

Pediatric Talus Fracture - A Rare Condition

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Abstract: Talus fractures are rare in the Pediatric age group as compared to adults. The injury occurs either from motor vehicle accidents or fall from height where there is a forced dorsiflexion of the ankle. The authors present here one such rare case of talar neck fracture with distal fibula fracture in a 9 year old boy, which was treated with percutaneous corticocancellous screws. On regular follow up the fracture was found to be healed completely.

Keywords: Talus, Distal Fibula, Corticocancellous screws, Hawkins, Pediatric

1. Introduction

Fractures of the talus are rare injuries with an estimated prevalence of 0.008% of all childhood fractures compared with 0.3% in adults.¹ It is thought that the pediatric foot is flexible and skeletally immature bone less brittle, with higher elastic resistance than adult bone, thus the pediatric talus bone can sustain higher forces before fractures occurs.^{2,3} The talar neck is the most common fracture, followed by talar body.

2. Case Presentation

A 9-year-old boy was brought to emergency department following a fall from six to eight feet height. He was unable to weightbear on her right foot and his anterior ankle region was swollen, with no open wounds or abrasions. He had no other injury and no medical and surgical history. Following triage, he was sent for mortise and lateral radiographs of his ankle.

3. Investigations

His radiographs revealed the right neck of talus, Hawkins Type 1 with no displacement of the fracture or subtalar dislocation.(Figure 1) and undisplaced fracture of distal fibula



Figure 1: showing the talar neck fracture

4. Treatment

Initial treatment involved a plaster of paris backslab with ankle in neutral position. His right leg was elevated on pillows and treated with ice to alleviate swelling. The fracture of the neck of talus was fixed with two

percutaneous corticocancellous screws under C-arm guidance (Figure2).

Fibula fracture was managed conservatively with below knee cast.



Figure 2: showing immediate post operative image

Post Operative Protocol and follow up

The patient was advised non-weight bearing in a below knee cast for 6 weeks and advised to attend for regular follow-ups (Figure 3). The patient is to be followed up for the period of two years following union to assess for avascular necrosis of the talus.



Figure 3: Shows 6 weeks follow up and fracture union

5. Discussion

In 1919, Anderson described talus fractures as 'aviator's astragalus' and identified the dorsiflexion mechanism of injury.⁴ Research focusing on pediatric talar fractures identified road traffic accidents and falls from a height as the most frequent injury mechanisms.^{3,5} Smith *et al*⁶ studied 29 children with talus fractures sustained at an average of 13.5 years. They reported that displaced pediatric talus fractures and those associated with high-energy trauma resulted in more complications including avascular necrosis (7%), arthrosis (17%), delayed union (3%), neuropraxia (7%) and the need for further surgery (10%). They also found that talus fractures were more common and occurred with more severity among older boys.⁶ These findings were supported by Eberlet *et al*³ in their comparison of children and adolescents sustaining talus fractures. Furthermore they observed no persistent osteonecrosis in patients younger than 12 years, and reported favourable outcomes in the majority of cases irrespective of the mode of treatment.³ Jensen *et al*² reported an excellent long term prognosis of minimally displaced and undisplaced fractures

of talus in the pediatric population. Avascular necrosis of the body of the talus has been reported in children after minimally displaced fractures⁷ but usually occurs following fracture-dislocations of the talus.^{2,7,8} Definitive guidelines for the treatment and incidence of avascular necrosis following talar fractures are yet to be elucidated. However, awareness of this rare fracture helps in early identification of injured children and also helps to carry out treatment with clinical and radiological follow-up, assessing avascular necrosis.

6. Summary

Pediatric talus fractures are rare injuries resulting from axial loading of the talus against the anterior tibia with the foot in dorsiflexion. Skeletally immature bone is less brittle, with higher elastic resistance than adult bone, thus the pediatric talus can sustain higher forces before fracture occurs. However, displaced pediatric talus fractures and those associated with high-energy trauma have been associated with complications including avascular necrosis, arthrosis, delayed union, neuropraxia and the need for revision surgery. The authors present the rare case of a talar neck fracture with distal fibula fracture in a skeletally immature young boy, managed with closed reduction and internal fixation with corticocancellous screws for talus and conservative management of fibula in a plaster cast.

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