

Circumferential Embedded Foreign Body: Diagnosis Requires A High Index of Clinical Suspicion

Dr. Gaurav Garg¹, Dr. Tarunika Gupta², Dr. V.K. Pande³

¹ Asstt. Prof of Orthopaedics, Deptt. of Orthopaedics, S.M.S. Medical College and Hospital, Jaipur, India

² Senior Resident, Deptt. of Ophthalmology, S.M.S. Medical College and Hospital, Jaipur, India

³ Prof. of Hand Surgery, S.D.M Hospital, Jaipur, India

Abstract

Background: Subcutaneous rubber band foreign bodies have been described particularly in children, when a rubber band is worn around a wrist and is forgotten leading to catastrophic complications. None of the reports described circumferential embedded foreign body in adults. Among two of our cases reported, one of the patient was 54 years old male, which authors think is a first description of rubber band syndrome in adults.

Methods: We report two cases of circumferential embedded foreign body in wrist and ring finger in an infant and 54 years old male respectively. Both the patients were having circumferential scar and non-healing sinuses.

Results: Elastic bands were removed surgically and both the patients eventually healed completely with no neuro-vascular deficits.

Conclusion: High index of clinical suspicion is required for diagnosing these cases, and increase awareness among the community and education is important to avoid complications related to circumferential foreign body around the limb and emergent surgical management should be undertaken if they occur.

Keywords: Circumferential foreign body, Rubber band syndrome, Wrist, Ring finger

I. Introduction

Case 1. A one year old female child was brought in orthopaedic outpatient clinic with discharging sinuses on the volar aspect of left wrist associated with pain and swelling for 1 month duration. Mother gave history of “sacred” thread tied around both wrists during a religious ceremony performed one and half months back. Following that after 15 days, she noticed swelling in left hand and wound on the wrist. She removed the thread immediately and took the child to a family physician. She was advised regular dressing and oral antibiotics for 7 days considering it as cellulitis, which was later switched to parenteral antibiotics as child shows no signs of improvement. Following this patient developed sinuses and girl was unable to sleep at night due to pain. On examination, child was irritable, left hand was swollen, dusky, indurated with local rise of temperature and two sinuses were seen on the volar aspect of wrist. Circumferential scar mark was seen on the wrist on stretching the skin as the child was chubby and scar mark was hidden under the wrist fold. Seropurulent discharge was seen in the dressing. Though, the neuro-vascular status was difficult to assess in child but grossly active finger movements were present and capillary filling was normal. Epitrochlear and axillary lymph nodes were not found to be enlarged. Routine blood investigations were normal except erythrocyte sedimentation rate, which was raised. Plane radiograph of the wrist showed no evidence of osteomyelitis. Culture from the sinus showed no growth of organism after 36 hours.

Considering the clinical symptoms with the discharging sinuses, exploration of the wrist was done through horizontal incision connecting both the sinuses. Pus came out which was sent again for culture and sensitivity. Careful dissection up to the bone surprisingly revealed a rubber band around the tendons along the subcutaneous plane; it was cut and pulled out. The wound was left open and allowed to heal by secondary intention. Post operatively, limb was supported with below elbow slab and the induration persisted for 1 week. Oral antibiotic were given for 15 days and child was reviewed after 3 weeks which shows complete healing of the wound with good recovery. It was presumed that child might have worn the rubber band to the wrist while playing, and due to deep wrist crease, the band was not seen and “sacred” thread was worn over it.

Case 2. A 54 year old male presented with swollen ring finger of right hand associated with pain and wound at the base of the finger for 2.5 months. Patient gave history of wearing gold ring on finger since last six months. He noticed swelling of the finger and tightening of the ring 2 months ago, he tried to remove the ring but it was entrapped, during the maneuver he developed wound over the base of finger on ventral aspect. He presented in emergency department with entrapped ring and swelling of ring finger. Ring was removed in emergency with k-wire cutter and dressing was done. He was given oral antibiotics and was asked to follow up after 2 days, but patient didn't show again.

He was seen in outpatient department after 15 days with swollen, red and warm right ring finger. Discharging sinuses were present on the base of the finger on the volar and ulnar aspect. Finger movement was painful and neurovascular status was intact. There was no enlargement of lymph nodes at the elbow and in axilla. Examination of wrist was normal. Plane radiographs showed signs of osteomyelitis in the proximal phalanx of the right ring finger. Routine blood investigations were in normal limits.

Exploration of the wound was done through zig-zag incision at the base of the finger. On separating the subcutaneous tissue a rubber band was found circumferentially around the base of the finger, compressing the tendons and the neurovascular structures. Rubber band was cut and taken out. Sinus tracts explored and curettage done, tissue sent for culture and sensitivity which showed *Staphylococcus aureus*. Postoperatively patient reports improvement in pain and reduction in swelling. Oral antibiotics were given for 1 week but the wound took little longer about 3 weeks to heal so another course of oral antibiotics for 1 week was given after 2 weeks post surgery. Sinuses healed completely after 4 weeks. After careful questioning patient, remembered that he had tied a rubber band distal to the ring as it was a little loose at that time, but later he forgot to remove the rubber band.

II. Discussion

There were few reports of circumferential embedded foreign body described in literature^{1,3-5}. Kumar et al¹ first reports on rubber band constriction in the thigh of a child. All the reports in English literature were from developing countries where elastic band or “sacred” threads were tied around the wrist in children. None of the reports described circumferential embedded foreign body in adults. Among two of our cases reported here, one of the patient was 54 years old male, which authors think is a first description of rubber band syndrome in adults.

Elastic bands pose different constrictive effects on the limbs depending on their thickness and tensile strength. Hixon et al² have shown that highly variable and inconsistent pressure was being executed by rubber bands when used as digital tourniquets. These bands produce inherent heat on stretching and coolness on relaxation, these changes in thermodynamics makes the rubber band gradually to penetrate the skin, which is a painless phenomenon. Subsequently, skin epithelializes over the elastic band and it is covered by circumferential scar mark on the surface. Though, no neuro-vascular deficits were encountered in our patients but reports suggest high chances of nerve palsies and they may even persist after removal of band and healing of the sinuses³.

A high index of clinical suspicion is required along with circumferential scar and non-healing sinuses for diagnosing a case of circumferential embedded foreign body. Clinicians should ask leading questions from parents or patients themselves regarding any elastic bands or threads being tied around the area in the past. Radiographs may be helpful in leading to diagnosis but only at a later stage when “constriction sign” can be appreciated⁴. One must be vigilant while dealing with chubby kids with similar complaints around the wrist or ankle, in adults presenting with similar symptoms around fingers or toes, especially from tropical countries where climatic conditions favors rapid skin maceration.

We conclude that increase awareness among the community and education is important to avoid complications related to circumferential foreign body around the limb and emergent surgical management should be undertaken if they occur.

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