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Irreducible plantar dislocation of fifth metatarsophalangeal joint: A case report

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Abstract
Isolated metatarsophalangeal joint dislocation of the little toe is not commonly reported. Common presentation is dorsal displacement and usually, these injuries are reduced easily. Difficulty in reducing these injuries could be due to plantar plate interposition or other causes. We report a case of isolated irreducible plantar dislocation of the fifth toe, which was treated by surgical reduction.

Keywords: Metatarsophalangeal dislocation, fifth toe, plantar dislocation

Introduction
Dislocation injuries of the metatarsophalangeal joint are not very common and even when it occurs, is usually easily reducible [1]. Among them, the metatarsophalangeal joint of the great toe is commonly dislocated [1]. Dorsal dislocations are the common type and hyper-extension injury is the usual mechanism [2]. Most dislocations can be treated by closed reduction. Only a few cases of dislocations of the Fifth metatarsophalangeal joint have been reported in the literature [3, 4]. However, these are dorsal dislocations. To our knowledge, no case of plantar dislocation of the fifth metatarsophalangeal joint has been reported yet. We report a case of irreducible plantar dislocation of the fifth metatarsophalangeal joint with its management.

Case report
54-year-old male presented to the casualty after a road traffic accident in which the patient, while riding a two-wheeler skidded and hit his foot over an obstacle and sustained an injury to his right fifth toe. Clinical examination showed deformity of the fifth toe with medial angulation, tenderness and swelling was present [Figure 1]. Radiographs revealed dislocation of the fifth metatarsophalangeal joint with lateral and plantar displacement [Figure 2]. No associated fractures or injuries were noted.

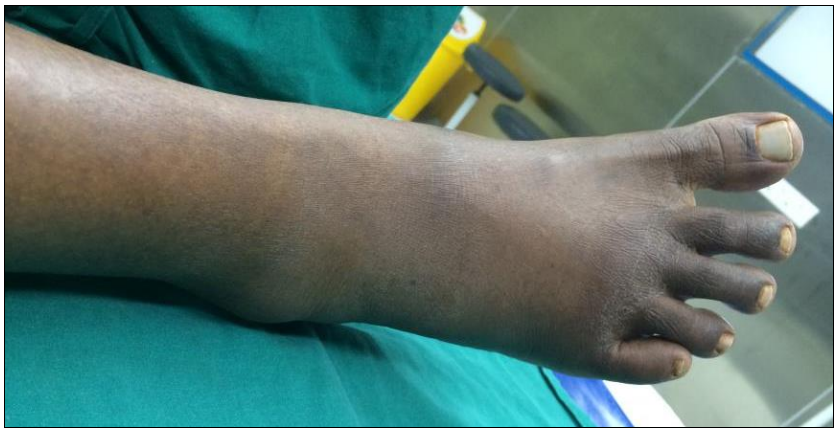

Fig 1: Clinical picture of the patient showing little toe deformity

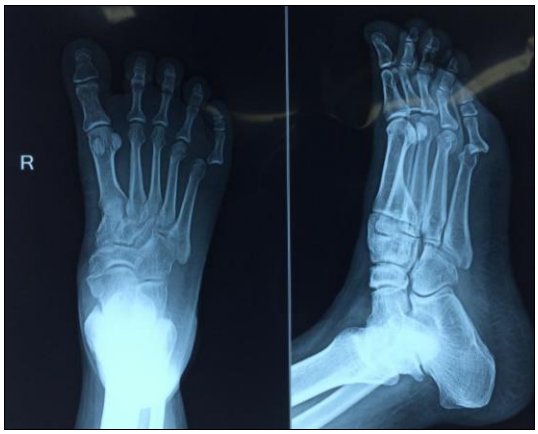

Fig 2: Lateral and plantar displacement of Fifth Metatarsophalangeal joint

The patient was taken to the theatre for closed reduction under anaesthesia. Since, the dislocation was irreducible, open reduction was done. A straight dorso-lateral incision was made over the fifth toe metatarsophalangeal joint. The joint capsule was found ruptured in the lateral and plantar aspect. The plantar plate was found to be interposed between the metatarsal head and phalanx. The plantar plate was released and the joint was reduced [Figure 3]. The joint capsule was sutured and the foot was immobilised in plasters. The post-operative radiograph showed a good reduction [Figure 4]. After 6 weeks, weight-bearing was started and the patient continued to do well in the follow-up period.

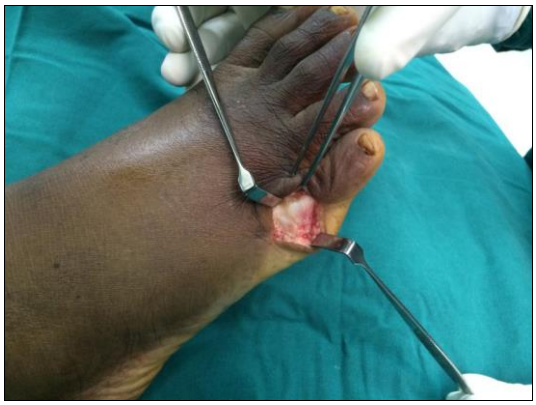

Fig 3: Per operative picture after joint reduction

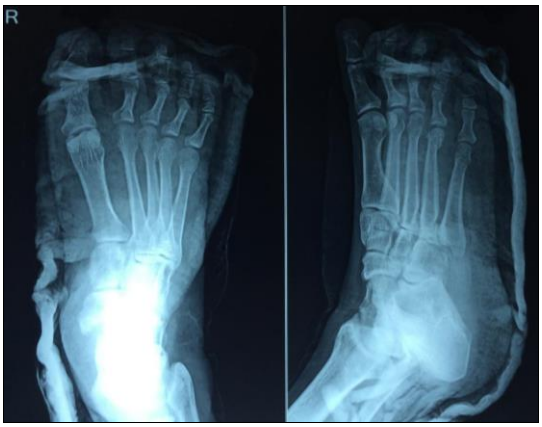

Fig 4: Post-operative radiograph showing reduced joint

Discussion

Owing to the improved awareness and availability of health care, foot injuries are being diagnosed in larger numbers than before. These injuries, if not diagnosed and treated properly, can lead to pain, instability, stiffness and post-traumatic arthritis. Metatarsophalangeal joints are quite stable and dislocations are rare. It is a condyloid type joint in which the convex metatarsal head articular surface articulates with the concave surface of the proximal phalangeal base. The plantar aspect of the metatarsal head has a rounded contour and the dorsal aspect of the metatarsal head is smaller than the plantar aspect. It has a concave or notched contour along medial and lateral margins [5]. A plantar plate is a fibrocartilaginous plantar capsular thickening extending from the metatarsal neck to the base of the proximal phalanx. It is attached to deep transverse metatarsal ligament, plantar fascia, flexor tendon sheath, and medial and lateral collateral ligaments [5]. The plantar plate, which is nothing but a condensed joint capsule, is thin near its attachment to the metatarsal neck and is thicker at the distal attachment [6].

Longitudinal traction with translation opposite to the side of displacement and occasionally exaggeration of the deformity will usually result in a closed reduction of these injuries. However, if the plantar capsule is interposed by the metatarsal head, it can be irreducible. Other factors could be the interposition of flexor digitorum longus or deep transverse ligament. In a case report by Stephenson KA *et al*, extensor digitorum longus and brevis tendons trapped underneath the plantar aspect of the third metatarsal head were reported as the cause for irreducibility [7]. Dislocations of lesser metatarsophalangeal joints are very rare and are almost always dorsal in direction [1] although horizontal [8] and plantar [7] dislocations have been described.

Usually, metatarsophalangeal dislocation occur due to high-velocity injuries with multiple associated fractures or injuries. In our case, there were no associated injuries and the ruptured plantar plate was found to be interposed and blocking reduction. Although the displacement was plantar, the joint was approached through the dorsolateral incision and the injured capsule could be visualised and repaired.

To conclude, this case report was intended to document a rare presentation of irreducible fifth toe metatarsophalangeal joint dislocation and to describe its management.

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