

Outcome of Retrograde Technique with Backfilling of Osteochondral Cysts: A Case Series

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PURPOSE

Osteochondral defects typically occur from single or multiple traumatic incident. The ankle is the third most common joint affected behind the knee and elbow(1). Currently, there are many treatment modalities for osteochondral cysts within the talus. Most of the procedures described destroy or remove the articular cartilage on the talus, as this is typically due to the nature of the lesion itself. Microfracture of a lesion is typically the primary treatment option (2, 3). The question then arises, what treatment should be performed if the cartilage and the subchondral plate is intact? Our case series evaluated three patients with greater than 1 year follow-up after undergoing arthroscopic evaluation of the ankle joint who had intact cartilage overlying the talar cyst and backfilling of an osteochondral cyst.

METHODOLOGY

A retrospective review was performed on three patients who have undergone ankle arthroscopy with backfilling of the osteochondral lesion with greater than one year follow-up. The follow-up time for the three patients consisted of 19 months, 18 months, and 14 months after undergoing this procedure. Two of the three patients were female with ages ranging from 37, 58 and 71 years old. The patients all sustained an ankle injury and were suffering from chronic ankle pain. All patients had exhausted conservative treatments including corticosteroid injections to the ankle, physical therapy, bracing and anti-inflammatory modalities. Magnetic Resonance Imaging (MRI) was performed on all patients and osteochondral cysts were identified. On MRI, the overlying cartilage appeared intact as seen in Image 1. Current literature focuses on the benefits of microfracture and arthroscopic evaluation or performing autologous or allograft osteochondral transplant bone transfer. To this date, no case reports have been published on patients with over one year follow-up who kept the intact cartilage on the talar dome and utilizing a backfill technique for treatment of osteochondral cysts in the talus.

PRE-OPERATIVE PLANNING



Image 1: MRI of a patient with the T1 and T2 sagittal and coronal images depicting a central medial osteochondral cyst of the talus with an intact cartilage

PROCEDURE

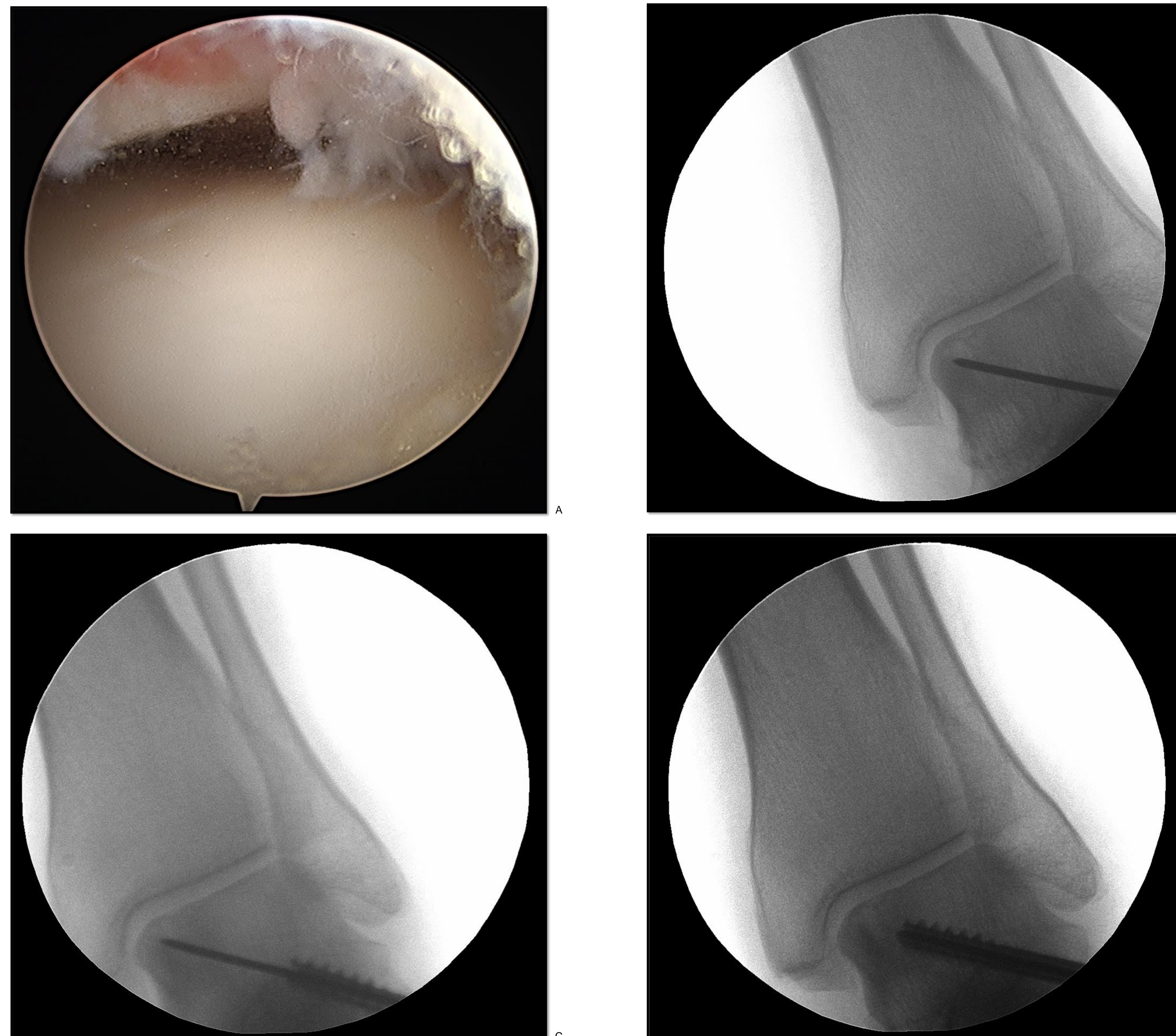


Image 2: A) Intra-operatively the talar cartilage overlying the osteochondral cyst appear intact B) A guidewire for a 4.5 or 6.7 mm screw is triangulated to the lesion utilizing fluoroscopic imaging C) The site is drilled for a 6.7 mm cannulated screw D) Screw is inserted and the guidewire is removed in order to introduce the injectable demineralized bone matrix through the screw using a large gauge spinal needle or angiocatheter.

PROCEDURE

Patients who suffered from ankle pain for a minimum of 6 months following an ankle injury underwent MRI. When an osteochondral cyst or defect within the talus was identified and conservative treatment failed, the patient underwent arthroscopic evaluation with the option for microfracture or backfilling of the defect. Intra-operatively, if the cartilage appeared adhered to the talar surface and was firm with palpation utilizing a probe, the patient would undergo the backfill procedure. If the cartilage was soft and peeling away from the subchondral plate, the patient would undergo a microfracture of the subchondral plate. Once the decision to backfill the cyst was determined, a guide-wire for a cannulated 4.5 / 6.7 mm screw was directed to the cyst under direct fluoroscopic visualization. Once the lesion was triangulated, the drill was advanced to the level of the cyst. Under fluoroscopic imaging, a 6.7 mm screw was inserted to the level of the cyst. Injectable bone substitute was injected through the cannulated screw to level of the cyst utilizing a spinal needle or angiocatheter. The bone substitute was injected as the screw was removed to fill the void of the screw as demonstrated by Image 2.

RESULTS

All patients experienced pain relief. All patients are over one year out from surgery and no patient has required an ancillary ankle procedure.

DISCUSSION

The major benefit of the backfill technique is the preservation of native articular cartilage on the talus and tibia as compared to retrograde drilling or microfracture techniques with the goals of decreased pain and increased function of the ankle joint. Other backfilling procedures have recommended the removal of the cartilage, however, in order to fill the cyst, the subchondral plate must remain intact and patients are left without any cartilage or fibrocartilage. Limitations of this case study would include the small sample size. Additionally, a longer term follow-up would be beneficial to evaluate the longevity of the procedure.

REFERENCES

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