Autogeous Chondrocyte Transplantation for Osteochondral Defects of the Talus after Failed Primary Operative Treatment: Early Clinical and MRI Results

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Precis/Summary:
Nine subjects were treated with ACI using Hyalograft C®. Patients were evaluated prospectively and rated in the Hannover Scoring System, Visual Analog Score and assessed by MRI. According to Hannover Scoring System, 5 patients were rated excellent and 4 good. VAS revealed an average of 8.54 (preop 2.97) for pain, 7.23 for function (preop 3.44) and 7.67 for satisfaction (preop 1.85). Regarding the MRI follow-up examinations, complete filling of defect repair was found in 4 patients, hypertrophy of the graft in 4 patients and incomplete in 1 patient.

Abstract:

Background
There have been limited data reporting about the use of autologeous chondrocyte transplantation (ACI) for the treatment of cartilage defects of the talus. No data exists the use for primary failed operative treatment.

Materials & Methods
In a prospective study, results of 9 ankles (5 women and 4 men; average age at surgery: 28 years, range 17-43 years) are presented. The mean follow-up was 2.1 years (range 1.2-3.0 years). Treatment was ACI using the Hyalograft C®. Patients were evaluated pre- and at least twice postoperatively and rated in the Hannover Scoring System and a Visual Analog Score (VAS: 0=very poor, 10=excellent). Cartilage repair tissue assessment by MRI was done according to the following variables: Degree of defect repair and filling of the defect, integration to border zone, surface of the repair tissue, structure of the repair tissue and subchondral bone alterations. In six cases a second look arthroscopy was done when removing the screws of the osteotomy. The grafted area was evaluated with the ICRS-Cartilage Repair Assessment Score. Statistical analysis was performed by using Wilcoxon sign rank sum test with a level of significance of p< 0.05.

Results
Location of the defect was medial in all cases. In 8 cases an osteotomy of the medial malleolus was necessary to approach the defect. Previous operative treatment included debridement (2x), anterograde (3x) or retrograde drilling (1x), microfracture (1x) and cancellous bone grafting (2x). According to Hannover Scoring System, 5 patients were rated excellent and 4 good. VAS revealed an average of 8.54 (preop 2.97; p<0.001) for pain, 7.23 for function (preop 3.44; p<0.001) and 7.67 for satisfaction (preop 1.85; p<0.001). Regarding the MRI follow-up examinations, complete filling of defect repair was found in 4 patients, hypertrophy of the graft in 4 patients and incomplete (>50% of adjacent cartilage) in 1 patient. Integration to the border zone was complete in 7 cases; a demarcation border (split like) was seen in 2 cases. The surface and structure was regarded intact in 3 cases, whereas a damaged surface (fibrillations, fissures or ulcerations) and an inhomogeneous structure of the repair tissue were found in 6 cases. The subchondral bone was intact in 4 patients, in 3 cases subchondral edema-like signal alterations and at each one case a cyst and granulation tissue were seen. According to the ICRS-Cartilage Repair Assessment Score the transplanted areas were rated nearly normal (Grade II) in all cases.

Conclusions
In a short term follow-up, ACI after failed primary treatment showed good to excellent clinical results. However, homogenous coverage of the defects was not achieved in all cases. Longer-term results in more patients remain to be evaluated.