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Case Report

Bilateral Fracture of 5th Metatarsal

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Abstract

5th metatarsal stress fractures are frequently encountered in professional football.

Approximately five to six percent of fractures encountered in the primary care setting are metatarsal fractures. In adults, metatarsal fractures peak in the second to fifth decades of life. The most frequent fracture seen is the fifth metatarsal, accounting for 68% of metatarsal fractures. Proximal fifth metatarsal fractures are divided into three zones. Zone one, zone two and zone three fractures account for 93%, four percent and three percent of proximal fifth metatarsal fractures, respectively [1].

Radiographic imaging for a suspected metatarsal fracture includes three standard radiographic views of the foot: Lateral, anteroposterior, and a 45 degree oblique. Acute stress fractures are typically not detected on the standard three views of the foot. It is suggested that repeated radiographs are made at 10 to 14d after the initial onset of symptoms. At this time a radiolucent reabsorption gap around the fracture confirms the diagnosis. In the case of more complex midfoot trauma, a CT scan is recommended to rule out the Lisfranc fracture dislocation [2].

Displaced zone two fractures require operative management. Less consensus exists on acute nondisplaced Jones fractures (zone two). There are many studies that advocate for early intramedullary screw fixation for acute Jones fractures in the active population. Acute Jones fractures treated operatively resulted in quicker return to sport and clinical healing in competitive athletes [1]. The therapeutic management of this fracture remains controversial. Someauthors have mentioned the difficulty of treating Jones fractures which very of-ten progress to non-union linked to the precariousness of the vascularization [4].

There is concern that early return to play following intra-medullary screw fixation may lead to an increased risk of delayed union. However, intramedullary screw fixation of 5th metatarsal stress fractures leads to a predictable time of return to play and a low rate of non-union [3]. The fracture of its base described by Sir Robert Jones in 1896 is the source of etiological, prognostic and therapeutic confusion. This frequent fracture of the foot has been often studied in the military, athletes and the European population but not mexican poblation [5,6].

Keywords: Metatarsal Fractures; Fifth Metatarsal; Jones Fracture; Club Pachuca Soccer

Abbreviations

5th: Fifth; AP: Anteroposterior; Cm: Centimeter; Mm: Millimeter; Ct: Computed Tomography

Introduction and Case Report

Male professional of Pachuca soccer player and 21 years old. In 2017, presented a pain in the left foot at the lateral dorsum region. An anteroposterior (AP) and lateral radiographic projections were requested, which were performed with Mindray model Eye 280 digital X-ray equipment. X-Ray showed a radiolucent and observed a loss of the cortical continuity on the base of the 5th metatarsal, related with a fracture with an non displaced appearance and without an increase in the density of the cortex or medullary bone tissue, That findings suggested bone remodeling and an ap-

parent decrease in radiographic bone density with compatible with osteopenia. A closed-focus surgical procedure was performed which consisted in a 1 cm incision, on the base of the 5th metatarsal. It was dissected and located, a guide nail is placed, the position is confirmed, a 3.5 mm cannulated drill inserted, a 4.5 x 5.0 mm screw is placed and adequate reduction of the fracture is observed.

At 2019, during training he had a forced eversion on the right ankle with a subsequent "snap" in the lateral region of the metatarsus, at 3 anteroposterior (AP) and lateral radiographic projections of the right foot are requested, which were performed with equipment of Mindray model Eye 280 digital X-ray showing a radiolucent area that indicates loss of cortical continuity of the base of the 5th metatarsal in relation to a non-displaced fracture with no increase in the density of the cortex or medullary bone tissue. The data suggested a bone remodeling and less radiographic bone density that suggests osteopenia, so the patient is immobilized and a closed-focus surgical procedure is performed; which consists of performing a 1 cm lateral approach, dissected by planes until the base of the 5th metatarsal is located, a threaded guide nail is passed, it is observed in proper placement, the cannulated drill bit is passed, the 4.5 x 5.0 mm screw is passed and closure of the fracture line is observed.

Radiological findings

The main findings in the acute phase of the 5th metatarsal fracture are loss of cortical continuity in the proximal metaphyseal region of the 5th metatarsal compatible with a fracture without changes in the density of the cortex, the medullary bone tissue or the fracture edges, There is a possibility or not at all displacement of the distal fragment. Chronic changes include thickening with increased density of the fracture edges indicative of bone remodeling.

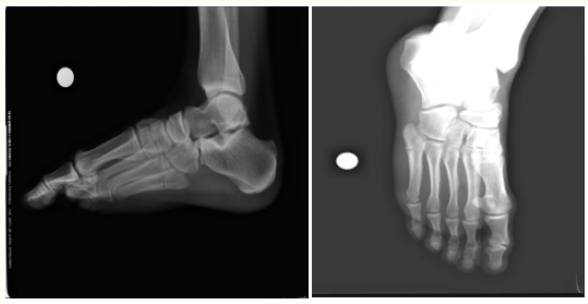

Figure 1: Radiograph of a fifth metatarsal type Jones fracture.

Figure 2: Intramedullary screw fixation of 5th metatarsal.

Rehabilitation

On both occasions, the rehabilitation consisted as following:

- Acute phase: Physical agents, lower and upper body strengthening exercises and CORE.
- Partial support phase: Physical agents, manual therapy, 50% partial support, lower and upper body strengthening exercises and CORE exercises. A gradually return to activities in a pool, was during 1 to 4 weeks.
- Full support: unloading, pre-running and running work, in a period of 4 to 8 weeks.

Materials and Methods

- Mindray model Eye 280 digital X-ray equipment.
- Arthroscope.
- Rehabilitation team.

Results and Discussion

In the case presented, the player of club Pachuca soccer belonging to the first division league of Mexico who had two similar injuries of bilateral fifth metatarsal fracture in a period of 2 years, indicated that this kind of fractures are relative common. The most common kind injury in soccer players are the Jones fracture. It is located in an area of the fifth metatarsal with poor blood supply. It usually occurs after sprained ankle or foot (tarsus). Although they can be caused by microtrauma or repetitive stress in the metatarsal area. Many of the patients who have suffered a Jones fracture has oftenly a Varo supinator foot, which may be a predisposing factor for the fracture development, due to the increased a mechanical stress on fifth metatarsal area.

Conclusion

These kinds of injuries occurred mainly in young subjects, they heal slowly with a high potential for delay, pseudoarthrosis or re-fracture and for this reason several authors are inclined towards surgery as in our case. The selection of the procedure is mainly due to the ease and safety of the technique and the speed of consolidation. The bilateral fracture of the base of the fifth metatarsal remains a frequent lesion. The spontaneous nature and the failure or the delay of the consolidation and the bilaterality must always motivate the search for a non-traumatic etiolog-ical factor. The persistent symptomatic nature should make screwing with or without a bone graft preferable to conservative orthopedic treatment.

Conflict of Interest

There is not any conflict of interest exists.

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