Case report

Osteochondral lesion of the talus: presentation and management - A case report

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ABSTRACT

Osteochondral lesions of the talus (OLT) involve the chondral and subchondral region typically. Most are secondary to trauma. The patients present with pain, stiffness, swelling. Diagnosis is made typically by clinical and radiological correlation. Treatment strategies employed can be conservative or surgical. This case report is of a 24-year-old male, who presented with pain on the right ankle ,for a chronic period following trauma. The patient was diagnosed with OLT and underwent surgical treatment (Right medial malleolus osteotomy +curettage of right talus + bone grafting + reconstruction of the medial malleolus). This case study is aimed at understanding the various treatment strategies for OLT, both surgical and non-surgical and thus arriving at a conclusion. Treatment of osteochondral lesions is mainly by early screening in high-risk patients (trauma). Although outcomes are favorable in most of the cases, treatment should be individualized to every patient with adequate counseling of outcomes and complications.

Keywords: OLT- Osteochondral lesions of the talus; bone marrow stimulation; malleolar osteotomy.

INTRODUCTION

Osteochondral lesions of the talus (OLT) are a broad terminology. The chondral and subchondral regions are typically involved (1). OLT considers osteochondritis dissecans, osteo-chondral fractures, osteochondral defects etc., to name a few (2).

It was first described by Monro in 1738 as osteocartilaginous loose bodies in the ankle. In 1984, Zengerink *et al.,* suggested the lesion should not be called osteochondritis dissecans and rather classified under osteochondral lesions of the talar dome (1, 3-5). Most are secondary to trauma, medial lesions occur from inversion, external rotation, and plantarflexion and lateral from dorsiflexion and inversion (6,7). This repetitive trauma, the relatively thin talar cartilage, retrograde vascular supply and additional watershed areas showing poor perfusion make the talus prone for developing OLT (8, 9). Radiographically OLT can be staged based on classification systems, for example is one by Berndt and Harty (5). It was based on a demonstration of the etiological mechanism of transchondral fractures of the lateral border of the talar dome (Fig. 1). On inversion, the lateral border presses on the fibula (Stage 1), on continued inversion, lateral ligament ruptures and begins to avulse a segment of talus (Stage 2), complete detachment (Stage 3), displaced in inversion (stage 4). However, this classification only considered traumatic etiology. Loomer *et al.,* added a stage 5 for presence of subchondral cyst (10).

Typically, patients present with non-specific symptoms like pain on weight bearing, stiffness, swelling and occasional locking. A history of trauma was noted. A differential ankle synovitis, occult fractures, early sub talar arthritis was considered.

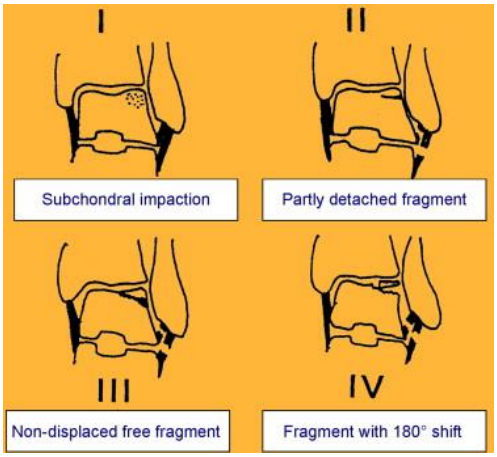

Fig. 1: Different OLT stages based on classification systems (10)

CASE PRESENTATION

A 23-year-old male, presented to the outpatient department with chief complaints of right ankle pain on and off for the past 2 years. Patient gives history of being asymptomatic 2 years ago following which he had an alleged history of accidental injury to the right ankle while playing football (Mechanism unknown) and developed pain since. Patient was able to bear weight after injury and is associated with pain. Pain is sudden in onset, non-progressive, intermittent, dull aching type, increases on exertion (running and playing) and decreases with rest. Patient gives history of multiple consultations and has been managed conservatively and was on analgesics until presenting to our OPD.

Fig. 2a & 2b: Dorsiflexion

Fig 3: X-Ray taken one year prior to presentation (19 Dec. 2020)

Fig. 4a & 4b: Osteochondral lesion of the right talus

On examination, no swelling or deformity noticed, no tenderness on the talus, range of movements in the ankle and subtalar joint is full and painful terminally (Dorsiflexion) (Figs. 2a and 2b). Inversion tilt, eversion tilt, drawer test were negative.

All baseline investigations were within normal limits. A radiograph (X-Ray) of the ankle showed a lesion on the medial aspect of the talar dome. Patient was clinically and radiologically diagnosed with osteochondral lesion of the right talus (Figs. 4a and 4b). The patient underwent right medial malleolus osteotomy +curettage of right talus + bone grafting + reconstruction of the medial malleolus.

Under spinal anesthesia, patient in supine position, right lower limb and left iliac crest parts painted and draped. Skin incision made over the medial malleolus. Skin and soft tissue dissected . Medial malleolus osteotomized at the level of the ankle joint (Fig. 5a), distal fragment retracted. Under C-arm guidance (Figs. 6a and 6b), osteochondral defect over talar dome identified and curettage done, and sample sent for biopsy. Cancellous bone graft was harvested from an iliac crest using a Jamshidi needle. Thorough wound wash given over the talar dome and bone graft packed over the defect(Fig. 5b), Graft placement checked under C-arm guidance. Distal medial malleolar fragment was repositioned and fixed with 2 (4.5 mm) cannulated cancellous screws (Figs. 7a and 7b). Thorough wound wash given and wound closed in layers . Patient was then placed in a below knee POP slab and was on non-weight bearing mobilization. Serial x-rays were taken on postoperative day 2, 1 month post op and 3-and 6-months post op(Fig. 8a and 8b). Post operatively after one month patient started on full weight bearing mobilization.

Fig. 5a: Osteotomy done, and needle inserted into the talus with the guidance of a C-arm Crm

Fig. 5b: After osteotomy the void created in the talus is packed with bone graft

Fig. 6a and 6b: Identification of osteochondral defect over talar dome

Fig. 7a: Repositioning of distal medial malleolar fragment

Fig. **7b**: Fixing of cannulated cancellous screws

Fig. 8a: Immediate post-operative radiographs

Fig. 8b: Eight months post-operative radiographs

DISCUSSION

Osteochondral lesions of the talus have a male predominance along with greater chance in the right ankle and medial side. Morphologically medial and lateral lesions present differently with the former being deeper and more rounded and the latter being flat and discoid which can be confirmed with an MRI (11). The medial lesion unlike the lateral lesion is caused by perpendicular force to the talar dome thus resulting in deeper lesion in contrast with the lateral lesion produced by tangential shear force (12).

Treatment strategies employed can be conservative or surgical (excision and curettage, curettage combined with micro fracturing, bone grafting). Transmalleolar drilling is useful when the lesion is difficult to access but at the risk of damage to healthy tibial cartilage. Articular cartilage can be restored with the help of autologous chondrocyte implantation, bone marrow stimulation or fresh osteochondral allografts (FOCAT).

Based on the recent review of literature, bone marrow stimulation is regarded as the best treatment option by Zengerink *et al.*, (1). Recent surgical techniques include arthroscopic excision, curettage, and Bone Marrow Stimulation as primary treatment due to its low cost, morbidity, and high success rate (1). Some lesions are difficult to access (involve talar dome on posterior 20-30%) and need a posteroanterior incision and graft is harvested through a second anterior incision. Clinicians should have a high grade of suspicion based on clinical and radiological signs (13). The choice of treatment (conservative or surgical) should be chosen based on the cartilage involvement, symptoms, and containment of the lesion (13).

CONCLUSION

Treatment of osteochondral lesions is mainly by early screening in high-risk patients (trauma). Osteochondral lesions include a variety of disorders which pose a challenge to diagnose and treat. Although outcomes are favorable in most of the cases, treatment should be individualized to every patient with adequate counseling of outcomes and complications.

CONFLICT OF INTEREST

Authors declare no conflicts of interest.

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