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Mid-Term Results of Lipo-Amic Technique for Treatment of Focal Symptomatic Cartilage Defects in the Knee

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Summary:

The repair of full-thickness cartilage injuries in the knee using the LIPO-AMIC technique (Chondro-Gide collagen membrane + ADSCs) provides good to excellent clinical improvement and MRI defect filling at mid-term follow up at three years, with results improved in respect to standard AMIC technique and comparable to matrix assisted chondrocyte implantation, at significantly reduced costs.

Abstract:

Purpose

To investigate the mid-term clinical outcomes of cartilage repair using the one-stage technique of adipose tissue transfer derived stem cells in association with a collagen based scaffold (LIPO-AMIC) for treatment of full thickness cartilage injuries in the knee.

Methods

and Materials

Eighteen patients with grade III and IV cartilage injury underwent LIPO-AMIC treatment (mean age 43,9 years). Patients were followed prospectively using patient reported scoring instrument consisting of Lysholm score, the Knee Injury and Osteoarthritis Outcome Score (KOOS) and visual analogue scale (VAS) and MRI imaging. We performed comparative analysis of preoperative and postoperative scores and MRI imaging.

Results

Patients were followed at 6, 12, 24 months with final follow-up at 36 months. Patients showed relevant, immediate and durable improvement of scores already from initial follow-up. At final follow-up all scores were significantly increased ($p < 0.001$). MRI examination showed early subchondral lamina regrowth and progressive maturation of the repair tissue and moderate to complete filling of the defects.

Conclusion

The repair of full-thickness cartilage injuries in the knee using the LIPO-AMIC technique (Chondro-Gide collagen membrane + ADSCs) provides good to excellent clinical improvement and MRI defect filling at mid-term follow up at three years, with results improved in respect to standard AMIC technique and comparable to matrix assisted chondrocyte implantation, at significantly reduced costs. The literature has clearly stated that adipose tissue can represent the ideal source of mesenchymal stem cells since the easiness of the lipoaspirate withdrawal, the mini-

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invasivity of the surgical procedure, the definite chondrogenic capacity and the abundant quantities of tissue and cells that can be harvested.