High-energy traumatic proximal and distal interphalangeal joint dislocation in the same finger

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DESCRIPTION

A 23-year-old right-hand dominant sportsman presented to the emergency department having sustained a sporting injury. While playing hurling he tackled an opponent who had just struck the ball (sliotar) with his hurley (type of wooden bat), making contact with his left hand at high speed. It caused an axial compression/hyperextension injury to his little finger, resulting in swelling and an obvious closed deformity that was irreducible pitchside. Radiographs demonstrated a proximal and distal dorsal interphalangeal joint dislocation in a stepladder deformity displayed in Figure 1. He was given a local anaesthetic in the form of a ring block with 1% lidocaine in the emergency department. Reduction was achieved by first reducing the distal joint using hyperextension, axial traction and volar translation. Following successful reduction, the proximal dislocation was then reduced in the same manner. Postreduction X-rays displayed in Figure 2 confirmed successful reduction with no apparent bony avulsion fragments or fractures. His fourth and fifth fingers were neighbour strapped and he was permitted to mobilise as tolerated for 3 weeks.

At 3-week clinical follow-up, he had full extension of both joints with flexion of the distal interphalangeal joint to 45° and the proximal joint to 90°. Both flexor and extensor tendons as well as collateral ligaments were all clinically intact. Indicators of a volar plate injury such as tenderness over the volar aspect of each joint, pain on passive hyperextension and loss of pinch power were not present. He was referred to hand therapy for a rehabilitation programme and was permitted to return to sport and work as tolerated.

This is a rare injury with a variety of causative factors including workplace injuries, mechanical falls and sporting injuries. The mechanism of injury in this case was a high-energy collision involving a hurl and had a higher potential to cause further soft tissue damage compared with a mechanical fall. We would like to highlight some important considerations in these cases.

First of all the reduction must be carried out with adequate analgesia in the form of a ring block. Opposing traction caused by the extensor tendons can lead to difficulty in reducing either joint. For this reason, we recommend relocating the distal joint first by hyperextending, applying axial traction and dorsal pressure to reduce the phalanx volarly in that order. The proximal joint can then be reduced in similar fashion. Neighbour strapping and early mobilisation is preferred to avoid stiffness.

Second, there must be a strong suspicion for soft tissue sequelae in these high-energy injuries. At first clinical follow-up, a thorough exam must be performed to outrule collateral ligament, volar plate or tenodinous injury, which if present will require referral to a hand specialist for further treatment. If there is no evidence of concurrent injuries,
Images in...  

Patient's perspective

I was very happy with the management of my injury and returned to sport without issue. One year on I have no problems.

Learning points

► Provide adequate local anaesthesia prior to reduction—reduce by hyperextension, axial traction and volar translation in that order.
► Have a high suspicion for soft tissue sequelae in high-energy injuries including volar plate, collateral or tendinous injury.
► If clinical examination at 3 weeks is satisfactory, return to sport can be recommended.

the patient should be seen by a hand occupational therapist, who will provide a rehabilitation programme to regain full range of motion at both joints. Return to sport at 3 weeks was achieved in this case without difficulty.

Contributors  KC collected details about the case, gained consent from the patient and performed background research on the topic. Contributed to the writing and revising of the final draft. RPP performed background research on the case, and contributed towards the writing of the manuscript. ES provided expertise in writing the manuscript, details about the case and the revising of the final script.

Funding  The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests  None declared.

Patient consent for publication  Obtained.

Provenance and peer review  Not commissioned; externally peer reviewed.

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