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Original Research

Evaluation of posteromedial talus fractures- A clinical study

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ABSTRACT:
Background: 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. The present study was conducted to assess cases of posteromedial talus fractures. **Materials & Methods:** 125 patients of posteromedial talus fractures of both genders were enrolled. Mechanism of injury, treatment given and complications was also recorded. **Results:** Out of 125 patients, males were 50 and females were 75. Type of fracture was medial tubercle in 56, postero- medial body fracture in 34 and posterior process in 35 cases. The difference was significant (P< 0.05). Treatment given was cast in 25, excision in 60 and ORIF in 40 cases. Common complications were subtalar arthritis in 6, non- union in 3 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.
Key words: postero- medial body fracture, subtalar arthritis, talus.

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INTRODUCTION

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.[1] The incidence of fractures of the talus ranges from 0.1% to 0.85% of all fractures. 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.[4] 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.[5]

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.[6] Between the two tubercles is the groove for the flexor hallucis longus (FHL) tendon. 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] The present study was conducted to assess cases of posteromedial talus fractures.

MATERIALS & METHODS

The present study comprised of 125 patients of posteromedial talus fractures of both genders. All

were enrolled after they agreed to participate and gave their written consent.
Data such as name, age, gender etc. was recorded. A thorough clinical examination was performed. Radiographs were taken to identify fracture the posteromedial talar body fracture pattern involving both the ankle and subtalar articulations. Mechanism of injury, treatment given and complications was also recorded. Results were analyzed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 125		
Gender	**Males**	**Females**
Number	50	75

Table I shows that out of 125 patients, males were 50 and females were 75.

Table II Type of fracture

Fracture	Number	P value
Medial tubercle	56	0.04
Postero- medial body	34	
Posterior process	35	

Table II shows that type of fracture was medial tubercle in 56, postero- medial body fracture in 34 and posterior process in 35 cases. The difference was significant (P< 0.05).

Graph I Type of fracture

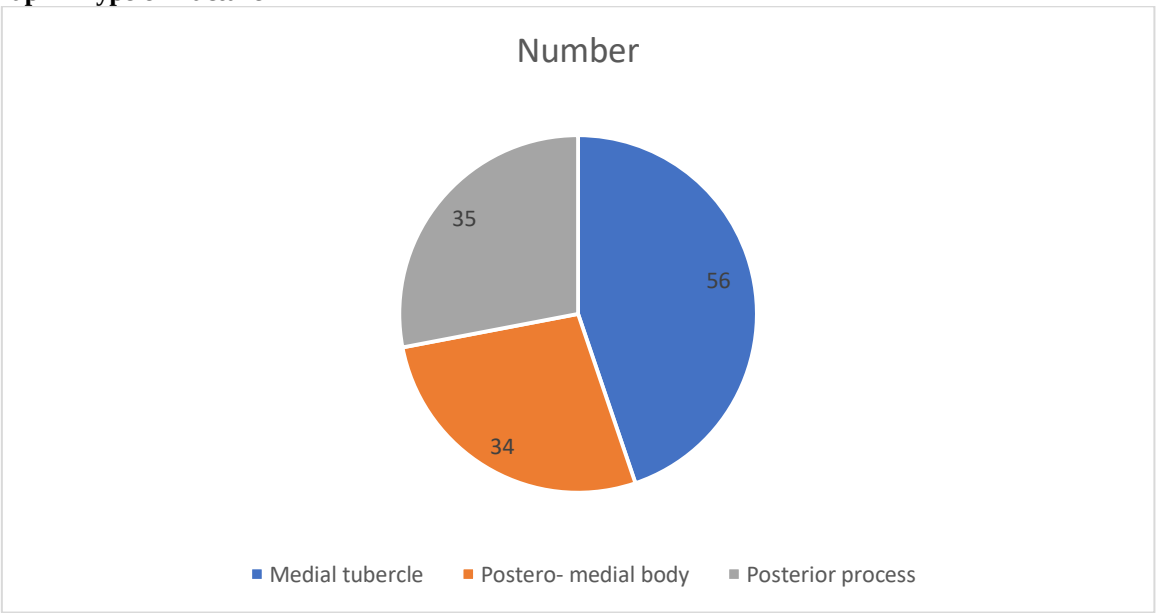

Table III Treatment given to patients

Treatment	Number	P value
Cast	25	0.01
Excision	60	
ORIF	40	

Table III shows that treatment given was cast in 25, excision in 60 and ORIF in 40 cases. The difference was significant (P< 0.05).

Table IV Complications in patients

Complications	Number	P value
Subtalar arthritis	6	0.01
Non union	3	
Stiffness of ankle joint	1	

Table IV shows that common complications were subtalar arthritis in 6, non- union in 3 and stiffness of ankle joint in 1 case. The difference was significant ($P< 0.05$).

DISCUSSION

Peripheral talar fractures comprise fractures of the lateral and posterior process with its lateral and medial tubercle, the medial or medio-caudal ridge, the talar head as well as traumatic osteochondral lesions of the lateral and medial talar dome.[8] They are a heterogeneous entity of injuries in terms of mechanism, pathology, treatment and outcome.[9] However, they share some common traits, for which reason they are analysed together: they are rare, easily overlooked, and show poor results if neglected.[10] Peripheral talar fractures are more common than central body fractures of the talus or talar neck fractures. The incidence of peripheral talar fractures has traditionally been estimated with 0.3 to 1% of all ankle injuries. However, a recent radiological evaluation of 132 talar fractures showed that 18% of all talar fractures involved the lateral process and 16% involved the posterior process.[11] The present study was conducted to assess cases of posteromedial talus fractures.

In present study, out of 125 patients, males were 50 and females were 75. We observed that type of fracture was medial tubercle in 56, postero- medial body fracture in 34 and posterior process in 35 cases. Swords et al[12] in their study ten patients were treated for posteromedial talar body fractures. All fractures were intraarticular at both the ankle and subtalar articulations. All fractures were diagnosed at presentation. 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. Follow up averaged 4.8 years (range 1–10 years). Subtalar motion was 40% of the contralateral foot. Ankle range of motion averaged 80% of the contralateral ankle. The range of motion tended to be worse in cases with associated dislocation. Two patients, both with associated medial subtalar dislocations, had medial calcaneal nerve paresthesias at the initial examination with 1 fully resolved at the last follow up. No patients reported any symptoms associated with the FHL. Two secondary procedures were performed. One patient had an ankle cheilectomy performed, and 1 patient underwent a gastrocnemius recession. Most importantly, no arthrodesis procedures were necessary in this patient series.

We observed that treatment given was cast in 25, excision in 60 and ORIF in 40 cases. Common complications were subtalar arthritis in 6, non- union in 3 and stiffness of ankle joint in 1 case. Giuffrida et al[13] in their study reported on a 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.

Kinner et al[14] reported the clinical and radiological outcome after surgical treatment. 16 peripheral talar fractures could be included in this retrospective case series. All 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 fractures, 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. Other secondary procedures like implant removal were necessary in 5/16 subjects. During the last follow-up the recorded AOFAS score (mean ± SD) was 87.3 ± 6.6 and the EQ5-D (mean ± SD) 0.91 ± 0.06.

CONCLUSION

Authors found that most common type of fracture was medial tubercle, postero- medial body fracture and posterior process fracture.

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