

Report On - Case Of Closed Talar Neck Fracture With Triple Dislocation

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Abstract

Introduction: Talar Neck Fractures Are High Energy Injuries To The Foot That Are Associated With A High Incidence Of Talus Avascular Necrosis. The Vascular Supply Of Talus And Devoid Muscle Attachments Predispose It To Avascular Necrosis. The Injury Is Usually Associated With Triple Dislocation Of Talus. In This Case Report We'll Be Seeing About Neck Of Talus Fracture With Dislocation And It's Management.

Materials & Methods: 14 Year Old Kid Came With History Of Fall From Height And Presented With Fracture Neck Of Talus And Medial Malleolus. X-Ray And Ct Were Taken Showing Hawkins Type Iv Fracture (Subtalar Tibiotalar And Talonavicular Dislocation). Patient Was Taken Up For Open Reduction (After Failed Attempt On Closed Reduction) And Internal Fixation With Cannulated Cancellous Screw (Talus) And K Wire Fixation For Medial Malleolus.

Conclusion: Delay In Treatment Or Failure In Reduction Of Fracture Dislocation Lead To Avascular Necrosis Or Secondary Osteoarthritis. Usually Type Iii And Iv Fractures Are At Maximum Risk Of Going For Osteonecrosis. In This Patient Following Orif, Patient Was Put On Below Knee Cast And Was Followed Up After 2 Months.

Where X-Ray Showed Subchondral Lucency (Hawkins Sign) Which Signifies Revascularization Thus Indicating Earlier Reduction And Fixation Can Reduce The Incidence Of Avascular Necrosis.

INTRODUCTION

Talar neck fractures are very uncommon usually occurs as a result of high energy trauma – forced ankle dorsiflexion (fall from height or motor vehicle accidents) occurs in less than 1% of fractures¹. The vascular supply of talus and devoid muscle attachments predispose it to avascular necrosis. The injury is usually associated with triple dislocation of talus and leads to arthritis , avascular necrosis and non union of talar fragments.

In this case report we see about the treatment and outcome of a 14 year old patient with dislocated talar neck fracture. Further, review of literature and the complications will be Discussed in this report.

CASE REPORT

A 14 year old child without any previous medical history presented with H/o fall from height and Sustained Injury to his right foot Neurovascular status is intact Radiographs and CT showed Hawkins type IV fracture with subtalar , talonavicular and tibiotalar dislocation .

Figure 1 and 2 Attempts to closed reduction in ER failed and patient was taken for EOT where closed reduction attempted again and failed .

ORIF with 2 Cannulated Cancellous Screw fixation along with fixation of medial malleus was done with help of K-wire.

Figure 3 Patient was kept on posterior below knee slab and was advised non Weight bear walking for 6 weeks.

Patient was followed up regularly & 6 weeks post op X-ray taken which Showed Positive HAWKIN'S SIGN(subchondral lucency) which is a sign of revascularisation .

Figure 4 Hawkins sign indicates less incidence of avascular necrosis Patient was followed up for a period of 15 months and regular X- ray's were taken, Patient reported of no Complaints during daily activities. Figure 5



Figure 1: showing X-ray of ankle



Figure 2: showing 3D CT reconstruction of ankle



Figure 3: immediate post op x-ray



Figure 4 : 6 weeks post op x-ray



Figure 5: 15 months post op xray

BLOOD SUPPLY OF TALUS

The risk of arthritis and necrosis post talar neck fractures can be attributed to its vast articular surface and its vascular supply.

Talus is supplied by 1) posterior tibial, 2) anterior tibial 3) perforating peroneal artery. All above mentioned arteries form numerous anastomoses around the Talar neck & Sinus and perfuse these areas.

In case of fracture dislocation of talar neck, the talar corpus is only supplied by deltoid artery thus increasing the risk of avascular necrosis²

Table 1: Hawkins Classification

The modified Hawkins classification considers, beside the grade of fracture dislocation, the severity of vascular damage possibly causing avascular necrosis of the talus^{3,4}

TYPE	DISLOCATION	VASCULAR DAMAGE	RATE OF AVN
Type 1	None	Anterolateral	0-13%
Type 2	Subtalar	Neck, sinus tarsi, tarsal canal	20-50%
Type 3	Tibiotalar and Subtalar	All 3 arteries	20-100%
Type 4	Tibiotalar, Subtalar and Talonavicular	All 3 arteries	100%

AVN - AVASCULAR NECROSIS

DISCUSSION

Talar neck fractures have big effect on the Outcome of the Ankle joint. Talar neck fractures are usually associated with medial malleolus fractures, Hawkins in his study found that 26% out of 57 patients, Canale & Kelly study showed 10% out of 71% had associated medial malleolus fracture.^{3,4} Most common complication following Talus neck fracture / dislocations are Osteonecrosis and Avascular necrosis (AVN), due to interruption of blood supply to the tarsal tunnel and sinus tarsi Sanders in his study reported of Secondary arthritis in 47 to 90% of Cases with displaced talar neck fractures⁵ Talar Surface is mostly Covered by articular cartilage and the arthritis is followed by the Subchondral damage primarily occurring at the time of the injury. The Hawkins sign describes subchondral lucency of the talar dome that occurs secondary to subchondral atrophy due to inactivity six to eight weeks after a talar neck fracture. It indicates that there is sufficient vascularity in the talus and it is unlikely to develop an avascular necrosis later^{6,7}. Infection and delayed wound healing are usual Complication following Surgical fixation of displaced talar neck fractures. concluded in his review that there was a correlation between the severity of talar neck fractures according to the Hawkins classification and avascular necrosis⁸. Several authors have considered fracture displacement and delayed surgery the main risk factors for this

daunting complication; immediate ORIF has been historically recommended to decrease its avascular necrosis (AVN) rate in talar neck and body fractures is reported between 12 to 53%. In this case report we present about Talar neck fracture with triple dislocation of the talus with associated ipsilateral medial malleolus. Managed with Surgical fixation of talus with Cannulated Cancellous Screws and k-wire fixation of medial malleolus. Despite the high Complication rates Seen with displaced talar neck fractures , the functional outcome on this case was satisfactory^{9,10}.

CONCLUSION

Talar fracture and it's dislocations are challenging for proper Reduction and fixation. Treatment outcomes may vary according to the initial fracture and degree of displacement . In spite of higher incidence of complications such as avascular necrosis and arthritis, we were able to deter these complications in this case due to early diagnosis , anatomical reduction and timely intervention .

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