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(CASE REPORT)

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Open subtalar dislocation of internal variety caused by horseback riding accident: A rare case report

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Abstract

This article describes a rare case of an open subtalar dislocation of the internal variety caused by a horseback riding accident. The patient was a 43-year-old with no previous medical history. An emergency reduction was performed in the operating room under general anesthesia, and external osteosynthesis was used to stabilize the joint. Following ankle rehabilitation, the patient's evolution was satisfactory, and after four months, the patient resumed their sports activities. The functional outcome was good after an 18-month follow-up. This case report emphasizes the importance of timely and appropriate management of rare injuries to achieve positive outcomes.

Keywords: Pure subtalar dislocation; Open subtalar dislocation; Internal variety; Horseback riding accident; Emergency reduction; Surgical treatment; External osteosynthesis; Ankle rehabilitation; Functional outcome; Case report

1. Introduction

Pure subtalar dislocation is a very uncommon lesion that accounts for 1% of all dislocations in traumatology [1]. It is distinguished by the loss of anatomical contact between the astragalus, calcaneus, and tarsus, while the talus and tibio-peroneal mortises remain congruent. This lesion is caused by a high-velocity trauma, which explains why it is so uncommon in sports accidents. The most common type is the internal variety. The open type, on the other hand, is even more exceptional. We report a rare case of open subtalar dislocation of internal variety caused by a horseback riding accident. Emergency reduction was combined with surgical treatment using external osteosynthesis to achieve joint stabilization. Following ankle rehabilitation, the evolution was satisfactory. After four months, the patient resumed his sports activities. This manuscript has been reported in line with SCARE's 2020 Criteria [3].

2. Case Presentation

This is a 43-year-old patient with no specific pathological history who was injured in a horse-riding competition. During the interrogation, the patient stated that his right ankle was caught in the stirrup, preventing him from performing forced dorsal flexion and pronation, causing the horse to fall with a landing point in inversion and equinus. The patient was taken to the emergency room for treatment. A skin opening on the lateral aspect of the right ankle with exit from the astragalus exposing its lower articular surface was discovered in the clinical study (Figure 1). As a result, any attempt to mobilize the ankle was excruciatingly painful. There was also no downstream vascular-nervous damage.

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Figure 1 Right leg showing the open subtalar luxation

Anterior and lateral ankle radiographs showed a pure subtalar dislocation with internal displacement of the talus without any other associated bone lesion (Figure 2).

Figure 2 A standard x-ray of the right ankle shows the open subtalar luxation

After extensive joint lavage, the reduction was performed urgently in the operating room under general anesthesia. A suction Redon drain was used for plane-by-plane closure and external lateral ligament repair. A set of second-generation internal tibio-metatarsal Hoffman-type external fixators was used to stabilize the joint (Figure 3). Radiological monitoring revealed that the subtalar and talonavicular joints were congruent (Figure 4).

Figure 3 Postoperative aspect with external fixation

Figure 4 Postoperative radiological control shows the reduction

Antibiotic therapy based on protected penicillin was recommended. The postoperative procedure was straightforward. The five-week follow-up revealed good skin healing with no signs of infection (Figure 5).

Figure 5 Five weeks follow up without infection or complications

At the beginning of the sixth week, the external fixator was removed. Ankle rehabilitation began right away. Four months after the trauma, the patient resumed his sports activities. The functional outcome was good after an 18-month follow-up.

3. Discussion

Subtalar dislocation is one of the most uncommon ankle injuries in athletes, with internal dislocation being the most common. Furthermore, the open nature is exceptional, necessitating a high energy mechanism [2]. According to the authors, the latter is still debatable. Baumgartner Huguier describes the fibula-calcaneal bundle of the lateral lateral ligament as the first to tear, followed by the hedge ligament, and finally, as the foot is pushed inwards, the astragalo-scaphoid ligament ruptures, explaining the open character [3]. According to Giraud and Rachou, the interosseous hedge is too tough to break and instead tears away from its lower insertion [4]. According to Watson-Jones, subtalar dislocation is a double dislocation and represents the second stage of foot inversion accidents, with the first stage being single ankle dislocation and the third being triple dislocation and represented by astragalus enucleation [5]. Finally, this range of theories has been worked out. We will keep the experimental study's conclusions based on clinical, anatomical, experimental, and biomechanical arguments in which Allieu demonstrated that the mechanism of this dislocation is secondary to trauma in a weakened position, namely an inversion associated with equinism, rather than at a right angle or flexed on the leg, as some authors believe [6]. X-rays of the ankle from the front and side confirm the diagnosis, with the calcaneus and axis of the foot displaced inwards while the astragalus remains wedged in the mortise on the front view and the line space of the subastragalar joint obliterated and the scaphoid surface cleared on the profile view. If the degree of the osteo-cartilaginous lesions is not visible on plain radiographs, the scanner can help [7]. If the dislocation is closed, the treatment consists of an emergency reduction under general anesthesia using the boot puller maneuver (patient in supine position, knee flexed at 90° to relax the muscles of the compartment of the leg, one hand placed on the anterosuperior region of the tibiotarsal and the other cups the palm and pulls the foot forward in plantar flexion) followed by 45 days of immobilization [8]. If, on the other hand, the dislocation is open, surgical treatment is required, and the patient must be reduced to the open sky after joint lavage, drainage, and adequate antibiotic therapy. Stability should be assessed clinically and radiologically. If the reduction is unstable or there are significant associated ligament lesions, internal fixation is indicated [2]. This is our patient's situation. Rehabilitation will begin as soon as the external fixator is removed and will condition the functional prognosis of the ankle, which will generally depend on the speed with which the reduction was made and the healing of the ligaments [9]. Subtalar osteoarthritis is the most dangerous risk, followed by astragalus necrosis [10].

4. Conclusion

In conclusion, pure subtalar dislocation is a rare injury that is caused by high-velocity trauma and accounts for 1% of all dislocations in traumatology. Open subtalar dislocation of the internal variety is even more exceptional, with very few reported cases in the literature. This case report highlights the successful management of an open subtalar

dislocation caused by a horseback riding accident through emergency reduction and surgical treatment with external osteosynthesis. The patient's functional outcome was good after ankle rehabilitation, and they were able to resume their sports activities after four months. It is essential to recognize and appropriately manage rare injuries like this to achieve positive outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of ethical approval

This study is exempt from ethical approval from the institution.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Provenance and peer review

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