

Case Report

Rubber Band Syndrome: A Rare Orthopaedic Condition in South Africa

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Abstract:

Religious or traditional bands are often placed around limbs of children. This practice may lead to the Rubber Band Syndrome, a rare paediatric condition mainly described in Asia. This study presents the first case of Rubber Band Syndrome reported in South Africa. The patient aged 18 months presented with a swollen right hand, a circumferential scar on the wrist and a discharging sinus. Under general anaesthesia, debridement revealed a yellow rubber band deep to the wrist flexors and neurovascular bundles. This was removed without repair of these structures. At 3-month follow up, function of the right hand was completely restored.

Keywords: Rubber Band Syndrome, draining wrist sinus, circumferential scar

INTRODUCTION

In Asian and African countries, traditional bands are placed around the limbs of children to ward off evil spirits and to ensure good health and prosperity.⁽¹⁾ Commonly practiced in regions of India, cases are described in which a forgotten thread or elastic band has slipped into a skin crease on the wrist or ankle.^(2–4) This becomes embedded in the skin and is no longer visible to the child's carers with disastrous consequences.⁽⁴⁾ Over time the thread or elastic band becomes embedded within the skin through the dual process of constriction around a rapidly growing limb combined with swift healing, forming a well epithelialised scar around the site of constriction, most commonly around the wrist or ankle.^(2,4) The band burrows circumferentially towards the bone and easily disrupts neurovascular structures and tendons in its path, resulting in distal oedema and loss of hand function.^(2–4) The presence of the foreign body results in a chronic inflammatory process leading to a non-healing wound or draining sinus. In the wrist, the sinus is usually located on the volar aspect of the wrist on the radial side.⁽⁴⁾ Referred to as 'The Dhaga syndrome' in India, named after the 'Moli Dhaga', which is a coloured thread tied around the wrist in religious ceremonies, it is rare in Europe.^(2–4) However, in 1961 a similar case was reported by Hogeboom et al who described this as 'The Rubber Band Syndrome'.⁽⁵⁾ This is the first case of Rubber Band Syndrome to be reported in South Africa.

Case Report

An 18-month-old child was brought by his mother to the emergency department with a 2-month history of a 'sore' on his wrist, swelling and disuse of the right hand. A trial of antibiotics had been unsuccessful. On examination the child was well nourished and in no distress. There was a circumferential scar on the right wrist with a purulent discharging sinus on the volar aspect. There were no signs of systemic sepsis. The hand was swollen, not tense or tender but with decreased range of movement. The fingers had an increased capillary fill time but perfusion was adequate. Temperature and sensation were normal.

On direct questioning about the circumferential scar, his mother remembered that an elastic band had been placed on the wrist for religious reasons and she had assumed that this had fallen off.

Radiographs showed no foreign bodies and no bony changes. The child was taken to theatre for incision, drainage, and debridement under general anaesthesia. The volar wound was extended proximally and distally, and debridement commenced. After the initial debridement and washout, the yellow rubber band was found deep to the flexor carpi radialis, flexor carpi ulnaris and palmaris longus tendons, sitting just superficial to the long flexors of the hand (Figure 1 & 2). Although the band was found deep to these structures, they were all intact. On the dorsal aspect of the wrist the rubber band was found to be superficial to the extensor compartments, resting on the extensor



Figure 1. Volar aspect of wrist showing rubber band lying deep to superficial structures



Figure 2. Radial side showing rubber band

retinaculum. The scar was then meticulously excised and the complete rubber band carefully freed and dissected out and the sinus irrigated (Figure 3). The skin edges were opposed, leaving a 5x5mm opening for drainage. After dressing, the forearm was immobilised in a volar splint

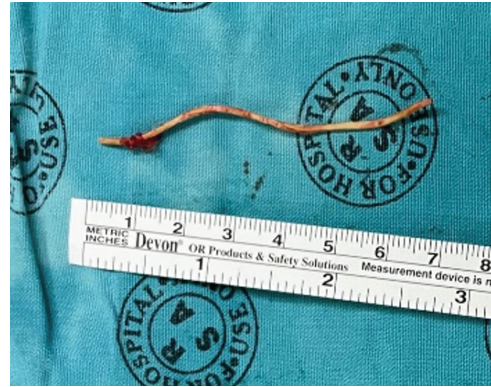


Figure 3. Rubber band removed as a whole

for 48 hours and intravenous broad-spectrum antibiotics continued. Rehabilitation was commenced in the ward by occupational therapists.

The child was discharged on the 5th postoperative day at which time the wound was dry with no evidence of infection. Oral antibiotics were continued for a week post discharge.

At the three months post operative review, sensation in the ulnar, median and radial distribution was assessed as normal. The child exhibited voluntary use and fine motor skills in both hands equally.

Discussion

Rubber Band Syndrome is a rare but important condition in children that may present to primary care givers and orthopaedic surgeons. Rubber bands or threaded bangles are commonly placed around the wrists of young children for decorative, traditional and religious reasons.(2–4) They may also be placed there accidentally by older children at play. The bands can easily be concealed in the wrist crease and forgotten by caregivers especially in young infants unable to express or locate pain or discomfort.(1–4) Following the first case of Rubber Band Syndrome described by Hogeboom in 1965, there have been few reports to date. (1–5) These cases were mostly described in children between the ages of 1 and 4 years. Due to their rapid growth rate and increasing circumference of the wrist, the bands easily erode through the skin.(1–5) This gradual process is often painless and may not cause noticeable signs or symptoms as it occurs in a pre-existing skin crease which heals over the band. The slow penetration and constriction, coupled with rapid healing of divided structures, continues deeply through structures of the wrist.(1–4) Tendons and neurovascular structures can be divided during this process.

In the case reported here, the structures through which the band had already passed were intact and now overlay the band. It would appear that as the band slowly eroded underlying structures, it was followed by healing along the tract of the band until it finally exited deep to these healed

structures. However, a review of the literature shows that healing does not always occur. There are reports documenting repair of the tendons and nerves through which the band had passed.

If the process continues at the wrist, the band may erode as far as the distal radius and ulna resulting in osteomyelitis.⁽³⁾ This has produced radiographic changes described as the 'Constriction Sign', a soft tissue constriction with a periosteal reaction which can be seen on plain radiographs.⁽¹⁾

The Rubber Band Syndrome results in a chronic inflammatory process with or without superimposed infection. The clinical picture is that of a non-healing wound or draining sinus.⁽³⁾ In South Africa where tuberculosis is endemic, tuberculosis of the wrist and hand should be considered. The latter, however, represents only 1% of skeletal infections and 33% of these will have evidence of bone involvement on plain radiographs.⁽⁶⁾ In patients presenting with a circumferential scar and draining sinus the differential diagnosis must include Rubber Band Syndrome.

Other less common sites of Rubber Band Syndrome have been described including around the ankle and thigh.⁽³⁾ Although often a chronic presentation, there have been cases of an 'Acute Rubber Band Syndrome' resulting in compartment syndrome requiring acute surgical intervention. The Rubber Band Syndrome is not limited to the paediatric population, with isolated cases having been reported in elderly patients with a similar clinical course.⁽²⁾

CONCLUSION

Rubber Band Syndrome is a rare condition previously only seen in Asia. Few cases have been described in Western

Countries. This is the first case of Rubber Band Syndrome reported in South Africa. A high index of suspicion is necessary to make the diagnosis and careful dissection is required. Education of caregivers and parents to alert them to the dangers of wrist and ankle bands is of paramount importance.

ETHICS STATEMENT

Informed consent was obtained from the parent of the child to prior to commencement of the case report. This report was approved by the University of Witwatersrand Human Research Ethics Committee.

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