

Osteochondral Autograft and Allograft Transplantation in the Talus

Alan Ng, DPM^{a,b,*}, Kaitlyn Bernhard, DPM^a

KEYWORDS

- Osteochondral autograft transplantation • Osteochondral allograft transplantation
- Hyaline articular cartilage • Medial malleolar osteotomy • OATS

KEY POINTS

- Large, symptomatic, focal chondral, and osteochondral lesions of the ankle have been treated over the past 15 years with osteochondral autograft/allograft transplantation (OAT) procedure.
- The OAT procedure is a reconstructive bone grafting technique that uses one or more cylindrical osteochondral grafts from an area of low impact or allograft source and transplants them into the prepared defect site on the talus.
- Performed through miniarthrotomy or malleolar osteotomy this technique allows defects to be filled with osteochondral plug with mature hyaline articular cartilage.
- Acute or chronic chondral or osteochondral lesions can be a debilitating condition, especially in the younger athletic population; provided here is a review of osteochondral autograft or allograft transplantation.
- OAT procedure shows successful outcomes for large osteochondral lesions or for revision osteochondral defect repair.

INTRODUCTION

Large, symptomatic, focal chondral, or osteochondral lesions of the ankle have been treated over the past 15 years with osteochondral autograft/allograft transplantation (OAT) procedure.¹⁻³ The surgical technique was first described for treating lesions in the knee by Yamashita and colleagues in 1985.⁴ Improvements on the procedure continued over the next decade while Hangody and Fules popularized the modern technique.⁵ Performed via open, miniarthrotomy, or arthroscopic-assisted approaches, this technique allows defects to be filled immediately with mature, hyaline articular cartilage.⁶ Ideally, a cylindrical plug of healthy cartilage and subchondral

^a PMSR/RRA, Highlands/Presbyterian St. Luke's Podiatric Surgical Residency Program, 1719 East 19th Avenue, Denver, CO 80218, USA; ^b Private Practice, Advanced Orthopedic and Sports Medicine Specialists, 8101 East Lowry Boulevard #230, Denver, CO 80230, USA

* Corresponding author. PMSR/RRA, Highlands/Presbyterian St. Luke's Podiatric Surgical Residency Program, 1719 East 19th Avenue, Denver, CO 80218.

E-mail address: ankleftdoc@aol.com

bone is harvested from an area of low impact. Depending on the size of the lesion, mosaicplasty could afford a better fit, utilizing multiple smaller sized plugs to fill the defect. Acute or chronic chondral or osteochondral lesions can be a debilitating condition, especially in the younger athletic population; provided here is a review of osteochondral autograft or allograft transplantation.

CLINICAL PRESENTATION

A typical clinical presentation of osteochondral lesion of the talus (OLT) includes symptoms such as pain, mechanical locking, and catching of the ankle joint with range of motion. A single injury or multiple traumatic events can result in some form of cartilage injury. Approximately one-half of acute ankle sprains are likely to cause chondral or osteochondral pathology.⁷ In addition, a study reviewed 84 acute ankle fractures, and of those fractures, 61 (73%) had concomitant chondral injuries.⁸ Those individuals describing deep ankle pain with weight bearing, impaired function, stiffness, and even swelling raise clinical suspicion for ankle joint pathology.⁹ A diagnostic ankle block helps differentiate between ankle joint pain and extra-articular pathology, while providing therapeutic benefits for the patient.

INDICATIONS/CONTRAINDICATIONS

OAT procedures are primarily reserved for larger, (>1 cm²), isolated lesions and subchondral cystic lesions of the talus.¹⁰ If the primary treatment for smaller defects fails to resolve with excision, debridement, and bone marrow stimulation, then the OAT procedure should be considered.⁹ OLTs secondary to avascular necrosis have been shown to be at higher risk for failure because of the decreased vascularity resulting in poor incorporation of the graft.² With autograft transplantation, it is not recommended to treat a defect greater than 4 cm² due to donor site morbidity.⁵ Some contraindications include infection, inflammatory arthropathy, neuropathy, vascular disease, degenerative joint disease of the tibiotalar joint, uncorrectable malalignment, and ligamentous instability.¹¹ Lesions of the talar shoulder are also a relative contraindication.

IMAGING PREPARATION

Subtle findings can be detected on plain radiographs, with up to 50% to 66% of OLT appearing as trabecular bone irregularities.¹² It is helpful to obtain ankle radiographs of anterior-posterior, lateral, and mortise views to clearly demonstrate the talar dome.¹⁰ In cases with normal radiographs but high clinical suspicion, advanced imaging such as computed tomography (CT) and magnetic resonance imaging (MRI) may be performed to make a more definitive diagnosis. MRI has certain advantages over CT, being able to demonstrate bone marrow edema and the stability of the OLT. However, MRI is less precise in bone analysis compared with CT. Specifically, CT-arthrogram is superior to both with its ability to demonstrate precise analysis of the bone matrix and the cartilaginous cover provided by arthrography.¹⁰ Although bone scintigraphy does not provide a definitive diagnosis, it remains useful in the exploration of unexplained pain. Intraoperative arthroscopy provides the most accurate diagnosis, when prior imaging may have misinterpreted the findings. As with each imaging modality, classification systems have been developed to better understand the progression of the lesion (**Table 1**).

TECHNIQUE

A key principle for the OAT procedure to be successful is to have perpendicular access for both plug harvest and transfer. A distal fibular osteotomy can be utilized for

Download English Version:

<https://daneshyari.com/en/article/5678423>

Download Persian Version:

<https://daneshyari.com/article/5678423>

[Daneshyari.com](https://daneshyari.com)