



ORIGINAL ARTICLE

The Dhaga Syndrome: An Important Differential of Acquired Constriction Band around the Wrist in India

Deepak Kumar Garnaik , B Satya Sree*  and Enono Yhoshu 

Department of Pediatric Surgery, All India Institute of Medical Sciences, Rishikesh, India

*Corresponding author: B Satya Sree, Department of Pediatric Surgery, All India Institute of Medical Sciences, Rishikesh, India



Keywords

Mauli dhaga, Rubber band syndrome, Constriction, Wrist

Introduction

Rubber band syndrome aka Dhaga syndrome is a rare entity mostly seen in young population in communities where rubber bands/mauli dhaga are worn over the wrist for decorative or religious purposes. If the band is worn for long duration, then it produces constrictive features burrowing through the skin and subcutaneous tissue. This results in distal edema, loss of function and sometimes damage to neurovascular structures. The

symptoms of this rare syndrome sometimes mimics Osteomyelitis or Tuberculosis. Early diagnosis and recognition of this syndrome can prevent catastrophic changes and prolonged morbidity. Herein we report 2 cases of this rare syndrome and discuss the clinic-radiological features and management.

Case 1

A 1.5 year male child presented to our OPD with complaints of swelling over the volar aspect of the right wrist and pus discharge (Figure 1a) which had been present for 5 months. He also had intermittent low grade fever. There was no history of trauma or discharge

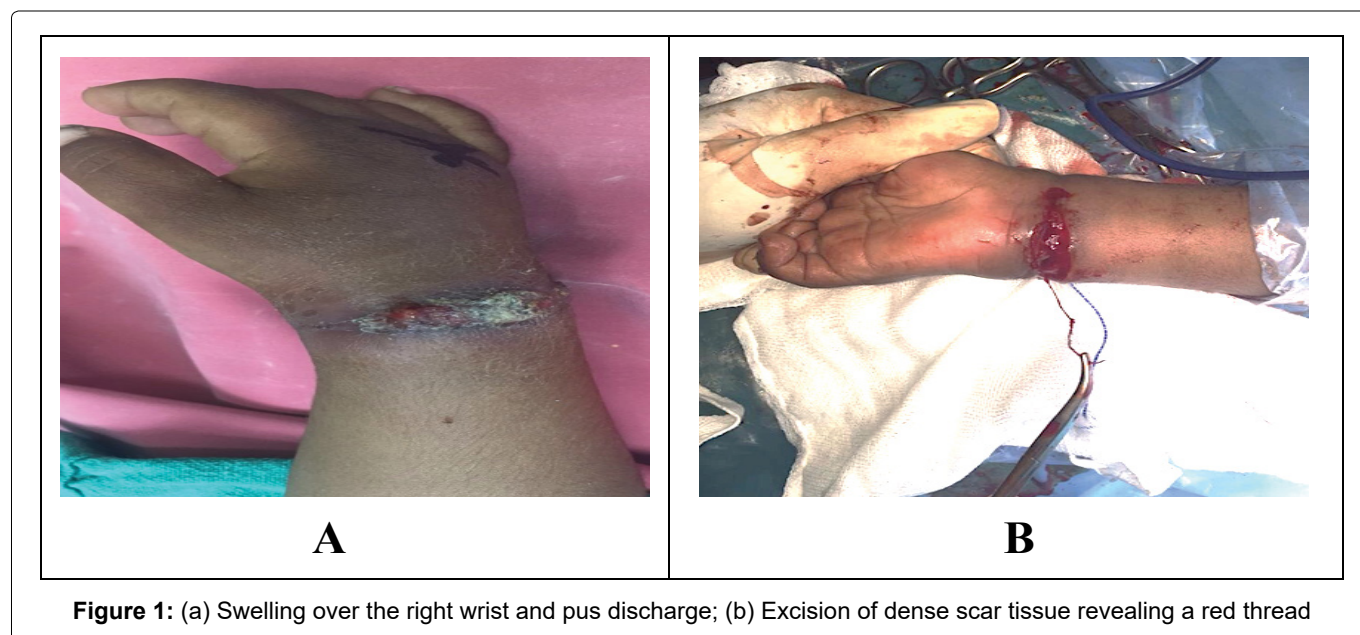


Figure 1: (a) Swelling over the right wrist and pus discharge; (b) Excision of dense scar tissue revealing a red thread

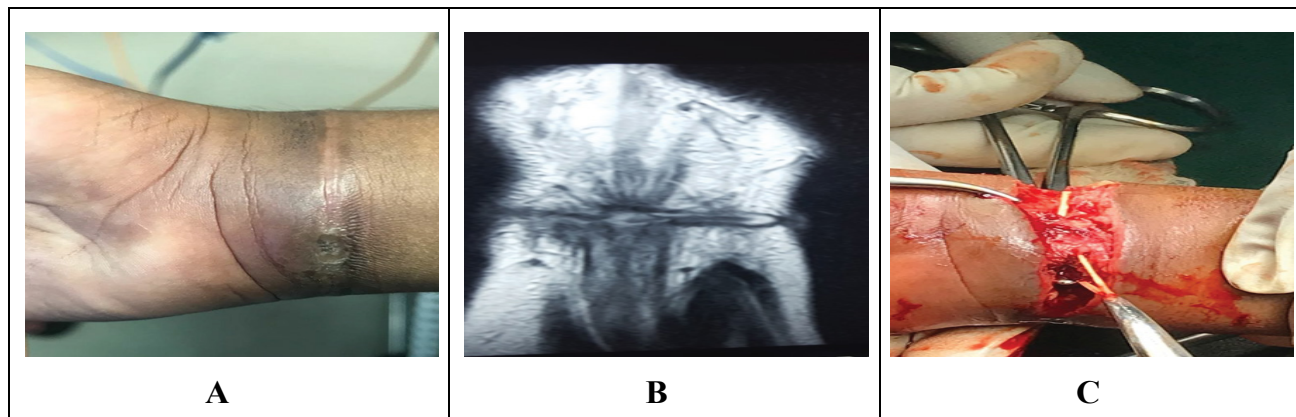


Figure 2: (a) Linear circumferential constriction mark over right wrist; (b) MRI revealed a curvilinear thin foreign body with synovitis of radio-carpal joint; (c) Elastic rubber band removed.

of colored granules. On examination the right wrist was swollen, erythematous and indurated. Peripheral pulses could not be elicited as the hand was swollen. There was a linear circumferential scar mark over the wrist with foul smelling sero-purulent pus discharge on pressure. Active finger movements were present and he responded to tactile stimulus.

After routine investigations excision of the dense scar tissue revealed a red thread (Figure 1b) which was removed and secondary suturing was done. The skin lesion healed with a course of antibiotics. On enquiry the parents remembered a thread, which was tied on child's wrist in a religious ceremony, nearly 10 months back.

Case 2

A 2.5 year male child presented to us with swelling around the right wrist joint and restricted wrist movements for 2 months. There was a linear circumferential constriction mark (Figure 2a) over the wrist with no signs of inflammation. Neurovascular status was normal. There was no history of fever or any discharging sinus. The parents did not give any history of a thread being tied over the wrist. Due to a strong suspicion of Rubber Band Syndrome an MRI was ordered (Figure 2b) which revealed a curvilinear thin foreign body with synovitis of radio-carpal joint. Excision of dense scar tissue showed an elastic rubber band under the tendons which was removed (Figure 2c). With intensive physiotherapy the child regained wrist movements within 6 months.

Discussion

Rubber Band Syndrome is a rare syndrome mainly seen in small children residing in specific geographical regions. Majority of the cases have been reported from India. Rubber bands or threads (locally known as Mauli Dhaga) are tied around wrists, arm, fingers or toes of small children for religious or decorative purposes. Self-removal of this thread is considered as an ominous sign and hence the thread remains *in situ* for a long period which eventually the parents tend to forget to

remove. When left in-situ for a longer duration, owing to the chubbiness of limbs it lies hidden in the wrist crease. Due to rapid growth of the tissues and increase in circumference thread cuts through the soft tissues around the wrist. This slow process of penetration is mostly painless. Sometimes it cuts through the tendons, causing a 'constricting sign' on plain radiographs. It can also cause Acute Compartment Syndrome compromising the neurovascular bundle leading to limb threatening condition with tissue necrosis and gangrene.

The clinical presentation is characterized by linear circumferential scar combined with swollen and painless hand. Sometimes it presents as discharging sinuses mimicking Osteomyelitis or Tuberculosis.

This syndrome was first described by Hogeboom and Stephens [1] in 1961 and till date very few case reports have been published (Table 1) [2-8].

In Rubber Band Syndrome, MRI is the investigation of choice to delineate these bands [8]. The treatment of choice is removal of the retained foreign body along with exploration and repair of damaged structures. This rare syndrome often mimics and is confused with Tuberculosis due to endemicity of this disease in India. Chronic osteomyelitis, osteoarticular Tuberculosis, mycetoma are some of the differential diagnoses of this rare syndrome. Hence this syndrome can easily be missed if the clinician doesn't have high index of suspicion and can be mistreated as Tuberculosis or Osteomyelitis.

Conclusion

The cardinal features of linear constricting scar with discharging sinus in a young child mimicking osteomyelitis or Tuberculosis should always alert the physician of a forgotten band around the wrist which might have burrowed in to the soft tissues over a period of time. Prompt surgical removal and excision of fibrous circumferential tissue can lead to fast recovery and good outcome. Moreover, education of the communities regarding precautions in use of these mauli threads is important.

Table 1: Case reports published on circumferential scar.

Sl. No	Author/Year	Age/Sex	Location	Circumferential Scar	Discharge/Sinus	Plane	Recovered Foreign Body
1	A Agarwal, et al. (2013) [2]	3y/F	Wrist	Yes	Yes (single)	Tendon and NVS	Rubber band
2	Arora, et al. (2014) [3]	Case 1: 18 m/F Case 2: 4 y/F Case 3: 4 y/F	Wrist Wrist Wrist	Yes	Yes (single)		Ceremonial thread
3	Ojha, et al. (2016) [4]	1 y/F	Wrist	Yes	Yes (multiple)	Tendons	Ceremonial thread
4	John, et al. (2018) [5]	4 y/M	Arm	Yes	Yes	Muscles	Rubber band
5	Yang, et al. (2019) [6]	7 m/F	Ankle	Yes	Yes (yes)	Superficial plane	Rubber band
6	Kurup, et al. (2020) [7]	2 y/M	Wrist	Yes	No	Fracture of radius and ulna	Rubber band
7	Kumar, et al. (2022) [8]	Case 1: 3 y/M Case 2: 4 y/M	Wrist Wrist	Yes Yes	No Yes	Tendons and NVS	Rubber band Rubber band
8	Index case	Case1:1.5y/M Case2:2.5y/M	Wrist Wrist	Yes Yes	Yes No	subcutaneous Tendons	Rubber band Rubber band

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