

TRAUMATIC DISLOCATION OF THE HALLUCAL SESAMOID — A CASE REPORT

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SYNOPSIS

This is a case report of the rare condition of traumatic dislocation of the tibial hallucal sesamoid. The peculiar physical finding of a dimple over the ball of the foot is described. Roentgenographic features are unique. Clinical diagnosis is confirmed at surgery. Open reduction and repair of the dislocated sesamoid is successful. Mechanism causing the injury has been postulated.

INTRODUCTION

To avoid confusion, it has been suggested that the use of the term 'tibial' and 'fibular' be used to describe the medial and lateral sesamoids (1).

Garrison in 1910 first related that the tibial sesamoid was known as the mythical bone 'Luz' which the Rabbi Uschaia thought would be the nucleus for reconstitution of the body at the milleneum (2). The name 'sesamum' is said to be first used by Galen at about AD 180 because of its resemblance to the seeds of the plant 'Sesamum Indicum', the oil of which was used in ancient Greece as a purgative!(3)

Bizarro in 1920 concluded that both phylogeny and function combined, appeared to be the two causes of sesamoid formation and development (4). Anatomy of these bones will not be described.

Trauma to the sesamoids has been divided into acute fractures, fracture-dislocations and chronic stress injuries (5). Bizarro in 1921 felt that frequently the tibial sesamoid was more prone to injury because the fibular sesamoid could move fibularwards into the first intermetatarsal space — this escape mechanism explaining rarity of fibular sesamoid injury (6).

Acute fractures are rare and have been reported and discussed by various authors over the years (1, 2, 5, 6, 7, 8, 9, 10)

Bizarro in 1921 described the very rare case of transverse fracture of the sesamoid associated with metatarsophalangeal joint dislocation (6).

Injuries due to chronic repeated stress (also known as "sesamoiditis" or "Osteochondritis") have been described and discussed over the years. (3, 5, 11, 12).

The type of injury in this case is that of dislocation. This injury to the tibial sesamoid is extremely rare as evidenced by the paucity of literature on the subject.

Aetiology of dislocation can be divided into:

1) Congenital, 2) trauma or 3) pathomechanical stress (13). In our case, the aetiology is that of acute trauma.

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Fig. 1: Dimple is seen on the ball of the right foot.



Fig. 2: Roentgenogram of the foot showing abnormal displacement of the sesamoids into the interdigital space.

CASE REPORT

A 34 year old man first presented on 23.7.82 with complaint of a painful and swollen ball of the right foot, as well as inability to move his right great toe.

He was well until five days previous when he was a motorcyclist involved in a road traffic accident. He was concussed and therefore could not recall the mechanism of the injury. He was admitted to the General Surgical Unit for observation of head injury and he regained consciousness with the above foot symptoms. He had no other complaints.

On examination, except for some abrasions mainly on the right side of his body, abnormal findings were confined to his right foot.

On inspection, the ball of his right foot was swollen. A peculiar finding was that of a dimple overlying the first metatarsal head (Figure 1).

The area over the first metatarsal head was tender on palpation.

The patient was unable to actively move the great toe at both the metatarsophalangeal joint and the interphalangeal joint.

Attempts to flex these joints passively produced pain.

Roentgenograms (anteroposterior and oblique) showed abnormal displacement of both sesamoids fibularwards. (Figure 2)

The tibial sesamoid was located in the first interdigital space.

The normal tibial sesamoid is usually superimposed on the metatarsal head and is more distally located as compared to the fibular sesamoid (10).

Axial roentgenograms were not done (1).

Surgical findings and procedure

The patient's right foot was explored as an elective procedure on 29.7.82.

At operation, both the sesamoids and the flexor hallucis longus tendon were found dislocated into the first interdigital space (Figure 3). The intersesamoid ligament was intact.

The tibial sesamoid was reduced into its normal position and the position was maintained by suturing its attaching fibres to the medial collateral ligament of the first metatarsophalangeal joint. With the tibial sesamoid in position, the flexor hallucis longus tendon was also reduced. This was confirmed by post-operative roentgenograms (Figure 4).

The patient was discharged the following day and was walking well with crutches.

Recovery

When seen one week post operation, the patient had no more complaints of pain. There was no swelling nor tenderness of the base of the right foot.

Passive movement of the great toe was full and painless (Figure 5).

At two weeks post operation, the patient was walking with full weight bearing. There were no complaints.

DISCUSSION

The first peculiar aspect of this case presentation is the presence of the dimple over the ball of the right foot (Figure 1). We believe that this physical sign has yet to be

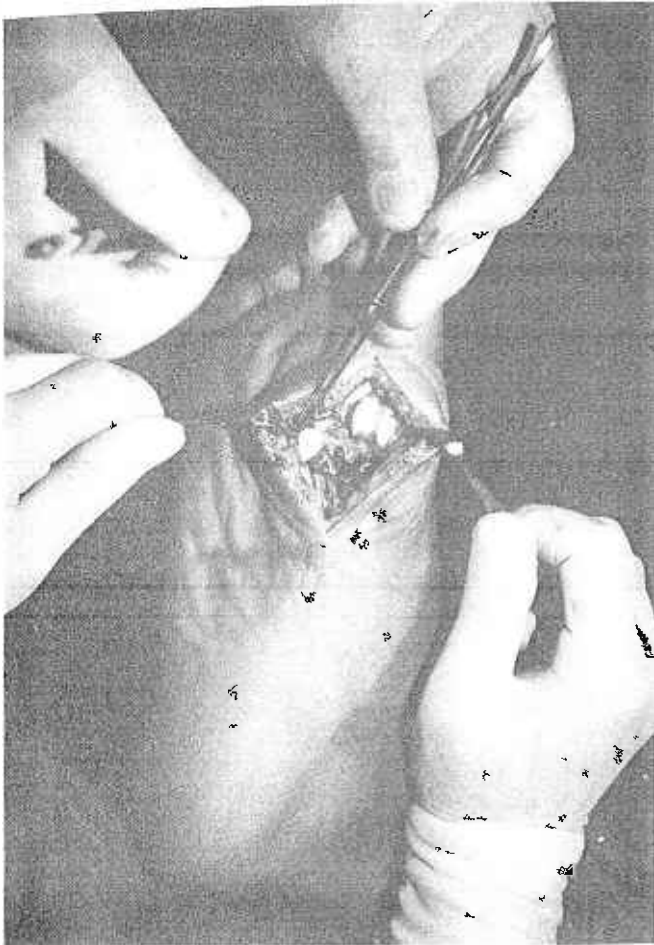


Fig. 3: Operative exposure reveals abnormal positions of the tibial sesamoid and the flexor hallucis longus in relation to the first metatarsal head.

described.

Between the sesamoids and the skin, there is normally a thick fibrous pad of the "ball" of the foot through which the 2 sesamoids may sometimes be palpated.

In this case, the tibial sesamoid together with the flexor hallucis longus tendon had dislocated fibularwards into the first interdigital space. The dimple probably overlay the space vacated by these structures, that is, the tibial articular surface of the metatarsal head — bordered tibially by the abductor hallucis longus tendon and fibularly by the central ridge of the metatarsal head (Figure 3).

Dislocation of both the flexor hallucis longus and the flexor hallucis brevis (which invests the sesamoids) accounted for the patient's inability to flex the great toe at both interphalangeal and metatarsophalangeal joints.

This proved so, for post-operatively, the patient was able to flex high great toe after tendons and sesamoid were reduced into their normal position (Figure 5).

Dislocation of the sesamoids have been described previously mainly in association with Hallux Valgus (14). But with Hallux Valgus, the intersesamoid ridge of the metatarsal head is gradually smoothed out, the medial joint capsule is attenuated and the surrounding tendons are pulled to abnormal positions causing displacement of the sesamoids (15). Cases of traumatic dislocation of sesamoid bones have seldom been reported.

Mechanism of injury in causing dislocation of the tibial sesamoid is postulated as being due to an extension-adduction force. This force probably caused tearing of the ligamentous bands blending the medial collateral ligament of the first metatarsophalangeal joint with the ligament of the tibial sesamoid. The tearing, together with violent adduction of the phalanges probably accounted for the



Fig. 4: Check roentgenogram post operation showing reduced tibial sesamoid.

dislocation of the tibial sesamoid and flexor hallucis longus tendon fibularwards.

Inge and Ferguson in 1933 wrote that "interruption of one or more of the conjoined tendons results in a cooked-up hallux, through loss of the powerful action of the flexor brevis" (2)

Some systemic disorders, for example collagen diseases and psoriasis, may affect the sesamoids or conjoined tendons. But in these cases, dislocation of the sesamoids are usually associated with hallux valgus or varus (5).

Other forces are unlikely to result in a dislocated tibial sesamoid. A pure hyperextension force normally causes a metatarsophalangeal joint dislocation with an associated transverse fracture of the sesamoids (6). A hyperextension — abduction force would result in compression of the sesamoid against the metatarsal head and thereby causing a fracture (10).

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Fig 5: Post operatively, the patient is able to flex his right great toe.

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