

CASE REPORT

Fracture Neck of Talus: Intervene Early and Avoid Complications

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ABSTRACT

Fracture talus is an uncommon fracture with incidence of less than 1% of all fractures. Here, I describe a case of closed talar neck fracture Hawkins type II with comminution in a 25-year-old male following a road traffic accident. Patient presented to the emergency 1 hour after injury. X-ray and computed tomography (CT) scan revealed talar neck fracture with subtalar joint dislocation. Patient was operated within 5 hours of trauma. The patient underwent open reduction and internal fixation with medial malleolus osteotomy with 4 mm partially threaded cannulated cancellous screws. In the postoperative period, the patient was given below-knee slab for 2 weeks. The patient was kept nonweight-bearing for 6 weeks followed by partial weight-bearing for 6 weeks followed by full weight-bearing mobilization with gradual return to full activity. At 6 months follow-up, the patient had no complaints and functional range of motion of ankle and subtalar joint was maintained. On radiological examination, fracture had united with subchondral lucency (Hawkin's sign) under talar dome, suggestive of intact vascularity. Fracture talar neck fixed within 6 hours can preserve vascularity and possibly avoid avascular necrosis (AVN). Complications like malunion and arthritis can be avoided by open reduction and internal fixation with acceptable anatomic reduction.

Keywords: Avascular necrosis of talus, Talus fixation, Talus fracture.

How to cite this article: Shah KA. Fracture Neck of Talus: Intervene Early and Avoid Complications. *Int J Educ Res Health Sci* 2018;1(3):113-115.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Talus fracture is uncommon with incidence of less than 1% of all fractures.¹ Fracture neck of talus is most common among the parts of talus. Males are affected more commonly. The osteonecrosis rate in talar neck fractures ranges from 21 to 58%, while in the talar body, 88% of patients present osteonecrosis and/or posttraumatic arthritis.¹

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CASE REPORT

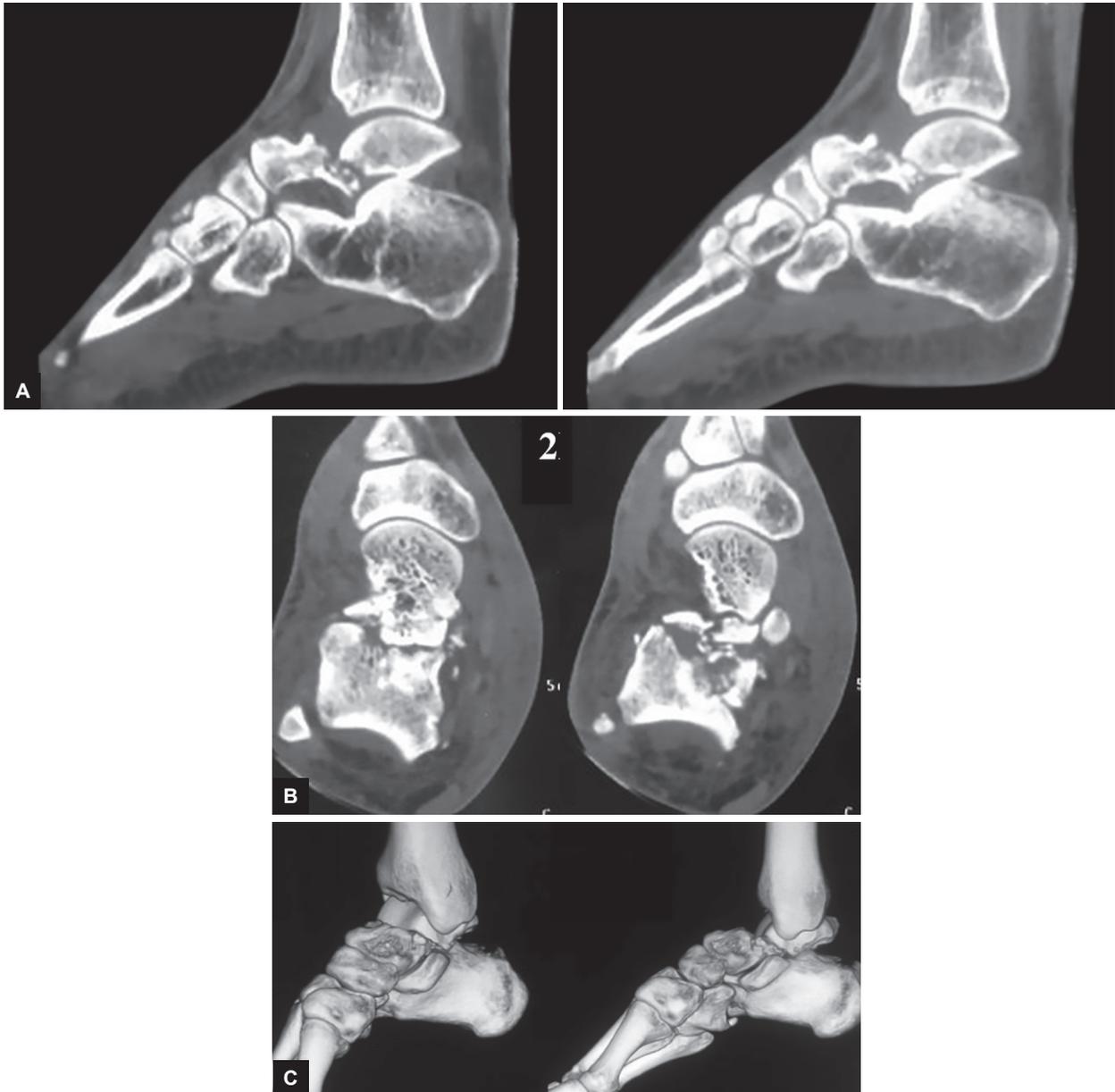
A 25-year-old male presented to the emergency department with pain and swelling in right ankle and inability to bear weight following a road traffic accident. Time of arrival from the incident was 1 hour. Initial physical examination was suggestive of tenderness over antero-medial aspect of ankle, crepitus, and painful movements.

Standard radiographs revealed neck of talus fracture (Hawkin's type II) with comminution at fracture site (Fig. 1). Computed tomography scan showed fracture in coronal plane with subtalar joint dislocation. It also showed comminution at fracture site. Tibiotalar joint and talonavicular joint were normal (Fig. 2). Patient had no distal neurovascular deficit.

Patient was taken up for operative fixation in the emergency operation theater within 5 hours of trauma. Medial incision was taken followed by Chevron-type medial malleolar osteotomy. Reduction was achieved with smooth Kirschner wires and fixed with 4 mm partially threaded cannulated cancellous titanium screws. Anatomical reduction was confirmed clinically as well as on fluoroscopy. Medial malleolus was fixed with two Kirschner wires and tension band wiring (Fig. 3). Closure was done with absorbable suture and skin staplers. In the postoperative period, patient had no distal neurovascular deficit (Fig. 4). Below-knee plaster splint was given for 2 weeks until suture removal. Ankle range of motion exercises were started after 2 weeks and patient was kept

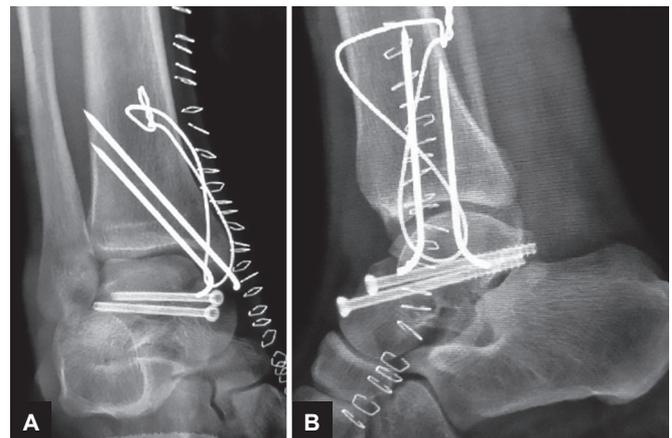


Figs 1A and B: Initial radiographs of the patient showing fracture neck of talus. (A) Lateral view of ankle and (B) oblique view of foot



Figs 2A to C: Computed tomography of ankle: (A) Preoperative sagittal; (B) axial and (C) cuts and three-dimensional reconstruction images

nonweight-bearing for 4 more weeks. After completing 6 weeks of postoperative period, patient was started on partial weight-bearing for 6 more weeks. Radiographs, anteroposterior and lateral views, were taken at 6 and 12 weeks which showed union at medial malleolus osteotomy site. Full weight-bearing mobilization was started 12 weeks postoperative. On follow-up at 6 months, radiolucent line was seen along the talar dome (Hawkin's line) suggestive of intact perfusion. No evidence of sclerotic bone was seen on X-ray (Fig. 5). Clinically, patient had no pain on daily routine activities and the range of motion was mildly decreased in plantar flexion. According to American Orthopedic Foot and Ankle Society scores, ankle hind-foot score was 80/100. Patient was asked to resume his duties at workplace 6 months postinjury.



Figs 3A and B: Immediate postoperative X-rays. (A) Mortise view of ankle showing screws, Kirschner wire, and tension band wiring. (B) Lateral view of ankle



Fig. 4: Postsuture removal with no wound complications

DISCUSSION

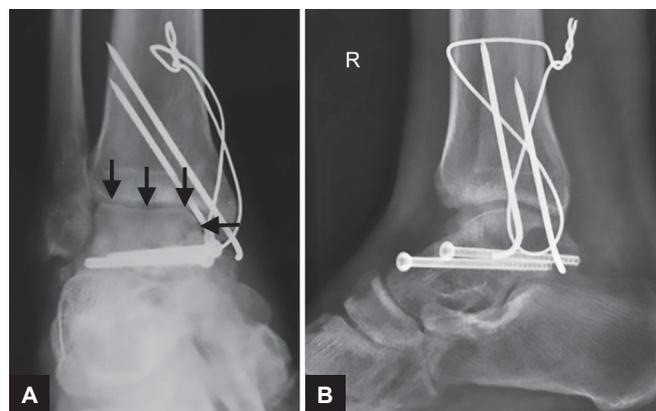
Fractures of talus are rare, 1% of all fractures² and 2% of all foot fractures.³ They are associated with a high incidence of AVN, osteoarthritis, and malunion.⁴ Avascular necrosis of the talus has always been a surgical challenge because the talus is hidden by its anatomic location and has a precarious blood supply.

Adelaar and Madrian⁵ reported that most cases (75%) of AVN of talus are traumatic and associated with talar body and neck fractures. The AVN of the talus can be a significant problem because collapse of the talar dome leads to degenerative changes, which leads to pain and disability of the ankle and subtalar joints.

Hawkins⁶ reported the incidence of AVN as 91% for type III injuries. When AVN occurs in talar neck fractures, the body of talus becomes sclerotic and then collapses. The other most common complication is post-traumatic arthritis, which occurs secondary to initial trauma causing cartilage damage, AVN, and nonanatomical reduction. In this case report, on radiological examination, no sclerosis of body or collapse of dome of talus was seen and anatomic reduction was confirmed intraoperatively.

Displaced fractures are associated with an exceedingly high rate of AVN. The incidence of AVN following Hawkins' type III fractures of the talar neck may approach 100%, particularly if diagnosis and reduction are delayed.³

Hawkins sign is a reliable predictor excluding the possibility of AVN, which was present in this case report. Chen et al⁷ reported that Hawkins' sign was seen in 50, 30, and 33.3%, and the incidence of AVN was 0, 10, and 50% respectively, in types I, II, and (types III and IV) talus fractures.



Figs 5A and B: Six months postoperative X-rays showing "Hawkin's line" (black arrows). (A) Mortise view of ankle and (B) lateral view of ankle

CONCLUSION

Early surgical intervention in talus neck fractures can decrease the chances of AVN of talus. With open reduction and internal fixation with parallel screws (antegrade or retrograde), we can achieve anatomic reduction and thus increasing union rate and decreasing rate of malunion and posttraumatic arthritis. Early nonweight mobilization and active and passive range of motion at ankle joint starting at 2 weeks avoid complications like stiffness of tibiotalar and subtalar joint, thus giving favorable ankle hindfoot scores.

Early detection of subchondral atrophy at dome of talus (Hawkin's sign) can predict viable vascularity of talus.

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