SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Traumatology and Orthopedics

A Rare Combined Fracture of the Ankle, Talar Neck Fracture-Dislocation and Jones Fracture: Case Report and Management

A. Elmoula[1*], M. Meskouf[1], Z. Chbihi[1], A. Soleh[1], Y. Fathelkhir[1], E. M. Boumediane[1], S. Aziz[1], M. A. Benhima[1], I. Abkari[1]

[1]Traumatology and Orthopedics Department B, AR-RAZZI Hospital, Mohammed VI University Hospital, Marrakech

DOI: https://doi.org/10.36347/sasjs.2025.v11i05.022 | **Received:** 08.04.2025 | **Accepted:** 14.05.2025 | **Published:** 20.05.2025

***Corresponding author:** A. Elmoula
Traumatology and Orthopedics Department B, AR-RAZZI Hospital, Mohammed VI University Hospital, Marrakech

Abstract | **Case Report**

Highlights

- This article aims to present a rare fracture combination of ankle and foot fractures and dislocations. Which will allow professionals a rapid recognition and adequate management of this type of trauma.
- It also presents the peculiarities of radiological diagnosis.
- Our work talks about the specificity of the management of this trauma.

Keywords: Jones fracture, Talar neck fracture-dislocation, Ankle fracture, Medial Malleolus fracture, Tibial pilob fracture, Ankle strain, McReynolds approach, Hawkins Classification, Lauge Hensen classification, case report, SCARE criteria.

BACKGROUND

Here we report a case about an exceptionally rare fracture-dislocation combination which was caused by a trauma mechanism of axial compression, adduction while the foot is in dorsiflexion is; such trauma mechanism is exceptional [1,2] and an association with Jones fracture (which requires a plantar flexion [3]) is exceptional.

Here we report a case about an exceptionally rare fracture-dislocation combination:

- Fracture of the medial malleolus with a wedge towards the anterior tubercle;
- Fracture of the base of the 5th metacarpal (Zone 2);
- Talar neck fracture with a subtalar dislocation;
- Strain of the lateral ankle ligament.

We report that such a complex combination is possible, and we showcase its specific surgical management and the necessity of regular monitoring for complications that may arise. This report has been written in line with the SCARE criteria [4].

CASE PRESENTATION

Patient information

Demographic details

The patient is a male 39 years old originating from North Africa with a BMI of 22.5, originating from a low-middle income area.

Past medical and surgical history

No medical or surgical history or comorbidities.

Presentation

The patient was brought by ambulance to our health facility after being a victim of a public road accident, the patient had fallen from his motorcycle after hitting the brake suddenly after an unexpected road obstacle has arisen.

Mechanism

The accident has caused him an open trauma which impacted the right lower limb with reception of its foot against the road ground, with the foot being in forced dorsiflexion and adduction with a compression component that can be inferred from the trauma mechanism.

Timeline

The patient was brought by ambulance immediately after the accident with a delay in the emergency of 2h, surgical management took place 4 hours later and the patient was discharged three days later.

Clinical findings

On inspection the patient presented with complete ankle functional impotency, swelling in his ankle and foot, an ankle deformity in adduction, a 4cm

transverse linear wound with clean, uncontoured margins, and exposure of the ruptured fascia of the external malleolus 2cm above its tip, a 5cm x 3cm skin abrasion on the outer heel, with a second 2cm skin abrasion lesion on hing-foot.

On palpation we found a stair-step feeling on the medial malleolus, and an exquisite pain on palpation of the medial malleolus, on the compression of the heel and the base of the 5th metatarsal, the vascular-nervous examination was without any abnormality.

Figure 1: External lateral view of the ankle and foot

Figure 2: Front view of the ankle and foot

Imaging Diagnosis

Radiological imaging consisted of four X-ray views, Front and side views of ankle and foot was requested; Radiological findings were as follow:

- Vertical oblique fracture of the medial malleolus with a split towards the anterior tubercle of the tibia pilon and an ankle locked in plantar flexion;
- Fracture of the neck of the talus with posterior subtalar subluxation with an internally displaced calcareous-pedic block; classified as Hawkins II [5]

- Fracture of the 5th metatarsal with large fragment passing through the proximal joint of the 4th and 5th metatarsal; classified as Zone 2 or Jones fracture [3]
- Sprain of the external collateral ligament;
- Negative Skinner's test;
- No radiological evidence of syndesmosis lesion.

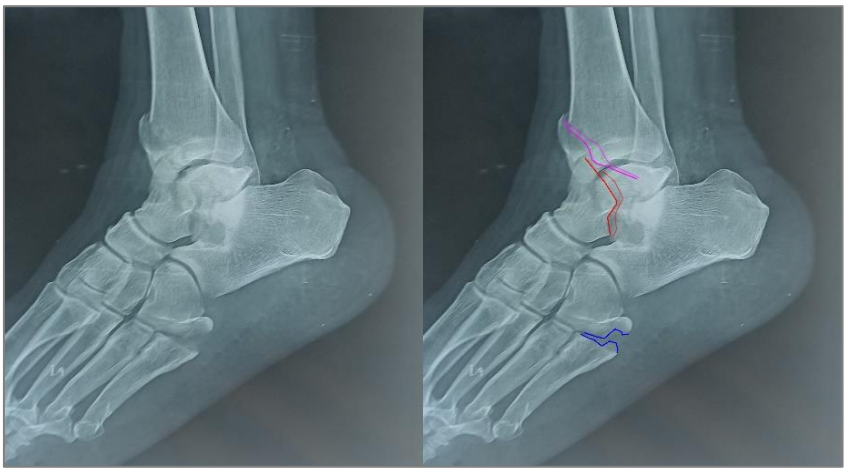


Figure 3: Side view ankle X-ray image

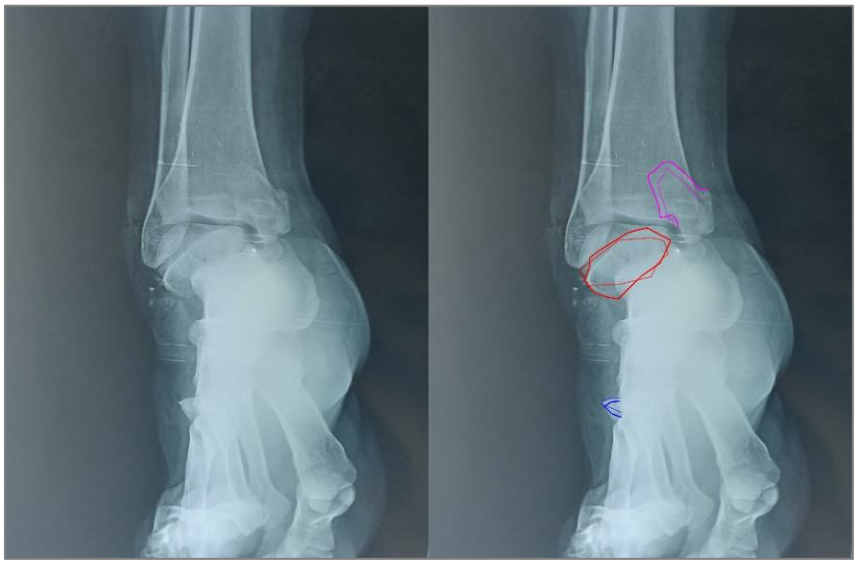


Figure 4: Front view ankle X-ray image

MANAGEMENT

Medical management

Initial trauma management took place 1 hour after the trauma has occurred; It consisted of level 2 analgesics, tetanus serotherapy, amoxicillin-clavulanic acid antibiotic prophylaxis with abundant physiological serum rising.

Surgical management

The surgery took place four hours after the trauma has occurred; the patient was placed in the supine position, on an ordinary surgery table, under spinal anesthesia, the pneumatic cuff was used; the ankle was alleviated from the floor by placing a 10cm x 10cm x 20cm cushion under the lower part of the leg.

We followed an open reduction and internal fixation approach; the skin incision starts 3cm above the tip of the medial malleolus and descends along its anterior border; then it curves downs towards the distal part of the subtalar joint after X-ray fluoroscope monitoring.

On superficial dissection the saphenous pedicle was identified and then cleared upward and forward; the tibial pedicle along with the retro-malleolar tendons were cleared backward and downward.

On deep dissection we passed through the tendons of the tibialis anterior muscle (spread forward) and the flexor hallucis longus muscle (spread backward) and left their insertions intact;

Figure 5: per-oprative of the talus open reduction and internal fixation

Talus bone fixation took place first; the medial malleolus was spread downward; then reduction used two parallel provisional pins in the anteromedial vertical direction towards the posterolateral angle of the talus that were monitored under the X-ray fluoroscope; the reduction was retained by placing an auxiliary davit then two 4.5mmm intermediary screws were placed following the same direction of the pins ; then those provisional pins were removed.

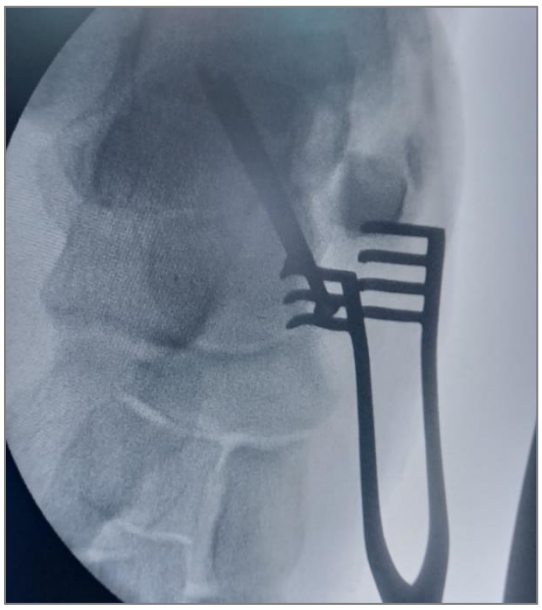


Figure 6: X-ray fluroscope image of the talus internal fixation

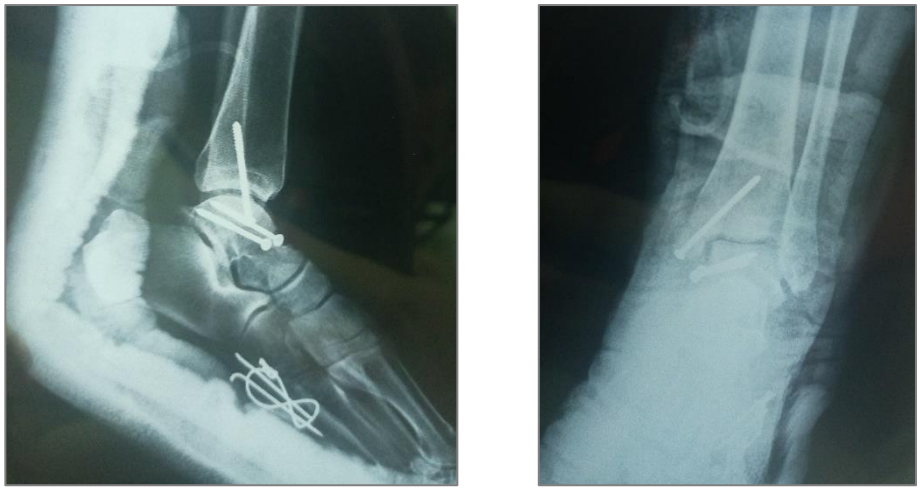
Then medial malleolus fixation took place by obtaining its reduction after assessing the articular surface congruency; the reduction was retained by placing an auxiliary davit then a 4.5mmm intermediary screw was placed under the X-ray fluoroscope monitoring.

Figure 7: X-ray fluroscope image of the medial malleolus internal fixation

We then made a longitudinal proximal postero-external incision along the base of the 5th metatarsal, after dissection we obtained open reduction and then we implemented a figure-of-8 tension band wire construct.

Figure 8: X-ray fluroscope image of Jones fracture internal fixation

Then the rinsing, trimming, exploration of the external malleolus took place which assessed that the profound structures remained undamaged; the incision wounds was closed under a Redon's suction drain and a sterile bandage. The surgical duration was 65 min and blood loss was under 50 g.



(A) Side view of the ankle **(B) Front view of the ankle**

Figure 9: post operative X-ray image of the ankle

OUTCOME

Initial medical management took place 1 hour after the accident; then surgery occurred 3 hours later (4 hours after the accident). The patient's postoperative course was uneventful; a sensory and motor examination 24 hours after was without any abnormality; a flat plaster gutter was maintained one week after the cutaneous condition was judged safe; then a circular plaster was placed for 6 weeks; rehabilitation started after the 8th week; foot-ground contact was forbidden for 6 months to prevent talar osteonecrosis and secondary displacement [6]; radio-clinic quotation of modified VIDAL [7] at 6 months was 18 (Good) out of 20 along with an ankle x-ray that excluded any talar osteonecrosis with follow-ups extended up to 18 months.

DISCUSSION

The mechanism that explains this injury is axial compression, adduction while the foot is in dorsiflexion [8] as Jones fracture requires adduction combined with internal rotation [3]; while the talar neck fracture requires a dorsiflexion of the foot; The inversion mechanism (adduction, internal rotation and plantar flexion) [3] that is linked with Jones fracture was incomplete in our case as otherwise, a dorsiflexion component was present; while a high energy trauma that can be associated with the talar fracture dislocation can explain the occurrence of Jones fracture.

Talar neck fracture often requires the osteotomy of the medial malleolus [9], in our case, this was not necessary as the internal malleolus was already fractured.

Talar internal fixation is often done using calcaneum or ankle surgical approaches [9]–[12]; in our case we used a novel approach: anteromedial approach of the ankle combined with a modified medial calcaneum approach; in our case with shifted the distal incision line upwards away from the retro-malleolar pedicle unlike, the original McReynolds [13] approach which would help preserve talus arterial supply and thus reduce the risk of talus osteonecrosis [14], [15].

CONCLUSION

This case report is about an exceptional fracture combination of medial malleolus with the anterior tubercle, along with a talar neck fracture subtalar dislocation and Jones fracture occurred in a 39 years old male patient with average BMI and no medical history after sustaining an injury secondary to a fall from his motorcycle. although that Jones fracture is associated with a plantar flexion mechanism; this trauma was caused by a mechanism of axial compression, adduction while the foot is in dorsi-flexion; It is necessary to establish a clinical and radiological diagnosis for adequate management. We present a novel approach that preserves talar vascularization and we take advantage of the fractured internal malleolus to carry out anatomical open reduction followed by a up to 18-month postoperative follow-up to watch for any complications.

Declaration of competing interest: The authors declare that there is no conflict of interest.

Statement of Ethics

The study was approved by the Scientific Committee and the Medical Council of our establishment. Written informed consent was obtained from the patient for publication of this report and any accompanying images in accordance with the principles of the Declaration of Helsinki.

Funding: No funding to declare.

Author's contribution: This article was written and drafted by El moula Abdelhamid. All the authors read and approved the final manuscript.

Data Availability Statement: All data generated or analyzed during this study are included in this published article.

Registration of research studies Not applicable.

Guarantor: El moula Abdelhamid.

Provenance and peer review: Not commissioned.

REFERENCES

1. S. L. Jensen, B. K. Andresen, S. Mencke, and P. T. Nielsen, "Epidemiology of ankle fractures: A prospective population-based study of 212 cases in Aalborg, Denmark," *Acta Orthop. Scand.*, vol. 69, no. 1, pp. 48–50, Jan. 1998, doi: 10.3109/17453679809002356.
2. M. Dhillon, S. Aggarwal, S. Dhatt, and M. Jain, "Epidemiological Pattern of Foot Injuries in India: Preliminary Assessment of Data from a Tertiary Hospital," *J. Postgrad. Med. Educ. Res.*, vol. 46, pp. 144–147, Jul. 2012, doi: 10.5005/jp-journals-10028-1032.
3. H. Kavanaugh and T. D. Brower, "The Jones Fracture Revisited."
4. R. A. Agha *et al.*, "The SCARE 2020 Guideline: Updating Consensus Surgical CAse REport (SCARE) Guidelines," *Int. J. Surg.*, vol. 84, pp. 226–230, Dec. 2020, doi: 10.1016/j.ijsu.2020.10.034.
5. T. Alton, D. J. Patton, and A. O. Gee, "Classifications in Brief: The Hawkins Classification for Talus Fractures," *Clin. Orthop. Relat. Res.*, vol. 473, no. 9, pp. 3046–3049, Sep. 2015, doi: 10.1007/s11999-015-4136-x.
6. H. A. Vallier, S. E. Nork, D. P. Barei, S. K. Benirschke, and B. J. Sangeorzan, "Talar Neck Fractures: Results and Outcomes," *JBJS*, vol. 86, no. 8, pp. 1616–1624, Aug. 2004.
7. J. Vidal, "Fractures malléolaires. Rôle de la membrane interosseuse. Etude critique des résultats á propos de 60 observations," 1974.
8. J. Yde, "The Lauge Hansen classification of malleolar fractures," *Acta Orthop. Scand.*, vol. 51, no. 1–6, pp. 181–192, 1980.
9. E. A. Magnusson, S. Telfer, M. Jackson, and M. F. Githens, "Does a Medial Malleolar Osteotomy or Posteromedial Approach Provide Greater Surgical Visualization for the Treatment of Talar Body Fractures?," *JBJS*, vol. 103, no. 24, pp. 2324–2330, Dec. 2021, doi: 10.2106/JBJS.21.00299.
10. A. Fournier *et al.*, "Total talar fracture – Long-term results of internal fixation of talar fractures. A multicentric study of 114 cases," *Orthop. Traumatol. Surg. Res.*, vol. 98, no. 4, Supplement, pp. S48–S55, Jun. 2012, doi: 10.1016/j.otsr.2012.04.012.
11. A. R. Hsu and J. A. Scolaro, "Posteromedial Approach for Open Reduction and Internal Fixation of Talar Process Fractures," *Foot Ankle Int.*, vol. 37, no. 4, pp. 446–452, Apr. 2016, doi: 10.1177/1071100716635813.
12. S. Rammelt and H. Zwipp, "Talar neck and body fractures," *Injury*, vol. 40, no. 2, pp. 120–135, Feb. 2009, doi: 10.1016/j.injury.2008.01.021.
13. B. D. Burdeaux, "Reduction of calcaneal fractures by the McReynolds medial approach technique and its experimental basis," *Clin. Orthop.*, no. 177, pp. 87–103, Jul. 1983.
14. R. H. Gelberman and W. W. Mortensen, "The Arterial Anatomy of the Talus," *Foot Ankle*, vol. 4, no. 2, pp. 64–72, Sep. 1983, doi: 10.1177/107110078300400204.
15. M. L. Prasarn, A. N. Miller, J. P. Dyke, D. L. Helfet, and D. G. Lorich, "Arterial Anatomy of the Talus: A Cadaver and Gadolinium-Enhanced MRI Study," *Foot Ankle Int.*, vol. 31, no. 11, pp. 987–993, Nov. 2010, doi: 10.3113/FAI.2010.0987.