

## A Case of Metallic Instrument Retained in The Liver

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### Abstract

**Background:** Retained surgical item (RSI) is the term used to describe any foreign body inadvertently left in a patient's body after surgery. Intra-hepatic retained surgical items are rare but serious incidents, with sometimes dramatic consequences. Multiple risk factors have been identified that need to be controlled in order to reduce the incidence of such events.

**Case Report:** We report the case of a 69-year-old female with a history of right liver hydatid cyst surgery who was admitted for abdominal pain. Physical examination revealed tenderness in the right hypochondrium. Abdominal X-ray showed a metallic instrument. Surgical exploration through laparotomy found a metal forceps embedded in the hepatic parenchyma which was removed.

**Conclusion:** The primary prevention based on the standardization of practices in the operating theatre and the inculcation of a "culture of safety", remains the key to the problem. A special effort must be made in terms of raising awareness and training staff in order to increase the level of vigilance. Also, optimizing the environment and working conditions has to be a central concern.

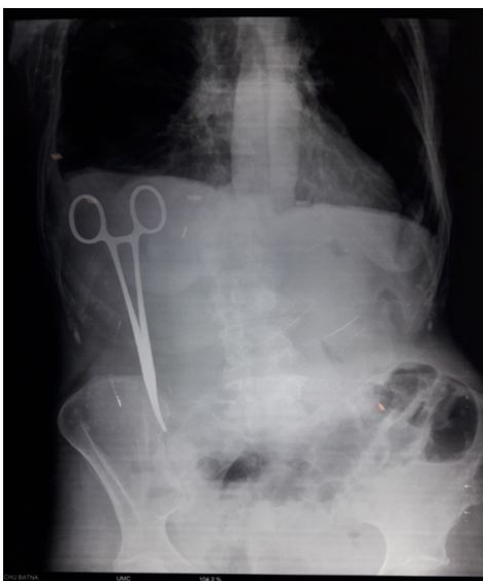
**Keywords:** Retained Surgical Items; Retained Liver Foreign Bodies; Surgical Instruments; Management; Prevention

## Introduction

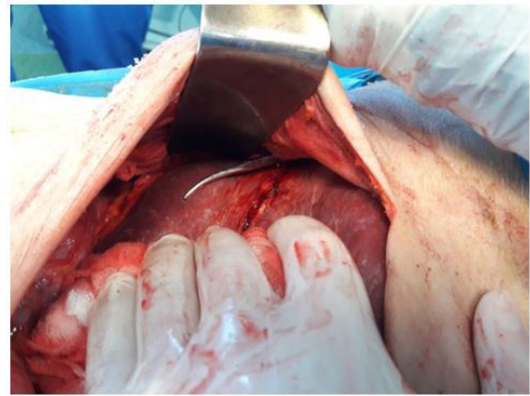
In the literature, retained surgical item (RSI) is the term used to describe any foreign body inadvertently left in a patient's body after surgery [1]. In medico-legal terms, this negligence is easily proven according to the principle of "res ipsa loquitur", and remains indefensible. Often unreported, these incidents are largely underestimated [1]. A recent analysis of the collections of the Agency for Healthcare Quality and Research (USA), showed an incidence of 13 events per 100,000 case-years [2]. In Algeria, at present, we have no available data on the frequency of this phenomenon.

## Case Presentation

A 69-year-old female with history of right liver hydatid cyst operated a month ago in a peripheral hospital, presented to the emergency department for abdominal pain. physical examination revealed tenderness in the right hypochondrium associated with a fever of 38.3°C. White blood cell count reached 11.000/mm<sup>3</sup>, the rest of the blood test was within normal limits. The X-ray of the abdomen did not show any pneumoperitoneum; in contrast, it showed a metallic instrument in the right hypochondrium and flank (Figure 1). We decided to take the patient to the operating room without further investigations. Surgical exploration revealed multiple adhesions, no foreign body was found on the sub-mesocolic compartment. Adhesiolysis provided access to the subphrenic space, revealing a metallic "Kelly" forceps embedded in the hepatic parenchyma, in what appeared to be a residual cavity of the right liver with purulent contents. (Figure 2). The forceps was removed and the residual cavity drained through a tubular drain (Figure 3). The postoperative period was affected by the deterioration of the patient's condition, related to septic shock, leading to death on the 4th postoperative day.



**Figure 1:** Abdominal X-ray showing the metallic instrument



**Figure 2:** Intraoperative view showing the metallic forceps after disengaging from liver parenchyma



**Figure 3:** Metallic forceps after extraction

## Discussion

The liver is rarely the site of foreign bodies [3]. Of varied nature, it can be an acupuncture needle accidentally penetrating the liver through the skin [3]. More commonly, it may be metal pins, sewing needles or other unusual objects swallowed, passing through the stomach or duodenum to lodge in the liver [4–7]. A surgical instrument left in the liver is an even rarer situation. A review of the literature has indeed found no case similar to ours. Clinical expression is varied, and some cases may remain asymptomatic for a long time [8]. The diagnosis is usually made within the first two months postoperatively, up to several months or even years [9]. In our patient, within one month, the symptomatology was mild intermittent abdominal pain in the right hypochondrium without radiation associated with a fever. Diagnosis is based on imaging; CT scan is the exam of choice for detecting RSIs. In the case we present, the diagnosis was evident on the abdominal X-ray, which is still commonly used despite their low sensitivity [10]. The management of intrahepatic RSIs depends primarily on their accessibility, risk of migration and severity of symptoms [5]. Surveillance may be considered in the absence of complications; however, laparotomy or laparoscopy is required to remove a symptomatic foreign body [5,7,11]. In our patient, given the forceps size and the risk of adhesions, we preferred a median laparotomy

approach for better access. Reducing this type of error essentially requires the identification of risk factors. Two case-control analyses clearly showed that the risk of intra-abdominal retention was significantly higher in cases of emergency or complex surgery, unplanned surgical changes, incorrect counting of instruments or sponges, and in cases of obese patients [12, 13]. Prevention occupies a prominent place; this necessarily involves counting instruments and sponges before and after use, which remains the most widely used method [14]. However, with an estimated sensitivity of 77.27%, counting is far from being a foolproof method [15]. In a retrospective study, Egorova *et al.* [15], showed that a counting discrepancy occurred every 145 interventions (0.69%), multiplying the risk of RSIs by 100. The occurrence of these counting discrepancies is highly correlated with the number of circulating nurses in the operating room and the change of shifts [15,16]. In addition to the above-mentioned factors, Cima, *et al.* [17], in a study conducted at the Mayo Clinic in Rochester (USA), showed that the complexity of the operating theatre, multiple distractions, and especially poor communication between the different actors, have a negative impact on counting. It appears essential to take all these risk factors into account to elaborate adequate strategies aimed at reducing the RSIs occurrence. Several authors have evaluated the contribution of new technologies in prevention [18–20].

## Conclusion

Although the role of these advanced technologies seems indisputable, they often remain inaccessible to many. This encourages us to focus more on primary prevention based on the standardization of practices in the operating room, and the inculcation of the “culture of safety”, which remains the key to the problem. A special effort must be made in terms of raising awareness and training staff in order to increase their level of vigilance. Also, optimizing the environment and working conditions has to be a central concern. Finally, this phenomenon should be considered more as a system failure, to which solutions must be brought, in particular through clinical trials.

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