MRI and hystological examinations of the fat surviving

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Introduction: What is the mechanism of the fat cells surviving is contraversion question! With the different diagnostic methods wehave trying to precise the way of harvesting, preparation and injection. Histological monitoring of the quality of adipose cells, vascular stroma, fibroblast and fibrocyte is of high importance in transplanting of fatty stem cells. Success of operating procedure depends on the harvesting technique and application but also on the quality of cell structures and their preservance. With preoperative and postoperative MRI we are detected the quantity and placed of the adipocites.

Patients and methods:

In the 2006-2014period we have operated on 112 patients. All the patients have been monitored for a year, every three months. Preoperatively, we measured BMI (percentage of fat, muscle and water in the body), and MRI of lower legs and buttocks before and six months after operation. We measured the volume. Fat harvested from the back, stomach and internal and external part of thighs. The fat was extracted with 3.0 cannulas and vacuum syringe. Fat was partially rinsed and partially centrifuged.

Deep into the muscle it was injected rinsed fat with large 3.0 cannulas, while in the regions below the knee, below the gastrocnemius muscles, above the ankle and in the ankle level we injected centrifuged fat with 1.2 cannulas. The fat amounting 50-120 ml was kept in the freezer at -18°C.The sample of the adipose tissue was processed with standard histolochemical method and afterward stained by haematoxylin and eosin stain method, as well as appropriate immunohistochemical method used antibodies for detection of vascular spaces, most of all capillary spaces, and antibodies for detection of adipocytes: **S-100 Marker** of adipocytes cells **Vimentin** (intermediate filament protein).**CD31** (Platelet Endothelial Cell Adhesion Molecule – PECAM) expresses on the surface of endothelial cells

CD 34 (Human Progenitor Cell Antigen) expresses on the surface of endothelial and haemopoetic progenitor cells**Collagen IV** marker of the basal lamina, which is clearly differentiated in mature and preserved fat tissue **LCA** (Leucocyte Common Antigen)expressed in granulocytes and T and B lymphocytes (inflammatory process)

After six months, we have taken a sample of fat for histological verification and immune-histochemical survival adipocytes and control MRI with and without fat suppression.

Results:

Patients have been monitored for a year upon the surgery. At 40% of patients, the fat was added at three months period after the surgery. Percentage of fat survival was 70-90%. Results have been measured and compared with fat volume inserted in specific region of lower legs. BMI did not change after the surgery. With MRI we made the verification of the fat in the subcutaneous level and into the muscle. The histological and immune-histochemical examination of the taken fat samples, after six months, shows the high level of vitality and preservance of cell structure and vascular spaces as well as persistence of neo-vascular elements.

Conclusion:

One's own fat tissue is definitely the choice for total buttocks and legs remodeling. Unlike the implants, which can be placed exclusively in anatomically specific region and have specific shape, by fat transfer we can completely remodeling the particular part of the body according with body line by filling them in circularly. Postoperative course is less demanding than the one following the implants insertion.