

Case Report

A rare case of a rubber band or Dhaga syndrome

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Received: 06 September 2023
Accepted: 19 September 2023
Epub Ahead of Print: 07 December 2023
Published: 31 January 2024

DOI

10.25259/CRCR_149_2023

Quick Response Code:



ABSTRACT

Rubber band or Dhaga syndrome is a rare condition commonly present in infants or toddlers of specific communities who wear bracelets or sacred thread for religious or decorative purposes. It was first described by Hogeboom and Stephens in 1961. We report a case of a 2-year-old girl who came to our institution with swelling, inflammation, and pain in her right wrist. We describe the clinical-radiological presentation of this rare disease with intra-operative findings.

Keywords: Wrist, Rubber band, Dhaga, Constriction, Compartment syndrome

INTRODUCTION

The condition known as a rubber band or Dhaga syndrome occurs when elastic bracelets or sacred thread, worn for decorative purposes or religious causes, becomes too tight around the wrist. Over time, the band can become embedded into the skin of the wrist crease and become invisible and can cause injury to the tendons and neurovascular structures.^[1,2]

The rubber band can be suspected clinically when the patient presents with a thin circular scar at the wrist, which often encircles the wrist, painful swelling, a non-healing discharging sinus, and a “constriction radiographic sign” present in long-standing cases.^[1]

This case report focuses on the clinical presentation, imaging characteristics, related complications, and operative findings of forgotten rubber bands at the wrist in children.

CASE REPORT

A 2-year-old girl presented to our institute with complaints of pain and swelling of the wrist for 2 months. The child had a sacred thread tied around the wrist as a religious ritual by the parents for 2 months, following which they noticed that the thread was significantly taut and subsequently embedded deep into the skin. The child developed increased pain and swelling at the wrist even after an alleged history of removal of thread by the parents. Within 2 months, the child was unable to move the fingers for which she was referred to the plastic surgery department. On examination, there was diffuse swelling of the wrist and hand with a circumferential scar at the proximal palmar crease of the wrist [Figure 1]. The child could not perform active flexion of the wrist joint and fingers. There was no history of fever or discharging sinus at the time of presentation.

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The ultrasonography (USG) of the wrist joint showed a thin circumferential linear echogenic foreign body located sandwich between the flexor digitorum profundus (FDP) and digitorum superficialis tendons in the proximal carpal tunnel region [Figure 2].

Once the foreign body was confirmed by USG, the patient underwent a surgical exploration of the wrist joint under general anesthesia. The Z-shaped surgical incision was made over the volar aspect. The rubber band was found deep to the median nerve and superficial to the FDP tendons [Figure 3a]. It had completely divided palmaris longus, flexor carpi radialis, flexor carpi ulnaris, ulnar neurovascular bundle, flexor pollicis longus, and flexor digitorum superficialis. The median nerve was still in continuity due to fibrosis, and so were the FDP tendons. The rubber band was found deep in the extensor retinaculum and intact extensor

tendons on the dorsal aspect [Figure 3b]. The rubber band was extracted completely from the deep tissues [Figure 3c]. The ulnar artery was repaired, and all fingers showed good blood flow after deflating the tourniquet; the above elbow slab was applied post-surgery and showed an uneventful post-surgical stay in the hospital. On follow-up, the child had good finger movements and sensations in the wrist and fingers.

DISCUSSION

“Rubber band or Dhaga syndrome” is rare in infants or toddlers who wear bracelets or sacred threads around their wrists. Over time, the band can embed itself into the skin, making it difficult for parents to notice until symptoms develop. Some common symptoms include hand swelling and possible neurovascular complications.^[1,3-5]

The syndrome was first described in 1961 by Hogeboom and Stephens, and since then, a few more cases have been reported by different authors.^[1-9] Arora and Agarwal^[1], as well as Agarwal *et al.*^[3,4] have reported on development of the condition, and McIver and Gochman^[7] reported on related severe complications.

This condition is more prevalent in a certain region like the Indian subcontinent.^[1,3] Before initiating any religious ceremony in India, it is customary to tie a sacred thread known as “Moli Dhaga” (a red and yellow thread) around the wrist. It is considered unlucky to remove the thread oneself, so it is typically kept in place for an extended period.^[1]

Arora and Agarwal^[1] reported three cases and first described “Dhaga syndrome” in 2004. Diagnosis is made by identifying a constriction radiographic sign and circumferential scar at the wrist joint.

It is important to note that the red and yellow thread or thin rubber band can easily be concealed within the crease of an infant or child’s chubby hand. The rubber band will gradually cut through the soft tissue as the wrist rapidly expands. This process is painless and does not result in any neurovascular symptoms in the early stage. However, the gradual tissue penetration, paired with a quick healing process, allows the rubber band to penetrate tendons and neurovascular structures. The thread or rubber band may even reach the bone in severe cases, showing a “constriction radiographic sign” on plain radiographs.^[1-4,6,7]

Arora and Agarwal.^[1] as well as Agarwal *et al.*^[3,4] described the “constriction radiographic sign” seen on plain radiographs in long-standing cases of a rubber band or Dhaga syndrome, which appears to be pathognomonic.

If the condition is not treated, it can cause acute compartment syndrome, which can damage the nerves and blood vessels



Figure 1: Clinical photograph: Linear circumferential constriction scar (yellow arrow) and swelling over the proximal palmar crease of the right wrist.

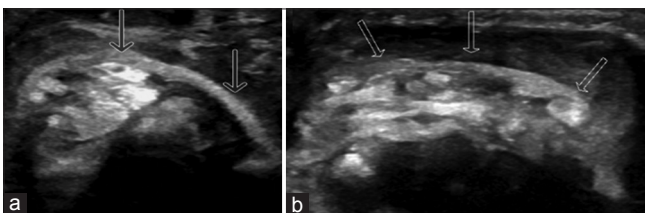


Figure 2: Ultrasonography (USG) appearance of rubber band at the level of the proximal crease of the wrist joint. Transverse USG of the volar aspect of the wrist joint (a) shows circumferential linear echogenic foreign body (arrows) deep to the flexor retinaculum between the flexor digitorum profundus and digitorum superficialis tendons, which represents the rubber band. Transverse USG of the dorsal aspect of the wrist joint (b) shows circumferential linear echogenic foreign body (arrows) deep to the extensor retinaculum and superficial to extensor tendons, which also represents rubber band.

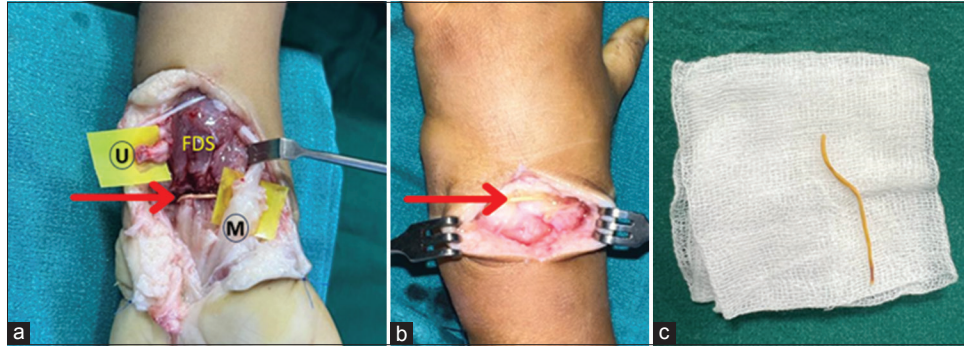


Figure 3: Intraoperative images. (a) Rubber band (red arrow) seen disrupting the flexor digitorum superficialis tendons, ulnar neurovascular bundle (U), and normal continuity of medial nerve (M) on the volar aspect. (b) Rubber band (red arrow) seen deep to the extensor retinaculum and superficial to the extensor tendons on the dorsal aspect. (c) Extracted rubber band specimen.

and potentially result in limb-threatening conditions.^[7] This can cause tissue necrosis, irreversible nerve and muscle damage, and permanent functional impairment.^[7]

Magnetic resonance imaging (MRI) is an important imaging modality that identifies foreign bodies and their location, playing a significant role in deciding further management.^[5] Sosnouski *et al.*^[5] described the MRI appearance of these bands as hypointense signal intensity on all MRI sequences.

Our study suggests that USG can be used as an alternative to MRI in detecting foreign bodies in infants or toddlers who require sedation for MRI. On USG, this rubber band appears echogenic.

In most cases, rapid recovery and positive outcomes can be achieved through surgical exploration, foreign body removal, neurovascular repair, and soft fibrous tissue release. Some case reports have mentioned residual neurological deficits. Agarwal *et al.* found that 14 months after surgery, the patient still had ulnar nerve palsy in the affected limb, even though the neuromuscular structures were anatomically intact during surgical exploration.^[4]

After surgery, the children in this study had normal wrist joint movement and growth during follow-up examinations.

CONCLUSION

The presence of a linear constricting scar with or without a non-healing discharging sinus around the wrist joint in patients with variable loss of flexor function of the wrist and fingers should alert surgeons or radiologists to the possibility of a forgotten rubber band or thread. This case report emphasizes the importance of early clinical-radiological diagnosis and treatment in preventing severe complications. Increased awareness and education of parents are essential in communities where circumferential objects are used for religious or decorative purposes.

TEACHING POINTS

- The clinician should be alert to the possibility of a forgotten band around the wrist, which can mimic chronic tuberculous or fungal infection in young children with a linear constricting scar around the wrist, with or without discharging sinus.
- Making an early clinical-radiological diagnosis and providing treatment promptly to avoid severe complications is crucial.

MCQs

1. What is rubber band syndrome?
 - a. A condition where a rubber band is ingested accidentally
 - b. A condition where blood circulation is restricted due to usage of a rubber band
 - c. A condition where a rubber band is embedded through the skin and soft tissue and causes neurovascular complications
 - d. A condition related to excessive use of rubber gloves

Answer Key: c

2. What is a pathognomonic sign of rubber band syndrome on a radiograph?
 - a. Constriction radiographic sign
 - b. Double density sign
 - c. Rubber band sign
 - d. Circumferential scar sign

Answer Key: a

3. What is a close mimicker of rubber band syndrome at clinical presentation in the Indian subcontinent?
 - a. Bone injury
 - b. Cellulitis
 - c. Tuberculous osteomyelitis
 - d. Congenital scar

Answer Key: c

Ethical approval

The research/study complied with the Helsinki Declaration of 1964.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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How to cite this article: Singh B, Pushpa BT, Bhardwaj P, Rajasekaran S, Gupta N. A rare case of a rubber band or Dhaga syndrome. *Case Rep Clin Radiol*. 2024;2:61-4. doi: 10.25259/CRCR_149_2023