Prospective Evaluation of Structural Allograft Transplantation for Osteochondral Lesions of the Talar Shoulder

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Introduction/Purpose: The management of large osteochondral lesions of the talar shoulder remains a clinical challenge. Their size, three-dimensional geometry, and subchondral cystic degeneration often preclude treatment with traditional measures such as microfracture and osteochondral autograft transplantation. Structural or bulk osteochondral allograft transplantation has demonstrated efficacy in several retrospective reviews. The purpose of this study was to prospectively evaluate patients who received fresh structural allograft transplantation to the talus.

Methods: A prospective evaluation of consecutive patients who underwent fresh structural allograft transplantation for an OLT form 2010 to 2013 was performed under Institutional Review Board approval. All patients failed a minimum of 6 months of conservative management. Preoperative MRI and/or CT, as well as plain radiographs were obtained on all patients. The following patient reported outcomes questionnaires were administered preoperatively and yearly after surgery: 100mm VAS pain scale, AOFAS Ankle-Hindfoot Scale, SF-36, and the Short Musculoskeletal Functional Assessment (SMFA). Pre- and postoperative radiographs were assessed for allograft incorporation and the development of arthritis.
**Results:** Fourteen patients underwent fresh osteochondral allograft transplantation. The mean follow-up was 47 months (range 24-73). The average size of the OLT was 2,269 mm³ (range 813-8,366) based on CT imaging and 5,797 mm³ (range 1,136-12,489) based on MRI imaging. There was significant improvement in the VAS pain score, AOFAS Ankle-Hindfoot Scale score, the SF-36 total score, and the SMFA functional and bother indices. Five (36%) of the patients required subsequent arthroscopy and removal of the screw(s) used to secure the graft. Three of these second-look patients had stable grafts without chondral damage. Two grafts demonstrated cartilage delamination. One of these patients had continued pain and progression of arthritis without additional surgery and one was converted to an ankle replacement. Therefore, the failure rate was 14%.

**Conclusion:** Significant improvement in pain and function can be achieved with structural allograft transplantation for large OLTs. However, it is important to counsel patients that painful hardware and stiffness can occur in approximately one-third of patients. An unstable graft and cartilage delamination are indicators of subsequent failure. The use of a structural allograft does not preclude subsequent ankle arthrodesis or arthroplasty.