

The occasional ring removal

Ava Baker, BArts, Sc(Hons)
Class of 2010, Faculty of Medicine, University of Calgary, Calgary, Alta.

Kristen Rylance, BSc(Hons)
Class of 2011, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alta.

Sarah Giles, BSc(Hons), MD, CCFP
Locum, Orleans, Ont.

Correspondence to: Dr. Sarah Giles; smgiles@dal.ca

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INTRODUCTION

It is not uncommon for patients to present to the emergency department with the concern of being unable to remove a ring or similar item, such as a washer or nut, from their finger. Most patients only present after several attempts to remove the ring themselves — margarine, soap and vegetable oil seem to be popular home remedies for attempted removal. Rings can become stuck because of digital trauma, peripheral edema, dependent edema, insect bites or animal stings. Children have been known to jam their fingers into tiny washers and holes only to find it impossible to remove their finger from the site.

Ring removal should be considered urgent if there are any signs of vascular compromise such as mottling. Luckily, there are several techniques for ring removal, all of which are relatively safe and simple. Choice of technique depends on the age and cooperation of the patient, the patient's level of pain, the value of the ring, the nature of the injury to the digit and the physical characteristics of the ring. Some children may not be able to cooperate with attempts to remove rings and thus may require conscious sedation. In cases of fingers that are fractured, dislocated or lacerated, or of rings that are inexpensive or to which the owners are not emotionally attached, immediate removal by ring cutter should be considered. Thick bands and expensive rings should prompt the physician to try alternative techniques as described below.

EQUIPMENT

Choice of equipment depends on the technique chosen, and may include the following:

- ice pack
- 5 mL 1% lidocaine without epinephrine
- 5-mL syringe
- 27-g needle
- povidone iodine solution or similar substitute
- water-soluble lubricant
- antibiotic ointment
- hemostat
- ring cutter and safety glasses
- 4.0 or 5.0 suture string, ribbon gauze or nylon tape
- surgical glove

PROCEDURE

Pretreatment

Before attempting to remove a stuck ring, instruct patients to elevate their hand above their head for 5–10 minutes while applying an ice pack. The preparation will reduce the local swelling and increase the chance of successful removal. If the patient is suffering considerable pain, the practitioner may consider a digital block using 3–5 mL of 1% lidocaine without epinephrine. However, if a ring cutter can be used in removal attempts, you should delay the block to allow the patient to inform you if the heat from the removal process is starting to burn the skin.

Removal by ring cutter

Manual ring cutters allow a specially designed lever to slip under the ring and protect the finger while the operator uses a thumb screw to rotate a jeweller's saw. Power cutters use the same

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technique but the saw's action is powered by electricity (Fig. 1). As metal-on-metal grinding will cause the ring to become hot, frequent breaks are required to allow cooling and prevent burns.

Taylor and Boyd[1] describe a technique for ring removal in a case report in which a hard metal auto part too hard to be cut with ring cutters was used as a ring by a patient who subsequently required the ring to be removed after a hand injury. The ring was lifted off the skin by sliding strips of gauze under the ring with a surgical skin hook and the tissue under the ring was protected with a stainless steel spatula. The area surrounding the ring was covered with wet gauze to prevent thermal injuries and then the ring was cut in 2 places using a dental motor (volvere) and hard grinding disc.

String wrap technique

Occasionally, it is necessary to remove a ring without damaging the ring itself because of sentimental attachment or the value of the ring. One method for removing a ring stuck on a finger without cutting the ring is to first ensure adequate pain control, and then to compress the tissue above the ring to allow easy removal by wrapping the tissue with nylon tape or suture (Fig. 2). In this technique, the proximal end of a length of nylon tape is passed under the ring, and the finger is tightly wrapped from proximal to distal. Pulling on the proximal end of the tape moves the ring distally onto the tape overlying the compressed tissue and finally off the digit.[2] This technique can also be completed using ribbon gauze or suture material.[3,4]

Case reports further describe a method in which an extremely edematous finger was wrapped tightly in 1 inch–wide elastic tape for 15 minutes. Then, a blood pressure cuff was applied to the arm as a tourniquet to prevent the edema from returning while the finger was unwrapped. The tape was taken off the finger and rewrapped more tightly, the blood pressure cuff removed and the tape remained on the finger for a further 15 minutes. This process was repeated until the swelling in the patient's finger had subsided adequately to allow the ring to be removed.[5]

Elastic pull technique

Another technique that doesn't damage the ring, takes less time than the string wrap method and may cause less trauma to the digit is the elastic pull technique. An elastic band can be slid underneath the ring and, once the ring has been adequately lubricated, both ends of the elastic are pulled circumferentially and distally, thereby moving the ring off the finger.[6]

Glove method

When simple lubrication and the string wrap method are ineffective and the patient does not want the ring damaged, another method may be employed before a ring cutter is used. The finger of a surgical glove is cut at both ends to yield a cylinder shaped piece of latex. This piece is then placed onto the affected finger and pulled under the ring using forceps. The proximal end of the glove segment is then grasped and pulled toward the distal end of the finger in a twisting motion, pulling the ring with it.[7]

SUMMARY

Ring removal may be necessary in cases of digital trauma or edema. After pretreating the digit with ice

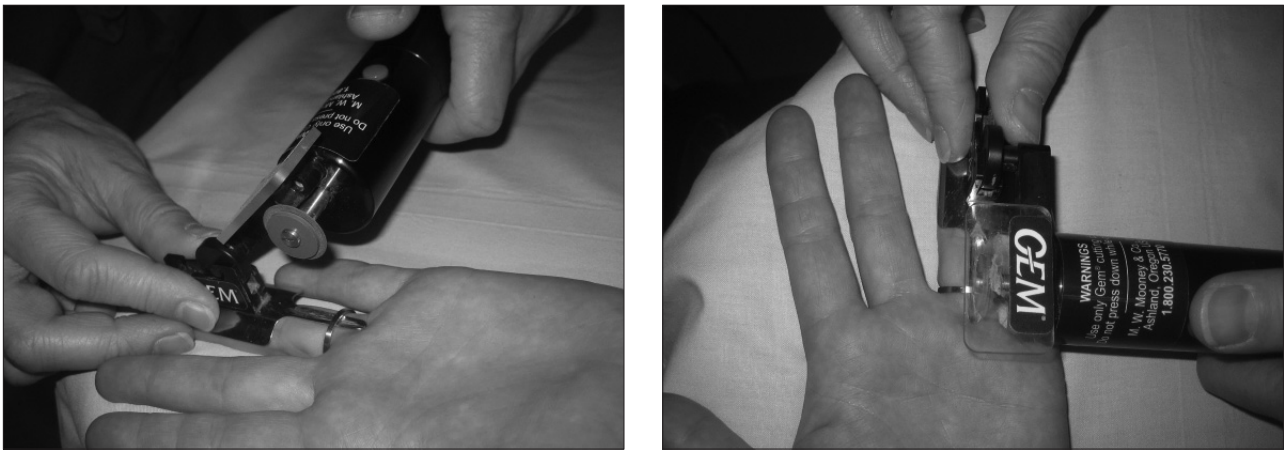


Fig. 1. Ring removal with a power cutter.

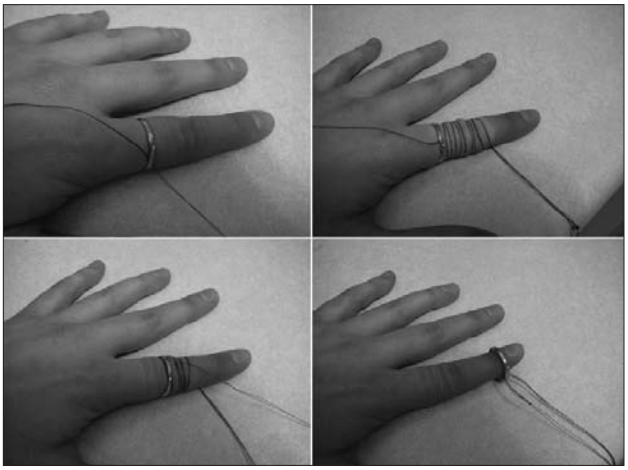


Fig. 2. Ring removal with a string wrap technique.

and elevation and after considering the appropriateness of a digital block for anesthesia, the ring can be removed using one of several methods. If the ring is not valuable and can be cut off, a ring cutter is the preferred method. In cases where the ring cannot be cut or has sentimental or other value, the ring can be removed using the string wrap technique, the elastic pull technique or the glove method.

Competing interests: None declared.

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