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Case Report

Isolated Tillaux fracture in an adult: a rare case and review of management

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ABSTRACT

Isolated Tillaux fractures of the ankle joint are predominantly seen in adolescents due to the presence of open epiphyses, which makes the region more susceptible to injuries. In adults, this fracture is rare because the anterior inferior tibiofibular ligament (AITFL) typically ruptures before bone avulsion occurs. These injuries can be easily missed or misdiagnosed. Recognizing such injuries is critical to prevent long-term complications, including joint instability and post-traumatic arthritis. We report a rare case of an isolated Tillaux fracture in a 35-year-old male following a road traffic accident. This report outlines our diagnostic approach, management strategy, and postoperative outcome.

Keywords: Ankle injury, Isolated Tillaux fracture, Adult

INTRODUCTION

First described in 1822 by Sir Astley Cooper, the Tillaux fracture results from a forced external rotation mechanism, whereby the AITFL avulses the anterolateral portion of the distal tibial epiphysis.[1,2] In adolescents, the ligament is stronger than the epiphyseal bone, which predisposes them to such avulsion injuries.[3] In adults, this injury is rare, as the ligament typically ruptures rather than causing an avulsion fracture.[3] Only a few isolated adult Tillaux fracture cases have been reported in the literature.[3,4]

Clinically, Tillaux fractures can be mistaken for lateral ankle sprains.[5,6] Therefore, awareness and accurate diagnosis are critical to avoid complications such as degenerative arthritis and ankle dysfunction.

Radiographs may fail to reveal the fracture, necessitating CT for anatomical assessment and surgical planning. As an intra-articular fracture in a weight-bearing joint, anatomical reduction and stable fixation are essential for optimal recovery.

Here we would like to report a rare case of isolated Tillaux fracture in an adult male and emphasize on the importance of accurate diagnosis and management.

CASE REPORT

A 35-year-old male presented to the department of trauma and emergency medicine following a road traffic accident, with left ankle pain, swelling, and inability to bear weight. On examination, there were no symptoms or signs suggestive of life-threatening injuries. There was diffuse tenderness and swelling noted over the anterior and anterolateral ankle, without neurovascular deficits or open wounds. Patient was initially manged according to ATLS guidelines.

Initial radiographs showed a fracture involving the anterolateral tibial plafond (Figure 1). The patient was immobilized in a plaster splint and received analgesics. A CT scan confirmed an isolated fracture of the Tillaux-Chaput tubercle, with >2 mm displacement and involvement of the fibular notch (Figure 2).

As it was an intra-articular fracture with a displacement >2 mm, surgery was indicated, which was performed on the very next day after proper patient stabilisation and workup. Under regional anesthesia, an anterolateral approach was used. The fracture was reduced with a clamp, temporarily stabilized with pins, and fixed with two 4.0 mm cannulated cancellous (CC) screws under fluoroscopy. Additional stabilisation was ensured using two biodegradable suture anchors. Adequate reduction was confirmed intraoperatively (Figure 3) and again with imaging (Figure 4 and 5). The wound was closed primarily, and a posterior splint applied.

Postoperative care included splinting for 15 days, pain management, 48-hour antibiotic prophylaxis, and patient was discharged on postoperative day 3 with proper instructions. At two weeks follow-up, the patient began active and passive ankle motion exercises. Partial weight-bearing with a walker commenced at six weeks, with full weight-bearing by eight weeks. At six months, the patient had full, pain-free ankle mobility and no complications. The range of motion was comparable to the contralateral ankle and the AOFAS (American orthopaedic foot and ankle society) score was 84/100, due to his occupational exertion.

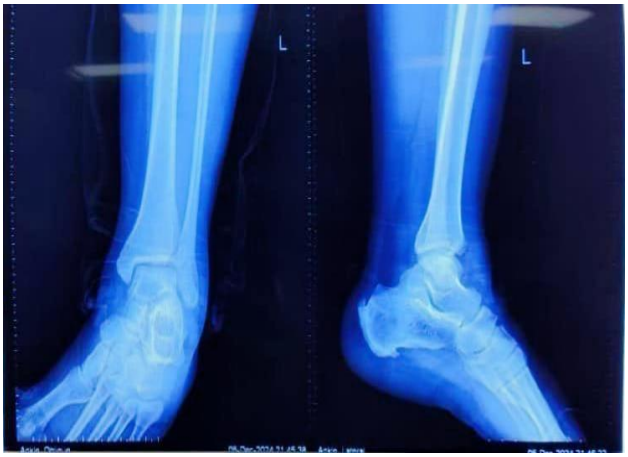

Figure 1: Preoperative X-ray.

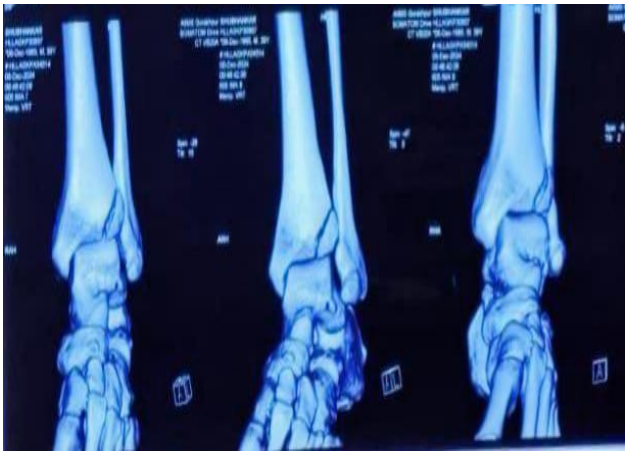

Figure 2: Preoperative CT scan.

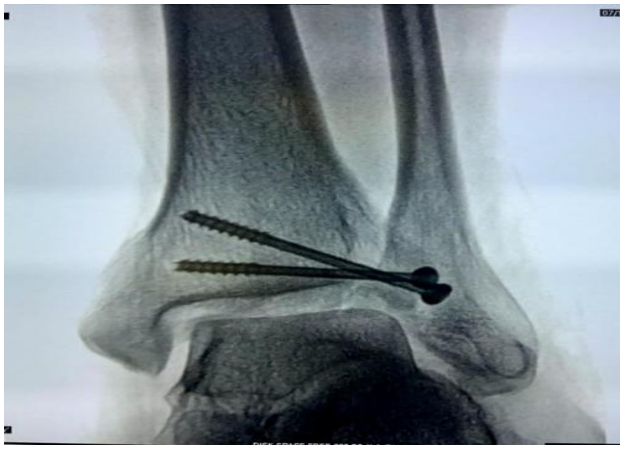

Figure 3: Intraoperative reduction.

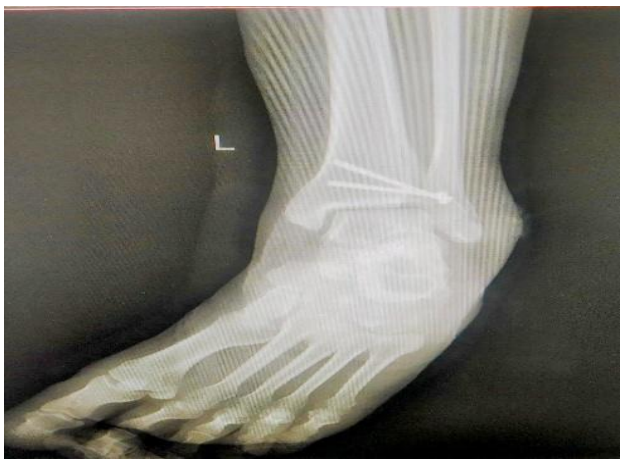

Figure 4: Post operative anterior X-ray.

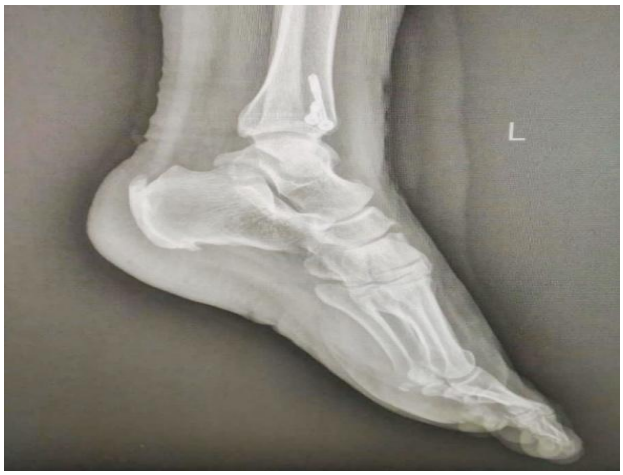

Figure 5: Post operative lateral X-ray.

DISCUSSION

The Tillaux fracture affects the Tillaux-Chaput tubercle-an anterolateral epiphyseal region where the AITFL inserts.[7-10] When injured, syndesmotic stability and tibiotalar congruency may be compromised, leading to pain, dysfunction, or osteoarthritis if not properly managed.[9-11]

In adolescents, the anterolateral region of the distal tibia is the last zone of closure of the physis, making it vulnerable to avulsion.[7,8] In adults, stronger bone structure generally leads to ligamentous injury instead.[5,6] Isolated adult Tillaux fractures result from focal force transmission during trauma onto this Tillaux-Chaput's tubercle without propagating rotational injury.[12] Due to their rarity, these fractures may go undiagnosed.[4-6,10] CT imaging is crucial when radiographs are inconclusive, helping evaluate fragment size, displacement, joint involvement, and comminution, thereby guiding treatment.[4,6]

While conservative management with immobilization for 6 weeks has been reported, but is no longer appropriate and the ideal surgical treatment is controversial.[4,6] It is generally limited to cases with <2 mm displacement and , if displacement exceeds 2 mm after attempted close reduction, surgical intervention such as open reduction and internal fixation is recommended to achieve anatomical alignment.[13] Immobilization protocols also vary widely, likely due to small case numbers.[4]

The goal of surgical treatment is anatomical reduction and stable fixation, typically using cannulated screws.[6,10] Surgical fixation techniques differ depending on fracture configuration and syndesmotic stability. Oak et al. used quadricortical screws for syndesmotic disruption.[4] Lee et al opted for a T-plate fixation supplemented by two tricortical screws to fix the syndesmosis.[14] Arthroscopy-assisted fixation has been used in some centers, though it requires specialized skills and equipment.[15]

In this case report, we presented a 35-year-old male who sustained an isolated displaced Tillaux fracture following a road traffic accident. The CT scan revealed a displaced fracture of more than 2 mm which warranted surgical treatment and, in our case, surgical fixation yielded excellent clinical and radiologic outcomes. Early mobilization was initiated at two weeks, with weight-bearing progression from six to eight weeks, consistent with prior studies.

CONCLUSION

Isolated Tillaux fractures in adults are rare and often underdiagnosed. High clinical suspicion, appropriate imaging, and timely intervention are crucial for optimal outcomes. CT imaging aids in accurate diagnosis and surgical planning. Displaced fractures require anatomical reduction and stable fixation to preserve joint function and prevent long-term complications.

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REFERENCES

1. Cooper AP. On dislocation of the ankle joints, in: A Treatise on Dislocations and on Fractures of the Joints, Longman, Hurst, Rees, Orme and Brown; E Cox and Son. 1822.
2. Tillaux P. Trait de Chirurgie clinique, Asselin and Houzeau, Paris. 1848.
3. Kumar N, Prasad M. Tillaux fracture of the ankle in an adult: a rare injury. J Foot Ankle Surg. 2014;53(6):757-8.
4. Oak NR, Sabb BJ, Kadakia AR, Irwin TA. Isolated adult Tillaux fracture: a report of two cases. J Foot Ankle Surg. 2014;53:489-92.
5. Sharma B, Reddy IS, Meanock C. The adult Tillaux fracture: one not to miss. BMJ Case Rep. 2013;2013:bcr2013200105.
6. Millán-Billi A, Fa-Binefa M, Gómez-Masdeu M, Carrera I, De Caso J. Tillaux fracture in adults-Case report and review of literature. J Clin Orthop Trauma. 2022;27:101809.
7. Wuerz TH, Gurd DP. Pediatric physeal ankle fracture. J Am Acad Orthop Surg. 2013;21(4):234-44.
8. Blackburn EW, Aronsson DD, Rubright JH, Lisle JW. Ankle fractures in children. J Bone Joint Surg Am. 2012;94(13):1234-44.
9. Tourné Y, Molinier F, Andrieu M, Porta J, Barbier G. Diagnosis and treatment of tibiofibular syndesmosis lesions. Orthop Traumatol Surg Res. 2022;108(2):103237.
10. Rammelt S, Bartoníček J, Kroker L. Pathoanatomy of the anterolateral tibial fragment in ankle fractures. J Bone Joint Surg Am. 2022;104(4):353-63.
11. Crawford AH. Triplane and Tillaux fractures: is a 2 mm residual gap acceptable? J Pediatr Orthop 2012;32(1):S69-73.
12. Birnie MFN, van Schilt KLJ, Sanders FRK, Kloen P, Schepers T. Anterior inferior tibiofibular ligament avulsion fractures in operatively treated ankle fractures: a retrospective analysis. Arch Orthop Trauma Surg 2019;139(6):787-93.
13. Sawyer JR, Spence DD. Fractures and Dislocations in. Thirteenth. Elsevier Inc. 2019.
14. Lee C, Douglas TJ. Irreducible ankle fracture from an interposed Chaput fragment: a case report, JBJS Case Connect. 2017;7(2):e42.
15. Simon WH, Floros R, Schoenhaus H, Jay RM. Juvenile fracture of tillaux. A distal tibial epiphyseal fracture. J Am Podiatr Med Assoc. 1989;79:295-9.

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