The Role of Demineralized Allograft Subchondral Bone in the Treatment of Shoulder Lesions of the Talus

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My disclosure is in the Final AOFAS Program Book.

I have a potential conflict with this presentation due to:

Paid Consultant: Wright Medical, Bacterin International
Introduction

- An osteochondral lesion of the talus (OLT) is a condition that occurs most commonly in sports, secondary to either direct or indirect trauma to the articular cartilage.
- Surgical treatments of osteochondral lesions of the talus encompass a wide variety of procedures.
- Microfracture surgery has been widely described as the first line of treatment for the painful OLT. Reported 80% failure rate in lesions >150mm².
- Autologous grafting has been reported as a successful treatment in ankle lesions. Reported donor site morbidity averaging 12% (0-37%)⁰¹.
- In an attempt to reduce the incidence of donor site morbidity and improve outcomes of large OLT treatment, the authors have used a one-stage cartilage restoration technique with demineralized subchondral bone allograft.
Procedure

Fig. 1: Medial talar dome OLT with cystic changes

Figure 2: Exposure of OLT

Figure 3: SC plug to fit lesion

Figure 4: Reamer to Match SC Plug
Procedure Continued

Figure 5: Decompressed OLT

Figure 6: Resurfaced talus

Figure 7: 3 months post-op

Figure 8: 4 month Post-Op CT
Results

• Average age: 42.9 years
• Mean duration of symptoms: 11.3 months
• All diagnosed with full thickness cartilage defect on MRI
• All failed conservative treatment (bracing, physical therapy, etc)
Results

- Results reflect preoperative pain/disability level vs. 12 months postoperatively
- Complications:
  - 1 case superficial cellulitis, resolved with oral antibiotics
  - 1 deep vein thrombosis occurred, successfully treated with oral anticoagulant therapy
Discussion

- All patients had a clinically significant reduction in pain during ambulation throughout the day as well as during the first step out of bed.
- At 12 months all demonstrated a clinically significant improvement when going up and down stairs. All patients also had a significant improvement in symptoms when walking 4 blocks.
- No procedure specific complications occurred; graft rejection, medial malleolar non-union/displacement.
- These patient reported outcomes are clinically significant given the amount of pain and disability reported pre-operatively.
- Although our sample size is small, our results mirror that of autologous cartilage transplantation without the donor site morbidity rate³.
Conclusion

- Microfracture chondroplasty is the first line treatment option for most OLT’s. When microfracture has failed, or is not an option due to lesion size, a number of techniques have been proposed.
- Emerging technologies such as demineralized subchondral bone may be a solution to treat not only the articular surface defect, but the underlying subchondral bone damage in severe lesions.
- While this data has a small sample size and short term follow up, the authors feel the data warrants discussion. A larger study, with multiple year follow up and post-operative advanced imaging may give surgeons a better understanding as to the role of cancellous bone sponge in challenging OLT’s.
6. Hahn DB, Anastoos ME, Wilkins RM. Osteochondral Lesions of the Talus Treated With Fresh Talar Allografts. Foot Ankle Int. Vol. 31, No. 4/April 2010