

Irreducible dislocation of the interphalangeal joint of the great toe in a collegiate football player due to sesamoid bone interposition- a case report and literature review

R Singh, R Rohilla, R Siwach

Citation

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Abstract

The dorsal dislocation of the interphalangeal joint of great toe with intra-articular displacement of a sesamoid bone is rare injury. Recommended treatment is a trial of closed reduction and open reduction in failure of closed reduction. We report this unusual injury in a collegiate football player. Closed reduction failed and open reduction through dorsal approach was performed to reduce the dislocation. Patient returned to competitive sports without any functional disability.

INTRODUCTION

Intra-articular sesamoid dislocation is a rare injury and may lead to difficulty in reduction and diagnosis [1]. The interphalangeal sesamoid of the phalanx is only present in approximately 13 per cent of the population [2, 3]. The increasing number of competitive and recreational athletes has resulted in more sports-related foot injuries [4]. We report a case of irreducible dislocation in a sportsman.

CASE REPORT

A 20-year-old male presented to the Accident & Emergency department with painful swelling of the right big toe while playing football. The patient's foot struck against the goal-post during the match. Examination revealed a tender and swollen right hallux with distal phalanx in slight extension. Passive movements of the interphalangeal joint were painful. There was no wound on the hallux. Radiographs revealed widening of interphalangeal joint space with intra-articular entrapment of sesamoid bone. The distal phalanx was subluxated dorsally and medially (Fig. 1).

Figure 1

Fig. 1:(A) An anteroposterior roentgenogram showing markedly widened joint space with sesamoid bone in the joint.(B) A lateral roentgenogram showing the wide joint space with sesamoid bone interposition. The distal phalanx is slightly subluxed dorsomedially.



Closed reduction (giving longitudinal traction in the axial plane of the deformity, followed by flexion once the distal phalanx is level with the articular surface of the proximal

phalanx) under ankle block to achieve failed. Open reduction was performed for irreducible dislocation of the interphalangeal joint. A dorsal inverted L-shaped incision with the transverse limb at the joint and the longitudinal limb placed dorsolaterally was given. Extensor tendon was retracted medially and joint was opened. The sesamoid bone with volar plate was displaced plantarly with the help of a probe resulting in reduction of the interphalangeal joint. Neither reconstruction of volar plate nor excision of the sesamoid was undertaken. The post-operative radiographs revealed satisfactory reduction of the joint and sesamoid bone (Fig. 2).

Figure 2

Fig. 2: (A) Postoperative anteroposterior and (B) lateral roentgenograms showing reduction of the interphalangeal joint with sesamoid repositioning.



The joint was immobilized in splint with strict elevation of the limb for three days and then partial weight bearing with crutches was allowed. Active-assisted range of motion of the interphalangeal joint was begun at three weeks. The patient returned to competitive sports without any complication.

DISCUSSION

The interposition of the sesamoid bone with dislocation of the interphalangeal joint of the great toe is a rare occurrence [1, 4-15] and may even remain neglected [13]. Sorene and Regev reported a case of traumatic complex dislocation of the interphalangeal joint of the hallux with intra-articular

entrapment of 2 sesamoid bones [15]. Intra-articular entrapment of the sesamoid may result in irreducible dislocation of the interphalangeal joint of great toe. Miki et al described anatomic details of the irreducible dislocation of the interphalangeal joint of great toe [11]. There are two types of irreducible dislocations depending upon the position of the displaced volar plate including the sesamoid. The sesamoid is entrapped in the joint in type I dislocation and roentgenograms reveal wider joint space, good alignment of phalanges, and intra-articular displacement of the sesamoid. In type II dislocation sesamoid bone is located over the proximal phalangeal head and roentgenograms reveal narrower joint space or overlapping of phalanges and hyperextension of the distal phalanx [11]. The patient in present case report had type I dislocation.

Closed manipulation can reduce such dislocations satisfactorily [1, 6, 15]. But, frequently open reduction is needed [9, 11]. The recommended treatment for sesamoid interposition is a trial of closed manipulation and reduction [1,6,8,14]. Open reduction is performed for failure of closed reduction [12,14]. Ward et al reported a case of sesamoid bone interposition in the interphalangeal joint of the hallux as a complication of closed reduction of a dislocated interphalangeal joint of the hallux [6]. They highlighted the importance of post-reduction radiographs to diagnose this complication. Both dorsal and plantar approaches have been described for open reduction of the dislocation [7,9,11,14]. Some authors have advocated excision of the sesamoid bone [9], while others have preserved it [7]. Plantar approach affords repair of the volar plate with preservation of the sesamoid bone [7]. A dorsal approach affords easy exposure [14]. Neither repair of the volar plate nor prolonged immobilization is necessary [14]. We have also preserved the sesamoid bone through dorsal approach and found dorsal approach satisfactory in the present case as no postoperative complication or disability was observed.

We present this case to highlight following facts about this entity:

1. This is a rare type of sports injury.
2. Closed reduction is the first line of treatment.
3. If closed reduction fails, open reduction using dorsal approach without repair of volar cartilage and excision of sesamoid is effective.
4. Prolonged immobilization should be avoided.

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Author Information

Roop Singh, M.D.

Professor, Department of Orthopaedic Surgery, Paraplegia & Rehabilitation Pt. B.D. Sharma PGIMS

Rajesh Rohilla, M.D.

Assistant Professor, Department of Orthopaedic Surgery, Paraplegia & Rehabilitation Pt. B.D. Sharma PGIMS

Ramchander Siwach, M.D.

Sr. Professor, Department of Orthopaedic Surgery, Paraplegia & Rehabilitation Pt. B.D. Sharma PGIMS