CASE REPORT

Dangers of neglect: partially embedded ring upon a finger

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SUMMARY

Digital swelling is a common presentation in clinical practice. Patients presenting with swollen fingers to the emergency department will often have rings on their finger, which can be removed using a variety of simple non-operative techniques or by cutting the ring off and thus avoiding any long-term consequences. Very rarely, when there is a delay in presentation of these patients, serious consequences may proceed, including finger ischaemia, infection, tendon attrition or ultimately the need for surgical amputation. We present an unusual case of patient with psychiatric illness who presented late with a ring that had embedded upon the volar aspect of the index finger. The difficulties faced by the emergency care practitioners in such circumstances, the consequences of rings acting as a tourniquet and strategies for removal of rings on swollen fingers are highlighted.

BACKGROUND

Upper limb injury or infection can cause swelling or dependent oedema in fingers and this may be further complicated by the presence of a ring. Patients often present to accident and emergency (A&E) whereby these rings can be removed; however, this may be difficult with a late presentation.

We report an unusual case in a psychiatric patient with a delayed presentation of a swollen digit and hope to highlight the difficulties to emergency care practitioners.

CASE PRESENTATION

A 49-year-old man presented to the emergency department with a partially embedded ring on the volar aspect of the left index finger (figures 1 and 2). The patient was known to the mental health team suffering from a long history of schizophrenia and depression.

Three months prior to his presentation, he had noticed a small cut on the left index finger; however, he did not seek medical attention. He subsequently developed swelling of the finger, which deteriorated over the following months. His attendance to A&E was triggered by increased pain and the inability to flex the finger.

Clinical examination of the left index finger revealed a grossly swollen digit surrounded by erythema. On the volar aspect of the finger, the ring was not visible as it was completely embedded within the skin. Capillary refill was delayed at 5 s with complete paraesthesia of the left index finger. Flexion distal to the metocarpophalangeal joint was

not possible indicating dysfunction of flexor digitorum superficialis and flexor digitorum profundus tendons.

Traditional methods to remove the ring would have failed due to the overlying skin.

TREATMENT

The patient was advised regarding the surgical treatment for the removal of the ring; however, he absconded. Six weeks later, the patient re-presented himself and the ring was removed as an elective procedure. In theatre, the ring was cut just adjacent to the point of entry into the skin (figure 3); small incisions were made at the entry point. The embedded part of the ring was then delivered by rotating it along its circumference (figure 4). After the removal of the ring, the wound was irrigated copiously. No further exploration was undertaken at this time and a course of oral antibiotics prescribed.

OUTCOME AND FOLLOW-UP

On follow-up review, the wound had healed without infection, the finger swelling had resolved

Figure 1 (lateral view) The ring completely embedded within the skin on the volar aspect.

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Figure 2 The ring completely embedded within the skin on the volar aspect (palmar view).

(figures 5 and 6) and the sensation restored; however, there was minimal flexion at the metacarpophalangeal and interphalangeal (IP) joints.

DISCUSSION

Swelling of the fingers may be secondary to dependence, infection, trauma or fluid retention secondary to other medical conditions. Digital swelling can be exacerbated with the presence of a ring acting as a tourniquet. This will cause disruption to the lymphatic drainage exacerbating digital oedema. Progression of the swelling will then cause disruption to the venous drainage

Figure 3 Intraoperative picture of the ring being cut.

Figure 4 The ring being rotated on its circumference.

leading to venous congestion. Eventually arterial compromise will ensue.

With a ring becoming imbedded into the volar aspect of the finger as in this case, the sequelae can include infection, contracture, flexor tendon rupture and finger ischaemia which may

Figure 5 Postoperative view of the index finger (lateral view).

Figure 6 Postoperative view of the index finger (palmar view).

require amputation. These consequences are more often seen in delayed presentations.¹ There have been a few documented cases whereby the delay in presentation has led to the overgrowth of skin and the ring becoming embedded.^{2–5} The common denominator in most of these cases seems to be some form of psychiatric illness.^{3–4} It is therefore not uncommon for the history to be vague. To avoid reaching the above-mentioned sequelae, it is imperative that a thorough examination is performed and the rings are removed at the earliest.

The method adopted for removing the ring is largely dependent on the degree of oedema and venous engorgement of the digit. If pain impedes removal, then a ring block can be administered.

Limiting further swelling by elevating the limb and applying ice is important.

Simple methods such as lubrication with axial traction should first be attempted. If this fails, elevation of the limb, followed by exsanguination of the digit, and the application of a tourniquet around the upper extremity, can decrease swelling. Axial traction with lubrication can then be attempted again.

The use of thread can be used as an adjunct in removing the ring. Wrapped tightly around the digit to decrease the swelling, the ring is gently rotated with traction while holding the proximal end of the thread (under the ring).⁶

Failure of the conservative methods mentioned above requires cutting the ring, either with a ring cutter or orthopaedic wire cutter.

If all non-operative methods fail, then surgical removal of the ring may be necessary.

When considering surgical removal, a multidisciplinary team is needed both for the surgical removal and when further hand therapy is required. There should be consideration for hand dominance and discussion with the patient regarding repair or delayed repair of tendons which may be ruptured. Alternatively, the fusion of the digit in a functional position, or amputation due to ischaemia of the digit, maybe more appropriate.

Learning points

- ▶ Rings on digits should be removed at the earliest opportunity in patients presenting with swollen digits or in patients with the potential for swelling of digits.
- ▶ Thorough clinical examination and prompt management of the patients presenting with swollen digits is imperative to prevent any long-term sequelae.
- ▶ In majority of the cases, simple conservative measures are sufficient to remove the rings from swollen digits.
- ▶ A lower threshold is necessary in patients with coexisting psychiatric illness.

Competing interests None.

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