

Nutcracker Fracture Of The Cuboid Associated With Metatarsal Dislocation And Its Treatment

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Abstract

The Cuboid bone is an important stabiliser of the lateral column of the foot 1, and is involved in all intrinsic movements of midfoot and hind foot 2. Fractures of cuboid are uncommon. Hermel et al first reported five cases of the nutcracker fracture of the cuboid in 1953, which is still the largest series in the literature. Since then nine other cases of this type of fracture have been reported in the literature. However due to the rarity of this fracture there has been no consensus by orthopaedic surgeons worldwide as to which is the best way to manage this injury. We report a case of 56 year old man who sustained nutcracker fracture of cuboid, and was treated with a new technique, that combines ligamentotaxis, and minimal intervention using percutaneous 1.6 mm Kirchner wires to reduce and stabilise this injury.

CASE REPORT

A 58-year-old truck driver was admitted with a crush injury to the right foot after the lorry tyre went over his foot from a medial to lateral direction. On examination the right foot was markedly swollen with no open wounds. There was no neurovascular deficit. The foot was immediately elevated and ice packs were applied to minimise the danger of impending compartment syndrome. Radiographs revealed a crush fracture of the body of the cuboid (figure 1) with significant collapse of lateral half of the articular surface, and migration of the fifth metatarsal proximally into the cuboid.

Figure 1

Figure 1 : X-ray showing the crush fracture of cuboid and dislocation of the metatarsal.



There was an undisplaced fracture at the base of the fourth metatarsal and dorsal dislocation of the second, third and fourth metatarso-phalangeal (MTP) joints. The MTP joint

dislocations were reduced and stabilised with transarticular Kirschner wires. The length of the lateral column was restored by traction over the fifth ray. On releasing the traction the fifth metatarsal was found to collapse again proximally. To prevent this two parallel, 1.6 mm Kirchner wires were passed from the base of the fifth metatarsal into the base of the fourth metatarsal to hold the fifth ray out to length. This manoeuvre was also found to reduce the cuboid fracture fragments by ligamentotaxis (figure 2).

Figure 2

Figure 2: X-ray foot showing K-wire fixation.



Post operatively the patient was given a below knee plaster cast and was advised to remain non-weight bearing for 6 weeks. The Kirchner wires were removed in the out patient department in 5 weeks. At the time of discharge after a year, patient had returned to his previous full time occupation and had a painless supple foot.

DISCUSSION

Cuboid fractures are classified as capsular avulsions and body fractures¹. They may be caused by direct or indirect mechanisms. Hermel et al first described the nutcracker fracture cuboid in 1953³. Forced forefoot abduction on a fixed hindfoot leads to compression fracture of the body of the cuboid between the bases of fifth and fourth metatarsals and the anterior calcaneus². Depending on the severity of the abduction force there may be associated injury to the tibialis posterior tendon, an avulsion fracture of the navicular tuberosity or even a subluxation of the midtarsal joint⁴. Hermel and Gershon-Cohen recommend conservative management for the fractures without dislocation, and an early midtarsal fusion for fractures with comminution or dislocation³. The Cuboid is involved in all intrinsic movements of midfoot and hind foot² and is an important stabiliser of the lateral column of the foot¹. Inability to reconstruct a smooth peroneal groove on the plantar surface of the cuboid following a fracture leads to fibrosis and dysfunction of the peroneus longus tendon⁵. For these reasons the vogue has changed towards accurate reduction of the fracture and internal fixation and bone grafting if necessary^{2, 5,6,7,8,9}. However due to the rarity of the nutcracker fracture of the cuboid and the paucity of reports on the management in the current literature, the best method of treatment has not been determined. We feel that our

approach to the management of this fracture is another important treatment option to add to the Orthopaedic surgeons armamentarium.

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