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Statement of Purpose

HEALTH SYSTEM®

Displaced, intra-articular, calcaneal fracture (DIACF) with an underlying talo-calcaneal coalition is a rare condition with only two isolated case reports identified. We present a case of a middle-aged woman who sustained DIACF following a fall from height with concomitant mature fibrous talo-calcaneal middle facet subtalar joint coalition. The purpose of this case study is to provide insight into the treatment decision making along with the short-term outcome of this rarely described condition.

Literature Review

After an extensive literature search only two other reports of calcaneal fractures with associated coalitions were identified. The first case involved a pediatric patient who sustained a calcaneal fracture after a fall with a mature talo-calcaneal middle facet coalition. This patient ultimately underwent an open reduction and internal fixation for his DIACF¹. At 4-years post-operative the patient had returned to full activities including cross country running, and radiographs confirmed maintenance of the reduction¹. The other case report involved an adult patient who also sustained a DIACF after a fall. Upon work up, a fibrous talo-calcaneal middle facet coalition was noted along with degenerative changes to the subtalar joint. The patient ultimately underwent an open reduction and internal fixation with primary subtalar joint arthrodesis². At 3-years post-operative the patient related only minimal discomfort to his heel and was able to return to full time work as a handy man.

Case Study

A 56-year old woman without medical comorbidities sustained a fall from a 12-foot height off of a ladder, sustaining a DIACF to her right foot. Initial radiographs showed a calcaneal fracture with depression of Böhlers angle (Figure 1). A non-contrast computerized tomography scan demonstrated a highly comminuted fracture of the calcaneal body with relative preservation of her subtalar joint posterior facet, along with a fibrous talo-calcaneal middle facet coalition (Figure 2). She developed extensive fracture blistering of her soft-tissues (Figure 3) requiring external fixation to reduce tension on the posterior heel soft-tissues and maintain the correct calcaneal morphology (Figure 4). The fracture blisters resolved approximately 4-weeks later, and the patient underwent open reduction and internal fixation with cancellous allograft impaction of the osseous defect all through a lateral extensile approach (Figures 5 & 6). The post-operative course was uneventful with the patient ultimately returning to full activities. She did experience common sequelae following a calcaneal fracture including, mild to moderate pain, stiffness, and swelling to her rearfoot. Böhlers angle increased 26 degrees from (-) 3 degrees pre-operative to 23 degrees post-operative. The patient's contralateral foot also demonstrated a fibrous talo-calcaneal coalition and a Böhlers angle of 23 degrees.

A Rare Case of a Displaced Intra-articular Calcaneal Fracture with Fibrous Talocalcaneal Coalition Treated with Open Reduction, Internal Fixation and Bone Grafting

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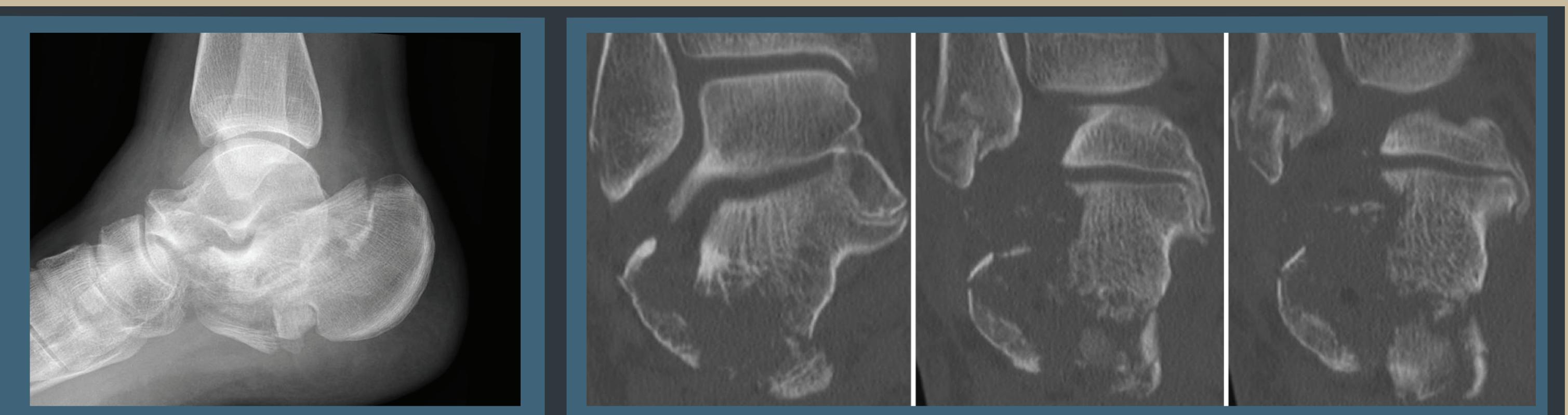


Figure 1: Pre-operative radiographs showing calcaneal fracture



Figure 3. Fracture blisters on initial evaluation

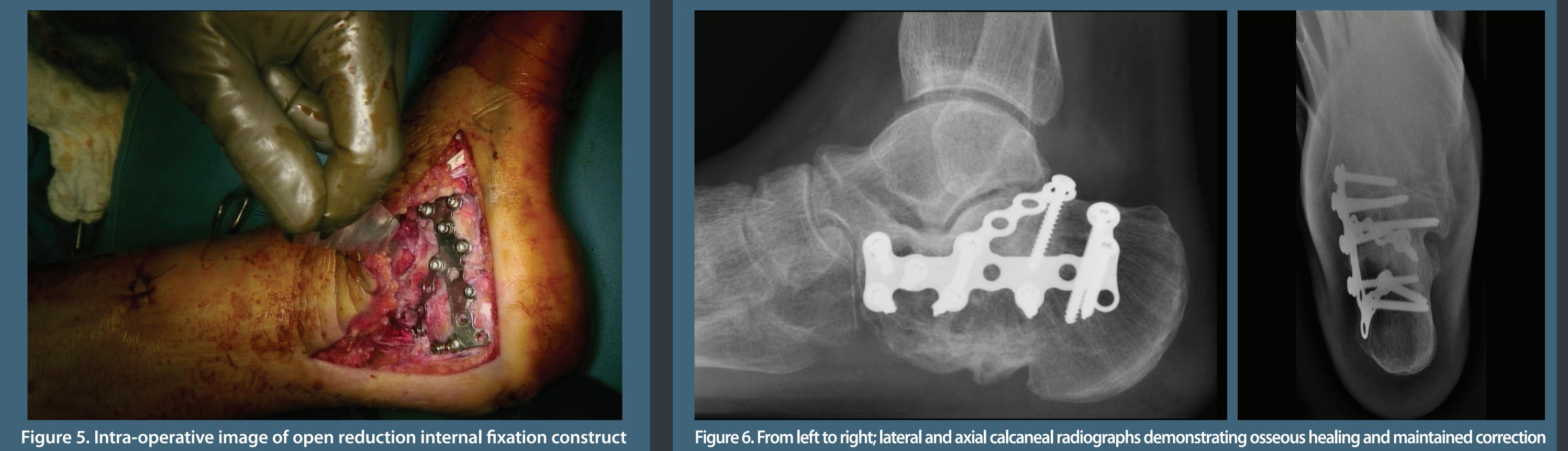
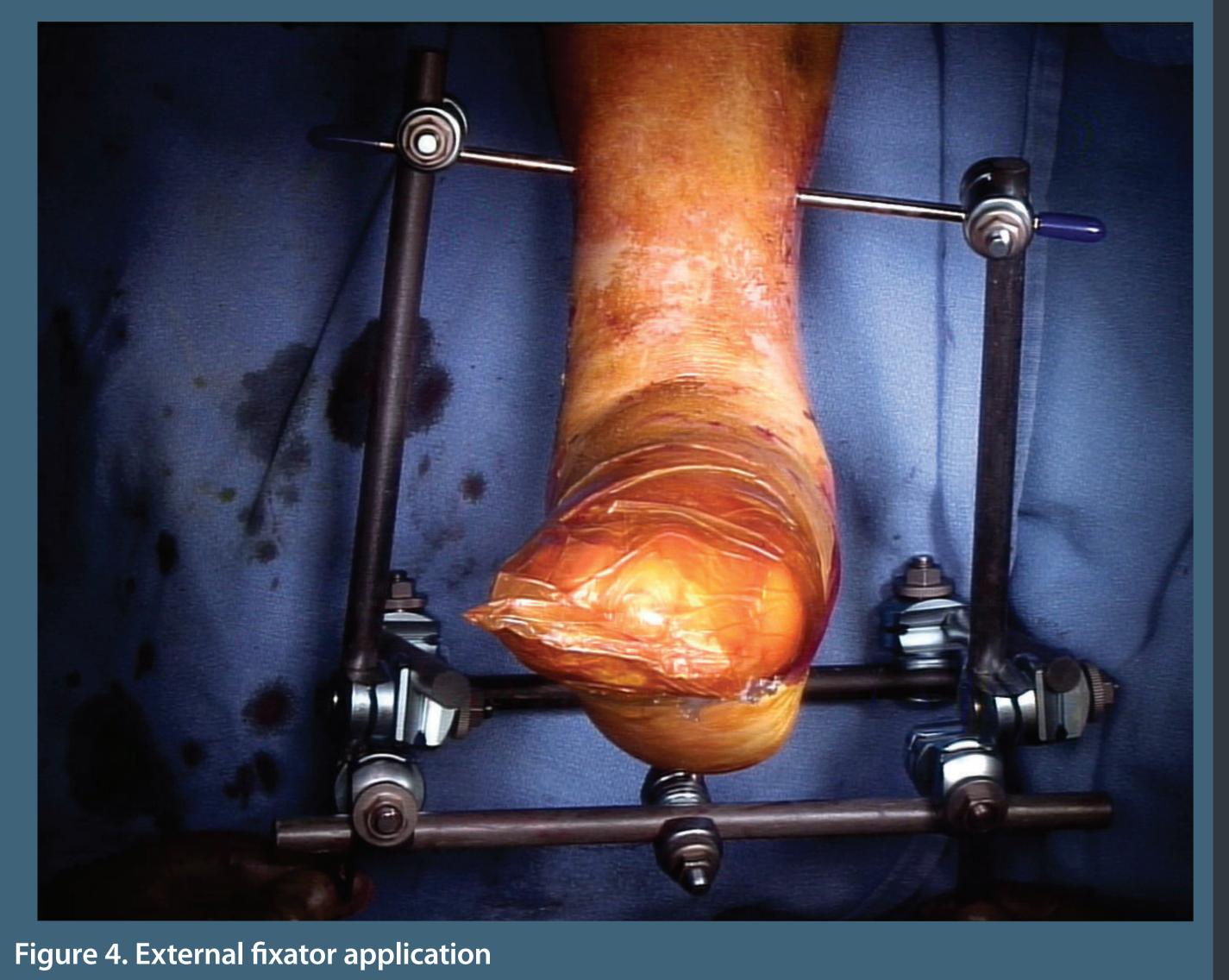


Figure 2: Pre-operative computerized tomography scan showing calcaneal fracture and talo-calcaneal joint middle facet coalition





Analysis and Discussion

Controversy persists regarding the best treatment for DIACF³. However, highly comminuted severe "explosion-type" injuries of the calcaneal body associated with a compromised soft-tissue envelope are most commonly treated with provisional external fixation, wound care management and delayed open reduction with internal fixation with or without bone grafting³. Due to the rarity of DIACF associated with concomitant talo-calcaneal coalition we elected to follow this same care plan. Due to the limited involvement of the subtalar joint posterior articular facet, subtalar joint arthrodesis was not performed therefore, preserving the vascular supply by avoiding the additional dissection required for a primary subtalar joint arthrodesis. The only other potential treatment described in the literature would be open reduction and internal fixation with resection of the coalition¹. This option was not considered a viable one by the authors as the patient had no pre-existing symptoms associated with the talo-calcaneal middle facet coalition. The patient's soft-tissues were healed using the delayed repair technique described. The patient's calcaneal morphology was restored with Böhlers angle restored to match the contralateral side. The patient achieved acceptable function at 12-months post-operative. While the short-term results are promising, long term surveillance will provide additional insight into the efficacy of the above approach.

References

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