Assessment of Posteromedial Talus Fractures

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Abstract

Introduction: To assess cases of posteromedial talus fractures. **Subjects and Methods:** Sixty- five patients of posteromedial talus fractures of both genders were enrolled. Mechanism of injury, treatment given and complications was also recorded. **Results:** Out of 65 patients, males were 34 (52.3%) and females were 31 (47.7%). Type of fracture was medial tubercle in 24, postero- medial body fracture in 30 and posterior process in 11 cases. The treatment given was cast in 12, excision in 21 and ORIF in 32 cases. The difference was significant (P< 0.05). Common complications were subtalar arthritis in 4, non- union in 2 and stiffness of ankle joint in 1 case. The difference was significant (P< 0.05). **Conclusion:** Most common type of fracture was medial tubercle, postero- medial body fracture and posterior process fracture. Common complications were subtalar arthritis, non- union and stiffness of ankle joint.

Key Words: subtalar arthritis, talus, clavicle.

INTRODUCTION

The incidence of fractures of the talus ranges from 0.1% to 0.85% of all fractures.[1] Talus fractures most commonly occur when a person falls from a height or sustains some other type of forced dorsiflexion injury to the foot or ankle.[2] The anatomic configuration of the injury is important because of both the function of the talus and its relationship to the tenuous blood supply. The classification of these fractures is based on their anatomic location within the talus (i.e., head, body, or neck). Each type has unique features that affect both diagnosis and treatment.[3]

The talus has no muscle or tendinous attachments and is supported solely by the joint capsules, ligaments, and synovial tissues. Ligaments that provide stability and allow motion bind the talus to the tibia, fibula, calcaneus, and navicular. The tendon of the flexor hallucis longus lies within a groove on the posterior talar tubercle and is held by a retinacular ligament. The spring (calcaneonavicular) ligament lies inferior to the talar head and acts like a sling to suspend the head.[4]

The posterior process of the talus consists of medial and lateral tubercles. The medial tubercle is smaller and is the attachment site for the posterior portion of the deltoid.[5] The lateral tubercle is larger and is the attachment site of the posterior talofibular ligament. Between the two tubercles is the groove for the flexor hallucis longus (FHL) tendon.[6] Fracture patterns of the posteromedial talus vary. Radiographs often underestimate or miss these injuries entirely. Computed tomography (CT) scans are essential in cases where posteromedial talar body fractures are suspected to aid in diagnosis and gain further understanding of fracture complexity.[7] Considering this, we performed this study to assess cases of posteromedial talus fractures.

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MATERIALS AND METHODS

A sum total of sixty- five patients of posteromedial talus fractures of both genders were enrolled after they agreed to participate and gave their written consent. Ethical approval was obtained form institutional review committee.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed. AP and lateral radiographs were taken to assess posteromedial talar body fracture pattern involving both the ankle and subtalar articulations. Mechanism of injury, treatment given and complications was also recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

RESULTS

Table I Patients distribution

Total- 65		
Gender	**Male**	**Female**
Number (%)	34 (52.3%)	31 (47.7%)

Out of 65 patients, males were 34 (52.3%) and females were 31 (47.7%) (Table I).

Table II Assessment of parameters

Parameters	Variables	Number	P value
Type of fracture	Medial tubercle	24	0.05
	Postero- medial body	30	
	Posterior process	11	
Management	Cast	12	0.05
	Excision	21	
	ORIF	32	

Type of fracture was medial tubercle in 24, postero- medial body fracture in 30 and posterior process in 11 cases. The treatment given was cast in 12, excision in 21 and ORIF in 32 cases. The difference was significant (P< 0.05) (Table II).

Table III Assessment of complications

Complications	Number	P value
Subtalar arthritis	4	0.01
Non union	2	
Stiffness of ankle joint	1	

Common complications were subtalar arthritis in 4, non- union in 2 and stiffness of ankle joint in 1 case. The difference was significant (P< 0.05) (Table III).

DISCUSSION

Major fractures and dislocations of the talus and peritalar joints are uncommon. However, fractures of the talus rank second in frequency (after calcaneal fractures) of all tarsal bone injuries.[8] The posterior process of the talus consists of medial and lateral tubercles. The medial tubercle is smaller and is the attachment site for the posterior portion of the deltoid. The lateral tubercle is larger and is the attachment site of the posterior talofibular ligament.[9] Between the two tubercles is the groove for the flexor hallucis longus (FHL) tendon. Fracture patterns of the posteromedial talus vary.[10]

Patients usually present with swelling and pain in the hindfoot area. The posterior talar impingement test is positive, with an increasing pain associated with active movements of the toe flexors or passive extension of the big toe. Plain radiographs of the ankle (anteroposterior, mortise and lateral views) are routinely obtained; however, the radiological features of minimal cortical breach and subtle lucency are not always easily identified.[11] Broden's view may aid in the assessment of subtalar joint involvement. It is taken by internally rotating the foot 45° while the beam is centered on the subtalar joint and angulated cephalad at a range of 10° to 40° from vertical. Computed tomography (CT) scans are essential in cases where posteromedial talar body fractures are suspected to aid in diagnosis and gain further understanding of fracture complexity.[12] We performed this study to assess cases of posteromedial talus fractures.

Out of 65 patients, males were 34 (52.3%) and females were 31 (47.7%). Kinner et al[13] in their study 16 peripheral talar fractures patients were treated operatively and followed for a minimum of 12 months. Clinical and radiological outcome were recorded. Mean follow-up was 16 months. 13 subjects presented with concomitant injuries. 2 patients suffered an additional spine fracture and 4 patients were polytraumatized. No non-union or mal-union were observed. One patient needed subtalar and calcaneo-cuboidal fusion during follow up due to a concomitant calcaneal fracture.

Type of fracture was medial tubercle in 24, postero-medial body fracture in 30 and posterior process in 11 cases. The treatment given was cast in 12, excision in 21 and ORIF in 32 cases. Giuffrida et al[14] in their study reported series of six patients with posteromedial talar body fractures. In their series, all were high-energy injuries, and all were associated with a medial subtalar joint dislocation. Four patients had the initial diagnosis missed. Three patients were treated with closed reduction and casting. Five of six patients revealed persistent subtalar instability. Four required subtalar joint arthrodesis, one required tibiotalar calcaneal arthrodesis. The lone patient who did not require an arthrodesis refused treatment even though an arthrodesis was felt to be necessary. Due to these unacceptably high rates of non-union and complications, surgical treatment is indicated for these injuries.

Common complications were subtalar arthritis in 4, non- union in 2 and stiffness of ankle joint in 1 case. Swords et al[15] in their study ten patients were treated for posteromedial talar body fractures. Mean patient age was 34.8 years. All patients were treated with a posteromedial approach. Surgery occurred at an average of 8.5 days postinjury. Mechanism of injury including five motor vehicle accidents, three occurred from a fall from a height, one injury was the result of the foot being crushed by a log truck and one patient fell while walking. Six patients had a medial subtalar dislocation at presentation, with two being open dislocations. 4/10 patients had other associated foot or ankle injuries including fracture of the cuboid, fracture of the lateral malleolus, navicular avulsion fracture and lateral process talus fracture. Due to the high energy mechanism of injury 5/10 patients had musculoskeletal injuries that were not of the foot or ankle.

Ebraheim et al[16] in their study one patient was treated with excision of a non-union, and the other patient with a non-union refused further surgery. Two patients underwent ORIF through a posteromedial approach. CT scans were useful in defining the fracture in all four patients. Cast treatment was recommended for displaced fractures or fractures without significant subtalar joint involvement. ORIF was recommended for displaced fractures with significant subtalar joint involvement.

CONCLUSION

Most common type of fracture was medial tubercle, postero- medial body fracture and posterior process fracture. Common complications were subtalar arthritis, non- union and stiffness of ankle joint.

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