Results of Arthroscopic Talar Osteochondral Lesions with Bone Marrow Stimulation and BST-CarGel
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Introduction/Purpose: Osteochondral lesions (OCL) are described as any defect involving both the articular surface and the subchondral bone of the talus. They are commonly associated with acute ankle injuries occurring often in active population. Bone marrow stimulation with microfracture is a standard reparative treatment for OCD however decline in related functional outcome has been reported. BST-CarGel contains chitosan which binds to negatively charged cartilage surface acting as biocompatible scaffold. This allows repair tissue with significant filling volume and proper integration into the surroundings. There has been reported better quantitative and qualitative cartilage repair tissue at 12 months with BST-CarGel.

We first report on clinical results of bone marrow stimulation and BST-CarGel for recalcitrant talar OCL in patients previously treated with microfracture alone in a prospective study.

Methods: This prospective single surgeon series was limited to patients with symptomatic OCL who previously had arthroscopic debridement and microfracture for same lesion. The pre-operative evaluation of all patients involved clinical assessment, weight bearing plain radiographs and magnetic resonance imaging of ankle joint. Inclusion criteria were age 18-55 years, single focal OCL of talus less than 3cm² and previous microfracture. Exclusion criteria was evidence of ankle osteoarthritis and allergy to chitosan or known hypersensitivity to crustaceans such as shrimp, lobster, and crab.

Functional outcome assessment was measured using Foot and Ankle outcome score (FAOS) and EQ5D (Health related quality of life) pre and post-operatively. We used paired Student's t-test for statistical analysis. Values for p < 0.05 were regarded as significant. The surgical technique used have been previously described in literature for OCL of the talus treated with bone marrow stimulation and Cargel.

Results: There were fourteen patients who were treated with arthroscopic BST-CarGel with BMS and followed up prospectively. There was no loss to follow-up. The mean follow-up post-operatively was 28 months. There were eight males and six females in the study group. Patient mean age at the time of operation was 42 years (21–60 years). The mean size of talar OCL treated was 2.8cm². Mean FAOS score for symptoms pre-operatively was 41.7 and post-operative was 52.8 (P<0.01). Mean FAOS pain subscale pre-operatively was 45.7 and post-operatively 55.6 (P<0.01). FAOS function and daily living score pre-operatively was 41.4 and post-operatively was 55.8 (P<0.01). Mean FAOS quality of life score was 39.2 pre-operatively and post-operative score 57.2 (P<0.01). EQ5D pre-operatively was 15 and post-operatively was 8 (P<0.01).

Conclusion: We noted statistically significant improvement in each subscale of The Foot and Ankle Outcome questionnaire scores post-operatively. There was also significant improvement in generic health status instrument EQ-5D. We also noted talar OCL improvement on MRI scan taken pre and post BST-CarGel treatment.

Recalcitrant OCL of talus present considerable challenge with persistent pain, functional limitations and secondary osteoarthritis. BST-Cargel treatment in our clinical study improved functional outcome scores similar to previously reported hip and knee studies. It requires standard arthroscopic technique and no complications were observed in our study.
