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RESEARCH ARTICLE
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EPIDEMIOLOGY OF TALUS FRACTURES IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To evaluate the characteristics of patients and their injuries, among those admitted to hospital for treatment of talus fractures between 2023 and 2025, at a tertiary care government hospital in North India.

Material and Methods: Retrospective Analysis of Medical Records of patients diagnosed with talar fractures and treated in department of Orthopaedics at a tertiary care government hospital in North India between June 2023 and May 2025. All patients with suspected talus fractures or with actual radiographic diagnosis of talus fractures underwent routine computed tomography. After a detailed review of the CT scans of the foot and ankle, twenty-nine acute fractures of the talus were identified. The analyzed parameters were: age, gender, injury mechanism (fall from height, motorcycle accident, car accident, bullet injury, sports injury and others), laterality of fracture, type of fracture, associated trauma (musculoskeletal, craniocerebral trauma, thoracic trauma, abdominal trauma, etc.), other associated fractures, time between trauma and definitive surgical intervention, length of hospital stay.

Results: Analysis on 29 cases showed that men were more affected than women, with a ratio of 4.8:1. The most frequent trauma mechanism was fall from height, followed by motor vehicle accident. The most frequent type of fracture was at the neck of the talus, with 14 cases. Among the 29 cases, 3 had talus related dislocations at the time of presentation, thirteen had exposed fractures and 13 presented other associated fractures. The mean length of time between the trauma and the definitive treatment was 4.5 days, while the mean length of hospital stay was 17.5 days.

Conclusion: Young males who experienced high-energy trauma most frequently developed talus fractures, which were most common in the talar neck region. There were additional fractures seen in nearly half of the cases. On an average 17.5 days were spent in the hospital.

INTRODUCTION

Talus bone injury is usually caused by high energy trauma and presents a therapeutic challenge even for an experienced orthopaedic surgeon.(1) Talus fractures are rare and account for 1% of all fractures and about 3-6% of foot fractures.(2) Surgical techniques, synthetic materials, and the state of knowledge regarding the biology of bone repair and the vascular supply of the talus have all advanced significantly over the past few decades, changing the landscape of this type of fracture.(3) Talar head

fractures can occur on the medial aspect along the actual talonavicular joint, they result from compressive loads applied axially by either the sustentaculum of the calcaneus or the navicular bone, various researchers believe that dorsiflexion and inversion of the foot are the injury mechanisms that produce the fracture pattern. This loading can result in two different fracture patterns, crush injuries to the articular surface with significant crushing, or shear fractures.(4) Talar neck fractures are classified according to the Hawkins classification as non-displaced (Type I), talar neck fracture with mild displacement subluxing subtalar joint (type II), talar neck fracture with moderate displacement subluxing of subtalar and ankle joint (type III), talar neck fracture with severe displacement subluxing of subtalar, ankle and talonavicular joint (type IV).(5) Talar body fractures are classified in several ways. The Sneppen's classification consists of six types. Type A, compression, or osteochondral dome fracture. Type B, coronal shear fracture. Type C, sagittal shear fracture. Type D, posterior tuberous fracture. Type E, lateral tuberous fracture. Type F, crushed or comminuted fracture of the talus. (6) Diagnosis is initially made by radiographic evaluation including ankle series (anteroposterior, lateral, and mortise) and foot series (anteroposterior, lateral, and oblique). The Canale Kelly view (7) allows a clear visualization of the talus neck. In addition, true lateral views of the subtalar joint and oblique views of the talus provide additional information about the fracture. (8) Computed tomography plays an important role in diagnosing talus fractures and aids in surgical planning because it can detect fractures that are difficult to see on conventional radiographs and clearly display the articular joints of the talus. (9) There are few studies in the national literature reporting epidemiological data on talus fractures. Sakaki et al. (3). A study of 23 cases found that men were affected at a rate of 4.8 more than women. The most common injury mechanism was a road accident followed by a fall from height. The most common type of fracture was the talus neck fracture, with 17 cases. Of the 23 cases, 7 were dislocations around the talus, 4 were open fractures, and 11 were other related fractures. The median time from trauma to final treatment was 6 days, and the median length of hospital stay was 11 days. Fonseca Filho et al. (10) studied 52 talus fractures from February 1972 to March 1995. They concluded that talus fractures occur most frequently in young adult males, are usually closed and unilateral, and occur more frequently in the neck and body regions. Ipsilateral medial malleolar fractures were the most common associated injuries, accounting for his 21.2% of cases. The main purpose of this study is to contribute to evaluation of the epidemiological features of patients suffering from from talus fractures and due to the lack of information on the epidemiology of talus fractures in our community.

Objective

To evaluate the characteristics of patients and their injuries, among those admitted to hospital for treatment of talus fractures between 2023 and 2025, at a tertiary care government hospital in North India.

Materials and Methods

Retrospective Analysis of Medical Records of patients diagnosed with talar fractures and treated in department of orthopaedics at Government Medical College, Jammu between June 2023 and May 2025 was done. All patients with suspected talus fractures or with actual radiographic diagnosis of talus fractures underwent routine computed tomography. After a detailed review of the CT scans of the foot and ankle, twenty-nine acute fractures of the talus were identified. The analyzed parameters were: age, gender, injury mechanism (fall from height, motorcycle accident, car accident, bullet injury, sports injury and others), laterality of fracture, type of fracture, associated trauma (musculoskeletal, craniocerebral trauma, thoracic trauma, abdominal trauma, etc.), other associated fractures, time between trauma and definitive surgical intervention, length of hospital stay.

Results

The ratio of males to females among the twenty-nine individuals analyzed was 4.8:1. (24 males and 5 females) and the age ranged from 24 to 60 years, with an average age of 32.5 years.

With nineteen cases (65.51%), the right side was the side most frequently affected. Thirteen fracture cases (44.82%) of all fractures, were open fractures; all fractures were scored as 3A by the orthopaedic physician who performed the first evaluation, in accordance with Gustillo et al. (11) Four (13.79%) talus fractures occurred at the talar processes, eight (27.5%) at the body, fourteen (48.27%) at the neck, and three (10.34%) at the head (Figure1).

The most frequent mechanism of injury, with 12 instances (41.37%), was a fall from one level to another, followed by motorcycle accidents with six cases (20.68%) and car accidents with two cases (6.8%). Additional mechanisms included sporting injuries seen in four (13.79%) patients, torsional trauma at home or workplace seen with four (13.79%) and gunshot wounds in one (3.4%) case (Figure 2).

Eight fractures (27.5%) had conservative care, while twenty-one (72.41%) required surgery. Twelve (41.37%) of the patients underwent open reduction and internal fixation, two (6.89%) underwent percutaneous surgery, one (3.44%) underwent minimally invasive surgery and six (20.68%) underwent additional procedures like external fixation and surgical debridement. The average waiting period for definitive surgery was 4.5 days ranging between 0 to 24 days (Figure 3).

Ten (34.48%) of the twenty-nine patients assessed had a talus fracture that was isolated. The majority had had many other associated traumas. Two (6.89%) patients had traumatic brain injuries, two (6.98%) with thoracic trauma, and two (6.89%) with abdominal trauma were found during the initial evaluation. The ipsilateral calcaneal fracture predominated in six (20.68%) of the twenty-nine patients instances with concomitant fractures, whereas the lateral malleolus predominated in four (13.794%) cases. two (6.89%) had tibiotarsal dislocation, and only one (3.4%) had an isolated talonavicular dislocation.

The average hospital stay for surgical patients was 17.5 days, with stays ranging from 0 to 59 days (Figure 4). Three of the patients who received conservative care remained in the hospital for a variety of factors, including related trauma and insufficient soft tissue problems. These patients' average hospital stays, ranged from 1 to 24 days and average of 8 days.

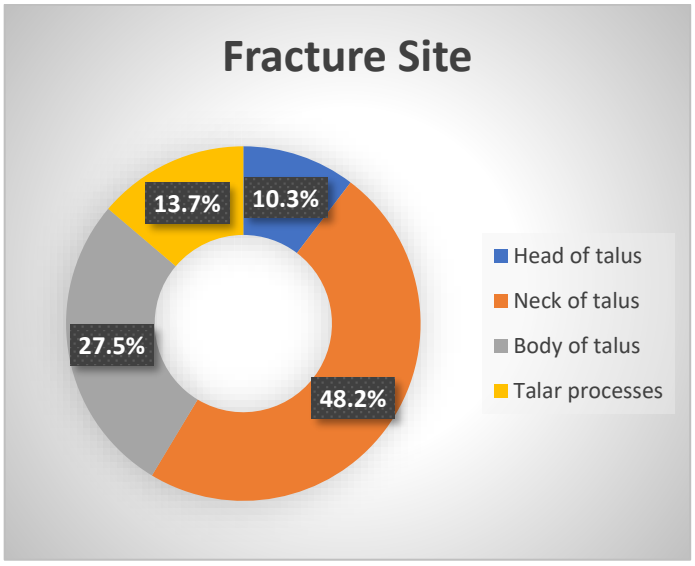

Figure 1

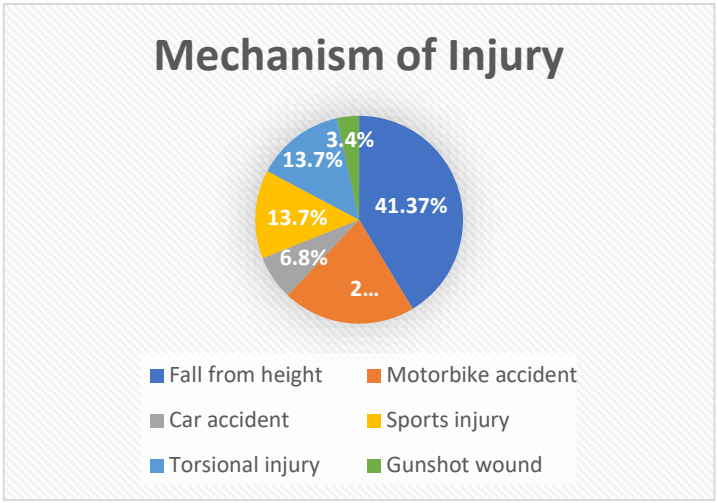

Figure 2

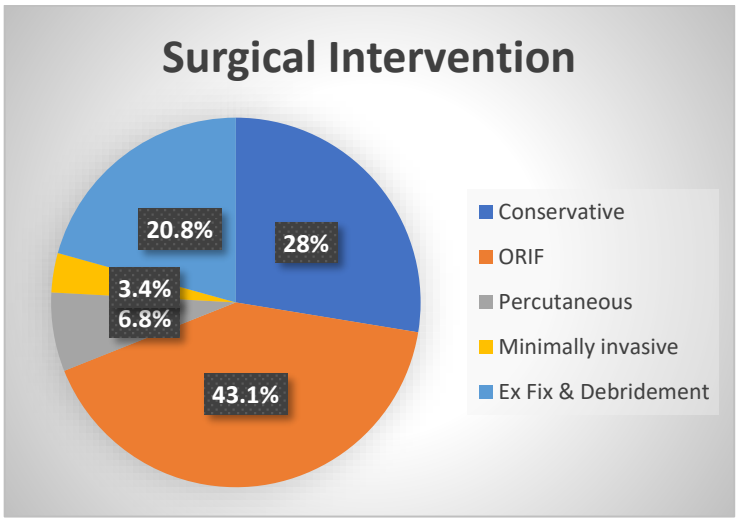

Figure 3

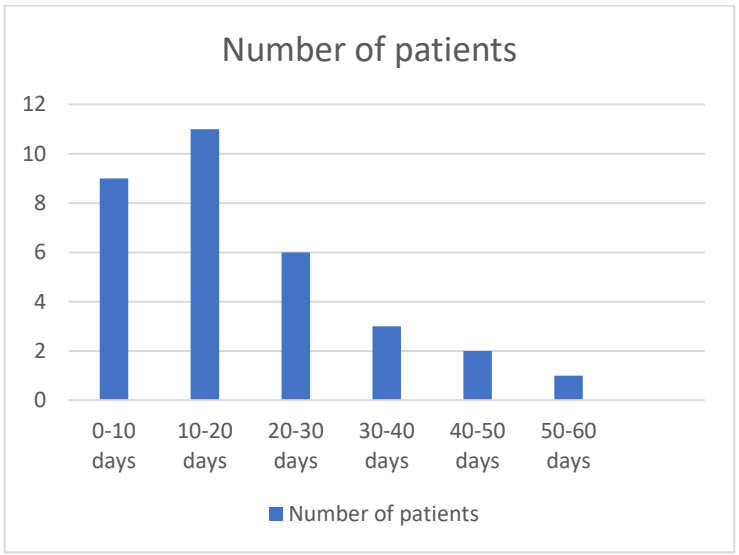

Figure 4

Discussion

Whereas Fonseca Filho et al. (10) treated fifty-two instances over 23 years, which was a mean of 2.3 per year, we operated on twenty one patients with talar fractures during this two-year period, which represents an incidence of 10.5 cases per year. It is clear that this sort of fracture is uncommon among the overall number of fractures that are treated surgically because both of these studies were carried out in large hospitals that offer tertiary-level orthopaedic traumatology care. This indicates that it will take a long time for orthopedists who give fracture treatment care in India at various centres to gain experience in the therapeutic management of talus fractures. Traumatologists will likely have tremendous difficulty training in smaller medical facilities.

The higher incidence of male patients (4.8:1) and younger patients (mean age of 32.5 years) demonstrates the significance of proper treatment for this type of fracture, which has a high rate of late complications, with sequelae that are frequently incapacitating and may require arthrodesis of the ankle and hindfoot to control these conditions. When comparing our results to those of Fonseca Filho et al. (10), we found that while their research's mean age (31 years and 4 months) was quite similar to ours, our study's male gender predominance (4.8 males for every woman compared to 2.9 men for every woman in the earlier study) was higher. This finding might be explained by the fact that young male drivers are more likely to be involved in accidents.

High-energy trauma was the cause of the fracture in twenty patients (68.96%). Twelve (41.37%) fractures were the consequence of incidents following a fall from level one height and above, which is close when compared with the results of Fonseca Filho et al. (10) which was (42.3%). Similar to falling from a height, traffic accidents were the second most common mechanism seen in eight (27.58%) patients, which very less as compared to (71.2%) of Fonseca Filho et al. (10). These findings help to direct the selection of talus fracture prevention strategies, such as stiff boots that restrict foot dorsal flexion movements, which is the mechanism underlying these fractures. Such boots would need to be durable and have a high impact absorption capacity for motorcycle riders and individuals operating at heights.

Five patients who smoked did not exhibit any postoperative difficulties up until the time of departure from the hospital, despite the fact that smoking has been linked to issues in the evolution of fractures and surgical procedures on the feet. We think that if more cases were evaluated, it might become clear that smoking had a detrimental effect on surgically treating talus fractures (12).

In the twenty-nine cases seen, central fractures (of the neck and body) accounted for twenty two (75.86%) of the cases, which is similar to the description made by Fonseca Filho et al. (10) which was found to be (78.8%). Its predominance may be due to the fact that many talus peripheral fractures, such as those of the posterior and lateral processes, commonly go undiagnosed and, even when properly identified, frequently respond well to nonoperative treatment. (13)

The average length of the hospital stay was 17.5 days, and the average wait period for the final surgical procedure was 4.5 days. These intervals were prolonged and directly impacted the cost of therapy due to the fact that related fractures were present in 65.51% of the patients.

We can conclude from a combined analysis of all these results that, despite epidemiologically making up a relatively small portion of the total number of fractures treated in orthopaedic hospitals, talus fractures are important because they frequently involve associated injuries and affect young people who are at the peak of their working lives, necessitating lengthy hospital stays. Talus fractures have a severe pattern and a significant risk of consequences such avascular necrosis. The most prevalent mechanisms should serve as the foundation for developing preventive measures for incidents involving vehicles and heights.

Conclusion

Despite being relatively rare, talus fractures are clinically significant due to their severity, high complication rates, and frequent occurrence in young, working-age males. High-energy trauma (fall from height or traffic accidents) remains the primary cause, emphasizing the need for targeted prevention strategies, especially for motorcyclists and workers at heights. Prolonged hospital stays (average 17.5 days) and frequent associated injuries (in 65.5%) further increase the burden of care.

Effective management and prevention are crucial to reduce long-term disability, especially given the risk of complications like avascular necrosis and arthrodesis.

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