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Case Report

Irreducible dorsal dislocation of the interphalangeal joint of the big toe: a case report

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ABSTRACT

Irreducible dislocation of the interphalangeal joint (IPJ) big toe is a rare injury Hitori et al. (2006). We report a case of the right big toe IPJ dislocation following a trauma. The problem was diagnosed and managed at other medical centers with standard treatment of closed manual reduction and splint. The right big toe was splinted accordingly and the patient was referred to our orthopedic outpatient clinic. At the clinic, a repeat plain radiograph was ordered due to high suspicion of the irreducible IPJ.

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Introduction

Toe dislocation is an uncommon trauma. The big toe metatarsophalangeal joint (MTPJ) dislocation is the most common location for the trauma of forefoot. However, the irreducible IPJ of the big toe is quite rare [4,6]. Usual attempt for immediate reduction of the dislocation via close method would usually result in a well reduced IPJ. The presence of volar plate or sometimes hallucal sesamoid complicates the procedure. The patient should be advised for open reduction if full IPJ relocation is not achieved. Plain radiograph is usually sufficient to diagnose IPJ dislocation & to assess post-reduction procedure, however in certain cases the interpretation may be missed even by trained professional.

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Case report

A 19 year old man was seen at the orthopedic outpatient clinic of Hospital Universiti Sains Malaysia (HUSM) for painful deformity of the right big toe 8 days following a motor vehicle accident (MVA). The patient was initially managed at a district hospital 4 days after the MVA.

The patient had sustained the injury after his motorbike skidded off a road. Other than a very painful right big toe, the patient had no other significant injury. The patient did not seek help immediately because he thought he was only having a right big toe sprain. Eventually, he decided to go to a nearby district hospital 4 days after the MVA when the pain had not subsided.

At the district hospital, a plain radiograph of the right big toe was taken and a diagnosis of interphalangeal joint (IPJ) dislocation of the right big toe was confirmed. The patient had received closed manual reduction under sedation and the right big toe was splinted with a plaster toe spica slipper. He was then discharged with referral to the HUSM orthopedic outpatient clinic after post-reduction radiograph of the right big toe was reviewed and the reduction was deemed successful.

4 days later, the patient came to the orthopedic outpatient clinic. He had requested for an earlier appointment since the pain of his right big toe has not improved. The patient denied new trauma to his right big toe and the toe spica was fully intact. Upon removal of the spica, local examination showed that the right big toe was still swollen and it was still very tender to palpation.

A repeat plain radiograph of the right big toe showed that the IPJ of the right big toe was still dislocated. The radiograph had also revealed hallucal sesamoid trapped in the IPJ (Fig. 1A & B). In retrospective, review of the previous post reduction plain radiograph provided by the district hospital also showed a similar finding with typical features of IPJ dislocation with hallucal sesamoid in situ (Fig. 2A & B). In view of these findings and the late presentation to our clinic, no attempt for closed reduction was done and the patient was immediately offered an elective open reduction of the IPJ of the right big toe. The patient had refused to immediate admission but requested to be admitted the following day. Unfortunately, the patient had never come back to the hospital and he was lost from further follow-up.

Discussion

The IPJ of the big toe is a stable saddle joint and it is generally stabilized by the collateral ligaments, surrounding tendons & plantar accessory ligaments. Dislocation of the IPJ of the big toe is rare. Irreducible IPJ following dislocation is even rarer and is usually attributed to anatomical abnormality such as incarcerated hallucal sesamoid [9].

There are 2 types of IPJ dislocation of a big toe. In Miki type I, the volar plate is displaced into the IPJ causing the IPJ to widen and subluxed together with the sesamoid bone if it is present. The rebound flexion and



Fig. 1. A & B. Repeat plain radiograph (AP & lateral views) confirmed right IPJ dislocation with hallucal sesamoid trapped in between (Miki type I)

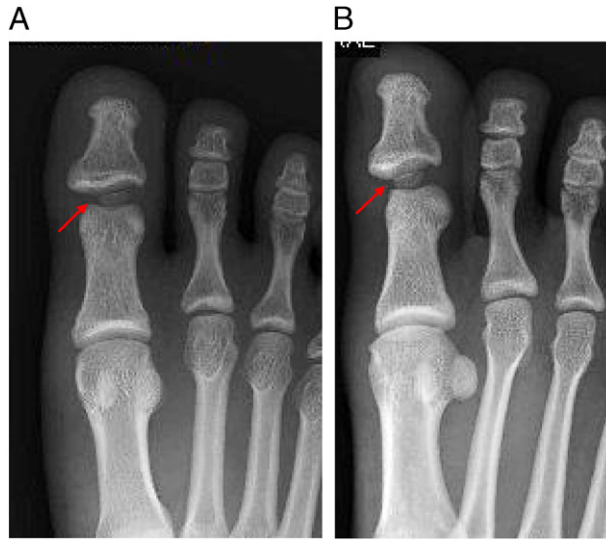


Fig. 2. A & B. Plain radiograph (AP and Oblique views) from earlier post reduction procedure showed presence of widening of right IPJ space with hallux sesamoid noted in situ.

present of intact collateral ligaments trapped the sesamoid or volar plate in situ. Clinically, other than a slightly elongated big toe, there is little or minimal deformity noted. In Miki type II, the volar plate is completely displaced posteriorly causing the deformity in which distal phalanx is hyperextended & dislocated dorsally [6,7,9].

The IPJ dislocation of the big toe in this patient follows the first type (Miki type I). Clinically, the minimal deformity of the big toe may be a factor to mislead medical personnel to have considered successful reduction and also causing the patient to refuse surgical intervention.

The hallux interphalangeal sesamoid is considered to be anatomical rarity and its presence may go unnoticed due to its clinical insignificance. Depending on studies, the presence of a single hallux interphalangeal sesamoid varies from 4.3% to 43.5% in adults [1,3]. The rarity of the hallux sesamoid and its clinical insignificance may have contributed to initial misdiagnosis in our patient. Another possible reason for wrong interpretation of the post IPJ relocation was little awareness of salient features of the presence of the rare hallux sesamoid in between the IPJ of the big toe. The post-reduction radiograph taken in anteroposterior (AP) and oblique views would probably compound to the difficulty in determining proper IPJ relocation even in trained professionals. The accuracy of the interpretation and diagnosis would be better if the big toe was viewed in AP & lateral views.

Closed manual reduction should be attempted first although outcomes may not be promising in the majority of cases [5–8]. Presence of interphalangeal sesamoid complicates and worsens the success of full reduction after an IPJ dislocation. Woon CYL described desirable result of percutaneous reduction in early cases of incarcerated sesamoid in the IPJ dislocation [6].

We had advised our patient for open reduction without another trial of closed reduction since his presentation was 8 days post-trauma and the big toe was still swollen thus rendering closed manual reduction difficult. Furthermore, surgical intervention gives more favorable and predictable outcomes [2,4,6,9].

Proper post-reduction radiograph assessment is crucial because occasionally irreducible IPJ with incarcerated sesamoid may be missed by untrained personnel. A repeat plain radiography with AP & lateral views is necessary if the index of suspicion is high.

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