APOA Foot & Ankle Council Presents..

Case of the Month

1st May 2023

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Presented by:

Dr. Andi Praja Wira Yudha Luthfi, MD

Department of Orthopaedics and Traumatology
Bhayangkara Tk.I R.Said Sukanto Hospital
Jakarta, Indonesia

Title:

Suture Tape Internal Brace Augmentation in Pure Ligamentous Ankle Dislocation

Learning Points:

- A pure ligamentous ankle dislocation is a rare case
- No standardized protocol to treat this injury
- In our case, an open skin wound with gross contamination and massive torn of ligaments were observed with some parts of it were lost
- Staged surgery was performed to decrease the infection rate and internal brace using suture tape was performed to augment the ankle ligaments repair due to poor remnant of ankle ligaments
- Good clinical outcome could be achieved with stage protocol and augmentation using suture tape in internal brace

Upcoming Case of the Fortnight on 1st June 2023

Presented by:

Dr. Henry Ricardo Handoyo, MD.

Faculty of Medicine Widya Mandala
Catholic University/Surabaya
Orthopedi and Traumatology Hospital,
Surabaya-East Java, Indonesia

Title:

PIP joint fusion and flexor digitorum brevis tenotomy procedure for claw toes in spinal cord injury following lumbar spine decompression

Want to present a case? Write to...

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Suture Tape Internal Brace Augmentation in Pure Ligamentous Ankle Dislocation

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Case Presentation:

The patient was a 33-year-old woman who previously had a motor vehicle accident and was admitted to the hospital elsewhere. There was an open skin wound on the anterolateral side of the ankle joint, and the articular surface of the tibia and fibula were exposed to gross contamination. The foot was displaced in the posteromedial direction ***(fig. 1)***. The radiographic examination revealed a posteromedial dislocation of a tibiotalar joint without an obvious fracture of the ankle mortise ***(fig. 2A).***

(Fig. 1)

Clinical presentation of the patient's ankle at the emergency room. The foot was medially and posteriorly displaced with open-skin wound on the lateral side of the ankle joint and articular surface of tibia and fibula were exposed

She was treated by previous surgeon with debridement, open reduction, and external fixation to immobilize the ankle joint ***(fig. 2B)***. The anterolateral joint capsule, anterior talofibular ligament (ATFL), calcaneofibular ligament (CFL), and deltoid ligaments were found irregularly torn and detached. The remnants of ATFL and CFL were in poor condition and making a primary repair was predicted with a preliminary result. Reconstruction or augmentation was also impossible because of the lack of facility and implants at the initial hospital. Postoperative computed tomography (CT) scan confirmed that there was no concomitant fracture of the malleolar bones ***(fig. 2C)***.

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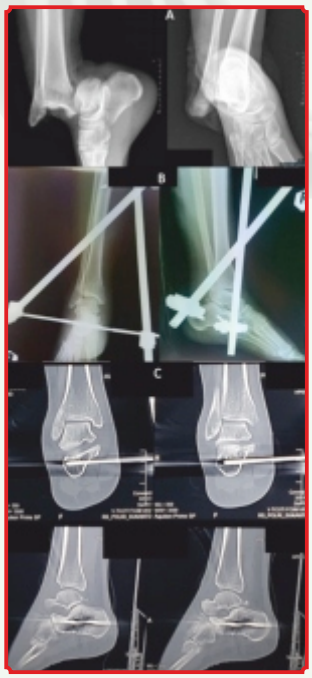
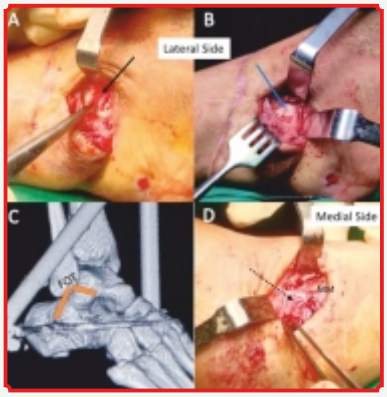


(Fig. 2)

From X-ray examination, the talus was displaced to posteromedial direction without obvious radiographic fracture of malleolar bones (A). Extensive debridement and immediate reduction of the ankle joint were performed and immobilized using an external fixator (B). Postoperative CT Scan examination confirmed no fracture on the medial, lateral, and posterior malleolus (C).

The patient was referred to our hospital for the second surgery, with the aim was to repair the ankle ligaments. The external fixator was removed, and the incision was made at the distal tip of the fibula, revealing the insufficient ATFL and CFL remnants ***(fig. 3A-B)***. Both ligaments were repaired and augmented using suture tapes and anchors. We placed a 3.0 mm titanium anchor with tape suture into the talar attachment of ATFL. Subsequently, we put the suture tape to the fibular attachment of ATFL with a 3.5 mm knotless anchor PEEK + titanium, just slightly below the fibular obscure tubercle (FOT) to provide a good tension for CFL augmentation. The remaining suture tape was inserted into the calcaneal attachment of CFL using knotless anchor PEEK + PEEK ***(fig. 3C)***. Another incision was made at the distal tip of the medial malleolus, a 3.0 mm titanium anchor with a suture was inserted into the medial malleolus, and the deltoid ligaments were repaired ***(fig. 3D)***. Intraoperative fluoroscopy was performed to confirm the reduction, position of anchors, and evaluate the stability ***(Fig. 4).*** Postoperative radiographs confirmed the anatomical alignment and parameters of the ankle mortise. On the 1st postoperative day, the patient was mobilized using crutches and allowed to bear restricted weight on her right foot. No cast or splint was applied following the surgery, and active range of motion (ROM) exercises were initiated to prevent prolonged stiffness. Partial weight bearing was initiated 4 weeks after the second surgery and continued with full weight bearing 6 weeks after surgery.



(Fig. 3)

Intraoperative findings revealed a poor quality and irregular form of anterior talofibular ligament (ATFL) and calcaneofibular ligament (CFL) remnants (solid black arrow), requiring augmentation of the repair (A). Internal brace using suture tape (solid blue arrow) was performed to augment the ATFL and CFL repair (B). Schematic of suture tape augmentation, the suture tape internal brace was anchored to the talar attachment of the ATFL, and the suture tape was then secured into the fibular obscure tubercle (FOT), and the rest of suture tape was anchored to the calcaneal insertion of CFL (C). On the medial side, suture anchor (dotted black arrow) was inserted into medial malleolus (MM) and the deltoid ligament was repaired (D).

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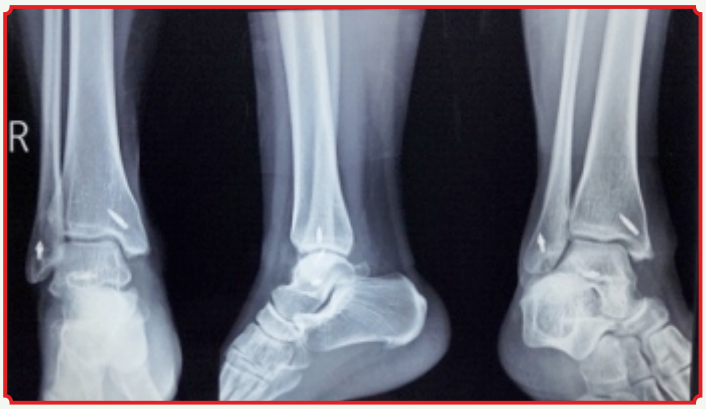
(Fig. 4)

Intraoperative imaging confirmed a good position of anchors and no instability after ligaments repair.

Regular X-ray was examined every 3 months. At the 12-month follow-up, full recovery was achieved, confirmed both clinically and radiologically. We observed no ROM limitation, instability, swelling, and sensory deficit, with the American Foot and Ankle Society (AOFAS) ankle hindfoot score at the final follow-up being 87 (out of 100). A normal alignment of the tibiotalar joint, without any signs of degenerative changes, was seen on the final X-ray and CT-scan ***(fig. 5)***.

(Fig. 5)

At 1-year follow-up, no sign of degenerative changes nor recurrent instability was detected on radiographic x-ray examination.



Discussion

Pure ankle dislocation injury is extremely rare, and few cases have been reported.2,6–8 The most common cause involving the ankle joint dislocation are sports injuries and motor vehicle accidents (MVA). There is no standardized treatment protocol for treating this injury. Emergent reduction of the ankle joint is the primary goal, regardless of whether it is open or closed dislocation. In the literature, treatment options are widely varied, from back slab, casting, transfixing k-wires, and external fixators. The necessity to repair the torn ligaments is disputable. Although many studies have shown a good clinical outcome without repairing the ankle ligaments, we believe that this will lead to late instability and early degenerative changes of ankle joint, especially in active patients. We believe that ankle ligaments, both lateral and medial, play an important role in stabilizing the talus and preventing early arthritis in the long-term outcome because of residual instability. We used the suture tape internal brace augmentation in this case due to poor remnant of ATFL and CFL, and the option of using autograft ligament reconstruction is not necessary. Excellent ankle function was achieved, and the patient maintained her daily activity, and no degenerative changes were detected on the follow-up X-ray.

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