



TREATMENT OF KNEE OSTEOARTHRITIS WITH CONCENTRATED ADIPOSE TISSUE INFUSION: CLINICAL RESULTS AND HISTOLOGICAL OBSERVATIONS

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Osteoarthritis (OA) is characterized by articular cartilage degeneration and subchondral bone sclerosis. Early OA begins as a focal damage; thus, its repair is envisioned to spare the joints from further degeneration and resume pain free movement. OA may benefit from non-surgical treatments based on articular infusions of adipose tissue derived-Stromal Vascular Fraction (SVF) or -mesenchymal stem cells (ASCs). Since both

cultured-expanded ASCs and collagenase-isolated SVF need manipulation in laboratory setting, we investigated the possibility to reduce lipoaspirate manipulation using autologous concentrated adipose tissue, injected intra-articularly in the knee.

The infusion of concentrated adipose tissue resulted safe, and all patients reported an improvement in term of pain reduction and function increase (VAS and WOMAC scores), even though the MRI evaluation was unable to detect augment in the thickness of cartilage. SVF and ASCs isolated from adipose tissue samples were cultured *in vitro* in standard conditions and plated on a composite bone scaffold, showing capabilities to differentiate into osteoblasts and chondrocytes upon stimulation. Immunohistochemistry performed both on bone scaffold and on knee joint intra-operative biopsies of patients, who underwent joint prosthesis, showed new tissue formation close to the osteochondral lesions. Overall our data indicate that concentrated adipose tissue infusion can stimulate tissue regeneration and might be considered an innovative and safe treatment for knee osteoarthritis, to place side by side to arthroscopy.