

John J. Joyce Award Third Place Winner

Surgical Treatment of Osteochondral Lesions of the Talus with a New One-step Arthroscopic Procedure

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Introduction: In the last years different methods have been proposed for the treatment of osteochondral lesions of the ankle. The state of the art is now represented by the arthroscopic Autologous Chondrocytes Implantation (ACI), a technique that reported good results, but requires two surgical steps, a laboratory phase and high costs. The aim of this study is to present a new one-step arthroscopic procedure with the use of mesenchymal stem cells (MSC) supported on a scaffold and autologous Platelet Rich Fibrin (PRF).

Materials and Methods: 42 patients with diagnosis of Osteochondral Lesion of the Talus (OLT) underwent the following procedure. The day before the surgery 120 ml of venous blood were harvested for the PRF production. The day of the surgery the MSC were harvested from the posterior iliac crest and concentrated directly in the operating room. An ankle arthroscopy was performed with lesion detection and curettage. The cell concentrate was mixed with a collagen paste or a hyaluronic acid membrane as scaffold and with PRF in order to obtain a final composite to fill the lesion site. No weight bearing for 6 weeks and early ROM were advised postoperatively. Clinical and MRI control was performed at 6 and 12 months. Three cases underwent a second arthroscopy with a biopsy of the regenerated tissue at 12 months follow-up.

Results: According to the American Orthopaedic Foot and Ankle Score (AOFAS) the patients with OLT had a mean preoperative score of 62.1 (range 35-79), a mean score of 73.3 (range 61-97) at 6 months, and a mean score of 86.6 (range 65-100) at 12 months follow up. MRI control at 6 and 12 months showed a progression of the reparative process in the lesion sites. The biopsy showed the presence of regenerated subchondral bone and remodelling cartilaginous tissue.

Conclusions: This one-step technique demonstrated to be a valid option for the treatment of osteochondral lesions of the talus. The main advantages of this technique are a reduced surgical time, lower costs and lower patient's morbidity. A longer follow up is necessary to verify the long-term maintenance of the results.