INTRODUCTION

Fracture-dislocations of the tarsometatarsal joint which is also known as Lisfranc's joint, are rare and complex. The incidence is low, accounting for less than 1% of all fractures and dislocations. The real incidence is more than reported because 20% of the Lisfranc's joint injuries are overlooked, especially in polytrauma patients. Early diagnosis, precise anatomic reduction, and maintenance of reduction are imperative for long term good functional results.

The tarsometatarsal articulation has a complex anatomy and to define the exact mechanism of injury is not always possible. To know the complex anatomy of the tarsometatarsal articulation is important for the accurate diagnosis and prompt treatment. While there is no soft tissue connection between the first and second metatarsal bases, the lateral four metatarsal bases are attached to each other by transverse metatarsal ligament. Thus, at the time of injury lateral four metatarsals move as one unit. Because of this complex anatomy, most of the Lisfranc's joint fracture-dislocations have different features, especially in indirect injuries. The following case is an example for an interesting and complex type of Lisfranc's fracture-dislocations.

CASE REPORT

A 20-year-old male car driver sustained a traffic accident. He had an isolated closed trauma to his right foot. On physical examination, his foot was very painful and swollen without any neurovascular damage. Initial radiographs showed a partial dorsolateral fracture-dislocations through second to fifth tarsometatarsal articulation. There were fractures at the neck of the metatarsals two through five (Picture1).

 MANAGEMENT OF LISFRANC'S FRACTURE-DISLOCATION

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ABSTRACT

Lisfranc's joint injuries are rare and complex. A car driver who sustained a traffic accident, was admitted because of partial dorsolateral fracture-dislocation of the Lisfranc's joint. The diagnosis was made by physical examination and radiographs. Reduction and pin fixation were performed under general anesthesia. At the end of the ninth month, range of motion of the foot and ankle was full, with no pain on daily activities.

Key words: Lisfranc's Joint, Fracture-Dislocation

On the day of injury, in the operating room, under general anesthesia fluoroscopic evaluation of the foot was performed. In addition to above findings there was a fracture at the base of the fourth metatarsal. Dislocation was succesfully reduced with closed manual manipulation and fluoroscopic evaluation was repeated. Alignment of the second and third metatarsal neck fractures was insufficient. Through a dorsal longitudinal incision in the second distal intermetatarsal space,
open reduction and retrograde intramedullar fixation was performed with smooth K-wires for the second and third metatarsal neck fractures. In order to maintain the stabilization of the Lisfranc's joint, the K-wire in the second metatarsal was advanced to the middle cuneiform and navicular bones. Another smooth K-wire was placed percutaneously from the base of the fifth metatarsal through the cuboid bone under fluoroscopic control (Picture 2).

Postoperative radiographs show anatomic reduction of the Lisfranc's joint and fixation with smooth K-wires. Cast and K-wires were removed at the end of the sixth week, and full weight-bearing was permitted. At the last follow-up visit, at the end of the ninth month, range of motion of the ankle and foot was full, with no pain on daily activities. Radiographs taken implied that there was no redisplacement (Picture 3).

Postoperative management of the patient was made with a below knee walking-cast and partial weight-bearing was permitted.. Cast and K-wires were removed at the end of the sixth week, and full weight-bearing was permitted. At the last follow-up visit, at the end of the ninth month, range of motion of the ankle and foot was full, with no pain on daily activities. Radiographs taken implied that there was no redisplacement (Picture 3).

DISCUSSION

According to Hardcastle classification system, Lisfranc fracture-dislocations are divided into three types of incongruity: total, in which all
Management of Lisfranc’s Fracture-Dislocation

Lisfranc’s joint because it is the longest metatarsal bone and its base is recessed between the medial and lateral cuneiform bones. The base of the second metatarsal is attached to the medial cuneiform with the Lisfranc’s ligament. This anatomic localization of the second metatarsal base makes it relatively immobile and more susceptible to fracture rather than dislocation. Distruption of the second metatarsocuneiform joint results in instability of the Lisfranc’s joint. Therefore, accurate anatomic reduction and fixation of the second metatarsocuneiform joint is a "keystone" for the stabilization of the Lisfranc's joint.

Although there are different opinions for the treatment options of the Lisfranc’s joint fracture-dislocations, all the authors agree that for optimum functional outcome, early diagnosis and accurate anatomic reduction and fixation are essential. In our case report, after immediate and precise reduction and fixation we achieved satisfactory functional results, that were full range of motion of the ankle and foot, with pain free daily activities and no sign of redisplacement. If accurate reduction and prompt fixation can not be achieved, long term results are boring for both the surgeon and the patient. The most frequent long term problems, recorded in the literature are posttraumatic arthritis, chronic pain, uncomfortable gait patterns, and chronic instability at the Lisfranc’s joint.

Closed reduction and cast immobilization alone has a high tendency for instability and redislocation. Most authors prefer fixation with pins or screws after closed or open reduction. In early diagnosed cases closed reduction is also possible. However, interposition of an avulsed second metatarsal base fragment or tibialis anterior tendon makes closed reduction impossible. Open reduction is imperative in late cases.

REFERENCES


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