

An Unusual Presentation of Fracture Ankle – A Case Report

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Abstract

Fractures around ankle are quite common and sometimes they are irreducible. Bosworth fracture dislocation has been described in which distal end of proximal fragment of fibula is displaced behind posterolateral ridge of the distal tibia and locked there. This situation is not recognized unless one is aware that it can occur and reduction is possible only through open reduction. We would like to present a rare case in which proximal end of distal fragment of fibula was displaced posterior to tibia and locked there (opposite of Bosworth lesion).

Case report-In our case proximal end distal fragment of fibula was displaced posterior to tibia and locked there which could not be released by closed reduction or heavy skeletal traction. Operative findings – posterolateral ridge of tibia with intact interosseous membrane and soft tissue interposition were the root cause. After reduction eight hole 1/3rd tubular plating was done with six A/O cancellous screws of 3.5mm. For comminuted fracture of tibia – fixator frame was made by inserting another stein man’s pin in middle 1/3rd and joined with calcaneum pin by tubular rods.

Discussion- Irreducible fracture dislocations around ankle joint have been described by various authors. The known causes are interposition of deltoid ligament, tibialis posterior and extensor tendons. In a typical Bosworth lesion upper fragment of fibula gets locked but in our case because lower fragment was locked we would call this as “Reverse Bosworth fracture dislocation”. Our case was different from others also because lower tibia was also comminuted with contusion.

Conclusion-Knowledge of the existence of Bosworth fracture dislocation and its variant will increase the awareness of its existence. Prompt recognition of its characteristic clinical and radiological features will lead to appropriate surgical treatment to prevent complications and minimize permanent disability in these patients.

Key words- Ankle, Tibia, Fibula, Bosworth fracture dislocation

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Introduction

Fractures around ankle are quite common. Sometimes they are irreducible. Bosworth fracture dislocation has been described in which distal end of proximal fragment of fibula is displaced posterior to tibia and locked there¹. We would like to present a rare case in which proximal end of distal fragment of fibula was displaced posterior to tibia and locked there (opposite of Bosworth lesion).

Fig1: Deformed left ankle with contusion



Case presentation

Patient 35yrs. male, rickshaw puller by profession had multiple injuries due to overturning of rickshaw which included fracture middle third left clavicle, fracture lateral malleolus right ankle along with major trauma to his left ankle joint.

Left ankle joint was highly deformed with severe contusion on lower 1/3rd of leg medially (Fig.1). X-ray showed severe comminution lower 1/3rd tibia above ankle along with displaced fracture fibula at the same level posteriorly (Fig.2).

Fig 2 AP & Lateral views showing severe comminution lower 1/3rd tibia above ankle along with displaced fracture fibula at the same level posteriorly



After written consent and explanation of prognosis regarding probable skin necrosis and compartment syndrome closed reduction under general anesthesia was tried, this failed to reduce the fibula. Patient was then placed on calcaneum skeletal traction which was gradually increased daily from one brick to three bricks keeping a watch over neurovascular compromise with serial X-rays. This also failed to reduce the fibula (Fig.3). Hence surgery was undertaken after subsiding

of edema on 10th day. Lower fragment of fibula was found locked behind posterolateral ridge of tibia with intact interosseous membrane. After reduction eight hole 1/3rd tubular plating was done with six A/O cancellous screws of 3.5mm (Fig.4). For comminuted fracture of tibia simple external tubular frame was made by inserting another Steinman's pin in middle 1/3rd and joining with calcaneum pin by tubular rods (Fig.5).

Fig 3 AP & Lateral views after failed closed reduction and calcaneum skeletal traction showing no improvement of displaced fracture fibula



Fig 4 AP and Lateral views after surgery

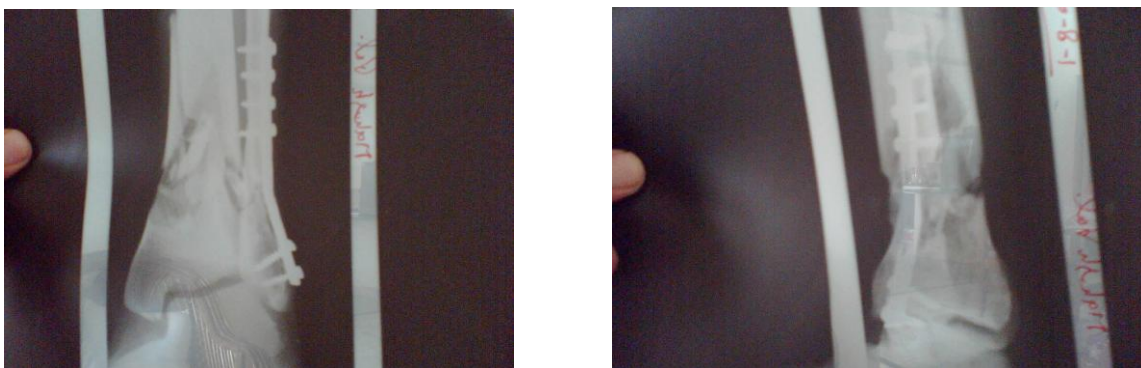


Fig 5 after surgery external tubular frame



Discussion

Irreducible fracture dislocations around ankle joint have been described by various authors. Walker RH et al have reported pronation eversion fracture dislocation of the ankle that was irreducible by closed means. Open reduction revealed displacement of the tibialis posterior tendon through the diastasis between the distal tibia and fibula². Hsiao KC and Tu CH have reported cases of irreducible ankle fractures where deltoid ligament and extensor tendons were found to be the root cause of soft tissue interposition³. Lee BJ et al have reported an unusual and irreducible fracture-dislocation of the ankle joint where entrapped medial malleolar fragment was discovered between the distal tibia and lateral malleolus. The fragment was removed during an emergent

open reduction, during which deltoid ligament repair and internal fixation of the bimalleolar fracture were undertaken⁴.

Bosworth in 1947 described five cases of irreducible fracture dislocations in which distal end of proximal fragment of fibula was displaced behind posterolateral ridge of the distal tibia and locked there¹. This entity was recognized and named as 'Bosworth fracture dislocation. He pointed out that this situation is not recognized unless one is aware that it can occur and reduction is possible only through open reduction. Despite coverage in subsequent literature that describes the Bosworth fracture dislocation, it is often an unrecognized entity. Patients with this condition will be left with permanent disability if they are not

properly treated with open reduction. Nowadays most displaced Pott's fractures are treated with open reduction and internal fixation to restore the ankle mortise anatomically. If this condition is recognized immediately after the injury, prompt open reduction and internal fixation can be performed before soft tissue swelling sets in. In such cases, a prolonged preoperative unreduced state for the ankle joint can be avoided, and early joint mobilization can minimize articular cartilage damage and optimize the ankle's functional outcome. Bosworth believed that the tight pull of the intact interosseous membranes prevented reduction of the proximal fibular fragment⁵. Perry et al⁶ reproduced the injury in anatomic specimens, and they concluded that the initial stage of a Bosworth fracture is a variant of the Maisonneuve fracture and that it is caused by supination and eversion. Compartment syndrome must be ruled out clinically in these cases. Beekman R and Watson JT⁷ have reported a case in which a Bosworth fracture-dislocation resulted in anterior, lateral, and deep posterior compartment syndrome. They have stated that a high degree of vigilance must be maintained when managing these fractures

in order to avoid complications and long term morbidity.

Schatzker et al⁸ also described the pathognomonic finding of the fibula sweeping behind the tibia from lateral to medial on the anteroposterior radiograph of the entire leg.

In our case proximal end distal fragment of fibula was displaced posterior to tibia and locked there which could not be released by closed reduction or heavy skeletal traction. In the operative findings posterolateral ridge of tibia with intact interosseous membrane and soft tissue interposition were detected as the root cause.

Because lower fragment was locked we would call this as "Reverse Bosworth fracture dislocation". Our case was different from others also because lower tibia was also comminuted with contusion. However compartment syndrome was not encountered.

Conclusion

Knowledge of the existence of Bosworth fracture dislocation and its variant will increase the awareness of its existence.

Prompt recognition of its characteristic clinical and radiological features will lead to appropriate surgical treatment to prevent complications and minimize permanent disability in these patients.

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