Evaluation of a two rubber band technique for finger ring removal

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ABSTRACT

INTRODUCTION Rings are required to be removed from a finger in many clinical situations. Rings that are difficult to remove is a problem encountered frequently. Many techniques have been reported for this problem. This study looks at the effectiveness of a single technique for removing difficult rings from fingers.

METHODS A two rubber band technique was used in this study of 69 difficult to remove rings. Success of the technique and time to removal were recorded.

RESULTS Difficult rings were removed in 92.5% of cases, in a mean time of 10.7 seconds. No fingers or rings suffered damage during the study.

CONCLUSIONS This two rubber band technique is a rapid, safe and effective method for removing rings that cannot be removed easily.

KEYWORDS

Finger – Injury – Removal – Ring

Accepted 30 January 2016

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Removal of a ring from a finger is often required in the setting of trauma to that limb, oedema, animal bites and stings or in preparation for a patient undergoing surgery.^{1–5} The patients themselves have usually tried simple techniques prior to seeking medical help.^{3,4} Rings that are difficult to remove frequently present a challenge to the clinician⁵ and upset to the patient, who would rather not have the ring cut off.^{3,4}

Many techniques (both traumatic^{2,5–8} and atraumatic^{1,9–12} to the ring) have been reported in the literature. Wrapping techniques,^{1,11,13,14} oedema management⁹ and cutting the ring^{2,6–8} have all been described.

This study concerned the attempted removal of a series of 69 rings using a single technique. The two rubber band (TRB) technique is a modification of a method described previously,¹⁵ with two rubber bands instead of one. The technique is used successfully by the authors in their clinical practice.

Methods

Following human research ethics committee approval for this study, participants were recruited from patients presenting to the orthopaedic outpatient department, family and friends of patients, and staff members. Staff members

were also recruited using the hospital's email system. Participation was voluntary and withdrawal from the study could occur at any time. Informed written consent was obtained from all participants.

Participants were eligible for inclusion in the study if they presented to the orthopaedic outpatient department for reasons not linked to ring removal and had one or more rings on digits of the hand that could not be easily removed (mechanically or with lubrication). Participants were excluded if they were under 18 years of age and had an allergy to latex (rubber bands) or the liquid soap used.

The endpoint for the study was success or failure to remove the ring. Data collected included demographic details of the participant (age and sex), the digit and hand involved, and the time taken to remove the ring. Time taken for the attempt was measured using a stopwatch on a smartphone and rounded to the nearest second.

Technique

The TRB technique utilises two rubber bands and ordinary liquid soap. The soap is used for lubrication. Two rubber bands are then inserted under the ring (Figs 1 and 2). A small artery forceps or similar instrument may be used to facilitate this. The rubber bands are looped over the ring and held in separate hands by the clinician (Fig 3). Distal

Figure 1 Inserting rubber bands under the ring

Figure 3 Applying traction to the ring using the rubber bands

traction is applied with the rubber bands while also oscillating them around the long axis of the digit, through an arc of 180° in alternating directions (similar to turning a wheel on a car) (Fig 4). This is continued until the ring has been removed (Fig 5).

Results

Overall, 49 participants (36 female, 13 male) were recruited (with 69 rings). The mean age was 54.6 years (range: 28–90 years). Rings were mostly on the ring finger ($n=62$), with four on the middle finger, two on the thumb and one on the little finger (Table 1). The digits included in this study had not sustained an injury.

Sixty-two rings (92.5%) were removed successfully. Of those rings, the longest a ring had been on was 39 years. The mean time for successful removal was 10.7 seconds (range: 2–60 seconds). Five attempts were unsuccessful. The causes attributed to the failures were proximal interphalangeal joint arthritis and increasing body mass index since the ring was first put on. The length of time these rings had been on was 20–45 years.

One participant withdrew consent to participate further in the study after one of her three rings had been removed. The reason given was her concern about getting her rings back on. All participants tolerated the removal with (at most) minimal discomfort. There were no injuries to any participants, nor were any rings damaged.

Figure 2 Rubber bands under the ring in preparation for removal

Figure 4 Rotating the ring around the finger by oscillating the rubber bands

Figure 5 The ring held safely by the rubber bands after removal

Table 1 Participant and ring demographics	
Participants (n=49)	
Male	13
Female	36
Mean age (range) in years	54.6 (28–90)
Rings (n=69)	
Male	13
Female	56
Fingers	
Index finger	0 (0%)
Middle finger	4 (5.8%)
Ring finger	62 (89.9%)
Little finger	1 (1.4%)
Thumb	2 (2.9%)
Right hand	18
Left hand	51

Discussion

The technique detailed here is one of many for removing difficult rings. Other methods are described in the literature in reports of a single case and papers have been published that give a description of a particular technique.^{1,2,6–15} The notable exception to this is the review by Kalkan *et al.*⁴ To our knowledge, there are no other studies of similar design to ours for comparison.

The TRB technique is rapid, and uses common items found in emergency departments, outpatient clinics and

community centres. It does not require the application of string, tape or any other item directly to or around the finger. The rubber bands are looped around the ring only. This may be important in the setting of injury to the digit and in reducing the risk of harm to the digit. Rubber bands were chosen over string as they grip the ring slightly, facilitating oscillation around the digit. Furthermore, the technique does not harm the ring and the ring cannot fall to the floor after removal.

We found there was sufficient space to pass the rubber bands under the ring easily in all cases, as have other authors.^{12,15} In cases where passing the rubber bands is not possible, an alternative technique would have to be used. Obstruction to removal was always at the proximal interphalangeal joint.

Study limitations

The use of the TRB technique would not always be possible in a trauma setting. Clinical judgement should be exercised when ring removal is attempted in these cases. The review by Kalkan *et al* provides a useful algorithm to guide decision making in this scenario.⁴ Pain or discomfort was not measured for our study. It was only assessed by the patient’s subjective statements. Moreover, the TRB technique was not compared with other methods. Further study could be carried out to determine which is most successful.

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