

Retained Wooden Foreign Body in Groin in a Child: A Case Report and Review of Literature

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Abstract

Wooden foreign body (WFB) injuries in children are common. They may report with acute presentation or be delayed as retained foreign body giving rise to complications. Cases with superficial skin penetration by these foreign bodies and acute presentation may be convenient to diagnose and remove. However, localising deeply impacted and chronically retained WFB is challenging, as they are usually not radiopaque and have a tendency to move deeper into the surrounding soft tissues with time. Foreign body retained for prolonged duration may present with either cellulitis, deep tissue infections, sinus, restriction of joint movements, necrotising fasciitis, osteomyelitis or tumour-like mass. We present an 8-year-old boy with discharging sinuses in the right iliac fossa and medial aspect of the right upper thigh, due to an impacted WFB for 3 months. Prompt radiological imaging and surgical removal helped him recover completely.

Keywords: Discharging sinus, impacted, penetrating injury, wooden foreign body

INTRODUCTION

Penetrating foreign body injuries in children are common as they are playful, carefree and reckless. The common foreign bodies encountered are metallic, glass, plastic, wooden and other vegetative materials such as thorns or ceramics.^[1] Wooden and other vegetative foreign bodies are associated with more inflammation and chances of infection in view of its porous organic material which serves as a good medium for growth of microorganisms.^[2] Wooden foreign body (WFB) may present acutely with an accurate history of mode of injury as well as visible swelling, pain and redness or chronically as retained foreign body with discharging sinus, induration, restriction of joint movements, necrotising fasciitis, periosteal reaction, osteomyelitis or tumour-like mass.^[2-4]

On X-rays, only 15% of wooden foreign bodies are visible in comparison to metal and glass which are radiopaque.^[5] If there is suspicion of retained foreign body which is not visible on plain X-ray, then further imaging should be done such as ultrasonography (USG), computerised tomography scan (CT scan) or magnetic resonance imaging (MRI).

Decision to remove a foreign body will depend on the composition of the material and also the presence of symptoms and complication risk. Medical malpractice litigation and claims have been commonly reported in soft-tissue foreign bodies that were missed or undiagnosed in patients which led to complications.^[6] We report a case of an 8-year-old male presenting with discharging sinus in the medial side of the thigh and groin due to a retained WFB.

CASE REPORT

An 8-year-old boy presented with discharging sinuses in the right iliac fossa and medial aspect of the right upper thigh for 3 months. The patient had an alleged history of fall from height about 12–14 feet while playing in his village 3 months back. A wooden piece penetrated the medial aspect of the right thigh. He was taken to a private hospital wherein MRI of the abdomen and pelvis done showed a loculated collection in the right iliac fossa extending to the anterior thigh region

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and a foreign body of size 48 mm × 14 mm × 11 mm was within the collection; a tract was seen from the collection to the upper thigh as an external opening. On the same day, he was taken up for exploration of the right iliac fossa region wherein a small wooden part was retrieved and shown to the parents. The patient continued to have pain and limping gait since then with a flexion deformity on the right hip.

General condition of the patient on his visit to our outpatient department was good except for slight pallor. There was a scar of length 6 cm along the right inguinal crease with a discharging sinus at its lateral corner. The skin around the sinus was darkened and had some rashes, suggesting irritation of the skin. The second sinus was located about 2 cm below the groin fold medially [Figure 1]. There was tenderness on palpation of the area around the two sinuses. The patient had inability to fully extend the hip joint and also had a limping gait.

Blood investigations done showed: haemoglobin = 8.5 g/dl ($n = 11.5-15.5$ g/dl) and total leucocyte count = $17,180/\text{mm}^3$ ($n = 4500-14,500/\text{mm}^3$). A contrast-enhanced CT (CECT) of the abdomen and pelvis was done which showed a cylindrical hyperdense foreign body with peripheral calcification and air foci measuring 3.8 cm × 1.3 cm within the right psoas; the right distal iliopsoas, iliacus and pectineus muscles were bulky [Figure 2a and b]. A peripherally enhancing tract measuring 3 cm × 1.5 cm was seen in the right psoas along the foreign body extending through the pectineus muscle to the medial side of the right upper thigh. Medially, the tract was extending to the right wall of the urinary bladder which was also thickened up to 8 mm. Reactive periosteal thickening was noted along the right iliac wing.

Exploration of the right groin region was done along the previous incision. Dissection was done cautiously, and the sinus tract helped in identifying the impacted WFB at a depth of about 6 cm from the skin which was about 5 cm × 2 cm in size [Figure 3a and b]. About 10 ml of pus was drained out from the tract. The two sinuses with openings at the right iliac fossa and medial aspect of the right thigh were found to be communicating. This whole tract was debrided from both openings – mechanically with a curette and chemically with hydrogen peroxide and thereafter washed with normal saline. A corrugated drain was placed in the tract from the thigh end, and the incision wound was loosely closed. The pus culture report showed growth of *Escherichia coli*, and according to the sensitivity report, injections piperacillin and tazobactam and amikacin were given for 8 days along with clindamycin. Injection tetanus toxoid was not given to him as he had received within the last 5 years. The drain pus output gradually decreased, and it was removed on the 3rd post-operative day. The patient was discharged in satisfactory condition on post-operative day 8. He is doing well on follow-up of 5 months, walking normally and with healed sinus tracts.

DISCUSSION

WFB-penetrating injuries to the limbs are more common than the groin or trunk. Few examples of WFB penetration to groin

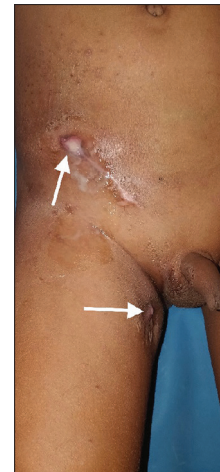


Figure 1: Clinical picture of the patient showing previous surgery scar in right inguinal area and discharging sinuses in lateral scar and right medical thigh (white arrows)



Figure 2: Computed tomography scan abdomen and pelvis showing (a) coronal cut – wooden foreign body (white arrow) with bulky psoas, iliacus and pectineus and right lateral wall of the urinary bladder; (b) transverse cut – cut section of wooden foreign body (white arrow) with bulky surrounding muscles



Figure 3: Intraoperative pictures showing (a) opened wound with a metal probe through the sinus tract (shown by 2 white arrows) and wooden foreign body placed on the white sponge; (b) measurements of the wooden foreign body

or trunk due to fall from height in literature includes- thigh area, entry from gluteal area through foramen ischiadum to the rectal space, and entry from sacrum up to S1 vertebral body via dural space.^[7,8]

High index of suspicion and early surgery improves the outcome for a patient with wooden or other organic foreign body-penetrating injuries. Retainment of part of foreign body is associated with complications. The initial surgery done in another hospital left a part of foreign body in the groin of the patient which further led to discharging sinuses.

X-rays have a 95%–100% sensitivity for radiopaque objects such as metal, bones and glass but cannot detect radiolucent objects. The next cost-effective and easily available diagnostic tool is USG which has a sensitivity of 50%–90% and a specificity of 70%–97% for metal, gravel, wood and plastic.^[9] Peterson *et al.* reported that the usage of the standard window and level settings of CT scan for retained wooden foreign bodies made their detection more vague and difficult. Only by changing the settings to increased window width, identification of the WFB became easier.^[10] They also concluded that USG is the best modality for retained WFB detection due to the markedly acoustic impedance difference between soft tissues and wood, but USG is often underutilised. In our patient, we had gotten a CT scan directly instead of a USG. We retrospectively pondered and thereafter admit that an initial USG could and should have been done.

Adequate preparation for exploring a case of WFB makes the procedure convenient and successful. This includes proper lighting, preparation of required instruments and

intraoperative USG, proper consent from parents for cases where the WFB is deeply located and sitting close to vital intraperitoneal structures. If residual foreign body is retrieved blindly, it can injure surrounding soft tissues, vessels and nerves. Hence, proper visualisation is always recommended, and in cases where it is difficult, the usage of haemostat to feel the WFB and further dissection and removal is advised.^[11] In our case, incision was given over the previous inguinal incision with good exposure. However, when the localisation was still not possible, we probed gently with a haemostat deep to the sinus tract which helped us to feel and locate the WFB. Missed or partially retained foreign bodies in the patients can resort to medical negligence and malpractice litigation claims and hence require utmost awareness and carefulness in handling such cases by surgeons.^[6,11] There is a need for peroperative/post-operative early radiological investigation for possibility of retained pieces of a radiolucent foreign body, and we suggest an algorithm for such cases [Figure 4].

In conclusion, wooden foreign bodies have a higher tendency for symptoms and complications but also a lower detection rate on routine first-line X-rays. Proper clinical assessment and counselling of parents, adequate radiological imaging and surgical removal with required instrumental and planning armamentarium are the keys to a successful management.

Consent

Written informed consent from the parents for publication has been taken by the authors.

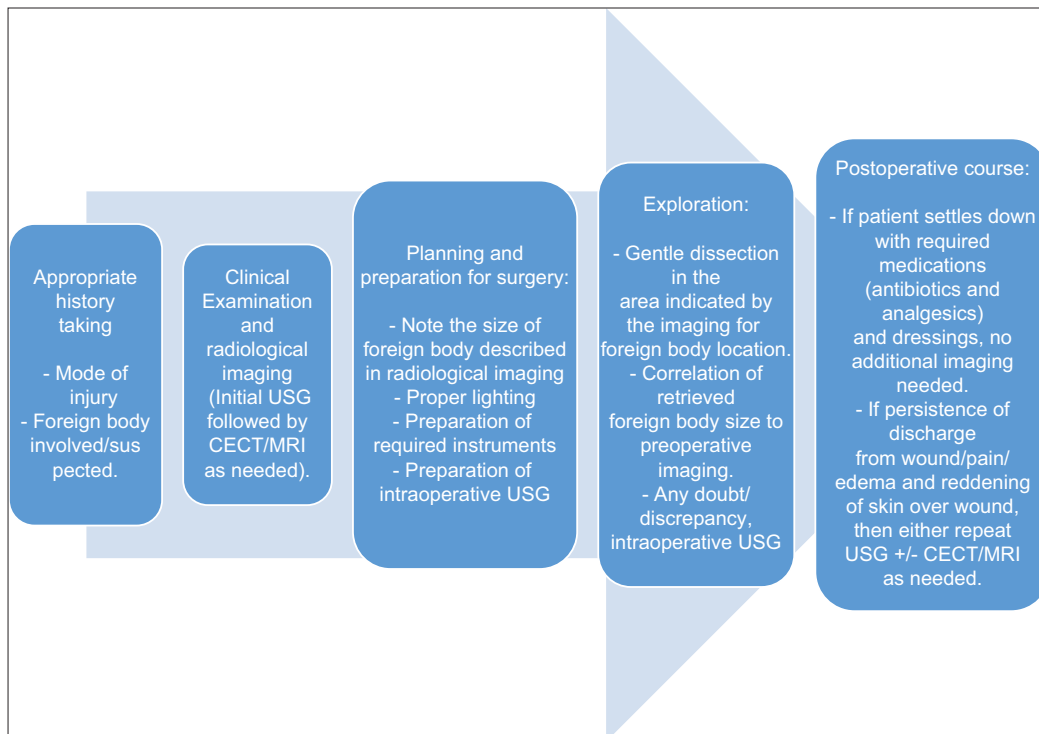


Figure 4: Algorithm for diagnosis and management of radiolucent foreign body

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the parents have given their consent for their child's images and other clinical information to be reported in the journal. The parents understand that their child's name and initial will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Authors' contribution

EY designed, did literature search and drafted the manuscript; MKG and EY operated the case; MKG revised the manuscript critically; GC helped in literature search and writing the manuscript.

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Conflicts of interest

There are no conflicts of interest.

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