Autologous Matrix-induced Chondrogenesis (AMIC) Aided Reconstruction of Osteochondral Lesions of the Talus

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Summary
This are the first clinical and radiological results of a prospective case series evaluating a novel method for surgical treatment of osteochondral lesions of the talus.

Introduction
Osteochondral lesions (OCL) of the talus remain a challenging therapeutic task to orthopaedic surgeons. Several operative techniques are available for treatment, e.g. autologous chondrocyte implantation (ACI), osteochondral autograft transfer system (OATS), matrix-induced autologous chondrocyte implantation (MACI). Good early results are reported; however, disadvantages are sacrifice of healthy cartilage of another joint or necessity of a two-stage procedure. This case describes a novel, one-step operative treatment of OCL of the talus utilizing the autologous matrix-induced chondrogenesis (AMIC) technique in combination with a collagen I/III membrane.

Methods
20 patients (8 female, 12 male; mean age 36, range 17-55 years) were assessed in our outpatient clinic for unilateral OCL of the talus. Preoperative assessment included the AOFAS hindfoot scale, conventional radiography, magnetresonancetomography (MRI) and SPECT-CT. Surgical procedure consisted of debridement of the OCL, spongiosa plasty from the iliac crest and coverage with the I/III collagen membrane (Chondrogide, Geistlich Biomaterials, Wolhusen, Switzerland). Clinical and radiological followup was performed after one year.

Results
The mean preoperative AOFAS hindfoot scale was poor with 63.1 points (SD 19.6). At one year followup the score improved significantly (p<0.01) to 86 points (SD 12). At one year followup conventional radiographs showed osseous integration of the graft in all cases. MRI at one year showed intact cartilage covering the lesions in all cases.

Conclusion
The initial results of this ongoing study are encouraging. The clinical and radiological results at one year followup are comparable with the results of ACI, OATS and MACI. The AMIC procedure is a readily available, economically efficient, one step surgical procedure. No culturing after chondrocyte harvesting or destruction of viable cartilage is necessary.