

Introduction

Calcaneal fractures account for 1-2% of all body fractures. Isolated fractures involving the sustentaculum tali are rare. It is usually associated with midtarsal, subtalar dislocations or foot fractures. Few published series exist and most publications are limited to case reports. [1-2] The name is derived from the Latin word-sustenus which means to support and tali that refers to the talus bone. Sustentaculum tali or (talar shelf) is a bony eminence that lies at the medial surface of the calcaneus, below the middle talar facet. It provides a vital support for the medial column of the foot and it gives attachment to the plantar calcaneonavicular (spring) ligament, tibiocalcaneal ligament and medial talocalcaneal ligament. This eminence is concave above, and articulates with the middle calcaneal articular surface of the talus; below, it is grooved for the tendon of the flexor hallucis longus; its anterior margin gives attachment to the plantar calcaneonavicular ligament, and its medial margin to a part of the deltoid ligament of the ankle joint. [3-6] Due to the strong and thick cortical bone, solitary fractures of the sustentaculum tali without additional calcaneal injuries occur in less than 1% of all calcaneal fractures. [7] Mechanism of trauma is either due to fall from a height with the foot in supination during impact or due to a direct trauma. Patients always complain of pain, which lies distal and anterior to the medial malleolus and increases by passive motion of the flexor hallucis longus tendon. Clinically, there is an area of ecchymosis that lies over the sustentaculum. (Fig.1) In lateral radiographic images sustentaculum tali fractures are difficult to diagnose, so misdiagnosis is a common finding. Radiographic diagnosis can be achieved by obtaining an axial (calcaneal) view or CT scan. [8-9] Misdiagnosis and mistreatment of the sustentaculum tali are reported to cause severe complications such as a rapidly evolving post-traumatic subtalar joint arthritis, non-union, chronic impingement of the

flexor hallucis longus tendon, varus of the hindfoot, parasthesia of the medial plantar nerve, persistent pain and swelling of the medial hindfoot, progressive pes-planovalgus deformity or even symptoms of a tarsal tunnel syndrome. [9-10]

The objective of this study is to delineate the importance of sustentacular tali fractures fixation mentioning operative technique and the post-operative outcome.

Patients and methods

After approval by our institutional ethical committee, this prospective cohort study was done between March 2010 and March 2015 at our institution. This study was conducted up on 10 patients with consequent 10 feet suffering from closed displaced sustentaculum tali fractures. All of them were treated by open reduction and internal fixation through a medial sustentacular approach. Patient`s gender was 9 male and one female. Average age was 27.6 years (ranging 22-40 years). Right side was affected in 6 cases while left side was affected in the other 4 cases. The chief mechanisms of injury were road traffic accidents in 8 patients and fall from a height in one patient and severe supination foot trauma during descending stairs in one patient. Associated fractures were one case of ipsilateral distal end fibula that was treated by percutaneous K-wires, ipsilateral talar neck in one case that was treated by open reduction and internal fixation through an anteromedial ankle approach and subtalar dislocation in one case that was treated by closed reduction. Time elapsed between trauma and surgical interference ranged (14-18 days) with an

average 15.4 days. All patients were followed-up with a follow-up period (24-84m.) with an average 52.8 months. All patients had obtained pre-operative x-rays (axial and lateral ankle views) and CT scans.