

Irreducible Dislocation of Great Toe Interphalangeal Joint by an Accessory Sesamoid Bone: A Case Report and Review of Literature

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ABSTRACT

Irreducible dislocation of interphalangeal joint is a rare condition with only a few case reports in literature. Here, we report a case with irreducible dislocation of interphalangeal joint due to sesamoid bone interposition, which required open reduction. A 45-year-old male had a fall from height with irreducible dislocation of interphalangeal joint of great toe. Intraoperatively, the interposition of sesamoid bone over the dorsal aspect of proximal phalanx was identified. Displaced volar plate with sesamoid bone was reduced into the position, and the joint was stabilized with k wire. On follow-up, we observed that the patient had no discomfort or pain for 6 months. The displacement of sesamoid bone with volar plate and intact collateral ligaments locks the joint in extension and obstructs the reduction of interphalangeal joint dislocation. One should have the suspicion of possibility of open reduction after observing the interposition of sesamoid bone over the dorsal aspect of the proximal phalanx. Dorsal approach is usually advocated; medial approach can be used if there is wound over the plantar aspect.

Keywords: Dislocation, Sesamoid, Toe, Volar plate.

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INTRODUCTION

Irreducible dislocation of interphalangeal joint is a rare condition. Only a few cases have been reported in the literature. According to Miki et al,¹ there are two types of interphalangeal joint dislocation of great toe. In the first type, the ruptured volar plate is displaced into the joint space between the two phalanges and the toe is slightly elongated, but the deformity is not obvious. In the second type, the volar plate is completely displaced into the

joint with sesamoid bone and the interphalangeal joint is locked in hyperextension position. Here, we report a case with irreducible dislocation of interphalangeal joint due to sesamoid bone interposition, which required open reduction.

CASE REPORT

A 45-year-old man was admitted with pain, swelling, and wound over the plantar aspect of great toe following a fall from a height of 6 ft, which happened 4 days earlier. A closed reduction procedure was performed and he was discharged. As the patient had persistent pain even after 2 days of dislocation, radiography was taken. This showed unreduced dislocation, and he was referred for further management.

Under anesthesia, closed reduction was attempted a few times. After repeated failure in closed reduction, a careful observation revealed the interposition of sesamoid bone over the dorsal aspect of proximal phalanx in image intensifier (Fig. 1A). As the patient had 0.5 cm wound over the plantar aspect, the same was extended for medial approach. The joint was exposed. Displaced volar plate with sesamoid bone was reduced into the position (Fig. 1B). Now the joint was reduced easily and stabilized with K wire in the axial direction (Fig. 1C). Strapping and back slab were applied.

DISCUSSION AND REVIEW OF LITERATURE

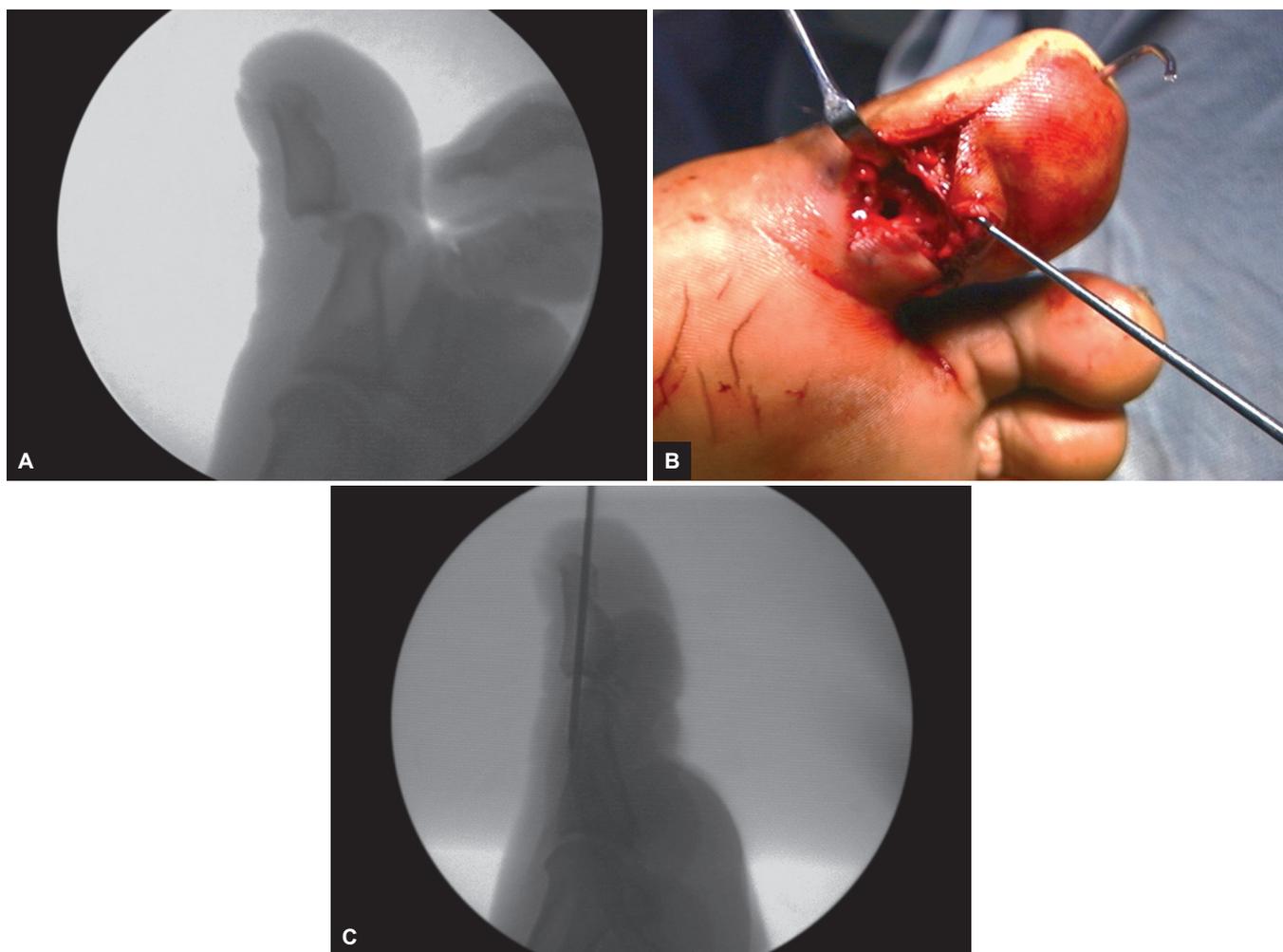
The term "sesamoid" was first coined by Galen in AD 180. It varies in size from 0.5 to 1 cm. The dorsal surface with two facets is more if cartilage and articulating with proximal phalanx. The nonarticulating part is osseous in the plantar aspect of the interphalangeal joint with volar plate.² Based on literature, its radiological appearance varies from 4.3 to 93% and bilateral presence in 94% on cadaveric study.³ The stability of the interphalangeal joint is given by volar plate, collateral ligaments (lateral stability), and both the flexor and extensor tendons. The sesamoid bone was found in 59% in the embryonic structure as osseous structure.²

Dislocation of interphalangeal joint is caused by axial loading and hyperextension force.⁴ Laceration in the plantar aspect of toe suggests about the hyperextension

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Figs 1 A to C: (A) Image intensifier picture shows the interposition of sesamoid bone over the dorsal aspect of head of proximal phalanx and locked interphalangeal joint; (B) wound over the plantar aspect was extended as medial approach and displaced volar plate with sesamoid bone was reduced into the position with K wire; and (C) image intensifier picture shows lateral view of interphalangeal joint in reduced position and stabilized with K wire

force at the time of surgery. Detachment of volar plate from both proximal and distal phalanx results in dislocation and invagination of volar plate with sesamoid bone in between.¹ The interposed sesamoid bone tightens the collateral ligaments and gives the lateral stability that locks the joint in hyperextension. Closed reduction is difficult because of tight collateral ligaments and swelling. The presence of sesamoid bone over the dorsal aspect of proximal phalanx indicates the interposition and that open reduction may be necessary. Persistent pain and restricted movements after closed reduction suggest the possibility of sesamoid bone interposition and unreduced joint.

Many approaches were described in the literature, including plantar, medial,^{1,4,5} dorsal,^{1,5} and dorsolateral extensor split. None of the approaches has great advantage over the other. Plantar approach may cause hyperkerotic scar over the weight bearing area.^{1,6} We used medial incision, which was extended, from the wound in the plantar aspect. Many authors believe that repair of collateral ligament is not necessary⁶ and that is also

technically demanding. After reduction, the joint should be stabilized with K wire and strapping.^{1,4,6} Nonweight bearing⁷ is advised for 4 weeks. In our case, we removed the K wire after 4 weeks. On reviewing, we observed that the patient had no discomfort or pain for 6 months.

CONCLUSION

The displacement of sesamoid bone with volar plate and intact collateral ligaments locks the joint in extension and obstructs the reduction of interphalangeal joint dislocation. One should have the suspicion of possibility of open reduction after observing the interposition of sesamoid bone over the dorsal aspect of the proximal phalanx. Dorsal approach is usually advocated; medial approach can be used if there is wound over the plantar aspect.

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