



Neglected Talar Fracture Dislocations –Case Series

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I. INTRODUCTION

Among all the fractures Talus fracture constitutes less than 1% and talar neck fractures are the commonest among them [1] comprising between 3% and 6%. Because of the large weight bearing surface and the complex vascularisation the accurate treatment of fractures becomes crucial. Talar fractures are notorious for morbidity, as they are prone for avascular necrosis, arthritis and non-union. This series includes the treatment and outcome of four patients with neglected talar fractures. Further, guidelines for treatment and follow up on this rare type of fractures are discussed.

II. CASE PROFILES:

Patient 1:

A 58yr old lady presented with complaints of left ankle pain for the past 4 years. She has history of indirect trauma to ankle following a fall, had native bandaging. She had complaints of swelling and difficulty in walking due to the pain. She had no known comorbidities.

Diagnosis: LEFT SUBTALAR ATHRITIS – POST TRAUMATIC SEQUAE

Treatment: LEFT SUBTALAR AND TALONAVICULAR FUSION

On her latest follow up after 5years she had no pain or stiffness of foot. Her activities of daily living have significantly improved.(Figure 01 a & b)



Case 2:

30-year-old gentleman presented with complaints of pain and purulent discharge from the left ankle for 8 months.

He sustained injury when a side wall collapsed and fell on his leg while he was sitting in a construction site. He sustained a left medial condyle femur fracture and left open talus fracture dislocation. He underwent open reduction and internal fixation for the same. The left medial condylar fracture was managed non-operatively;

subsequently he underwent a local flap cover of the ankle wound. He developed ankle pain and blood tinged pus discharge from the surgical site and presented to us for further management. He had no known comorbidities.

Diagnosis: LEFT TALAR OSTEOMYELITIS - POST TRAUMATIC SEQUAE(Figure 02 a & b)

Treatment:1st Stage:Left Talus debridement and cement spacer (Figure 03 a & b)

Patient 2-Preop xray:



Patient 2-Postop xray:



On follow up he had severe pain on weight bearing. There were no clinical, radiological & laboratorial findings suggestive of active infection.

So 2nd Stage Left ankle spacer exit and arthrodesis with hind foot nailing was done. (Figure 04 a & b)



Patient 2-Post op xray after 2nd stage:



On follow up:He presented with purulent discharge from his foot wound so Nail Exit and Sinus tract excision were done. Pus culture grew coagulase negative staphylococcus aureus which was treated with appropriate sensitiveIntravenous

Antibiotics suppression therapy for 6 weeks. The infection had eventually settled and at 6 years follow-up patient was able to ambulate with the support of a walking aid.(Figure 05 a & b)

Patient 2-Recent follow-up(6yr) xray:



Patient 3:

A 26-year-old gentleman presented with pain and deformity of his Left ankle.He had an alleged road traffic accident while riding a two wheeler he skid and fell, sustaining a closed injury

to the right foot. He underwent native splinting for the same, following which he has been having pain and deformity of his left ankle. He is known Patient of idiopathic seizures on regular medication.



Diagnosis: LEFT TALUS NEGLECTED
FRACTURE DISLOCATION(Figure 06 a & b)

Treatment done: LEFT TIBIO TALO
CALCANEAL ARTHRODESIS (Figure 07 a & b)

Patient 3-pre op xray:



Patient 3-Post op x ray:



On follow up: Patient was able to ambulate unaided with occasional pain on exaggeration at the end of 5 years.(Figure 08 a & b)

Patient 3-Final follow up(5yr) xray:





Patient-4:

41-year-old gentleman presented with complaints of pain in the right ankle. He had an alleged history of a road traffic accident when a two wheeler hit against his right ankle 4 months back. He was treated with native splinting for 45 days. He progressively developed valgus deformity of the right ankle. He had dull aching pain localised to the

right ankle increased on exertion and relieved by rest. He also has stiffness of the right ankle for past 3 months

Diagnosis: RIGHT TALUS FRACTURE NON UNION (Figure 09 a & b)

Treatment done: 1st Stage: OPEN REDUCTION AND TEMPORARY ANKLE SPANNING EXTERNAL FIXATION. (Figure 10 a & b)

Patient 4-Preop xray:



Patient 4-Postop xray:



On follow up: He complained of constant pain and was found to be developing Ankle arthritis.

Treatment done: RIGHT ANKLE ARTHRODESIS WITH EXTERNAL FIXATOR (Figure 11 a & b)
1st follow up admission post op xray



Recent follow up Patient-4 xray:



Recent follow up: His pain decreased considerably, but foot stiffness persisted. The hind foot varus deformity was corrected. He had no infection.

III. BACKGROUND:

Anatomy:The high risk of avascular necrosis and arthritis of the talus due to the precarious blood supply and the vast articulating surface of the bone. The extra osseous vascularisation consists of three arteries:

- i. The posterior tibial artery, which provides blood flow to the deltoid artery and the tarsal tunnel;
- ii. The anterior tibial artery providing the lateral tarsal artery and;
- iii. The perforating peroneal arteries providing the tarsal sinus artery.

These three arteries form multiple anastomoses that perfuse the talar neck from the tarsal sinus (2).

Mechanism of injury:Common mechanism of injury is sudden dorsiflexion on a fully plantar-flexed foot. Imparting a compressive force through the talar head resulting in compression of the talar head against the anterior tibial edge(3,4).

Pathogenesis of avascular necrosis:In a talar fracture especially with dislocation, the blood supply from the talar neck to the talar body gets interrupted. In such instances the body is perfused only by the deltoid artery, enhancing the risk of avascular necrosis(3,4)

Classifications of talar fractures:Most commonly used classification is Hawkins classification(6). The modified Hawkins classification considers,



beside the grade of fracture dislocation, the severity of vascular damage as well. Hawkins sign is the appearance of subchondral lucency at 6–8 weeks after injury (only on the AP X-ray), indicating that the talus is well vascularized. (5,6). On the contrary, if it is absent at this time then it indicates presence of osteonecrosis. Persisting pain is a frequent recurring complaint.

Complications of talar fractures: Avascular necrosis is the most common complication in isolation and associated always with arthritis. Infection in the form of chronic osteomyelitis, Non unions and Malunions (5,6) are the other complications. Arthritis often occurs, especially in Hawkins III or IV fractures after 5 to 10 years (5,6). The subtalar joint is the most frequently affected joint followed by tibiocalcaneal joint and talonavicular joint. Arthritis is most often treated by subtalar arthrodesis followed by tibiotalar arthrodesis and triple arthrodesis.

Despite the evolution of diagnostic techniques and the improvement surgical techniques described for safe dissection and the safety of different surgical procedures achieved in recent years, complications remain high. The avascular necrosis rate in talar neck and body fractures is between 12% to 53%.

Follow up: During follow up we should always keep in mind the possibility of avascular necrosis. Signs of revascularisation can be seen on ankle radiographs 6 to 12 weeks after trauma. The Hawkins sign describes subchondral lucency of the talar dome that occurs secondary to subchondral atrophy due to inactivity 6 to 8 weeks after a talar neck fracture (5,6). It is indicative of sufficient vascularity in talus and it is unlikely to develop an avascular necrosis later. (5,6). In case of combined non-union of the fracture and persisting pain, further investigation in the form of MRI should be performed to confirm avascular necrosis. Avascular necrosis of the talar bone alone is not an indication for re-surgery, only in case of persisting pain and disability re-surgery is indicated (7).

IV. DISCUSSION:

Talar fractures are rare and have a high risk of avascular necrosis depending on the severity of the injury and failure to reduce it. (5,6) The risk of developing avascular necrosis depends on the initial trauma with associated vascular damage. (6) It is rarely possible to perform a closed reduction in dislocated talar neck fractures due to interposition of soft tissue (usually the flexor hallucis longus). In case of failed closed reduction, immediate open reduction of dislocated talar neck fractures is essential to minimize the vascular compromise.

Arthritis and avascular necrosis occur frequently after severely dislocated fractures causing high morbidity. Infection also plays a big role in morbidity.

V. CONCLUSION:

This case series is aimed to provide a literature overview of acute talar fracture and dislocation. The 4 illustrated cases of talar fractures with their respective outcome, highlight the consequences of not treating the talar fractures appropriately in the acute setting. The natural history of neglected Talar fracture dislocations is eventual ankle fusion with loss of productive life period, prolonged & painful treatment duration and costs for the patient. Hence talar fracture dislocations should be treated as a surgical emergency for optimal outcome.

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