

## Image-guided Retrieval of Foreign Body in the Abdomen - A Case Report

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### ABSTRACT

The presence of retained surgical blade as a foreign body is uncommon and poses significant patient safety challenge issues. Most common etiologies for the presence of such foreign bodies are accidental, traumatic, or iatrogenic. Here, we report a successful management of the case with a rare foreign body in the abdomen, that is, surgical blade accidentally left during pigtail procedure of the liver abscess. Most of the iatrogenic injuries are preventable. In our case, a misfit of a blade in the handle might have been responsible for the complication. The use of radiological guidance for localization and removal of the foreign bodies embedded in the soft tissues is well established. With imaging guidance retrieval of a foreign body in the abdomen, laparotomy was prevented and facilitated early recovery.

**Key words:** *Foreign body, Percutaneous fluid drainage, Pigtail catheter, Stereotaxic*

Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries [1]. Previous literature has reported the prevalence rate as high as 55% from rural areas of Central and South America, India, and the tropical areas of Asia and Africa. Pyogenic liver abscess has an estimated global incidence of 1.1–2.3 per 100,000 person-years [1,2]. However, the patient outcome has improved with the evolvement of treatment strategies such as advances in interventional radiology, intensive care, progress in antibiotic therapy, facilities of sonography, and computerized tomography scanning of the abdomen [3]. Percutaneous drainage of liver abscess has been an important advancement in the treatment of pyogenic liver abscesses. Every form of medical and surgical treatment, even the most trivial one, carries with it some chance of complications. This risk is usually small, and the benefit of the treatment should clearly outweigh the risk. Treatment-related complications may occur, however, presenting either soon after the intervention or remote from it.

The presence of retained surgical blade as a foreign body is uncommon and poses significant patient safety challenge issues. Most common etiologies for the presence of such foreign bodies are accidental, traumatic, or iatrogenic. We report a successful management of the case with a rare foreign body in the abdomen, that is, surgical blade accidentally left during pigtail procedure of the liver abscess.

### CASE REPORT

A 34-year-old male reported to our hospital with the complaints of pain in the upper abdomen and fever for 4 days. There was no history of vomiting or loose motion. The patient was vitally stable, pulse of 86/min, blood pressure of 130/80 mmHg, and respiratory rate

of 18 cycles/min. A clinical examination of the abdomen revealed tenderness in the right hypochondrium and epigastric region.

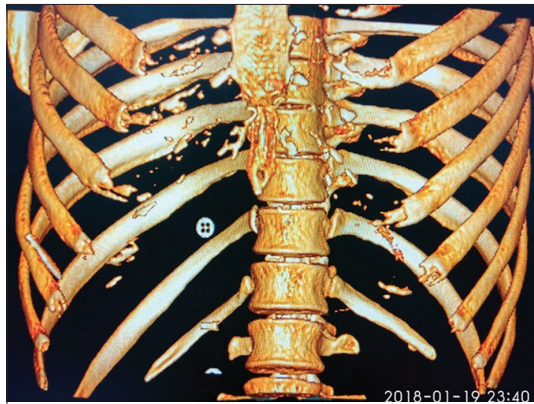
Blood examination was normal except leukocytosis. Hemoglobin level was 12.2 g%, platelet count was 200,000 cells/mm<sup>3</sup>, and white blood cell count was 18,000 cells/mm<sup>3</sup>. An ultrasound of the abdomen revealed approximately 10 cm × 10 cm × 9 cm size of liquefied abscess in segment VII of the liver. Hence, ultrasonography-guided percutaneous aspiration and insertion of a pigtail catheter were planned.

During the procedure while making an incision for the pigtail insertion, a surgical blade accidentally got lodged in the intercostal muscles, and due to the respiratory movements, the blade shifted internally near the liver lobe. Chest X-ray showed a radiopaque foreign body (surgical blade) on the right side of chest above the dome of the diaphragm. On further investigation, computed tomography (CT) scan abdomen revealed a metallic foreign body embedded in the liver with its proximal end jutting out in the intercostal muscles (Fig. 1).

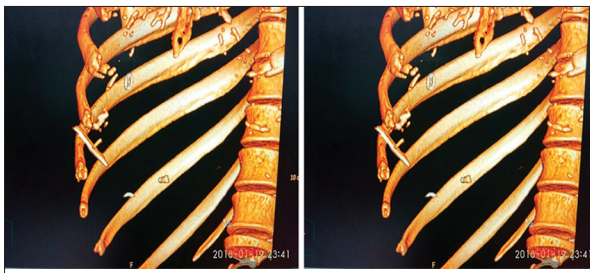
It was decided to try a stereotactic approach with CT guidance in the intervention room under local anesthesia after explaining the procedure to the patient (Figs. 2 and 3). Using metallic skin markers, the surface marking of the blade was done and the approach was marked. After calculating the distance of the proximal end of the blade from the skin, a two-inch skin incision was made in the fifth intercostal space in midaxillary line. The incision was deepened until the muscle layers which were separated using blunt dissection. The foreign body was felt and stabilized and removed. CT scan was repeated to document removal and look for any complications. The wound was sutured and the patient recovered uneventfully. The patient was asymptomatic at 1-month follow-up.



**Figure 1: Computed tomography scan showing metallic foreign body embedded in intercostal muscle**



**Figure 2: Stereotactic view of the foreign body**



**Figure 3: Three-dimensional view showing the foreign body in between ribs on the right side**

## DISCUSSION

In adults, image guided percutaneous aspiration and insertion of pigtail catheter in abscess cavity is well accepted treatment modality [4,5]. Percutaneous catheter drainage is a safe procedure with very few reported complications, which includes hemorrhage, perforation of hollow viscera, peritoneal spillage, catheter displacement or blockage, and septicemia [6].

In our case, a misfit of the blade in the handle might have been responsible for the complication. These iatrogenic injuries are preventable. The use of radiological guidance for localization and removal of foreign bodies embedded in the soft tissues is well established [7]. These foreign bodies are metallic objects or glass, wooden, and plastic shards [8]. The common imaging modalities, used for guiding the procedure, are fluoroscopy, ultrasonography,

and CT scan [8]. Ultrasonography guidance is best suited for foreign bodies which are relatively superficial. The advantages of ultrasonography are the lack of radiation and the ability to visualize non-radiopaque objects such as glass, plastic, and wood [9].

Qian *et al.* performed a CT-guided localization and pre-operative surface projection of over 1000 metallic foreign bodies [10]. This was done by applying a radioopaque marker on the overlying skin and determining the shortest and safest approach for removal. This three-dimensional localization is called as stereotaxy. In this study, the accuracy of CT-guided localization of metallic foreign bodies was 100%. Furthermore, the results showed minimal invasiveness, shorter operative time, fewer complications, and less severe post-operative pain.

In our case, since the proximal end of the blade was located outside the liver, removal could be successfully performed under CT scan guidance avoiding a laparotomy. The surgical options for such procedure are laparoscopy or laparotomy. Surgery is, sometimes, necessary if other methods of removal do not work.

## CONCLUSION

Iatrogenic complications due to equipment failure can only be prevented by strict adherence to procedure protocols. Percutaneous fluid drainage is a routine procedure best performed in the hands of experienced radiologists with the availability of the complete range of imaging modalities for guidance. With adequate planning, careful technique, and thorough patient follow-up, the risks and consequences of complications can be minimized.

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