

## Osteochondral Lesion of the Talus

An osteochondral lesion of the talus (OLT) is an area of abnormal, damaged cartilage and bone on the top of the talus bone (the lower bone of the ankle joint). This condition is also known as either osteochondritis dissecans (OCD) of the talus or talar osteochondral lesion (OCL). It is often associated with a traumatic injury, such as a severe ankle sprain or fracture. It can also occur, however, from chronic overload due to malalignment or instability of the ankle joint.

OCDs most commonly occur in two areas of the talus:

1. The inside corner of the talus (the medial talar dome)



Figure 2: X-ray showing a medial talar dome OCD



Figure 3: CT showing medial talar dome OCD

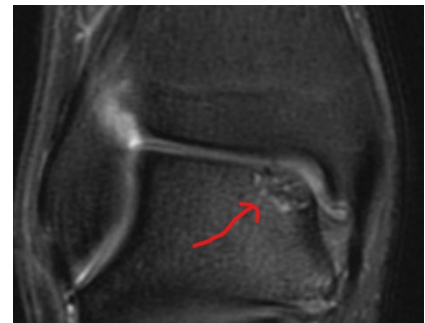


Figure 1: MRI showing medial talar dome OCD

2. The outside corner of the talus (the antero-lateral talar dome)



Figure 4: X-ray of lateral talar dome OCD



Figure 5: CT of lateral talar dome OCD



Figure 6: MRI of lateral talar dome OCD

## Clinical Presentation

Many patients with talar OLTs are asymptomatic (no pain or swelling). OLTs can be an incidental finding on an MRI ordered to assess another problem. However, if the lesion is large enough, or the overlying cartilage is displaced, talar OLTs can be

quite symptomatic. Symptoms include localized ankle pain and discomfort on either the inside (medial talar OLT) or outside (anterolateral talar OLT) of the ankle. The pain is often worse with activities, particularly running, walking and jumping. OLTs may also result in mechanical symptoms, such as clicking, popping or catching caused by a loose fragment of cartilage and/or bone.

OLTs on the outside of the talus (lateral lesions) are usually caused by an acute traumatic injury such as an ankle sprain, motor vehicle accident, or fall from height. In contrast, OLTs on the inside of the talus (medial lesions) are more commonly associated with chronic overload of the medial aspect of the ankle, which occurs, for example, in a patients with higher arched feet. Physical exam usually reveals swelling and localized pain along the front of the ankle joint.

## Imaging Studies

X-rays may be used to help diagnose an osteochondral lesion. Areas of decreased density (i.e., darker areas) seen on an x-ray can be indicative of this condition, although it is not uncommon for x-rays to be read as normal. The gold standard for diagnosis of talar OLTs is an MRI of the ankle. An MRI of an OLT may establish that the cartilage and bone damage is displaced (out of position) or non-displaced (perfectly in position). A CT scan may be needed next, to provide finer detail for pre-operative planning.

## Non-Operative Treatment

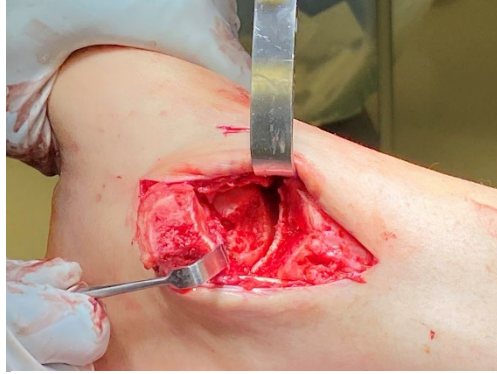
Non-operative treatment can be successful for non-displaced OLTs, especially if the condition is diagnosed and treated early, and the lesion is relatively small. Younger patients, particularly children or adolescents, have a much better chance of spontaneous healing compared to adults. There are several non-operative management options for the treatment of osteochondral lesions, including:

- Immobilization in a cast or walking boot: If the OLT occurs following an acute injury, initial immobilization in a cast for 4-6 weeks can help reduce stress on the OLT and allow healing. This treatment approach can be initially attempted in non-displaced OLTs.
- Physical therapy: including strengthening the muscles around the ankle, increasing range of motion, and balancing.
- Protective ankle braces: to decrease stress and prevent reinjury.

# Operative Treatment

Surgical treatment is usually indicated for displaced OLTs or non-displaced OLTs that have not improved with appropriate non-operative management. Surgical treatment of OLTs include:

- Arthroscopic debridement (cleaning out) of the ankle joint and microfracture of the OLT. This is the standard operative treatment in patients with OLTs less than 1cm.
- Osteochondral Autologous Autograft Transfer (OATs Procedure). An OATs procedure is reserved for patients who have been treated previously with arthroscopic debridement and microfracture and are still not doing well, or patients that have a very large ( $>20\text{mm}^2$ ) OLT. The theoretical advantage of this procedure is that it replaces the damaged cartilage with non-damaged cartilage and bone harvested from the patient (autograft). The graft is usually harvested from the patient's knee or hip on the same leg. The primary disadvantage of this procedure is the prolonged recovery time and increased complication rate, compared to arthroscopic debridement and microfracture.
- Osteochondral Allograft Transfer. A bone and cartilage plug may also be harvested from a cadaver and transplanted into the OLT. This obviates the need to harvest bone and cartilage from another part of the patient's body. Osteochondral allografts (cadaver grafts) have been used successfully to treat large talar lesions. However, the larger the graft, the greater the chance that it will collapse as new blood supply is established into the graft after transplantation.
- Autologous chondrocyte transplantation (ACI). This experimental procedure involves harvesting the patient's healthy cartilage, grow cells from the harvested cartilage in a lab, and then reimplanting these cells into the area of the OLT. This approach has not yet met the type of clinical success that had been hoped, and is not currently broadly available
- Dr. Moon utilizes a unique surgical technique, known as Articular Regional Reconstruction (ARR), to treat large osteochondral lesions of the talus with concomitant subchondral bony defects. This novel technique combines osteochondral allograft with the patient's own bone, harvested from the iliac crest of the hip. A medial malleolar osteotomy (a cut on the inside of the tibia bone) is performed to gain access to the OLT. Suture anchors are used to secure the osteochondral allograft, which is filling in the defect, over the bone.



*Figure 7: Intraoperative image of debrided lesion, accessed through medial malleolar osteotomy.*



*Figure 8: OLT lesion after autograft bone reconstruction of talar body bulk and placement of osteochondral allograft*

Article describing ARR: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9673593/>

## Other Procedures

It is not uncommon for other significant pathology that exists to be addressed at the time of surgery. The purpose of this is to reduce the risk of recurrent ankle rolls post operatively, which could result in new or recurrent OLTs.

These procedures may include:

- Surgery to address ankle instability, such as a Brostrom lateral ligament repair or a lateral ligament reconstruction.
- Calcaneal osteotomy to address significant hindfoot alignment abnormalities (usually hindfoot varus treated with a lateralizing calcaneal osteotomy).