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Finger Entrapment in Metallic Curtain Holder Clamp: A Novel Case Report

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ABSTRACT

Introduction: Finger entrapment in metallic bands is a commonly encountered situation. Usual victims are children, adolescents and psychiatric patients. It causes obstruction to lymphatic and venous drainage leading to edema distal to constriction, which further leads to a neurovascular compromise and presents as a surgical emergency.

Aims: We present a case of unconventional method used to salvage finger from foreign body entrapment.

Case Report: A 21 year old Male presented to us with his right ring finger being stuck in a metallic curtain holder clamp. Multiple attempts were made to remove the entrapped finger with conventional methods and home remedies, subsequently, it was removed by an electric motor driven metal cutting saw, which brings a new treatment modality in such unusual cases.

Discussion: Trapping of fingers in metallic constricting bands has solutions ranging from simple home remedies to specialized cutting instruments. Constriction can lead to obstruction of venous and lymphatic drainage leading to edema and hence further deteriorating the constriction and arterial obstruction leads to gangrenous changes.

In our case after several failed attempts using home remedies by patient, metallic curtain holding clamp was finally removed by an innovative method using an electric motor driven metallic cutting saw. Thus, this unconventional method is helpful for tackling such uncommon situations faced by doctors in emergency department.

Conclusion: Electric cutting saw when used cautiously can help to remove Finger entrapment in metallic bands. It requires due diligence and patience to carry out the procedure to salvage the finger.

Key Words: Entrapped finger, Ring finger, Curtain holding clamp, Electric saw, Lubricant, Hacksaw blade, Patients

INTRODUCTION

A Finger getting entrapped in a metallic clamp is a commonly seen condition in children and adolescents. In most of the cases, it is associated with trauma to hand or finger, or leads to edema of finger distal to where the clamp is trapped due to lymphatic or venous obstruction.

“Finger entrapment” also been described in psychiatric Patients.^{1,2}and in geriatric group.³ There are also descriptions of fingers getting stuck in plug holes of kitchen sink⁴ and

hardened metal auto parts.⁵ Delay in presentation of these patients to the hospital, may layout serious complications like finger ischemia, infection, tendon attrition or ultimately the need for surgical amputation.

Various methods and techniques are described in rescue of such trapped digits. We have a case of an adult male getting his finger trapped into a metallic curtain holder clamp and its subsequent removal, finally using an electric saw after several failed attempts using home remedies.

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MATERIALS AND METHODS

A 21 year old male adult presented to emergency department in Dhiraj hospital, Sumandeep University with his right ring finger being stuck in a metallic curtain holder clamp for 2 hours during occupational activity (Fig.1). Patient himself had made several forceful attempts to remove it. Further unsuccessful attempts to remove the trapped finger were made at primary health care centre by applying soap followed by oil as a lubricant to the finger and then trying to forcefully pull the finger out. After many unsuccessful attempts patient was then brought to our hospital. Ethical clearance number -34523

On Presentation at the emergency department, the finger distal to the clamp appeared swollen and was bleeding. Removal was first attempted by applying lignocaine jelly at junction of clamp and entrapped finger part for better lubrication and pain relief after submerging hand in ice water for 3 minutes to reduce edema. However, the attempt was unsuccessful. The next attempt was with the **HACKSAW BLADE** but could not get much success. An electric cutting saw was then arranged from the Maintenance Department of the hospital (Fig.2).

A primary trial to cut the metallic clamp far from the finger was made to test the saw. Patient was then shifted to Operation Theatre after taking written and informed consent. Under general Anesthesia, patient was positioned supine with arm fully extended pronated. Tail end of two forceps were used to provide some elevation and protection from injuring the finger below the clamp and cutting was done in a start stop fashion using electric saw, with 5 seconds of cutting followed by 5 seconds of hold with continuous irrigation with normal saline to minimize debris and thermal injury. Within 15 mins, the finger was released without any iatrogenic trauma (Fig.3).

Bleeding was then stopped by pressure bandaging. Capillary filling, temperature and oxygen saturation and finger movement were assessed and found to be normal. Bony injury was ruled out with post-operative x-rays (Fig. 4&5).

Patients was given volar slab for support and reduction of swelling along with analgesics and serratiopeptidase drugs.

On 1 week follow-up, there was no residual sequelae or complication seen. Circumferential abraded wound was well healed.

CASE REPORT

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had made several forceful attempts to remove it. Further unsuccessful attempts to remove the trapped finger were made at primary health care centre by applying soap followed by oil as a lubricant to the finger and then trying to forcefully pull the finger out. After many unsuccessful attempts patient was then brought to our hospital. Ethical clearance number - 34523

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DISCUSSION

Trapping of fingers in metallic constricting bands has solutions ranging from simple home remedies to specialized cutting instruments. Constriction can lead to obstruction of venous and lymphatic drainage leading to edema and hence further deteriorating the constriction and arterial obstruction leads to gangrenous changes. Usually patients present after multiple failed attempts at removal of the trapped objects by using force or lubrication using soap, oil or ointments. Such attempts tend to further worsen the situation and it might require amputation thereafter. Therefore early consultation at tertiary care center is essential to prevent such consequences.

Several techniques of such trapped fingers have been described over the years. Basically these techniques are divided into 'Non Cutting' and 'Cutting' methods.⁶ Choice strictly depends upon various factors such as Age, cooperation of the patient, nature of injury and physical nature of the constricting materials etc.

Non cutting techniques involve removal without disturbing its integrity, suited best for small lightweight objects like Rings.

These techniques involves home remedies like lubrication of finger using soap, oil, ointments etc. but with that several others steps are to be taken such as elevation of the hand and ice application to reduce the edema to facilitate the removal. Adequate analgesics should be given and if required various nerve digit blocks can be given.⁷ Kates³ described the use of a rubber elastic bandage to draw blood from finger to reduce the swelling. It thus helps to remove ring without cutting it. Cresap⁸ also described the use of elastic bandage for exsanguination and a blood pressure cuff as a tourniquet but he repeated the process of exsanguination four times to reduce

the swelling. Inoue et al.⁹ described another simple method using finger of a surgical glove which is cut at both ends to get cylinder shaped piece of latex.

Cutting techniques are used for hard metallic objects which can be manual cutters or power cutting devices. Ricks¹⁰ and Sazwan¹¹ et al. described removal of hard metal ring by a diamond tipped dental burr. Taylor and Boyd⁴ also described use of a dental volvere for removal of hard metal auto part stuck in a injured finger. Hajivassiliou¹² and Woodburn¹³ have also shared their separate experiences in removal of constricting objects using a hand-held inexpensive ‘hobbydrill’. McElfrish¹⁴ described an ‘elastic pull technique’ in which an elastic band is slid beneath the constricting object and on lubrication, both ends of the elastic are pulled circumferentially and distally.

In our case after several failed attempts using home remedies by patient, metallic curtain holding clamp was finally removed by an innovative method using an electric motor driven metallic cutting saw. Thus, this unconventional method is helpful for tackling such uncommon situations faced by doctors in emergency department.

CONCLUSION

Electric cutting saw when used cautiously can help to remove Finger entrapment in metallic bands. It requires due diligence and patience to carry out the procedure to salvage the finger. With this novel technique we can remove finger entrapment without any further complications in emergency ward.

Conflict of interest: Nil

Author’S Contribution

1. Shah Krunal: Perfomed procedure
2. Shah Prasanna: Assisted procedure



Figure 1: Entrapped ring finger in metallic curtain clamp.

3. Patel Kadam: Preoperative assessment, Preparing report
4. Nayak Hardik: Post operative care, Preparing report
5. Golwala Paresh: Proof reading
6. Agrawal Aditya: Proof reading

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Figure 2: An electric motor driven cutting saw.



Figure 3: Removal of clamp using an electric saw.



Figure 5: Postoperative X-Ray showing no bony injury.

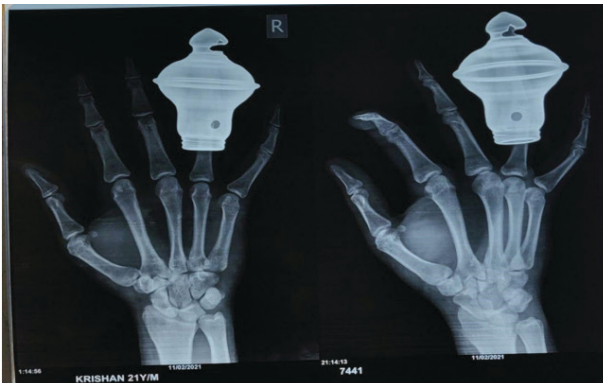


Figure 4: Preoperative X-Ray.