American Journal of Medical Sciences and Medicine, 2019, Vol. 7, No. 1, 13-20
Available online at http://pubs.sciepub.com/ajmsm/7/1/4
Published by Science and Education Publishing
DOI:10.12691/ajmsm-7-1-4

Epidemiology and Clinical Outcome of Entrapped Finger Rings: Experience from a Tertiary Health Institution

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Received January 11, 2019; Revised February 24, 2019; Accepted March 11, 2019

Abstract **Background**: Ring entrapment could occur and they present to the emergency department. In our environment it is uncommon. **Aim**: To describe the epidemiology and clinical outcome of patients presenting with entrapped finger rings to a tertiary health institution. **Methods**: Prospective study of patients with entrapped finger ring(s) presenting to the University of Port Harcourt Teaching Hospital between 1st October 2007 and 30th September 2018. A nondestructive traction technique utilizing electric cables was used to remove the entrapped ring(s). Data obtained was analyzed using IBM's Statistical Package for Social Sciences (SPSS) version 23. **Results**: Twenty five patients presented with entrapped finger rings. Most were in the 17-22 years age group. There were 10 males and 15 females, with slightly more singles. More had tertiary education. Majority presented with finger swelling and pain with no vascular or neurological compromise. Duration the rings were worn ranged from one day to five years. Most rings were entrapped for five days or less. Left ring finger was most involved. Tight rings were common. All the patients had attempted severally to remove the entrapped rings and all used soap and water and petroleum jelly. The patients and neighbours were involved. Median duration of ring removal was 45 seconds. Mostly abrasions complicated initial removal process. Abrasions and laceration complicated the procedure. All entrapped rings were successfully removed utilizing the electric cables. **Conclusion**: The younger age group and females are most affected. Majority had no vascular or neurological compromise. Electric cable traction technique successfully removed all entrapped rings.

Keywords: *ring entrapment, finger, epidemiology, clinical outcome, emergency department*

Cite This Article: Richard C. Echem, and Phillip D. Eyimina, "Epidemiology and Clinical Outcome of Entrapped Finger Rings: Experience from a Tertiary Health Institution." *American Journal of Medical Sciences and Medicine*, vol. 7, no. 1 (2019): 13-20. doi: 10.12691/ajmsm-7-1-4.

1. Introduction

It is common to find people wearing finger rings. Materials of different grades have been utilized to make finger rings. These could range from soft materials like gold and silver to very hard materials like titanium alloys and tungsten carbide or ceramics. [1-9] The choice of material will be dictated by availability as well as social perception of the value of the material used. [2]

Rings worn in the fingers fit snugly. However, if a tight ring is worn it can become entrapped [10-14]. Other reasons for ring entrapment include finger trauma, infection, tissue fluid retention such as occurs in pregnancy, skin disorders, allergic reactions, insect stings, animal bites and burn [7,11-17].

In certain climes, entrapped finger rings are common and present frequently to the emergency department. [12,18-21] However, in Nigeria it is uncommon. [22] Early removal of entrapped finger ring is indicated due to the tourniquet effect that can occur with resultant nerve damage, ischemia and gangrene. [11-14] The entrapped rings are removed by either nondestructive techniques, in which the rings are preserved or destructive techniques in which the rings are destroyed.

The aim of this study was to describe the epidemiology and clinical outcome of patients presenting with entrapped finger rings to a tertiary health institution in southern Nigeria.

2. Materials and Methods

This was a prospective study of consecutive patients with entrapped finger ring(s) who presented to the University of Port Harcourt Teaching Hospital, Port Harcourt between 1st October 2007 and 30th September 2018.

The authors developed a nondestructive technique of entrapped ring removal utilizing 1.5 – 2.5mm electric cables. This has been described previously. [23] In brief, it

is a nondestructive traction technique in which the electric cables are passed under the ring and looped over it. Traction is applied towards the distal aspect of the finger through the cables by the surgeon and his first assistant while moving the cables from side to side around the finger and a second assistant maintaining a pull in the opposite direction of the finger. This is continued until the ring is removed.

Data obtained included their age, sex, marital status, educational status, occupational status, symptoms and signs of ring entrapment, duration the ring(s) had been worn, reason for wearing the ring, duration of ring entrapment, number of rings in the affected finger, side of the hand and finger involved, number of initial attempts at removal, materials used for initial ring removal and individuals involved, number of times patient had had ring entrapment prior to the current presentation, history of psychiatric illness, duration of ring removal, complications from initial removal attempts, complications from current technique and the number of electric cables at the start and end of the procedure, duration of hospital stay and follow up.

Data was analyzed using IBM's Statistical Package for Social Sciences (SPSS) version 23 (IBM Inc, Armonk, NY, USA). Mean, standard deviation and median where applicable were used for descriptive statistics while categorical variables were expressed in absolute frequencies.

Ethical approval was obtained from the Research and Ethics Committee of the University of Port Harcourt Teaching Hospital.

3. Results

During the period under review, there were 25 patients who presented with entrapped finger rings. This constituted approximately 0.03% of total attendance and approximately 0.10% of total surgical/trauma attendance to the Accident and Emergency Department. Most of the patients (40.0%) were in the 17-22 years age group although four (16.0%) were less than 10 years with their ages ranging from six to eight years. The mean age of all the patients was 22.92±9.33 years (Range 6-40 years). There were 10 males and 15 females giving a male: female ratio of 1:1.5. There were slightly more singles [11(52.4%)]. Of the 11 singles, three were males and eight were females. Among the three single males, two wore tight rings and one swapped the ring to the left index finger which became tight. Of the eight single females, five had to put on the tight rings that got entrapped in the left ring finger to avoid advances from males and they were all undergraduates. The other three swapped rings to the right thumb, left middle finger and left index finger. These became tight. Of the 10 who were married, four were males and six were females. Those who were married wore their wedding rings. Of the six married females, none was pregnant. However, three were breastfeeding children between the ages of four to six months. Of the four children who had ring entrapment, three were males and one was female. These children picked up tight rings in their environment and wore and these became tight. More of the patients had tertiary education [13(52.0%)] with most being undergraduates (40.0%) (Table 1).

Table 1. Socio-demographic characteristics of patients

Variable	Frequency (n=25)	Percentage (%)
Age (years)		
≤ 10	4	16.0
17 - 22	10	40.0
23 - 28	4	16.0
29 - 34	5	20.0
>34	2	8.0
Mean±SD; Median	***22.92yrs±9.33;22yrs***	
Range	**6 – 40years**	
Sex		
Male	10	40.0
Female	15	60.0
Marital status		
Single	11	52.4
Married	10	47.6
Educational status		
Primary	4	16.0
Secondary	8	32.0
Tertiary	13	52.0
Occupation status		
Primary school pupil	4	16.0
Undergraduate student	10	40.0
School leaver	1	4.0
Civil servant	4	16.0
Trader	2	8.0
Police officer	1	4.0
Housewife	2	8.0
Artisan	1	4.0

Majority of the patients [19(76.0%)] presented with swelling of the finger and pain and majority (76.0%) had swelling with normal capillary refill and no sensory deficit (Table 2). Three patients (12.0%) had limitation of the range of active motion in the proximal and distal interphalangeal joints of the involved digits. The swellings were marked (gross). The range of motion improved after ring removal and returned to normal after resolution of the swelling. There was no case of gangrene. The duration the rings had been worn ranged from one day to five years with a median of four days. Most of the patients (52.0%) had the ring entrapped for five days or less with a mean of 5.72±4.57 days. The majority (84.0%) had one ring involved (Table 2). The left ring finger was involved in most of the cases [17(68.0%)] (Table 2). Figure 1 – Figure 4 show some of the entrapped finger rings. None of the patients gave a history of direct trauma to the finger prior to ring entrapment and there was no evidence of phalangeal fracture in any of the patients. However, one patient had swelling of the left hand with associated open left radius and ulna fracture and had the fractures stabilized with external fixators.

Table 2. Clinical features of patients

Variable	Frequency (n=25)	Percentage (%)
Symptoms		
Swelling of the finger+Pain	19	76.0
Swelling of the finger+Wound on the finger+Pain	6	24.0
Signs		
Marked swelling distal to the site of entrapment+Congestive changes of the finger+Numbness in the finger	3	12.0
Swelling+Laceration at the edge of the ring+Abrasion+Normal capillary refill+No sensory deficit	1	4.0
Swelling of finger+Blisters/abrasion+Midly hyperaemic+Normal capillary refill+No sensory deficit	1	4.0
Swelling+Laceration+Normal capillary refill+Impaired sensation	1	4.0
Swelling+Normal capillary refill+No sensory deficit	19	76.0
Number of finger rings involved		
One	21	84.0
Two	4	16.0
Duration of finger entrapment (days)		
≤ 5	13	52.0
6 - 10	10	40.0
>10	2	8.0
Mean±SD; Median	***5.72days±4.57; 5days***	
Range	**1-22 days**	
Side of finger involved		
Left index finger	2	8.0
Left ring finger	17	68.0
Left middle finger	2	8.0
Right thumb	1	4.0
Right index finger	1	4.0
Right ring finger	2	8.0

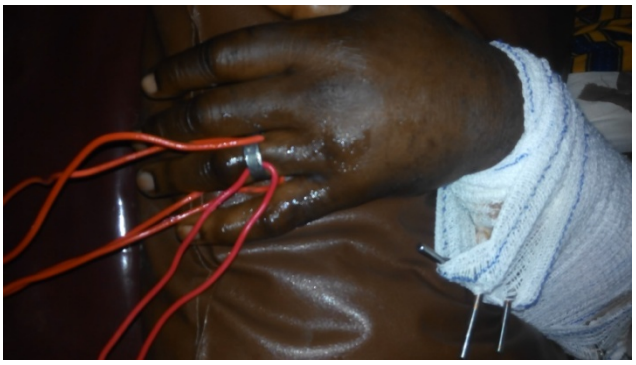

Figure 1. Entrapped ring in left ring finger with electric cables in place

Figure 2. Entrapped ring in left ring finger. Note the abrasion/blister

Figure 3a. Entrapped ring in left ring finger. Note the laceration and the two entrapped rings

Figure 3b. After ring removal from the left ring finger

Figure 3c. The rings after removal

Figure 4a. Entrapped ring in left ring finger.

Figure 4b. After ring removal from the finger

Figure 4c. Removed ring. Note the cut and uncut cable that is looped over the ring

None of the patients had any history of psychiatric illness, alcohol abuse or smoking of cigarettes. None admitted to any prior ring entrapment before the current presentation. All the patients had attempted severally to remove the entrapped rings but these failed. All the patients used soap and water and petroleum jelly and in most cases (60.0%) the patients and their neighbors were involved in the initial removal. Of note is the involvement of goldsmiths in the removal in three patients (12.0%) (Table 3). The duration of ring removal ranged from 25 seconds to 240 seconds with a mean of 63.60±46.58 seconds and a median of 45 seconds.

Table 3. Interventions and complications in patients

Variable	Frequency (n=25)	Percentage (%)
Material used in initial removal		
Soap & water/petroleum jelly (Vaseline)	20	80.0
Soap & water/petroleum jelly (Vaseline)/pulling of the ring	1	4.0
Soap & water/petroleum jelly (Vaseline)/cutter	3	12.0
Soap & water/petroleum jelly (Vaseline)/cutter/knife filing machine	1	4.0
Individuals involved in initial removal		
Self	2	8.0
Self & parents	4	16.0
Self & neighbors	15	60.0
Self & neighbors & goldsmith	3	12.0
Complication of initial removal (n=6)		
Abrasion	3	50.0
Abrasion & laceration	1	16.7
Abrasion & blisters	1	16.7
Laceration	1	16.6
Complication from current technique		
Abrasion	2	66.7
Abrasion & Laceration	1	33.3

Six patients had complications from the initial removal process and these were mostly abrasions. However, one patient each had laceration or blister in addition. Following the current removal technique utilizing electric cables, two had abrasions and one had laceration (in one of the patients who already had laceration from the initial removal process) (Table 3) and this was sutured. These were noticed in rings with sharp edges.

The number of electric cables at the start of the procedure were four in four patients (16.0%). Of these, the number at the end of the procedure was three in three of them. One of the cables cut in one of them in the course of the procedure. The number of electric cables at the start of the procedure were three in 21 patients (84.0%). Of these 21, it remained three cables in 18 of them at the end of the procedure and two cables in three patients. One cable each cut in these three patients. The cables that cut occurred when the entrapped rings had sharp edges.

The patient who had the laceration sutured was admitted for three days while all the other patients were discharged after observation for a few hours. The patients with either abrasion or laceration were placed on oral antibiotics in addition to the analgesics that were given to the patients. Anti-tetanus prophylaxis were given to the patients. All the entrapped finger rings were successfully removed utilizing the electric cables. The patients were followed up in the outpatient clinic and those who had wounds all healed before being discharged from the clinic.

4. Discussion

This study has shown that entrapped finger rings affects both children and adults as well as married and single individuals. They present commonly with swollen fingers and putting on of tight finger rings were common. The left ring finger was commonly involved and a single entrapped ring was most common. The affected individuals commonly attempted removal severally with soap and water and petroleum jelly. The rings were removed within a short period by the electric cable technique. Both the earlier removal attempts and the electric cable technique were complicated by abrasion and laceration. All the entrapped rings were successfully removed.

Many reports on entrapped finger rings were majorly case reports and some case series. Entrapped finger rings are common in some parts of the world, [12,18-21] although uncommon in others. [22] In response to an enquiry under the Freedom of Information Act 2000 for the number of incidents attended from 2010 to 2014 on removal of object from person or removal of person from object or similar, the Cornwall Fire and Rescue Service gave the incidents as 37 for 2010, 33 for 2011, 29 for 2012, 38 for 2013 and 18 for 2014. [24] In a further analysis of the 18 incidents in 2014, five of those involved ring removal and in another two, finger stuck in heavy door and an industrial washer stuck on finger were removed. The description had limited details which included the location of the incident, the number of rings removed from the finger of one individual (two) and the age of the child with finger stuck in heavy door (five or seven years). In 2013/2014, firefighters of the London Fire Brigade attended 472 incidents involving people being trapped or stuck. [25] This involved removal of object from people or people from object. It was indicated that since April 2013 up to a period of a year, 293 rings were removed which included seven from men where the rings were stuck in their penises. [25] The remainder were rings removed from fingers. Over a 17-year period, Musa reported on 33 patients who had stuck objects on their fingers treated at the Accident and Emergency Department of Usmanu Danfodiyo University Teaching Hospital Sokoto. [26] The present study had 25 patients over an 11-year period and this constituted 0.03% of total attendance and 0.10% of the surgical/trauma attendance during the study period in the Accident and Emergency Department of University of Port Harcourt Teaching Hospital, Port Harcourt.

Both children and adults are affected by entrapped finger rings. The study by Musa [26] had a mean age of 32.4±0.5 years (range 5-64 years) with a male to female ratio of 1:5. The present study had a lower mean age of 22.92±9.33 years (range 6-40 years) with a male to female ratio of 1:1.5. A number of the patients in Musa's study [26] were healthy children. In the present study, four of the 25 patients (16.0%) were children and they comprised of three males and one female. However, overall there were more females in the present study, which corroborates Musa's findings [26] although there were fewer females. Children are generally very explorative and often get their fingers stuck or entrapped in rings and other circumferential constricting objects such as plugholes of kitchen sinks or water baths, door knobs, door handles, keyholes, electric sockets and padlocks. [27-33] Fingers are ellipsoidal in cross-section and deformable soft tissue overlies the structure of the finger. [32] The soft tissues of fingers deform when forced through a tight but thin hole [32] but this can become difficult to remove, hence the entrapment.

In the present study, there were slightly more singles and more undergraduates. The location of the hospital may have contributed to this, as the hospital shares a common fence with the University.

Swelling and pain in the finger are the usual complaints of patients with entrapped finger rings or circumferential constricting bands. [3-8,12,13,20,22,26,27,29,30] The swelling could range from minimal [5,20] to gross. [4,7,8,26,34,35] They may or may not have associated vascular and/or neurological compromise in the affected finger. [4,5,7,8,11-14,26,27,29,30,34] There could also be associated laceration.[7] In the present study, majority of the patients (76%) had swelling of the finger and pain and majority (76%) did not have any vascular or neurological compromise in the affected digit. However, three (12.0%) had associated abrasion/laceration at presentation.

In the present study, three patients (12.0%) had limitation of the range of motion of the proximal and distal interphalangeal joints of the involved digits and these returned to normal with the ring removal and resolution of the swelling. Several authors had reported limitation in the range of motion of the proximal and distal interphalangeal joints especially when the entrapped rings are embedded. [8,10,36-40] The metacarpophalangeal joint can also be affected. [37,41] However, sometimes the range of motion of these joints are within normal limits even when the entrapped rings are embedded. [42]

In the present study, the duration the rings were worn before entrapment varied from one day to five years, with a median of four days. Various authors had reported the duration the ring had been worn for entrapped unembedded rings to vary from four days [4] to two years.[20] However, Bleibleh et al. [5] in their report indicated that their patient had worn the ring for several years, without indicating the exact duration. The duration the ring had been worn is usually longer in entrapped embedded rings. Hove and Odland [36] had reported a duration of 31 years in their patient. It is worthwhile to note that Kingston et al. [16] in their study to evaluate the two rubber technique for ring removal reported that the rings of these participants had been worn for 20-45 years. However, the participants did not present to the hospital for reasons linked to ring but had rings in their digits which could not be easily removed either mechanically or with lubrication.

The duration of ring entrapment had been reported to vary in the literature. It could be as short as six hours [3] to as long as several months or years especially if the entrapped rings are embedded. [10,36] In the present study, most of the rings were entrapped for five days or less in 52.0% of the patients.

The number of rings the patients wear vary. The rings could be worn in one hand or both hands. The number of rings worn could range from a single ring in a digit of the hand [2-8,10,13,16,20,22,26,34,36-38,41,42] to single or multiple rings in multiple digits of one hand [10,39] and even bilaterally in multiple digits. [10,39] There is even a

report of 17 rings in four digits.[40] In the present study, only four patients (16.0%) wore two rings and these were married women. The others only had single rings.

Although rings can be worn in any digit, entrapped rings are mostly found in the left ring finger. [2,3,6,7,16,35] The findings of the present study corroborates this, with most of the entrapped rings being in the left ring finger (68.0%).

The cause of the ring entrapment in the present series were wearing of tight rings [9(36.0%)], swapping of rings [3(12.0%)] which became tight for the finger and swelling of the hand as a result of an open fracture of the forearm. The exact cause of the entrapment could not be ascertained in most of the other patients although three of them were breast feeding mothers. There was no patient with phalangeal fracture. Various workers have reported tight rings, [10-14] swapping of rings,[4,8] prolonged bathing in a swimming pool, [3,8] finger trauma, [2,6,20] infection, pregnancy, skin disorders, allergic reactions, insect bites, animal bites and burn. [7,11-17,43,44] Swapping of finger rings leading to ring entrapment is noteworthy. The diameter of various fingers differ. [32] Hence, a finger ring that fits snugly on one finger can become tight in a finger with a larger diameter and result in ring entrapment.

There was no case of gangrene in our series. Gangrene could occur in a finger with entrapped ring, [11-14,45] if it is not removed early.

In the present study, there was no patient with psychiatric illness, alcohol abuse or tobacco abuse. Entrapped rings have been reported in some patients with psychiatric illnesses, [10,22,26,35,36,38,39] alcohol abuse, [46] tobacco abuse [10] and drug abuse. [10,47]

The tendency in the event of entrapment of ring or any circumferential constricting object on the finger, is to attempt to remove the entrapping object without seeking medical attention. In the present study, all the patients attempted severally to remove the entrapped rings. They all utilized soap and water and petroleum jelly. Some in addition cutters [4(16.0%)] and one patient in addition to the cutter, used a knife filing machine. Most of those involved in the removal were the patients and their neighbours (60.0%). In some the parents and goldsmiths were involved. Several authors have highlighted the several attempts at removal for entrapped rings or other circumferential constricting objects on fingers [4-8,13,27,29,31] and this is usually by the patients, parents, relations or neighbours. [4,5,8,13,27,29,31] In one of the reports, a jeweler was contacted. [4] The most common materials used are soap and lubricants. [4,8,27,29] These home methods of entrapped ring removal are unsuccessful a number of times and the patients have to visit hospital emergency departments. In some climes, the fire service is called. [24,25] Also, it has been reported that repeated unsuccessful attempts at entrapped finger ring removal can cause more swelling. [6]

Removal of entrapped finger rings can be by nondestructive and/or destructive techniques. While the nondestructive techniques preserve the ring, the destructive techniques destroy the ring. The nondestructive techniques have been classified into winding, string wrap, compression, caterpillar, twin threads, elastic pull and glove techniques. [11,17] The nondestructive techniques utilize oil, soap, ice, petroleum jelly or other lubricants, strings, sutures, nylon ribbon tape, umbilical tape, compression bandage, rubber band, Penrose drain, surgical glove, ribbon gauze and paper clips and arterial tourniquet. [11,12,14,16-19,34,35] The ring removal method in the present study which utilizes electric cables is a traction technique of entrapped ring removal. In the destructive techniques various type of cutters are utilized and include manual, battery or electric powered ring cutters, bolt cutters, electric saws, pneumatic saws, Dremel motor saw, dental saws, diamond-tipped saws, dental drill, pincers and pliers [1-9,11,13-15,17,20-22,26].

The duration for ring removal will vary depending on the technique utilized, whether nondestructive or destructive. Exner [48] has emphasized that using the string method, it takes a couple of minutes to remove an entrapped ring. In a study on removal of simulated entrapped rings in a mannequin using an umbilical tape, Gardiner et al. [14] reported a mean removal time of 135.4 seconds (range 95-164 seconds). However, Manca [49] has highlighted that the string method can take up to half an hour to remove an entrapped ring. The compression method described by Kates [50] utilizing a rubber blood-drawing tourniquet which is wrapped sequentially in a circumferential manner beginning at the finger nail and progressing proximally takes more than 10 minutes. The wrapped tourniquet is clamped on itself and 10 minutes is allowed to elapse. This is aimed at reducing the swelling. After its rapid removal, a lubricant is applied and the ring readily slides off the finger. The ring removal technique described by Cresap [34] combined a number of methods, both compression and string methods. Four sessions of compression each lasting 10-15 minutes with the elastic band was required to reduce the oedema and release the ring. The ring was finally removed utilizing the string method. The two rubber band technique described by Kingston et al. [16] reported a mean removal time of 10.7 seconds (range 2-60 seconds). However, these were not typical ‘trauma settings’ as the participants in the study presented to the hospital for reasons not linked to ring removal and had ring(s) which could not be easily removed (either mechanically or with lubrication). The mean duration for ring removal in the present study which utilized electric cables was 63.60 seconds with a median of 45 seconds (range 25-240 seconds). The duration for entrapped ring removal by the destructive technique will vary depending on the device utilized and the thickness and hardness of the ring. Manual cutters can take up to 10 to 15 minutes to cut entrapped rings. [2] Powered instruments generally take a shorter time and electric ring cutters have been reported to cut even the strongest alloys in less than 10 seconds. [2] However, other powered instruments such as dental drills and saws have been reported to take up to 15 to 20 minutes. [4,8,13] Generally, softer rings take a shorter time to cut. Sometimes manual and powered cutters may be unable to cut through very hard rings and locking pliers have been utilized. Locking pliers have been reported to shatter tungsten carbide rings (very hard rings) in a mean time of 23.1 seconds. [14] However, this study was on simulated entrapped rings in a mannequin.

The initial attempts at removing entrapped rings or circumferential constricting objects by the patients or their

neighbours or close relations are not without problems. Cresap [34] reported a shallow laceration/abrasion around half of the circumference of the affected finger. This was attributed to earlier attempts at removal of the ring which had a sharp inner corner. Cheah et al. [29] have also reported superficial lacerations from initial removal attempts for a circumferential constricting object (door knob). In the present study, six patients (24.0%) had complications from initial removal. These were mostly abrasions. In addition, lacerations and blisters were also noted.

Complications can follow any chosen ring removal technique whether nondestructive or destructive. Chiu et al. [12] using the Penrose drain compression technique recorded superficial abrasion in one of 12 patients this technique was used for. In the report by Cresap [34] there was a loose flap of tissue that prevented passage of the sharp edge of the ring. This invariably would have worsened the laceration. In the present study, the electric cable technique caused abrasions in two patients and laceration in one patient. These patients already had abrasions/lacerations from earlier removal attempts. The abrasions/lacerations were noticed in entrapped rings with sharp edges. It is worthy of note that the widest diameter of the finger is at the proximal interphalangeal joint and it is the most difficult point to negotiate. [12,15,30,35] The ring passing over it could cause superficial abrasions and discomfort. [15] Complications can also occur with the use of destructive techniques. With the use of cutters (both manual and powered) tissue injury from the blade itself [20,51] and thermal injuries to the skin [2,4,20,51] have been described. Foreign body granuloma and chronic digital synovitis in the affected finger from metal filings [20,52] have also been described. The metal filings are also potential ocular foreign bodies. [20] The use of locking pliers have been reported to result in superficial lacerations from fragments which are sharp. [1] The projectile fragments produced by the shattering, [1,14] can potentially result in ocular injuries and foreign body granuloma from the shards being implanted in an open wound. Although the possibility of a fracture of the digit had been entertained, this is unlikely to occur with the locking pliers as the small travel of the teeth of the pliers would not transmit enough energy to the bone to break it. [1] Due to these complications from destructive techniques, it has been recommended that guard be used to protect the finger with elevation of the ring from the underlying skin, [4,20] use of protective gauze under the ring, [20] use of saline or sterile water irrigation while using powered cutter because of the heat generated, [2,4,20] rinsing of the finger after ring removal to eliminate the shards, [1] use of ocular and face protection for both patient and the operator [1,20] and use of drape placed to avoid secondary injury. [1]

In the course of the use of the current technique, some of the cables utilized cut in the process. This was noticed when the edge of the entrapped ring was sharp. As a result, in some instances the number of cables at the end of the procedure may be less than what it was at the commencement of the procedure.

Most patients who present with entrapped finger rings which are removed are usually discharged after hours of observation and within 24 hours. [4,13,34,47] Those who stayed longer [10,22,37] had other conditions for which a longer duration of hospital stay was required. In the present study, only one patient who had laceration sutured was admitted for three days. All the others were observed for a few hours and discharged for follow up.

The outcome of the electric cable technique is generally good. All the entrapped rings were successfully removed by this technique giving a 100% success rate. Normal function is generally restored when the entrapped finger rings are removed early and the swelling regresses.

The limitations of the present study are the non-uniformity of the entrapped rings that were removed. While some had sharp edges, others had rounded edges. The small number of patients is also a limitation.

5. Conclusion

Entrapped finger rings affects both children and adults as well as married and single individuals. The younger age group and females are most affected. Majority presented with swollen fingers and had no vascular or neurological compromise. Putting on of tight finger rings were common. The left ring finger was commonly involved and a single entrapped ring was most common. The affected individuals commonly attempted removal severally with soap and water and petroleum jelly. The rings were removed within a short period by the electric cable technique. Both the earlier removal attempts and the electric cable technique were complicated by abrasion and laceration. All the entrapped rings were successfully removed by the nondestructive electric cable traction technique.

Statement of Competing Interest

The authors have no competing interests.

Financial Support Statement

The study was self-funded.

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