APOA Foot & Ankle Council Presents..

Case of the Fortnight

1st September 2022

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Presented by:

Dr. Yudha Manggala
Orthopaedic and Traumatology Surgery, Faculty of Medicine Soegijapranata Catholic University, Semarang, Indonesia

Title:

Surgical Treatment of Ankle Fracture Weber Type B with Syndesmotic Injury and Lateral Ankle Instability Using Syndesmotic Screw Fixation and Evans Tenodesis

Learning Points:

- Immediate appropriate treatment of an ankle fracture dislocation with syndesmotic injury and lateral ankle instability produces a very good outcome in the long-term and the return to normal activity.
- Syndesmotic injury should be anatomically reduced. It can be achieved by anatomical reduction using 3.5 or 4.5 mm cortical screws that engage three or four cortices.
- Many surgical techniques of lateral ligament reconstruction were proposed in the literature. These techniques are classified as anatomical reconstructions and non-anatomical reconstructions
- The Evans tenodesis does not replace either the anterior talofibular or the calcaneofibular ligaments, but acts along the resultant of the two ligaments, working in a different way in plantarflexion and in dorsiflexion. It gave protection against inversion with the ankle in neutral position and improves lateral ankle stability and has minimal complications and needs a relatively short immobilization time.

*Upcoming Case of the Fortnight on **15th September 2022***

Presented by:

Dr. Yuen, chi pan
Honorary Consultant in Orthopaedics & Traumatology, Gleneagles Hospital, Hong Kong SAR

Title:

Simultaneous ankle arthroscopy and hindfoot endoscopy: single position, usual orientation

Want to present a case? Write to...

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Surgical Treatment of Ankle Fracture Weber Type B with Syndesmotic Injury and Lateral Ankle Instability Using Syndesmotic Screw Fixation and Evans Tenodesis

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Case

Clinical presentation

A 23 year-old female patient, an athlete, suffered a right ankle fracture Weber type B with syndesmotic injury and a lateral ankle instability a month ago and was treated by another orthopaedic surgeon. A month following the initial surgery, she visited the author's clinic and complained about persistent pain and restriction of dorsiflexion movement of her right ankle. The patient was otherwise fit and well with no other significant past medical history.

Clinical evaluation

Clinical examination revealed a slight swelling on her right ankle with no open wounds. She had tenderness to palpation over her right ankle, pain over the anterior syndesmotic and pain with external rotation stress test. Limited dorsiflexion and pain aggravated when walking. No other discomfort or past medical history was reported. Squeeze test and External rotation test were positive. Neurovascular examination showed intact findings.

Radiologic evaluation

The initial radiograph of the right ankle showed medial malleolar fracture with tibiofibular overlap: 3mm, tibiofibular clear space widening: 10mm and medial clear space widening: 6mm, from the first radiograph indicated her ankle fracture dislocation with syndesmotic injury and lateral ankle instability.

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The postoperative radiograph following a previous surgery demonstrated that the patient underwent open reduction and internal fixation of the medial malleolar fracture, tilting talar position with tibiofibular overlap: 3mm, tibiofibular clear space widening: 10mm and medial clear space widening: 6mm. A second radiograph indicated the unsolved syndesmotic injury and ankle instability.

The radiograph just before revision surgery showed severe tilting talar position with tibiofibular overlap: 2mm, tibiofibular clear space widening: 11mm and medial clear space widening: 7mm. There is a linear fracture from tip distal fibula extends to syndesmotic level of fibula. This radiograph indicated the unsolved syndesmotic injury, ankle instability, and fibula fracture.

Final radiograph showed that the patient underwent the present surgery as open reduction and fixation with the syndesmotic plate and screw fixation, fibula fracture was fixed with screw fixation and ligament reconstruction via Evans tenodesis by the author. It also showed anatomic talar position with tibiofibular overlap: 7mm, tibiofibular clear space: 4mm, and medial clear space: 3mm which indicated the syndesmotic injury has been reduced and realigned as appropriate.

Treatment

Regarding her presentation, the author decided to perform the surgery to treat her ankle fracture with syndesmotic injury and lateral ankle instability by syndesmotic screw fixation and Evans tenodesis. The method is to hold the fibula in the correct position in relation to the tibia.

The syndesmotic was stabilized by open reduction using syndesmotic plate and screw, adhered to the lateral fibula with a non-locking 3.5mm bicortical screw in the most proximal and the fifth holes. The third and fourth holes were prepared for syndesmotic screw through the fibula and the lateral cortex of the tibia, with the ankle joint in dorsiflexion position, at the level of 3-cm above the distal tip of the lateral malleolus. The tip of distal fibula was stabilized with a non-locking 3.5mm bicortical screw.

Then exposure the peroneus brevis through a lateral incision curved around the posterior aspect of the fibula, the peroneus brevis tendon was then divided from its muscle belly proximally. A

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tunnel was drilled through the lateral malleolus from the anterior aspect of its tip to emerge posteriorly about 2.5 cm proximally. The tendon was passed through the tunnel and re-attached under proper tension to the peroneus brevis.

Postoperatively, the patient remained non-weightbearing for 6 weeks. She was allowed to bear the weight as tolerated after 6 weeks and suggested to perform early rehabilitation. At 6 months following the surgery, she visited the author's clinic for the follow-up without any complains.

(Fig. 1)

Radiographic study of the AP/ Lateral view of right ankle patient at the first time visit to another orthopedic surgeon

(Fig. 2)

Radiographic study of the AP/ Lateral view of right ankle patient at the day after first surgery

(Fig. 3)

Radiographic study of the AP/Lateral view of right ankle patient at the day before revision surgery

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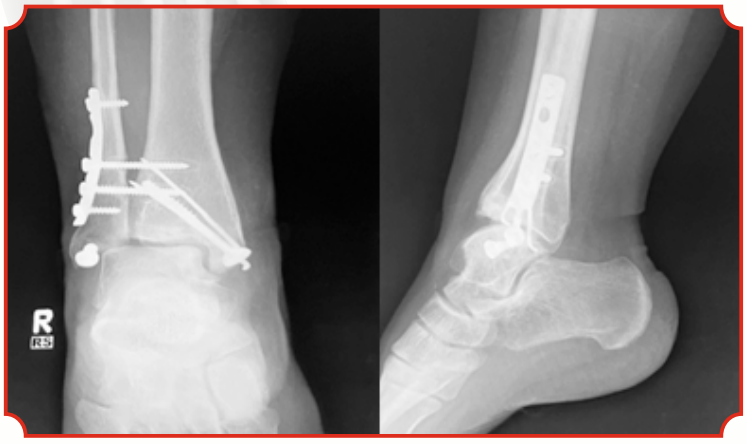

(Fig. 4)

The anteroposterior and lateral radiographs of right ankle patient at the day after revision surgery.

(Fig. 5)

The blue line is a line incision which placed posterior to the lateral malleolus (A), the oblique-anteroposteriorly directed drill hole in distal fibula (B), and the insertion of peroneus brevis (C)

(Fig. 6)

Operative exposure of the peroneus brevis through a lateral incision curved around the posterior aspect of the fibula, then detaching of the peroneal brevis tendon from the musculotendinous junction proximally

(Fig. 7)

Tenodesis is generally performed at the level of 3-cm proximal to the lateral malleolar tip.

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