Operative treatment of symptomatic subchondral lesion of the tibial plafond

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Introduction

Ankle pain due to subchondral lesions in the ankle are becoming more of a common source of ankle pain than previously identified. The exact pathophysiology of the condition has not been clearly determined; however it has been sited that it could be due to a large variety of etiological factors including trauma, typically coming from ankle sprains being the most common source.

Magnetic resonance imaging has become the most important technological advancement in detecting and diagnosing subchondral lesions of the ankle. This has lead to the advancement for further treatment plans. Previously, all pediatric and adolescent patients with subchondral lesions were treated nonoperatively.

However now due to the advancement in being able to identify the presence and absence of cartilage damage, along with the exact size and site of the lesion, operative treatment is now more utilized in children and adults with symptomatic subchondral lesions. This particular case study shows a patient who elected for operative treatment with successful outcome.

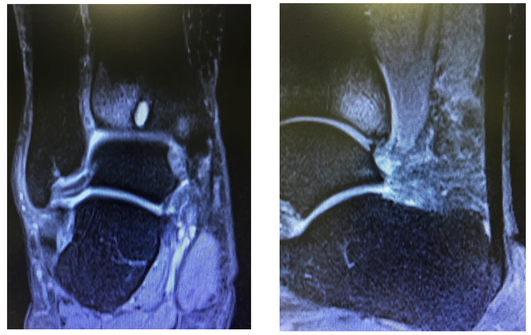
Case Study

A 40 year old female with no significant past medical history or recollection of ankle trauma besides previous ankle sprains, presents with chronic pain in the posterior lateral ankle with no relief from all conservative treatments including NSAIDS, physical therapy and ankle brace.

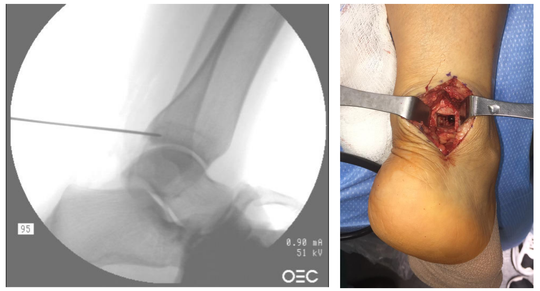
Previous magnetic resonance imaging reveals a 0.9x1.2 cm sharply demarcated subchondral bone cyst, in the right posterior lateral tibial plafond, as shown in Figures 1a and 1b. The patient was advised of surgical intervention and the patient agreed.

The bone cyst was identified intraoperatively utilizing fluoroscopy and a 1x1.5cm window was cut directly over the lesion and the cortex was removed to reveal the bone cyst within, as shown in Figure 2a and 2b.

The bone cyst was then cleaned via the use of a bone curette and power rasp and the bone window was prepared on the back table to remove all remnants of bone cyst and was utilized as autograft material. The remaining void was then packed with cancellous bone chips and covered with the patient's autologous cortex window, as seen in Figure 4a.

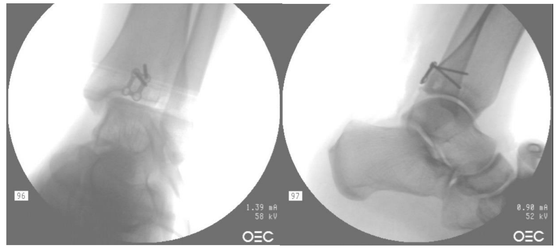


Figures 1a and 1b- Frontal and Sagittal magnetic resonance imagining revealing bone cyst

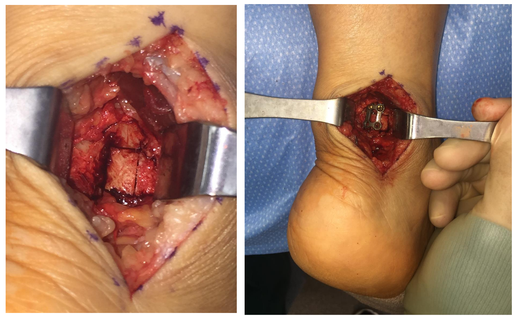


Figures 2a and 2b – Intraoperative fluoroscopy identifying bone cyst and evacuation of bone cyst with a window cut out

To maintain the correction of the bone window, a single 4-hole square plate was utilized to secure the window with 2 orthopedic screws, as shown in Figures 3a/b and 4b. Application of amniotic membrane graft was then applied over the previous lesion site and the wound site was reapproximated utilizing 3-0 Monocryl and 4-0 Nylon sutures.



Figures 3a and 3b – AP and Lateral view of hardware



Figures 4a and 4b – Intropertive autologous cortex window and correction of bone window with orthopedic hardware

Results

By 6 weeks postoperatively, the patient had resumed full weightbearing, and by 9 weeks, she had resumed the use of regular shoes and all her routine activities painfree.

Her postoperative course was uneventful and at the 3-month postoperative follow-up assessment, the patient had no complaints, except slight tenderness at the site of the posterior leg incision.

The radiographs showed bone replacement of the lesion with hardware intact. At 6 month, postoperative follow-up, the patient was completely painfree with no tenderness at the surgical site whatsoever and is completely satisfied with the results.

Discussion

The recommended treatment of symptomatic subchondral lesions of the ankle is curettage and autologous bone grafting, the course we pursed in the present case.

Bone graft substitutes can also be used to "backfill" the evacuated cyst defect as we also did with the cancellous bone chips. As a general rule, asymptomatic subchondral lesions should not be treated surgically, because the goal of surgery is to relieve pain and to prevent a pathological fracture, especially when the lesion is located in a weightbearing bone.

In conclusion, we have presented the rare case of a symptomatic subchondral lesion in the distal tibial plafond that was suitably treated with surgery to evacuate the lesion and to "backfill" the defect with cancellous bone graft substitutes along with autogenous cortical bone.

From our understanding of the published date and our experience with patients with symptomatic subchondral lesions, surgical treatment is indicated if symptoms are present or if the diagnosis remains uncertain after advanced imaging has been undertaken.

References

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