DOI: 10.7860/IJARS/2026/81406.3093

Case Report

Radiology Section

Dhaga Syndrome: Unravelling the Mystery of a Forgotten Strand in a Toddler's Wrist

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ABSTRACT

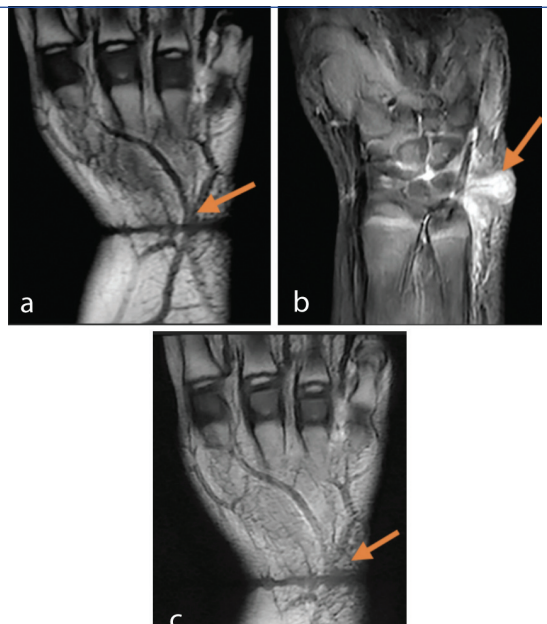
The condition known as Dhaga syndrome or rubber band syndrome is most commonly seen in infants and toddlers in certain communities where sacred threads are worn for religious purposes. It is a rare condition that can be identified through radiological investigations. Here, the authors report the case of a two-year-old male child who was brought to the institution with fever, swelling, and a circumferential scar over the left wrist joint. Magnetic Resonance Imaging (MRI) of the left wrist revealed characteristic findings of a foreign body reaction to a retained single strand of traditional thread tied around the wrist. Early diagnosis of Dhaga (rubber band) syndrome is essential in infants and toddlers presenting with unexplained circumferential wrist swelling or scarring. MRI is the investigation of choice for accurate diagnosis, enabling timely surgical intervention and preventing long-term neurovascular complications.

Keywords: Compartment syndrome, Constriction band syndrome, Retained thread, Rubber band syndrome, Wrist

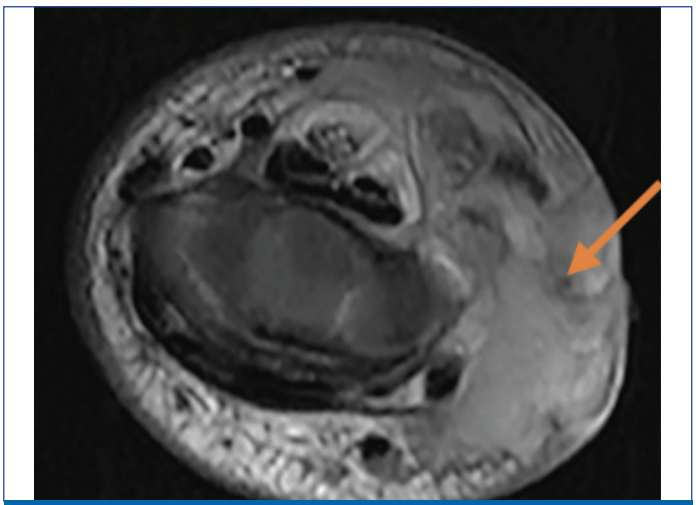
CASE REPORT

A two-year-old male child was brought by his parents with complaints of pain, fever, swelling of the left wrist joint, and restricted movements for the past 15 days. On clinical examination, the left wrist joint showed swelling and oedema with mild tenderness. The child was referred for radiological investigations, including ultrasonography and MRI. Ultrasound examination revealed cellulitis changes in the subcutaneous plane of the left wrist. MRI demonstrated a circumferential scar involving the skin and subcutaneous tissue around the wrist joint, which appeared slightly hypertrophied along the ventral and medial aspects.

T1-weighted and T2-weighted coronal images showed hypointense and hyperintense signal changes, respectively [Table/Fig-1a,b], with restricted diffusion. The T2 Short Tau Inversion Recovery (STIR) images revealed fluid collection along the medial aspect of the left wrist, predominantly in the subcutaneous plane, suggestive of an inflammatory collection [Table/Fig-1c]. The collection surrounded the flexor carpi ulnaris tendon and the ulnar nerve. Minimal fluid was observed within the carpal tunnel, along with diffuse subcutaneous oedema along both ventral and dorsal aspects of the wrist and hand [Table/Fig-2].



[Table/Fig-1]: Coronal images of the left wrist joint: a) The T1-weighted image shows a thin circumferential hypointense line; b) T2-weighted image shows a hypointense line extending from the medial to the lateral aspect of the wrist joint; c) The T2 STIR image shows fluid collection at the medial aspect of the wrist joint.

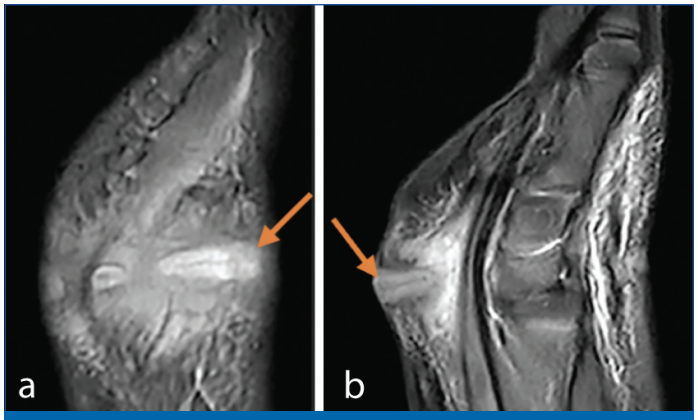


[Table/Fig-2]: T2 axial image at the level of wrist joint showing soft-tissue oedema.

Sagittal T2-weighted images demonstrated a thin linear hypointense structure (suggestive of a foreign body) surrounded by hyperintense signal changes representing inflammatory collection [Table/Fig-3a,b].

Based on these findings, a provisional diagnosis of constrictive soft-tissue injury due to a retained thread (suspected Dhaga syndrome) was made, and the child was scheduled for surgical exploration under general anaesthesia. During surgery, a linear incision was made over the left wrist joint. A thin linear foreign body was recovered from the subcutaneous plane [Table/Fig-4], consistent with a retained single strand of thread [Table/Fig-5].

Following surgical release of the constricting thread and appropriate soft-tissue debridement, the swelling gradually subsided, and the wound healed without infection. The child regained full range of motion of the left wrist with no



[Table/Fig-3a,b]: PD Fat Saturated sagittal weighted images showing thin linear hypointensity (possible foreign body) with surrounding hyperintense areas suggestive of collection.

[Table/Fig-4]: Volar aspect of left wrist.

[Table/Fig-5]: Foreign body (retained single strand of thread) with a circumferential foreign body.

neurovascular deficits. The patient was discharged after seven days. On follow-up after four weeks, the surgical site had healed well with minimal scarring.

DISCUSSION

Dhaga syndrome, or rubber band syndrome, is a rare and often underdiagnosed condition primarily affecting infants and toddlers. It results from a constricting sacred thread tied around the wrist, which gradually becomes embedded into the skin due to the child's growth. This leads to progressive soft-tissue constriction, sometimes involving tendons and neurovascular structures. The condition is predominantly reported in communities where sacred threads are worn for religious reasons [1,2].

As the child grows, the thread does not expand proportionally, leading to increasing constriction around the joint. The thread acts as a foreign body, triggering inflammation and fibrosis. Persistent pressure may result in ischaemia and necrosis of overlying skin, eventually causing the thread to become buried in the soft tissues [3-5]. In severe cases, deeper tissue involvement may lead to compartment syndrome [6-8]. In the present case, the thread was embedded in the subcutaneous tissue without deeper involvement.

Rubber band syndrome should be suspected when an infant or toddler presents with unexplained circumferential swelling around the wrist, pain, restricted movement, non-healing sinus, or a characteristic "constriction radiographic sign" [9]. In the present case, the constriction sign was present along with swelling and restricted motion, but without sinus formation or ulceration. Sacred threads are often worn for prolonged periods and may be forgotten by caregivers. Young children, who are unable to communicate discomfort effectively, are particularly vulnerable. Therefore, a high index of clinical suspicion and careful history taking from parents are essential for diagnosis [10]. Several similar cases have been reported in the literature [Table/Fig-6] [10-12].

CONCLUSION(S)

Although Dhaga (rubber band) syndrome is rare, it should be considered in infants and toddlers presenting with unexplained circumferential swelling or constriction around joints. Early recognition through clinical assessment and MRI, followed by prompt surgical intervention, results in rapid recovery, preservation of limb function, and prevention of long-term complications.

Acknowledgement

The authors acknowledge the support of Eureka Diagnostic Centre, Kolhapur, and extend sincere thanks to Dr Pramod Nagure, Dr Vasudha Nikam, and Dr Nitin Wadhwani. Their assistance was instrumental in conducting this study at Dr D.Y. Patil Education Society (Deemed to be University), D.Y. Patil Medical College, Kolhapur.

S. no.	Year	Authors	Child age	Site	Clinical presentation	Imaging	Management	Outcomes
1	2023	Aler S and Sinha A [10]	18 months male baby	Right Wrist	Linear circumferential scar over the right wrist. Swelling of the entire affected upper limb, associated with fever 1 month prior	MRI showed altered softtissue signal intensity, hypointense bandlike structure embedded in soft-tissue	Surgical wound exploration was done. The limb was immobilized in a plaster of Paris slab till suture removal.	The lesion healed without any complication in 4 weeks
2	2024	Aler S and Sinha A [10]	3 years girl child	Right Wrist	Hypertrophied Constriction on right wrist. Unable to move her fingers and thumb.	MRI showed discharging sinus surrounding the wrist joint with a circumferential scar. X-rays showed a shadow of a constriction sign with erosion (fracture) of both radius and ulna	Surgical wound exploration was done. Tenolysis was done for the flexor tendons and neurolysis was performed for all involved nerves	Complete neurological recovery was observed at 6 months' follow-up along with complete fracture healing of the radius and ulna

3	2023	Pandey VK et al., [12]	6 years female	Right wrist	Purulent discharge from volar aspect of right wrist of one week duration, insidious onset, associated with intermittent low-grade fever, intermittent dull aching pain in hand which was aggravated on exertion and relieved on rest. Associated with numbness over lateral half of palm. Restricted movements of right wrist joint	Not reported	Surgical wound exploration was done	After physiotherapy and rehabilitation, she recovered completely in 3 months
4	2024	Jani AK et al., [11]	4 years male	Right wrist	Swelling over the wrist and constricting band like scar around the wrist. There were two discharging sinuses with surrounding granulation tissue along the volar aspect of the wrist joint	MRI showed diffuse wrist joint synovitis and a circular band like structure surrounding the flexor tendons. There were discharging sinus tracts communicating with the synovitis on the volar aspect of the wrist	The child was taken for the exploration of sinus and removal of foreign body under general anaesthesia. Possible debridement and synovectomy of the wrist joint were planned in addition.	At 12 months follow-up, the patient had some regain in power following physiotherapy exercise. No residual neurological symptoms.

[Table/Fig-6]: Summary of few published cases [10-12].
Educating the parents about the tied religious thread around the wrist can prevent Dhaga syndrome

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Oct 06, 2025
- Manual Googling: Nov 18, 2025
- iThenticate Software: Nov 22, 2025 (10%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Jun 19, 2025**
Date of Peer Review: **Oct 06, 2025**
Date of Acceptance: **Nov 24, 2025**
Date of Publishing: **Mar 01, 2026**