

Intrahepatic Sewing Needle in a Child: A Case Report

Sunita Singh¹, Niraj Kumar Srivastava² and Rohit Meshram³

¹Department of Paediatric Surgery, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India

²Department of General Surgery, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, India

³Department of Paediatric Surgery, Lady Harding Medical College, and Kalawati Saran Children Hospital New Delhi, India

ABSTRACT

Sewing needles in the body of children has been reported in various body parts such as the liver, pancreas, brain, legs, muscles, mesentery of the bowel, etc. The sewing needle in the body of a child usually raises the suspicion of child abuse and in adult's suspicion of drug abuse. Rarely iatrogenic migrated retained foreign bodies (intravenous cannula) in the liver were also reported. The non-vegetative foreign body in the liver usually reaches by the bloodstream and the vegetative foreign body usually reaches via the entric route. There were controversies for expectant and operative management for asymptomatic foreign bodies in the liver. A case of transcutaneous penetration of a sewing needle into the liver of a child during playing was discussed. The sewing needle was successfully retrieved by laparotomy. If left untreated retained foreign body in the liver can invite complications of liver abscess, hematoma, external or internal biliary fistula, hemobilia, or migration of needle into the bloodstream.

KEYWORDS

Foreign bodies; Foreign body migration; Intrahepatic FB; Liver abscess; Laparoscopy; Sewing needle; Child abuse

ARTICLE HISTORY

Received 4 January 2024;
Revised 10 March 2024;
Accepted 20 March 2024

Introduction

The foreign body (FB) can reach the liver through ingestion or transcutaneously [1,2]. Serial weekly X-rays of the abdomen are advocated for follow-up. The ingested FB usually passes through the stool within 7 days [3]. Most intrahepatic sharp FBs like fish bone, chick bone, toothpick, and sewing needle transmigrate from the stomach, duodenum, and transverse colon. Other organs affected by transmigrated FBs are adjacent organs like kidneys and pancreas. Signs of peritonitis are usually not evident as intestinal perforation seals by local inflammation and fibrosis [4-6]. Transcutaneous penetration of the lower thoracic wall or abdominal wall in children should raise the possibility of child abuse [2,7]. Iatrogenic cases of post-procedure Menghini needle retention in the liver after liver biopsy have been reported. There are rare cases of FB lodgment in the liver through the bloodstream [8,9].

We discuss a case of transcutaneous penetration of a sewing needle into the liver parenchyma in a child with a review of the literature. This case report was written in line with the Surgical CAse REport SCARE criteria for surgical case reports [10].

Case report

A 3-year-old male child suffered from accidental penetration of a sewing needle in the right lower lateral chest wall while playing on the bed. Despite the efforts of the parent (mother), the needle got pushed further in with the movements of the crying child. An X-ray chest revealed linear radio-opacity in the left upper quadrant. There were no radiological signs of pneumothorax or pneumoperitoneum. On consultation at the peripheral hospital, the site of local wound entry was explored within 2 hours of penetration but was unsuccessful. The child was referred to a tertiary hospital for further management.

The child presented to our hospital 12 hours after the incident. The respiratory rate was 24/min. There were no signs of respiratory distress or peritonitis. A linear sutured surgical wound was noted in the right 8th intercostal space in the mid-axillary line. The child underwent a plain Computer Tomography (CT) scan of the abdomen, which showed a linear metallic foreign body at segment VI of the liver. There was no hepatic hematoma, hemoperitoneum, or hemothorax (Figure 1).

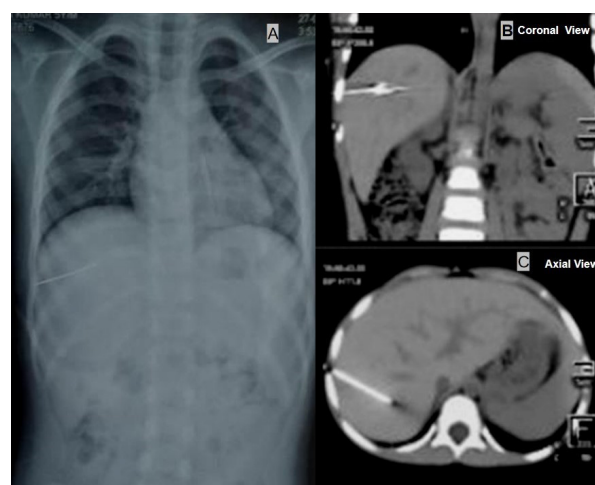


Figure 1. A) Plain skiagram of abdomen and thorax showing horizontal linear opacity at Right upper quadrant without pneumothorax / or pneumoperitoneum. (B & C): contrast Computer tomogram of the abdomen axial and coronal view showing a 3 cm liner metallic object at segment VII near the liver surface without any hematoma.

*Correspondence: Dr. Sunita Singh, Department of Paediatric Surgery, All India Institute of Medical Sciences, Raebareli, Uttar Pradesh, 229405, e-mail: drsunitasingh28@gmail.com

Intraoperative fluoroscopic guidance was utilized for need localization. Open surgery was opted as the laparoscope was out of order. Under General anesthesia, the child was positioned supine with the right hemithorax and abdomen raised above 30 degrees. The local wound was left untouched. The abdomen was entered via a right subcostal incision of 3 cm size lateral to midclavicular line. The needle was not visible from the surface of the liver, but as soon as the liver was gently retracted toward the midline for assessment of the VIth segment, the eye of the needle popped out spontaneously through the entry wound in the liver. The needle was retrieved with utmost care (figure 2). The abdomen was closed without any intraperitoneal drain after ensuring hemostasis. The child was given intravenous antibiotics covering gram-negative bacteria for 3 days and discharged on the 4th postoperative day. The postoperative and follow-up periods were uneventful. The child came for suture removal and further follow-ups during immunization and has been doing well.

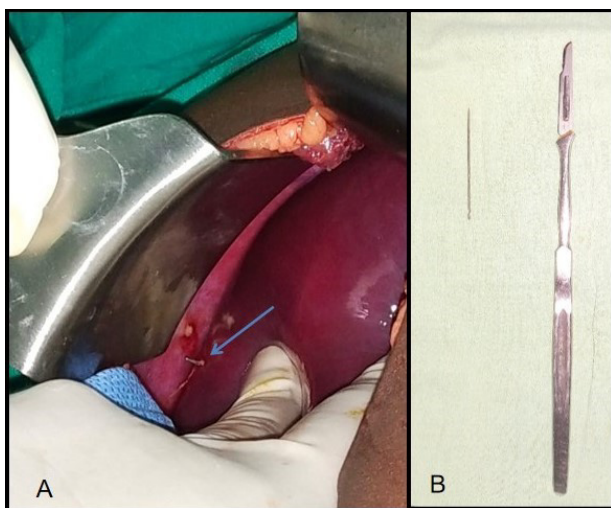


Figure 2. A) The needle tip can be visualized through the liver surface (blue arrow). B) Extracted needle.

Discussion

English language literature search on Pubmed, Medline, and OVID databases done with keywords “hepatic FB”, “Complications”, Hepatic FB”, management FB liver” and “Sewing needle” “child abuse”. Xu BJ et al. (2013) reviewed 9 cases of intrahepatic sewing needles in children [8]. Thereafter, 2 more cases of intrahepatic sewing needles in children were described till 2021. This makes ours the 12th case reported so far. Ten children were males. The youngest was 5 months of age, and the eldest was 16 years old. Three children had a history of ingestion, and in 10 children, sewing needles were incidentally found. Our case gave a history of accidental transcutaneous penetration. The needle was located in the right hepatic lobe in 10 children and the left lobe in 2 children. Sewing needles coming from the gastrointestinal tract are presented in 6 cases, through the abdominal wall in 4 cases, and in our case, through the thoracic wall. One child has not been operated on; it was not known how the needle reached the liver [11]. Sewing needle extraction was done with laparotomy in 6 children, laparoscopy in 4 children, and conservative management in 1 child. There was no history of child abuse in these cases [8,9-12].

Most ingested FBs are managed expectantly unless when the FB is sharp. The most common sites of gut perforation by sharp FB bodies are the duodenum, ileocecal junction, and rectosigmoid region. Most sharp objects are removed endoscopically, and less than 1% will require open surgery [1]. Transmigrated FB through the gut wall is usually the result of accidental ingestion. These objects can be vegetative (fish bone, chick bone, broken toothpicks) or metallic sewing needles [3,6-12]. In children, FB in the liver due to transmigration through the gut would be common because most of these ingestions are unattended; children improperly chew the food, and they explore surroundings by putting it in the mouth [9]. The sewing needle might be accidentally swallowed by adults who have the habit of holding the needle in their mouth. The Psychiatric population is also vulnerable because of their habit of accidental ingestion of objects [13,14]. Contrary to metallic objects, vegetative FBs are not visible in plain X-rays of the abdomen, leading to delayed diagnosis [15].

Clinical Presentation of intrahepatic sewing needle can be asymptomatic with the needle incidentally detected during radiological evaluation. The symptoms can be non-specific like, nausea, loss of appetite, dull aching pain, pyrexia, and weight loss [11], or may be related to liver abscess/septicemia like abdominal pain, fever, liver dysfunction, or Jaundice. Vegetative FB must be ruled out in all cases of Treatment refractory liver abscess [15]. The liver abscess associated with FB may be single or multiple [16]. The size of this abscess (es) varies from small to very large, and some of them may burst, needing emergency laparotomy.

The sharp intrahepatic FBs may penetrate the portal vein and cause the development of internal or external biliary fistula, hemobilia, intractable or recurrent cholangitis, migration into the bloodstream, or can be lethal [17-18].

Preoperative CT, preoperative & intraoperative USG, and/or fluoroscopic guidance, endoscopy, or colonoscopy may be required for diagnosis and retrieval of these FB [5,17]. CECT Scan abdomen findings suggestive of intrahepatic FB in cases of liver abscess are linear high-density material within the inflammatory mass.

The surgical approach depends on the location (central or peripheral), anatomy, complicated or no complicated & patient factors [19]. Migrated and ingested FB is more in a central location and difficult to remove, while percutaneously penetrated FB is peripheral and easy to remove [20]. Our case has a peripheral located FB, so it was quite easy to remove.

Few authors suggest incidental diagnosed hepatic FB can be managed expectantly [21]. Supporter of the surgical approach suggests most of these FBs lead to complications that increase patient mortality and morbidity [6]. So, for asymptomatic, uncomplicated, incidentally diagnosed FB liver, the management can be a percutaneous transhepatic approach or laparoscopic retrieval of FB.

Complicated hepatic FB like abscess, hemobilia, and cholangitis always need surgery via open or laparoscopic approach. Benefits of laparoscopy are adequate drainage of the abscess and better visualization of any fistulous communication between the gut and the liver via a minimally invasive route. Laparotomy is preferred for associated perforation peritonitis, clinical instability, and sepsis [22]. Recently, many cases of

laparoscopic retrieval of intrahepatic FB have been reported [18-22]. Cases of liver abscess with FB should be drained first with intravenous antibiotics. FB could be retrieved later on as the general condition improved.

Conclusions

All hepatic FB (metallic or vegetative) should be removed to avoid untoward complications that increase the morbidity of the patient. The decision for removal has to be individualized. It can be either staged or in a single setting via laparotomy or laparoscopy. All hepatic FB (metallic or vegetative) should be removed to avoid untoward complications that increase the morbidity of the patient.

Disclosure statement

Scientific Paper was presented at the 46th National Conference of the Indian Association of Paediatric Surgeons, (Online) in 2020.

References

1. Serwe S, Weber J, Strock P, Lens V. Liver abscess caused by an unnoticed swallowed toothpick perforating the colonic wall. *Z Gastroenterol.* 2007;45(10):1060-1062. <https://doi.org/10.1055/s-2007-963186>
2. Saitua F, Acosta S, Soto G, Herrera P, Tapia D. To remove or not remove...asymptomatic sewing needle within hepatic right lobe in an infant. *Pediatr Emerg Care.* 2009;25(7):463-464. <https://doi.org/10.1097/PEC.0b013e3181ab7940>
3. Shi H, Lv Z, Xu W, Sheng Q, Huang X, Xu T. Case report and literature review: An intrahepatic sewing needle in a child. *Front Pediatr.* 2023;10:1101163. <https://doi.org/10.3389/fped.2022.1101163>
4. Rahalkar MD, Pai B, Kukade G, Al Busaidi SS. Sewing needles as foreign bodies in the liver and pancreas. *Clin Radiol.* 2003;58(1):84-86. <https://doi.org/10.1053/crad.2002.11118>
5. Bilimoria KY, Eagan RK, Rex DK. Colonoscopic identification of a foreign body causing an hepatic abscess. *J Clin Gastroenterol.* 2003;37(1):82-85. <https://doi.org/10.1097/00004836-200307000-00021>
6. Bulakçı M, Agayev A, Yanar F, Sharifov R, Taviloğlu K, Uçar A. Final destination of an ingested needle: the liver. *Diagn Interv Radiol.* 2011;17(1):64-66. <https://doi.org/10.4261/1305-3825.DIR.2703-09.0>
7. Amirjamshidi A, Ghasvini AR, Alimohammadi M, Abbassioun K. Attempting homicide by inserting sewing needle into the brain Report of 6 cases and review of the literature. *Surg Neurol.* 2009;72:635-641. <https://doi.org/10.1016/j.surneu.2009.02.029>
8. Xu BJ, Lü CJ, Liu WG, Shu Q, Zhang YB. A sewing needle within the right hepatic lobe of an infant. *Pediatr Emerg Care.* 2013;29(9):1013-1015. <https://doi.org/10.1097/PEC.0b013e3182a35eea>
9. Demir S, Ilhan GB, Ertürk A, Şahin VS, Öztoran Cİ, Güney D, et al. Removal of two needles from the liver and axillary region using ultrasound: A case report with current literature review. *Haseki Tip Bul.* 2020;58(4):390-394. <https://doi.org/10.4274/haseki.galenos.2020.6109>
10. Agha RA, Borrelli MR, Farwana R, Koshy K, Fowler AJ, Orgill DP, et al. The SCARE 2018 statement: Updating consensus Surgical CAse REport (SCARE) guidelines. *Int J Surg.* 2018;60:132-136. <https://doi.org/10.1016/j.ijvsu.2018.10.028>
11. Nishimoto Y, Suita S, Taguchi T, Noguchi S, Ieiri S. Hepatic foreign body - a sewing needle - in a child. *Asian J Surg.* 2003;26(4):231-233. [https://doi.org/10.1016/s1015-9584\(09\)60311-0](https://doi.org/10.1016/s1015-9584(09)60311-0)
12. Chintamani, Singhal V, Lubhana P, Durkhare R, Bhandari S. Liver abscess secondary to a broken needle migration--a case report. *BMC Surg.* 2003;3:8. <https://doi.org/10.1186/1471-2482-3-8>
13. Shimooki O, Ito N, Hakozaiki M, Minakawa Y, Tono C, Abe T. A sewing needle in the liver: a case report and literature review. *J Surg Case Rep.* 2023;2023(12):rjad678. <https://doi.org/10.1093/jscr/rjad678>
14. Basquez RL, Butt I, Billings A, Pippin M. Liver Abscess Caused by Ingestion of a Sewing Needle. *Cureus.* 2020;12(6):e8924. <https://doi.org/10.7759/cureus.8924>
15. Werner KT, Gallegos-Orozco JF. Multiple hepatic abscesses secondary to chicken bone penetration of the colon: a case report. *Rev Gastroenterol Mex.* 2012;77(1):43-46.
16. Lau CW, Wong KM, Gogna A. Image-guided Percutaneous Transhepatic Removal of Fish Bone from Liver Abscess. *J Radiol Case Rep.* 2017;11(2):1-7. <https://doi.org/10.3941/jrcr.v11i2.2997>
17. Olds KL, Gilbert JD, Byard RW. Unexpected Death Associated With Clostridial Sepsis. *Am J Forensic Med Pathol.* 2021;42(3):289-291. <https://doi.org/10.1097/PAF.0000000000000640>
18. Carver D, Bruckschwaiger V, Martel G, Bertens KA, Abou-Khalil J, Balaa F. Laparoscopic retrieval of a sewing needle from the liver: A case report. *Int J Surg Case Rep.* 2018;51:376-378. <https://doi.org/10.1016/j.ijscr.2018.09.012>
19. Bekki T, Fujikuni N, Tanabe K, Amano H, Noriyuki T, Nakahara M. Liver abscess caused by fish bone perforation of stomach wall treated by laparoscopic surgery: a case report. *Surg Case Rep.* 2019;5(1):79. <https://doi.org/10.1186/s40792-019-0639-0>
20. Pérez Saborido B, Bailón Cuadrado M, Velasco López R. A liver abscess secondary to a toothpick: a rare complication of accidental foreign body ingestion. *Rev Esp Enferm Dig.* 2019;111(2):167-168. <https://doi.org/10.17235/reed.2018.5860/2018>
21. Tan CH, Chang SY, Cheah YL. Laparoscopic Removal of Intrahepatic Foreign Body: A Novel Technique for Management of an Unusual Cause of Liver Abscess--Fish Bone Migration. *J Laparoendosc Adv Surg Tech A.* 2016;26(1):47-50. <https://doi.org/10.1089/lap.2015.0487>
22. Kim DH, Kim MS, Park JW, Chang YS. Laparoscopic Treatment of Hepatic Abscess Caused by an Ingested Foreign Body. *J Minim Invasive Surg.* 2019;22(4):177-180. <https://doi.org/10.7602/jmis.2019.22.4.177>