

Displaced Isolated Cuboid Fractures

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Commentary

The cuboid bone is injured very rarely, but fracture-dislocations can lead to significant disruption of normal foot mechanics and motion. The cuboid fracture is frequently associated with other midfoot fractures and when a fracture of the midfoot (Lis-franc fracture) occurs, an accompanying cuboid fracture should always be closely evaluated for [1].

As the cuboid is often part of a midfoot fracture-dislocation, fractures that are commonly seen involve avulsions, “nutcracker” type fractures [2] and cuboid fractures associated with Lis-franc injuries (Figures 1a and 1b).



Figure 1a: Anterior Posterior of fracture of cuboid and lateral rays.



Figure 1b: Oblique of fracture of cuboid and lateral rays.

Isolated fractures of the cuboid without involvement of other parts of the midfoot are relatively unusual [2] but can be treated well with simple tactics. Often CT scan and 3D CT reconstruction can help elucidate exactly where the area of the injury is. Other injuries across the whole midfoot must also be ruled out. If a cuboid does present as an isolated injury, proven by CT, then a direct approach to deal with the fracture seems to be the best (Figure 2).

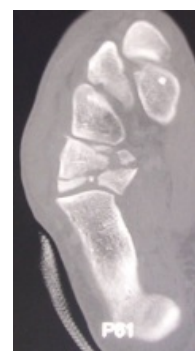


Figure 2: CT of isolated cuboid fracture.

Open reduction and internal fixation can be achieved by many means, especially by direct lateral approaches immediately over the cuboid. The calcaneo-cuboid joint may be involved or the cuboid metatarsal joint may be involved especially with the “nutcracker fracture” where the cuboid needs to be disimpacted, bone grafted and stabilized with fixation. Plate fixation can be used or in the instance of the four isolated cases which we discussed in our paper [2] open reduction and internal fixation with bone graft substitute and carefully placed threaded k-wires (Figure 3). The pins were then removed at 6 weeks with excellent clinical results. There are specialty plates now made by many trauma implant companies which can be applied to the cuboid, but there has not been research at this point evaluating the efficacy of such implant designs.



Figure 3: Postop AP and oblique of cuboid with reduction of the cuboid and pinning with the base of lateral rays reduced.

Much more commonly, the whole of the midfoot is significantly injured with an accompanying Lis-franc injury that goes along with the cuboid fracture. In this instance, the most common care is that of stable fixation achieved either by fixation or fusion of the medial column of the foot followed by open reduction and Steinman pin fixation of the cuboid 4th and 5th metatarsal articulation. These wires

are then taken out at 6 weeks. There are no large trials concluding the most effective means of cuboid fixation. The literature supports open reduction with Steinman pin temporary fixation (6 weeks) [2].

This is a difficult area for randomized controlled trials yet outcome studies show that this fracture can do well with accurate reconstruction [3]. There seems to be much more problems with too much hardware and stiffness on the lateral column of the foot as compared to less fixation and good foot mechanics with mobility through the calcaneo-cuboid joint and cuboid metatarsal joints.

Accurate reduction and stable fixation seems to be best for both significant midfoot injuries and isolated cuboid fractures. Evidence supports cases where the cuboid is reduced with minimal pin fixation

and managed non weight bearing followed by pin removal and full mobilization with no hardware in place at 6 weeks.

References

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