CASE REPORT

A painful thumb

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SUMMARY

Isolated traumatic carpometacarpal (CMC) dislocation of the thumb is a rare injury. There are many different ways to manage a thumb CMC joint dislocation which ranges from closed reduction with or without Kirschner wires and casting to ligament reconstruction. However, it is still up for debate on the best management for this injury. We describe a case of isolated traumatic carpometacarpal dislocation of the first CMC joint in a 22-year-old student and reviewed the evidence on management. Our patient was managed with manipulation under anaesthesia (MUA). She returned to preinjury activities with no difficulties within 2 months. Good outcomes can be achieved with MUA to manage dislocation of the first CMC joint; however, those with high activity of the hand may also benefit from ligament reconstruction.

BACKGROUND

Although carpometacarpal (CMC) dislocation of the thumb is often described as a rare injury, it is not that uncommonly seen and is an important differential in hand injuries. It can occur due to trivial injuries and often presents to the emergency department. It is important to recognise this injury. It is important as CMC joint injuries are very unstable. Perfect alignment is important in management and patients may require open reduction with or without ligament repair or reconstruction. The management of this injury is still greatly debated and it is important to be aware of the evidence regarding the management.

CASE PRESENTATION

A 22-year-old woman presented to casualty with pain in the left wrist and thumb. She is a student and is right-hand dominant. She developed wrist pain and swelling immediately after opening a door handle at a 'funny angle'. She is normally fit and well.

On examination, she had swelling and tenderness over the base of the left thumb. Her wrist was tender particularly in the area of the distal radius. She had full range of movement of her wrist. She had a reduced range of movement in her thumb. This was a closed injury. Her pulses and sensation were intact.

INVESTIGATIONS

Radiographs confirmed a dislocation of the base of the first metacarpal with the trapezium, in keeping with dislocation (figure 1). There were no other bony injuries.

TREATMENT

She was treated with a manipulation under anaesthesia. The dislocation was reduced under image intensifier control. The x-ray showed no evidence

Figure 1 Initial x-rays taken in the emergency department.

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of bony injury. An acceptable stable position was achieved and a Zimmer splint was applied for 1 week (figure 2).

OUTCOME AND FOLLOW-UP

One week postmanipulation, she is comfortable with a good range of movement. Her Zimmer splint was changed for a Futura splint for comfort.

She was reviewed 2 months later and she did not complain of any pain in the thumb. Her examination showed full range of movements at the first CMC joint. She returned to preinjury activities with no difficulties.

DISCUSSION

Traumatic CMC dislocation of the thumb is a rare injury. The mechanism involved is usually due to an axial force transmitted through a flexed thumb. Currently, there is no accepted method of treatment for dislocation of the thumb. Treatment ranges from closed reduction with or without Kirschner wires and casting to ligamentoplasty.¹

Although a rare injury, it is not that uncommonly seen and is an important differential in hand injuries. It is important as CMC joint injuries are very unstable. Perfect alignment is important in management; patients may require open reduction with or without ligament repair or reconstruction.²

Kural *et al*³ describes a case of first CMC joint dislocation treated with immediate reduction and short thumb spica cast for 6 weeks. This was followed by a rehabilitation programme. No pain or instability was found at 6 months.

Khan *et al*⁴ also had success using closed reduction and immobilisation. They suggested that failure to maintain reduction, acute instability, significant swelling or delayed presentation may require percutaneous pinning followed by thumb spica cast. Open reduction may be required if loss of reduction after pinning or failure of reduction. In these cases, ligamentous reconstruction may be considered. Uchida *et al*⁵ describe two cases of first CMC joint dislocation managed with closed reduction and immobilisation for 6 weeks. Both were rugby players and were able to return to preinjury activities at 12 weeks. At 2 years follow-up both cases were painless, had good function and stability.

Bosman *et al*¹ looked at patients who were treated with closed reduction and cast and they achieved good results. Their patients

were pain free and had normal range of motion at follow-up. The authors felt that ligamentoplasty was not always justified especially if there is joint congruency after closed reduction.

Another case of internal fixation and immobilisation yielded initial satisfactory results; however, at 18 months follow-up, they found slight instability.⁶ Shah and Patel⁷ also found that closed reduction produced unstable results. Two patients had open reduction and internal fixation with Kirschner wires, one patient had open reduction and one patient had closed reduction with Kirschner wires. All were followed with 6 weeks immobilisation. Two patients had dorsal subluxations at 2 years follow-up. The conclusion was the two open reduction and internal fixations was inadequate and the dorsal capsule and ligament should be explored and reconstructed during surgery.

Simonian and Trumble⁸ looked at early ligamentous reconstructive versus closed reduction and pinning. Eight patients were treated with closed reduction and pinning. Four of these patients had unsatisfactory results. Three had recurrent instability and one had degenerative arthritis. They went on to have an open reduction with a flexor carpi radialis weave. Nine patients had early ligamentous reconstruction. Thumb abduction was reduced by 10% and pinch strength was reduced by 13% in those with ligamentous reconstruction as compared with 20% and 19%, respectively, for those who had closed reduction. In those with closed reduction, three patients were symptomatic with radiological degenerative changes.

Fotiadis *et al*⁹ reported a case where there was a failure of closed reduction with gross instability. They repaired the rupture dorsoradial ligament and joint capsule. At follow-up 3 years postoperatively, the patient had no pain and returned to preinjury activities. The patient also had full range of movement with no instability. Radiology showed no degenerative changes. The authors suggested that ligament reconstruction should be considered in those with injuries that remain unstable after closed reduction. Another case¹⁰ involving ligament reconstruction also achieved a stable pain free thumb at 1 year postoperatively.

Management of dislocation of the first CMC joint still remains controversial. There is limited evidence for both closed and open methods for the management of CMC joint dislocation. There is evidence to show that closed methods are adequate; however, in those with instability after closed reduction, especially those with high activity demands of the hand, ligament reconstruction should be considered.

Figure 2 Manipulation under anaesthesia under x-ray guidance confirmed adequate position.

Learning points

- ▶ First carpometacarpal (CMC) joint dislocation can occur in trivial injuries and is an important differential of hand injuries.
- ▶ A high suspicion for first CMC joint injuries can aid diagnosis of hand injuries.
- ▶ Management with closed methods achieves acceptable outcomes.
- ▶ Those with high activities of the hand should be considered for ligament reconstruction.
- ▶ Good return to preinjury levels of activities can be achieved with both methods.

Competing interests None.

Patient consent Obtained.

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