

Case Report

Recurrent lateral proximal interphalangeal joint dislocation of the fifth toe in adult-why and when to operate

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ABSTRACT

Recurrent lateral proximal interphalangeal (PIP) joint dislocation of the 5th-toe is a rare injury and is debilitating unless the appropriate treatment is provided. We report the case of a 32-year-old woman who presented with a history of multiple dislocations of the PIP joint of right 5th toe, over the past 10 years following trivial trauma, treated conservatively via strapping every time. This has eventually resulted in a painful, chronic, irreducible dislocation of the PIP joint of the fifth toe. The joint was accessed via a dorsal incision and it was found that the joint capsule and medial collateral ligament were interposed in the PIP joint space. The capsule and medial collateral ligament were reconstructed, and stabilized by a transarticular Kirschner wire for 6 weeks. The joint was found to be stable, anatomically-aligned and pain-free at the end of 12-months post-surgery. While PIP dislocations are generally managed conservatively via closed reduction and strapping, in certain cases this method fails due to soft tissue interposition in the affected joint. Such cases need to be managed surgically. This approach provides a good and functional outcome even in cases of long-standing injury.

Keywords: Interphalangeal joint dislocation, Irreducible dislocation, Injury, Foot, Toe

INTRODUCTION

Interphalangeal joint dislocations of the lesser toes, with PIP joint more frequently involved, are uncommon injuries resulting in chronic deformity and functional impairment if improperly treated; the fifth toe being particularly vulnerable due to its lateral position and susceptibility to abduction forces.^{1,2}

Non-resolving, chronic traumatic IP joint dislocation affecting the PIP joint of the fifth toe is a rare injury-usually the result of abductory forces causing in dorsolateral displacement of the distal component of the fifth toe.² When the flexor digitorum longus tendon or the corresponding medial collateral ligament remain stuck inside the incongruent joint, the dislocation appears to be non-reducible.^{1,3} Another reason is that due to the buttonhole effect between the extensor tendon fibers and

the proximal phalanx, surgery may be necessary to achieve joint stability and restore mobility.³

Here we present a case of chronic irreducible dislocation of the PIP joint of the fifth toe managed surgically and its final outcome.

CASE REPORT

A 32-year-old woman with no comorbidities presented with complains of recurrent dislocation of right toe for the past 10 years. The initial episode was due to trauma to the right-5th toe while dancing which was treated conservatively via strapping. Following this she gives a history of multiple episodes of PIP joint dislocation of the right-5th toe over the last 10 years, mostly due to trauma, with the same treatment each time. The fifth toe gradually became permanently swollen and painful on movement. When the patient presented in the OPD with chronic right

fifth toe pain and swelling, the toe was displaced dorsolaterally (Figure 1). The plain radiograph showed dislocation of PIP joint. There was no indication of joint destruction, erosion or fracture (Figure 2). The distal segment of the toe was unstable because of the chronic and persistent joint subluxation.

The decision was made to attempt the correction by open reduction, as the dislocation was persistent and all previous attempts at closed reduction had failed. The joint was exposed via a dorsal incision (Figure 3), revealing that the joint capsule and attenuated medial collateral ligament were interposed within the PIP joint space, and the articular cartilage showed no erosion (Figure 4).

The joint capsule and the collateral ligament were dissected away from the joint space, plantar plate was released and the reduction of the PIP joint was maintained by inserting a longitudinal transarticular 1.5 mm Kirschner wire. The medial collateral ligament was repaired anatomically. The tightened joint capsule, and completed skin closure were done (Figure 5). The sutures were removed 2 weeks after surgery and patient could mobilize with an air CAM-walker boot. The k-wire was removed after postoperative week 6. The patient was able to wear normal footwear 6 weeks after surgery. Patient complained of no further difficulty on further follow-ups (Figure 6), with the final follow-up 1 year after surgery, with the joint remaining stable, painless and retaining full mobility.



Figure 1 (A-C): Preoperative examination of right 5th toe revealing chronic irreducible dislocation of the proximal interphalangeal joint.



Figure 2: Preoperative x-ray of patient's foot showing dislocated 5th-toe-PIP-joint.



Figure 3: Approach via dorsal incision.

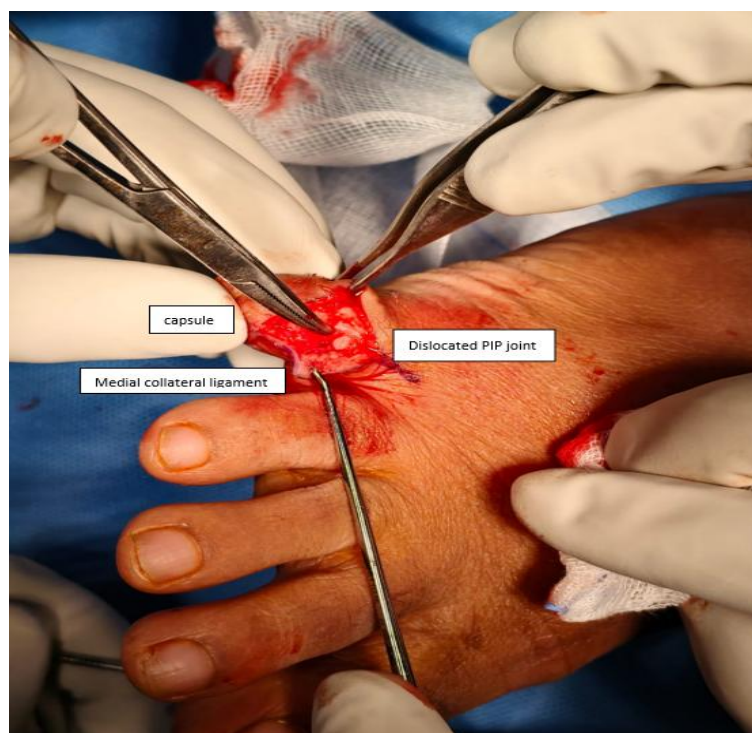


Figure 4: Deep dissection showing the dislocated PIP joint, attenuated and entrapped medial collateral ligament and capsule.

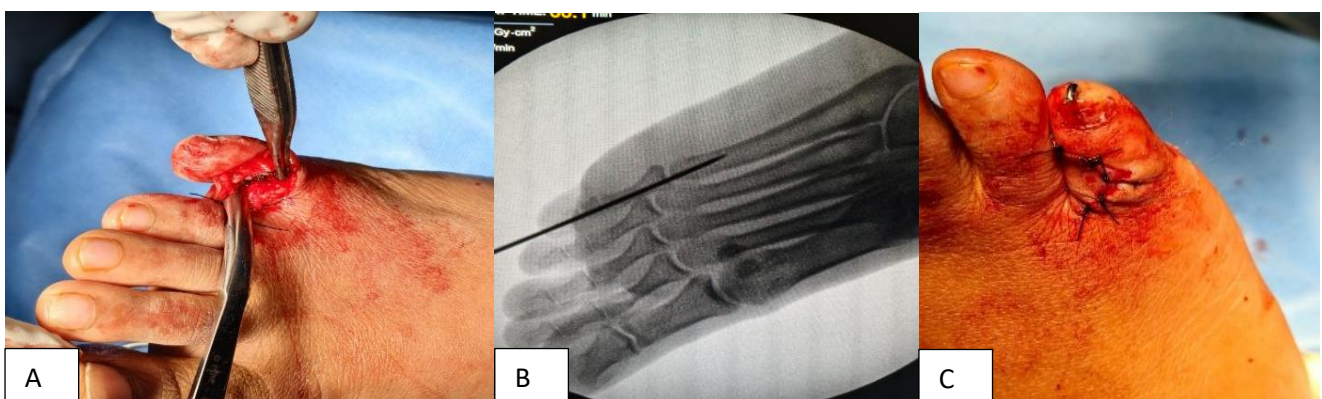


Figure 5 (A-C): Medial collateral ligament repair and capsular reconstruction and temporary k-wire fixation.



Figure 6 (A-C): (A and B) physical examination (C) radiograph- 6 months' postoperative follow-up results showing a well healed, aligned, stable and pain free joint.

DISCUSSION

A rare injury to the forefoot, dislocation of the PIP joint of the 5th-toe typically results from hyperdorsiflexion or an abrupt dorsolateral force that causes traumatic abduction of the joint.¹⁻⁵ Because the soft tissues that typically maintain joint stability and congruency-such as the collateral ligaments, the proximal fibrocartilagenous plantar plate, the joint capsule, and the long and short toe extensor and flexor tendons-are damaged during the dislocation, the PIP joint becomes unstable. Closed reduction and strapping is typically used to treat traumatic dislocation of PIP joint.⁶ After first exaggerating the abnormality, longitudinal traction is performed to correct the deformity.⁶ A modification of this technique, is

wherein the dislocated joint is dorsiflexed to exaggerate the deformity and while maintaining the dorsiflexion the affected IP joint was further dorsiflexed and then plantarflexed, with the joint reducing, with a 'pop' sound.⁶ All cases should be treated initially by closed reduction, but in some cases open reduction is required.¹ The complex dislocation as described here often requires surgical correction of the disrupted soft tissues stabilizers, such as the medial collateral ligament, the joint capsule or the plantar plate in order to achieve joint stability.

A dorsal approach is preferred for open reduction.¹⁻⁵ For an unstable joint, temporary k-wire fixation should be considered.¹ When the buttonhole effect-causing structures are eliminated, joint stability is maintained.¹ In order to achieve an anatomical reduction, any injuries to the

capsule, collateral ligaments, tendons, or plantar plate should be corrected.¹⁻⁵ After reduction, routine radiographic evaluations are advised to assess development and verify alignment.⁶

CONCLUSION

It is crucial to identify and appropriately manage a traumatic dislocation of the fifth toe's PIP joint as promptly as possible. Open reduction of the displaced joint with associated soft tissue repair is an appropriate alternative if this method fails, recurrent dislocations occur/pain lingers.

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Ethical approval: Not required

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