Unusual index fingertip avulsion injury

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J Li, S Morris, A Freiberg. Unusual index fingertip avulsion therapy. Can J Plast Surg 1994;2(1):39-40. An unusual index fingertip avulsion including the digitorum profundus tendon-muscle unit is described in a 57-year-old workman. Although ring avulsion injuries are common, this type of injury has not been reported in the literature.

Key Words: *Avulsion injury, Digitorum profundus tendon, Fingertip*

Lésion inhabituelle avec avulsion de l'extrémité de l'index

RÉSUMÉ : Une lésion inhabituelle, avec avulsion de l'extrémité de l'index affectant l'unité tendon-muscle du fléchisseur profond est décrite chez un ouvrier de 57 ans. Bien que les avulsions annulaires soient fréquentes, ce type précis de blessure n'avait encore jamais été rapporté dans la littérature.

Ring avulsion injuries have been well described in the literature (1). Typically a ring or wedding band is caught on something, with traction placed on the finger. The injury may range from skin loss to complete amputation. No previous reports are available on the involvement of the index finger profundus tendon.

The following is a report of an unusual injury in which the flexor digitorum profundus tendon of the nondominant index finger was avulsed with its muscle belly following traumatic avulsion of the distal phalanx of the finger.

CASE REPORT

A 57-year-old right-handed male, working in a meat packing plant, attempted to relieve a jammed machine when his nondominant index fingertip was caught and avulsed. He presented to the emergency room shortly after the injury with a complete amputation of the left index finger at a level just proximal to the distal interphalangeal (DIP) joint. Examination revealed no other significant injury. The neurovascular supply to the rest of the index finger was intact. Flexion of the rest of the digits was normal. The avulsed fingertip had attached to it the entire flexor digitorum profundus tendon, measuring 30 cm, with part of its muscle belly (Figures 1,2).

Radiographs revealed a fragment of the distal phalanx

remaining and a comminuted fracture of the middle phalanx. The distal fragment of the middle phalanx was removed and the stump closed. The patient was observed in hospital for 24 h, did not develop a compartment syndrome and was discharged with full function of his hand and normal sensation.

On follow-up three months later, he had active and passive flexion at the index proximal interphalangeal (PIP) joint of 50/0 (right side 90/0), with full range of motion (ROM) at the metacarpophalangeal (MCP) joint (Figure 3). He still had persistent pain on flexion of the index PIP, with a positive Tinel's sign over the ulnar digital nerve of his left index finger, and over the flexor retinaculum. He also complained of aching in the forearm radiating to the index finger, when he slept with his elbow flexed. Electromyography and nerve conduction studies were negative for nerve entrapment.

DISCUSSION

Several classification schemes have been proposed for avulsion injuries. Initially, Urbaniak et al (2) divided ring avulsion injuries into three classes for purposes of treatment: class I - circulation adequate; class II - circulation inadequate; class III - complete degloving or amputation. This classification scheme was subsequently modified by Nissenbaum (3) and others (4,5) to include arterial or venous injury only, in order to provide better treatment guidelines. These injuries are to be differentiated from tendon avulsions, which were described by Leddy and Packer (6).

In this case, a class III injury caused the index flexor

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Figure 1) Amputated part involving distal phalanx and flexor digitorum profundus muscle-tendon unit

Figure 2) Amputated index finger through the distal middle phalanx level

Figure 3) Amputation stump three months following injury. Acceptable range of movement

digitorum profundus tendon to be avulsed with its muscle belly. In late follow-up, the patient experienced considerable pain in the finger. This may have been due to neuropraxia of the digital nerve or to carpal tunnel scarring. These problems were treated conservatively and the patient improved and returned to work four months following injury.

This case is comparable with published results of class III injuries treated with amputation revision (5,7).

As the results were not completely satisfactory, it will be important to determine whether index avulsions are mechanically different from ring avulsions, and whether a flexor profundus tendon avulsion will affect the end result.

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