

## Case Report of Paediatric Talar Body Fracture Associated with Medial Malleolus Fracture



### Medical Science

**KEYWORDS :** Paediatric talar body fracture, Paediatric medial malleolar fracture, Subtalar joint, Osteonecrosis of talus.

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### ABSTRACT

*This case report is to put to light the rare case of paediatric talar body fracture associated with medial malleolus fracture (incidence <0.08%). Though this presents a challenge to the surgeon, it can be managed by open reduction and internal fixation of the talus fracture as well as the malleolar fracture followed by prolonged non weight bearing leading to good fracture healing with no signs of osteonecrosis. Such an injury is generally a high energy trauma with chances of future osteoarthritis or stiffness if anatomical fixation and timely mobilisation is not achieved. In case of talar fractures associated with malleolar fractures the rate of osteonecrosis seems to be lower probably because the soft tissue attachments to the bony fragments remain intact and preservation of the extraosseous vascular supply that accompanies the deltoid and talofibular ligamentous complexes.*

#### • **INTRODUCTION :-**

Talus fractures in children are rare, with a reported incidence between 0.01% and 0.08%. There are only a limited number of case studies published in literature about talus fractures associated with medial malleolus fractures, most of which report such injuries in adults. (1,3) Talar injuries are usually high energy injuries often associated with both the talar body and neck fractures.

Careful investigation of any injury about the ankle requires both clinical and radiographic examination. (2)

#### • **CASE REPORT :-**

A 12 year old male patient with history of fall from 15 feet height developed pain & swelling in right ankle over the medial aspect. The patient had no associated injuries and no other significant past or family history. On examination localised swelling was noted around the ankle, tenderness over medial malleolus with normal distal neuro-vascular status. Radiographs of the right ankle revealed vertical (sagittal) fracture of the talar body associated with fracture of the medial malleolus. A CT scan with 3D reconstruction was done which revealed that the patient has a comminuted fracture of the talus body with displaced fracture fragments with fracture of the medial malleolus with surrounding soft tissue hematoma.

**Pre operative image ( figure 1) about here.**

**Pre operative imaging – x-ray and CT scan ( Figure 1)**



The patient was treated by open reduction and internal fixation of the talus and the medial malleolus. Patient was taken on simple table in supine position with tourniquet control under spinal anaesthesia, through medial approach the medial malleolus was retracted and open reduction of the talar fragments achieved using pointed reduction clamps, then fixation was done by using two 4.0mm cannulated cancellous screws with counter sinking of the screw heads. Then the medial malleolus fracture was fixed using two 4.0mm cannulated cancellous screws with

washers sparing the physis. Post operatively patient was given below knee slab with toe mobilisation started on the same day. He was given below knee cast after stitch removal which was done 14 days after surgery.

**Post operative X-Ray image ( figure 2) about here.**

**Post Operative X-Rays ( Figure 2)**



After 10 weeks, the cast was removed and physiotherapy was started, with gradual initiation of weight bearing. At 6 months follow up, ankle dorsiflexion was 10 degrees and plantar flexion was 30 degrees. There was 5 degrees eversion and 10 degrees inversion at the subtalar joint. X-ray of ankle at this stage was satisfactory with no evidence of non-union or avascular necrosis of the talar body.

**6 month post operative X-Ray image ( figure 3) about here.**

**X-Ray on 6 months follow-up ( Figure 3)**



**DISCUSSION:-**

Talar body fractures are produced by an axial compression of the talus between the the tibial plafond and the calcaneum. In cases of the combined medial malleolar fracture an additional inversion torque seems to distribute this force to the medial structures, producing a vertical split of the talar body and medial malleolar fracture(8).

This patient was classified into the C1 group as per the AO/OTA classification (4). While it was classified into Type 2 as per the classification given by *Sneppen et al* (5) for the talar body fractures as shearing was mostly responsible for the injury.

**TREATMENT, RESULTS AND COMPLICATIONS:-**

As paediatric age group talus fractures are very rare injuries hence a high index of suspicion for these injuries should be maintained. (1) An accurate reduction and stable fixation is mandatory in order to provide the best biomechanical environment for revascularisation of the lateral part of the body of the talus (6).

In sagittal talar body fractures, the lateral part of the dome is devascularised since the main blood supply of the body is coming from the medial side through the deltoid branches arising from the artery of the tarsal canal [7]. Union in such cases is extremely slow as it depends on a new blood supply growing in the avascular bone. [8]

In case of those fractures associated with malleolar fractures the rate of osteonecrosis seems to be lower probably because the soft tissue attachments to the bony fragments remain intact and preservation of the extraosseous vascular supply that accompanies the deltoid and talofibular ligamentous complexes.

Peritalar stiffness and arthritis commonly occur after both talar neck and talar body fractures. Subtalar joint arthritis occurs more frequently after talar neck fractures, with an incidence of 60–100%. Talar body fractures have increased rates of arthritis at the tibiotalar joint. Despite x-ray evidence of joint space narrowing in many patients, there is usually little need for secondary reconstructive procedures [9].

Displaced fractures require anatomical open reduction of the major joint surfaces and internal fixation .Prolonged non-weight bearing and immobilization is the norm. Despite aggressive management, complications like avascular necrosis and post-traumatic arthritis to both the subtalar and tibiotalar joints occurs frequently (2)

No evidence of osteonecrosis and collapse are seen in our case after 6 months follow up and the functional result of our patient was satisfactory.

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