



## Removing the ring stuck on finger with a high speed motor: a case report

Removing the ring with motor

M. Fethi Ceylan<sup>1</sup>, Haldun Topg l<sup>2</sup>

<sup>1</sup>Department of Orthopedics and Traumatology, In n  University Turgut  zal Medical Center, Malatya,

<sup>2</sup>Department of Orthopedics and Traumatology, Elaz g State Hospital, Elaz g, Turkey

### Abstract

A considerable number of patients apply to the emergency departments with rings, made of different alloys and in different shapes, stuck on their fingers. Sticking is a condition that must be removed as soon as possible because it may cause a serious problem that can lead up to the necrosis in the finger. Many methods have been described in the literature for removing the stuck rings. In this report, we presented a case where a ring made of a thick and hard metal alloy that causes sticking and infection in the finger, was removed with a diamond tip high-speed motor used in spinal surgery unlike conventional methods, and the patient was treated without any sequel.

### Keywords

Stuck Ring; Metal Alloy; High-Speed Motor

DOI: 10.4328/JCAM.5994

Received: 10.09.2018 Accepted: 30.10.2018 Published Online: 04.11.2018

Corresponding Author: Haldun Topg l, Department of Orthopedics and Traumatology, Elaz g State Hospital, Elaz g, Turkey.

GSM: +905356697080 E-Mail: halduntopgul@gmail.com

ORCID ID: 0000-0001-9371-4827

**Introduction**

Many people use rings made of very different alloys and in a variety of shapes. The rings can cause sticking in fingers due to trauma, infection, allergy, insect bite, pregnancy, some skin diseases and excessive weight gain [1,2]. Sticking creates the risk of pain, circulatory impairment, infection, nerve damage, vascular injury, and necrosis and it is a condition that should be removed as soon as possible [3,4]. In this report, a case applied to the emergency department with a ring stuck on her finger, where the ring made of a thick and hard metal alloy and caused infection and excessive edema, was removed being cut by a diamond tip high-speed motor other than the conventional methods is presented.

**Case Report**

A 17-year-old female patient applied to the emergency department at around 20:00 in the evening because of the swelling and pain in her finger caused by a ring. The patient's complaints began two days ago and gradually increased. During the examination of the patient, it was seen that there was an interlaced double ring, which was wider and thicker than normal, on the 4th finger of the right hand. There was redness, swelling, and temperature increase on the finger in the distal part of the ring (Figure 1). It was seen that the ring on her finger was stuck to the highest degree. With the help of lubricants, the extraction was tried to be removed without being cut but this procedure was not successful. Later, although the wire cutter, pliers, Gigli wire, and ring cutter were used, the ring could not be cut (Figure 2). The patient's finger was fairly stretched and had the risk of developing compartment syndrome. A diamond tip high-speed motor used in spinal surgery was used to remove

this ring, which could not be removed by conventional methods. First, the outer link of the ring was cut off. Then, the wider and thicker ring on the inside of the ring was cut out during a 10-minute period by placing a forceps between the ring and the finger to prevent injury to the patient's finger and cooling intermittently with water to avoid thermal injury (Figure 3,4).

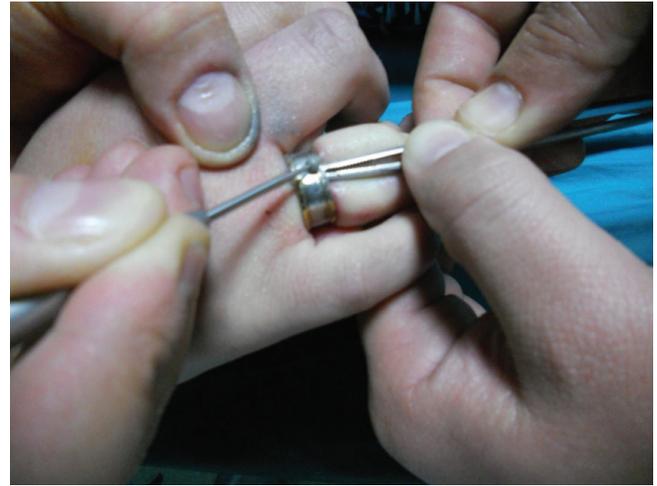


Figure 3. Cutting the ring with the high-speed motor.



Figure 4. Finger's condition following the removal of the ring.



Figure 1. Patient's condition before the removal of the ring.



Figure 2. Tools used to remove the ring.

With the removal of the ring, the pain in the patient's finger decreased and the swelling began to retreat. The patient was given Cefazolin treatment orally (3x1) and was discharged with a recommendation to come to the control visit to an outpatient clinic. Three days later, on the outpatient clinic examination, it was seen that the pain in the finger stopped and the swelling and redness disappeared. On the control examination after 2 weeks, it was seen that the finger has completely recovered.

The ring can get stuck on your finger for various reasons, and after a while it can cause necrosis due to the effect of the tourniquet. [1,5]. First, the finger should be evaluated for signs of edema and ischemia. Severe pain, prolonged capillary filling time (longer than 2-3 seconds), and cyanosis are the findings of ischemia [6]. The ring should be removed as soon as possible in order to avoid permanent damage in the presence of ischemic findings. In that case, removal of the ring with cutting methods should be the first choice. In cases without ischemic findings, the removal methods without cutting can be used because there is enough time. Methods such as thread wrapping, Penrose drain wrapping, pulling with a thread tied up to a ring, glove finger method, and caterpillar method are some of the

methods described in the literature for removing the ring without cutting it [6]. If no success is achieved with these methods, then the ring should be cut off. The shape and thickness of the ring and the type of alloy from which it is manufactured play an important role in deciding which method should be used to cut the ring. It is easy to cut soft materials such as copper, gold, silver, plastic [7]. Breaking the rings made of hard alloys such as ceramic and tungsten carbide is easier than cutting them [8]. However, it is necessary to use electric power saws to cut the rings made of very hard alloys such as titanium and steel.

Tools such as manual ring cutter, pliers, adjustable pliers, Gigli wire, Dremel motor saw, dental drill, diamond tip saw are used in the cutting of the rings [6]. These tools may not always be found everywhere. There may be manual ring cutters, pliers, and adjustable pliers in most emergency services, but in most cases, there may be no electric powered devices. Different tools are also used to cut the rings when needed. Ricks [9] used a diamond tip dental drill to remove a tungsten carbide ring and cut it off in about 15 minutes. Some authors used the Dremel motor saw to cut rings made of hard materials [2,10]. Some authors, however, reported that they used the dental saw that dentists used to cut teeth to cut rings made of titanium and some hard alloys [11,12]. When using motor-operated tools, it is important to remember to wet the relevant area to prevent thermal damage caused by friction.

In conclusion, the use of a diamond tip high-speed motor may be an alternative method for cutting stuck rings that cannot be removed by conventional methods.

#### Scientific Responsibility Statement

*The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

#### Animal and human rights statement

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.*

#### Conflict of interest

*None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.*

#### References

1. Kumar A, Edwards H, Lidder S, Mestha P. Dangers of neglect: partially embedded ring upon a finger. *BMJ Case Reports*. 2013; 5:9
2. Shafiroff BB. Easy removal of a partially embedded ring from a finger. *Plast Reconstr Surg*. 1979; 63: 841–2.
3. Comtet JJ, Willems P, Mouret P. Ring injury with bilateral rupture of the digital arteries without skin damage. *J Hand Surg Am*. 1979; 4(5): 415–6.
4. Ramesh BA, Satish Kumar J. Ring Finger Necrosis Due to a Ring. *Indian J Surg*. 2017; 79(4): 367–8. DOI: 10.1007/s12262-017-1650-y.
5. Leung YF, Ip SP. Chronic erosion injury of a digit by a ring: epidemiology, staging, treatment and prognosis. *Br J Plast Surg*. 2002; 55: 353–5
6. Kalkan A, Kose O, Tas M, Meric G. Review of techniques for the removal of trapped rings on fingers with a proposed new algorithm. *Am J Emerg Med*. 2013;

31(11): 1605–11. DOI: 10.1016/j.ajem.2013.06.009.

7. Mullett ST. Ring removal from the oedematous finger. An alternative method. *J Hand Surg (Br)*. 1995; 20:49.
8. Allen KA, Rizzo M, Sadosty AT. A method for the removal of tungsten carbide rings. *J Emerg Med*. 2012; 43: 93–6.
9. Ricks R. Removal of a tungsten carbide wedding ring with a diamond tipped dental drill. *J Plast Reconstr Aesthet Surg*. 2010; 63: 701–2.
10. Louw J, Hodsgon E. An unconventional ring removal technique for hard-to-remove rings. *African journal of Emergency Medicine*. 2012; 2: 81–3.
11. Taylor SP, Boyd MJ. Unusually difficult ring removal from a finger solved using a dental instrument. *Emerg Med Australas*. 2005; 17: 285–7.
12. Chambers AF, Harper A. Removal of a titanium ring using a dental saw. *J Plast Reconstr Aesthet Surg*. 2012; 65: 128–9.

#### How to cite this article:

*Ceylan MF, Topgül H. Removing the ring stuck on finger with a high speed motor: a case report. J Clin Anal Med 2018; DOI: 10.4328/JCAM.5994.*