



Position Statement: The Use of Osteochondral Transplantation for the Treatment of Osteochondral Lesions of the Talus

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The American Orthopaedic Foot and Ankle Society (AOFAS) endorses the use of osteochondral transplantation for the treatment of osteo-chondral lesion of the talus, especially large diameter and cystic lesions, and does not consider this procedure to be experimental in a patient population that has failed non operative management.

The American Orthopaedic Foot and Ankle Society is a medical specialty society whose 2,000 members are orthopaedic surgeons specializing the surgical and non-operative treatment of injuries, disease, and other conditions of the foot and ankle. The AOFAS promotes quality patient care through education, research and training of orthopaedic surgeons and other health care providers, and serves as a resource for government, industry and the health care community on issues concerning the medical and surgical care of the foot and ankle.

Background

An osteochondral lesion of the talus (OLT) is a region of focal degeneration or injury of the talus bone that involves the cartilage of the joint surface as well as the “subchondral” bone just beneath the cartilage. OLTs are a common source of ankle pain and can cause substantial disability and lost productivity. While many OLTs are traumatic in origin, the majority of cases are idiopathic.

Numerous surgical options have been described for the treatment of painful OLTs that have not responded to non-operative care. Smaller diameter lesions (< 15mm in diameter) are most commonly treated with “marrow stimulation” techniques.¹ These involve making multiple perforations in the subchondral bone to allow recruitment of mesenchymal stem cells that then differentiate and produce fibrocartilaginous repair tissue. The most commonly utilized form of marrow stimulation is microfracture, in which a small awl or drill is used to make several punctures in the subchondral bone. However, it must be noted that the cartilage produce by marrow stimulation is partly fibrous (“fibrocartilage”) and contains Type I collagen. This differs and is biomechanically inferior to native cartilage, which contains Type II collagen.



Another essential tool in treatment of OLTs is osteochondral transplantation. With this technique, the diseased cartilage and subchondral bone is replaced with one or more autograft or allograft plugs that contain both bone and cartilage. Alternatively, a single “block” of bone and cartilage may be used. Osteochondral transplantation is particularly useful for the treatment of large diameter OLTs (>15mm in diameter) and also for those lesions associated with an underlying void, or cyst, in the subchondral bone (“cystic lesions”).

Peer reviewed Publications on Osteochondral Transplantation

The use of osteochondral transplantation is well supported by the peer reviewed scientific literature.¹⁻⁹

For instance, Hangody and colleagues utilized autograft transplant from the knee for talar osteochondral lesions in 98 patients with 93% good to excellent results.² Meanwhile, Lee et al. reported good-to-excellent results in 100% of patients treated with osteoarticular transplantation.³ Paul et al. reported a very large series (131 patients) in which autologous osteochondral plugs were used to treat advanced OLTs.⁴ These authors reported significant improvement in pain scores as well as a high percentage of return to sport.

Raikin retrospectively reviewed fifteen patients with symptomatic OLTs with a cystic component treated with allograft transplantation.⁵ The average visual analogue scale improved from 8/10 to 3/10, while the AOFAS hindfoot outcome scores (range, 0-100) improved by 45 points. El-Rashidy and colleagues reported similar results. In their series, osteochondral lesions treated with allograft transplants demonstrated statistically significant improvement in both visual analogue and AOFAS hindfoot outcome scores.⁶ Finally, Hahn et al demonstrated significantly improved pain scores in 13 patients treated with osteochondral allograft transplantation with statistically significant improvement in postoperative pain scores.⁷

Long-term follow-up studies have also shown good results.^{2,8-10} Imhoff and colleagues, for instance, reported that clinical outcome scores and follow-up magnetic resonance (MR) imaging remained improved at an average of 84 months following osteochondral autograft transfer.⁹ They reported a significant increase in the AOFAS score (50 to 78 points) as well as a significant improvement in the VAS pain score (7.8 to 1.5). Similarly, Hangody² reported good to excellent results in 93% of patients at long-term follow-up. Valderrabano and colleagues reported on a series of patients who underwent knee-to-ankle autologous osteochondral transplantation. At an average follow-up of 72 months, they found significant improvement in AOFAS hindfoot scores (from 45.9 to 80.2) and good to excellent results in 91% of patients in terms of patient satisfaction.¹⁰



Conclusion

Osteochondral lesions of the talus are common and often result in substantial pain and dysfunction. The American Orthopaedic Foot and Ankle Society supports the use of osteochondral transplantation for the treatment of OLTs that have failed other management, especially for large diameter lesions and cystic lesions. To this end, the AOFAS considers osteochondral transplantation to be a treatment option with demonstrated improved outcomes. This position is based on multiple reports from the peer-reviewed scientific literature.

Definitions

Allograft. Bone or cartilage (or both) that comes from a cadaver.

Autograft. Bone or cartilage (or both) that comes from the patient's own body.

Collagen. A group of proteins that forms the main component of the connective tissues of the body, including cartilage.

Cystic lesion. An osteochondral lesion in which some of the subchondral bone is actually missing, forming a cavity or cyst. The cyst is actually a void, and does not represent a tumor or malignancy.

Microfracture. The use of a small awl or drill is to make several punctures in the subchondral bone.

Osteochondral lesion. Focal degeneration or injury of the articular surface (joint surface) of the talus bone that involves both the subchondral bone and overlying cartilage.

Subchondral bone. In those bones that form a joint and have overlying cartilage, this is the layer of bone just beneath the cartilage.

References

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