CASE REPORT

Slipping with the waste (a wheelie bin hand injury)

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Accepted 9 June 2015

SUMMARY

A right hand dominant man in his 60s was moving his wheelie bin when he tripped and landed still holding on to the handle. His hand was trapped between the handle and the ground. He sustained lacerations at the level of the proximal interphalangeal joints of all the fingers of his right hand. The index and middle fingers had damage to the proximal phalangeal articular cartilage and central slip. The central slip loss in the middle finger required reconstruction. The wounds healed without complication by 4 weeks, at which point the patient's fingers were mobilised; he regained almost full range of movement by 3 months.

BACKGROUND

Central slip injury can be inadvertently missed by the unwary clinician. This case highlights a relatively unusual pattern of injury affecting multiple digits and illustrates the importance of the anatomical construct through successful operative management.

CASE PRESENTATION

A right hand dominant man in his 60s was moving a plastic wheelie bin when it overturned and landed so that his hand, still on the handle, was crushed against the ground. The patient's medical history was significant for gout and lower limb osteoarthritis. He is a non-smoker and only occasionally drinks alcohol. On examination capillary refill time was less than 2 s and no issues were noted with tendon function in flexion or extension (figure 1). However, lacerations over the proximal Interphalangeal joints (PIPsJs) of the index, middle and ring fingers (figure 2), raised suspicion that the central slip may have been damaged. He had also avulsed the nail from his little finger.

Figure 2 Clinical assessment of affected finger 285×201 mm.

INVESTIGATIONS

X-ray (anteroposterior and lateral) of the patient's right hand were taken and did not show any fracture.

TREATMENT

In the presence of the open wounds, tetanus cover and antibiotic prophylaxis in addition to analgesia, splitage and elevation of the hand were administered in the emergency department.

Exploration was undertaken in theatre under general anaesthesia. An above-elbow tourniquet was applied at a pressure of 250 mm Hg and the wounds extended to explore.

The index finger had damage to the articular cartilage and complete disruption of the central slip, which was repaired with Ethibond. There was some central slip loss in the middle finger, so reconstruction was required. This was achieved by drilling a hole in the proximal phalanx and mobilising the lateral portion of the central slip. This portion of the central slip was brought dorsally and secured to the drill hole with nylon reinforced with Ethibond, and attaching it to a drill hole made in the proximal phalanx.

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To cite: Parkes R, Weerasuriya T, Gibson S. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-208160

Figure 1 Intraoperative picture with diagrammatic representation overlapped 140×53 mm.

OUTCOME AND FOLLOW-UP

The skin sutures were removed at 10 days. Volar slab use was maintained for 4 weeks (until the wounds were healed). The patient was then referred to hand physiotherapy and regained good movement of the metacarpophalangeal joint, PIPJ and distal interphalangeal joint (DIPJ) by 3 months.

DISCUSSION

Finger extension is performed by the extensor digitorum muscle, which originates from the lateral epicondyle and has insertions on the middle and distal phalanges. At the level of the PIPJ, the tendons divide into the central slip and two lateral bands. The central slip inserts into the middle phalanx while the lateral bands re-join more distally and insert into the distal phalanx.¹

The mechanism that results in central slip disruption is forceful flexion (as in this case) or anterior dislocation of the PIPJ.¹ In this case, the injury was open so the lesion was visible, however, if the injury is closed, active extension of the PIPJ with the DIPJ in flexion reveals the injury.² This is known as the Elson's test (when the PIPJ is bent to 90° over the edge of a table and the middle phalanx is extended against resistance, if the central slip is intact, then the DIPJ is floppy, if not it is rigid). Untreated, the lateral bands will move anteriorly and a boutonniere deformity will develop³ (PIPJ is flexed and the DIPJ is hyperextended).

The method described here is of local soft tissue reconstruction using readily available resources. Alternative fixation methods include the use of bone anchors, and pull-out wires are an alternative to drilling a hole in the phalanx. However, bone anchors are a more costly option and pull-out wires are associated with infection.⁴

In conclusion, central slip injury is important to look for and treat, as with inexpensive operative treatment, improvement rather than deterioration in hand function can be achieved.

Learning points

- Extension of an injured finger may seem normal at first glance, and a central slip injury could easily be missed.
- Have a high degree of suspicion in a wheelie bin-type injury pattern and specifically look for a central slip injury.
- Central slip injuries can be treated with good functional outcome.
- Failure to treat will result in a boutonniere deformity.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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