily and although its exact functions are unknown, DDT is considered a functional homologue of MIF. The purpose of the present study was to investigate the expression of adipose tissue-derived MIF and DDT in wound healing disorders and elucidate their functions on dermal fibroblasts and cell mobilization.

MATERIALS AND METHODS: Subcutaneous adipose tissue samples were collected from wounds that showed delayed healing accompanied by classical signs of local inflammation. Subcutaneous tissue from healthy donor sites served as controls. Protein and mRNA expression were measured and their paracrine effect on the migration and proliferation of human dermal fibroblast was assessed in vitro. Finally, macrophage mobilization was evaluated by an in vivo cell tracking experiment.

RESULTS: Adipose tissue from wound healing disorders showed increased MIF expression whereas DDT was down-regulated. MIF is localized in adipocytes and infiltrated macrophages. DDT, by contrast, is primarily found in macrophages. While adipose tissue-derived MIF inhibited fibroblast proliferation, DDT supported fibroblast proliferation. Both family members recruited macrophages but the effect of MIF was more pronounced.

CONCLUSIONS: MIF and DDT show a hitherto unknown reciprocal role in adipose tissue adjacent to non-healing wounds, which may gain importance in therapeutic strategies (e.g. MIF antibodies / recombinant DDT) in the future.

12.30 IN VIVO TRACKING OF ADIPOSE- DERIVED MESENCHYMAL STROMAL CELLS DURING PHYSIOLOGICAL WOUND REPAIR

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INTRODUCTION: There is increasing interest in the use of adipose-derived mesenchymal stromal cells (ASCs) for wound repair. However, the location of administered ASCs, as well as their migration, engraftment and survival are still poorly defined. Prior to assessing the benefit of ASCs in in vivo models of wound healing, an appropriate tracking system needs to be established to follow administered cells. This study aimed to assess the possibility of in vivo tracking of ASCs labelled with green fluorescent protein (GFP) and firefly luciferase (fLUC).

MATERIALS AND METHODS: ASCs were isolated from rat inguinal adipose tissue and transduced with a dual lentivirus to express both GFP and fLUC. In vitro, flow cytometry and bioluminescence imaging