Treatment of Osteochondral Lesions of the Talus

with Cryopreserved Talar Allograft and Ankle Distraction with External Fixation

INTRODUCTION

Osteochondral lesions of the Talus are relatively frequent and are often associated with significant morbidity. These lesions represent a separated fragment of articular cartilage, with or without subchondral bone, typically arising secondary to trauma, with the incidence increasing in patients with recurrent ankle injuries and significant ligamentous injuries. Treatment of osteochondral lesions depends on the extent, or classification of the lesion.

This poster presents the results of a retrospective review of 6 osteochondral lesions in 6 patients treated with transplantation of cryopreserved talus allograft and ankle joint distraction. All patients complained of long standing ankle pain secondary to a traumatic episode confirmed through MRI (Fig.1). All surgeries were performed between 2002 and 2004. The average follow up time was 24 months.

MATERIALS AND METHODS with surgical technique

1. A retrospective review was performed on six patients treated for symptomatic osteochondral lesions.
2. All patients underwent talus allograft transplanted with cryopreserved talus allograft as well as ankle distraction.
3. The ankle was exposed via a medial longitudinal incision in patients with a medial gutter lesion, and through a longitudinal incision in patients with a lateral gutter lesion.

4. In order to provide adequate exposure of the talar dome, a transverse osteotomy was performed through the medial malleolus at the base of the fibular plateau for medial gutter lesions and a transverse osteotomy was performed through the fibula above the level of the fibular plateau for lateral gutter lesions.
5. The talus lesions were then visualized and resected utilizing an osteotome and mallet (Figure 2).

6. The talar bone was dorsifixed to enhance healing into the allograft. An osteotomy and mallet was utilized to obtain a graft from the cadaveric Talus of the same size, shape, configuration and anatomical location the talar dome lesion of the patient (Figure 3).

7. The talus graft was then implanted into the operative site and fixated into place utilizing Magic Plates (Figure 4 and 5).

8. The Medial malleolar osteotomies were then also utilized utilizing magic plates. One of the fibular osteotomies was utilized utilizing the fibula plate and the other fibular osteotomy was utilized utilizing a calcaneal screw attached to the external fixator.

9. A Bradford Sheet or multiple planar external fixation device was applied to each patient (Figure 5 and 6).

10. Each ankle was亦逐探 construction & conclusion

Talar dome lesions pose a difficult treatment dilemma to the foot and ankle specialist. The frequency of missed or incorrect diagnosis often creates a severe debilitating arthritic condition of the ankle joint. Talar allografts are particularly useful in large medial and lateral gutter lesions, allowing implantation with viable chondrocytes and intact hyaline cartilage. The author’s distraction modality of choice is a three ring multiplanar external fixator. This configuration provides an extremely stable fixation device and allows for early weight bearing.

Distraction of the ankle allows neovascularization and consolidation of the Talar dome into the body of the talus. Without distraction the talar dome could collapse under the weight of the ambulating patient. Distraction also produced a return to control levels of abnormal cartilage proteoglycan as well as a decrease in local inflammation of the ankle joint. Although technically challenging, talar dome transplantation with ankle distraction may allow patient to avoid other end stage procedures such as implant arthroplasty or ankle arthrodesis. We believe further investigation is warranted based on these initial findings.

RESULTS

1. Serial follow-up visits were taken throughout the post-operation course to assess appropriate healing and consolidation of the graft, healing was generally evaluated across seven function items as well as increased pain and swelling at the affected ankle. All grafts showed complete consolidation within 16 weeks (Figures 7 and 8).

2. All patients related subjective improvement in symptoms following distraction.

3. Postoperative dorsiflexion range of motion increased from 2º to 10º with an average increase of 8º while plantarflexion range of motion increased from 20º to 30º, with an average increase of 10º for both patients with medial incision or no increase in range of motion within a abduction decrease or symptoms as compared to preoperative examination.

4. Patient results were graded pre and postoperatively utilizing the Maryland Foot score. Pre-operatively four patients (67%) were graded as good and one patient (17%) was graded as fair. No patients reported poor results.

5. Healing was gauged by trabeculation across the graft site as well as a decrease in local inflammation of the ankle joint. Although technically challenging, talar dome transplantation with ankle distraction may allow patient to avoid other end stage procedures such as implant arthroplasty or ankle arthrodesis. We believe further investigation is warranted based on these initial findings.