



CLINICAL SPECTRUM OF RUBBER BAND SYNDROME IN CHILDREN

Paediatric Surgery

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ABSTRACT

In Indian subcontinent rubber bands are worn around the wrist for decorative purposes specially in young children so often when the band is worn for a long duration, it burrows through the skin and soft tissues resulting in persistent discharging sinuses and damage to underlying structure. Circumferential scar around the wrist with discharging sinus with distal oedema should give suspicion of forgotten buried rubber band and should be explored and removed. Early recognition may be important to prevent further damage of vital structures.

KEYWORDS

Rubber band syndrome, DHAGA syndrome, Constriction ring wrist, Acquired constriction band children

INTRODUCTION:

In Indian communities specially for religious purposes dhaga / elastic bands were worn by the devotees. Sometimes these dhaga / rubber bands were tied to the hands of infants and young children in a belief of preventing evil eye or as symbol to attract good fortune. But when parents forgot to remove these bands, these bands slowly worn out the underlying skin and got embedded in the skin and thanks to fast healing power of young children new epithelium grows over it giving rise to Rubber band syndrome.^{1,2}

This phenomenon can be compared with the classical "ksharasutra"/ seton wire technique used in high anal fistula / trans sphincteric fistulae treatment where the nylon / thread was passed through fistula and gradually tightened to cut through the sphincter muscle but simultaneously giving time to heal the previous tract, thus reducing the tract.³ Since it's a common religious practice in India most of the case reports were reported are from Indian subcontinent.⁴

Ours is also a report of five cases out of which we are describing two unique cases showing how diagnostic dilemma lead to a surprised discovery of rubber-bands.

Case Presentation

CASE 1:

A 5 year male child came to hospital with chief complaint of discharging sinus from the right forearm. Patient's father gave history of tying Rakhi(wrist band) over the right forearm following which he developed swelling over the right forearm which was managed initially at local hospital. Patient later developed ulceration and non-healing wound managed with dressing at home which gradually healed with scar circumferentially over distal forearm.

One month later presented to our outpatient department with multiple discharging sinus. On examination there are multiple discharging sinus. Distal vascularity is intact with normal movement of fingers with no sensory deficit. Patient was evaluated for Tuberculosis and fungal infection which came out to be negative. X-ray of forearm was done to rule out any foreign body. X-ray showed unicortical fracture of Radius and Ulna without any visible foreign body in the X-ray.

Patient was kept on antibiotics and daily dressing. Patient was later given hyperbaric oxygen therapy. Patient was kept on follow up and condition of patient did not improved.

On follow up after 3 months we notice a structure like rubber band exposed from the wound at new site which was initially not visible during the first visit hospital.

We have taken up the patient for immediate exploration and removed the rubber band which was embedded below the scar with the help of surgical instruments. Patient was followed up and wound completely healed after two weeks.



Figure 1. A. 1B Clinical photographs of case. Circumferential scar over right wrist



Figure 1. C and D showing intraoperative finding of rubber band

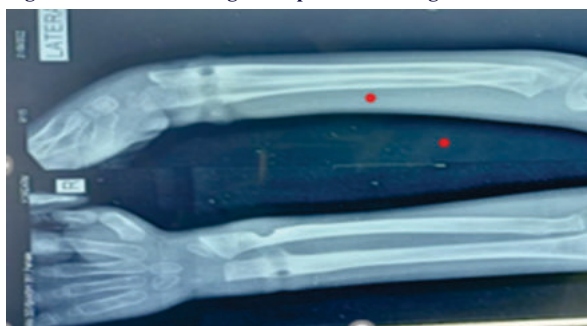


Figure 1. E. Xray of right hand showing osteomyelitis of Radius and Ulna without any visible foreign body

Case 2:

A Three year old male child presented with the complaint of multiple purulent discharging sinus near right wrist for last 3 months. Patient was initially put on antibiotics and repeated dressing by paediatrician for more than two months. The pus culture came sterile and discharge persisted so patient was referred to plastic surgeon. We evaluated the patient clinically and found a circumferential scar around the wrist. Patient's parent denied recalling any foreign body insertion or any band / dhaga placement over wrist. On examination there was no

neurovascular deficit. All biochemical parameters were within normal limits so we directly went ahead with exploration of the sinus present in the dorsum of hand. To our surprise we found a rubber band buried inside the scar which was then cut and pulled out. After that child was kept on empirical antibiotics for one week and daily dressing. The scar healed within 10 days.

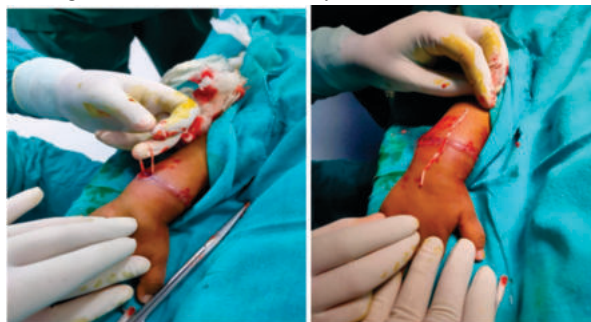


Figure 2 A and B showing intraoperative exploration showing rubber band inside circumferential scar.

Table 1. Cases of Rubber band syndrome, age of presentation, features and treatment given

S.No.	Age /sex	Presentation	Treatment
1.	5yrs /male	Osteomyelitis of right radius and ulna	Removal of rubber band
2.	3yrs/ male	Purulent discharge from right wrist	Removal of elastic rubber band
3.	2yrs /female	Sinus discharging from left wrist	Exploration and removal of dhaga
4.	3yrs/ female	Multiple discharging sinus circumferential to left distal forearm	Exploration and removal of remanent of elastic band
5.	4yrs/ male	Single discharging sinus in right wrist	Exploration and removal of remanent of elastic band

DISCUSSION:

Hogeboom and Stephens were the first to report on RBS in 1965.⁵ Since then many cases of RBS involving fingers, arm and wrist in adult patients had been reported from western world.

In Indian customs coloured rubber bands are tied around the wrist as decorative objects. Arora et al observed that these bands are concealed in the wrist crease, especially in infants and children with chubby hands and their presence may be forgotten by parents. On account of the rapid increase in the circumference of wrist in growing children, the band cuts through the soft tissue around the wrist. This gradual penetration is surprisingly painless and without early neurovascular symptoms.^{1,4,6}

Some authors have also described similar entity but with sacred "dhaga" thread where thread had buried through extensor tendon.⁷ Many have reported single cases where these bands are present on atypical location like Arm⁸ or lower leg affecting tibia and fibula⁹.

It was seen that there can be long delays between the initial events and final diagnosis as the child often cannot recall/express the events accurately or the events are frequently forgotten.^{1,2,4,12} In such cases these incidents might have been treated as blunt injuries or infection and treated as such. One more reason was that the symptoms due to foreign body might subside and remain silent for days/months. One author also reported of persistent sinus even after removal of band suggested that sometimes a part of band remained buried causing "missed band under the band" so one must always remain suspicious of rubberbands.¹⁰

Severe complications and initially misdiagnosis of cases were reported throughout literature. Due to persisting discharging sinuses many times suspicion of tuberculosis were raised due to endemicity of tuberculosis in our part and due to which unnecessary anti tuberculosis treatment was given to patients. A Case similar to ours was reported by Jayakrishna et al where in a 2 year old boy the rubber band constriction was severe enough to cause fracture of the distal radius and ulna.¹¹

Aggarwal et al in their article reasoned that the cardinal features of a

linear constricting scar with the presence of a discharging sinus around the wrist in a small child should always raise a clinical suspicion of a forgotten band around the wrist, which has burrowed into the soft tissues. It should always be kept in the differential diagnosis of an infective pathology around the wrist in a small child.²

Although MRI was not performed in any of our cases due to financial constraint but a case report on MRI findings of rubber band showed the foreign body appeared as hypointense on T1 and T2 weighted imaging and there was increased T2 signal and enhancement of the superficial soft tissues.¹²

The prognosis of the surgical removal of rubber band is good without need for major reconstruction of the tendon, nerves and bone and in all of our cases after removal of rubber band the wound healed completely.

CONCLUSION:

Any circumferential scar with discharging sinus in a young child mimicking osteomyelitis or Tuberculosis must alert the physician of a forgotten band / foreign body around the wrist which might have been buried in the soft tissues over a period of time. Early diagnosis with surgical removal allows prompt recovery and good outcome. Moreover, education of the community regarding precautions in use of these constriction articles around the limbs is essential

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