



Intra-abdominal Breakage of Laparoscopic Needle Holder Tip and Its Retrieval Under Fluoroscopic Guidance

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Abstract

Background Intra-operative breakage of laparoscopy instruments is a rare occurrence. It entails a risk of the foreign body being retained in the abdomen and may lead to medico-legal implications. The foreign body migrates due to bowel movements. Therefore, the retrieval of such foreign bodies can be challenging even for a highly skilled and experienced surgeon. Fluoroscopy can guide in locating the missing foreign body. The only preventive measure is the vigilance of the operating team and thorough inspection of all the instruments prior to completion of surgery.

Case Report We present a case report of a 50-year-old lady who underwent total laparoscopic hysterectomy with bilateral salpingoophorectomy at a private nursing home. During the closure of the vault, the tip of the needle holder broke inside the abdomen and the primary surgeon was unable to retrieve it. The missing tip of the needle holder was removed from the right hypochondriac region, by a second laparoscopic surgery by an advanced laparoscopic surgeon under fluoroscopic guidance.

Conclusion Intra-operative breakage of laparoscopy instruments can occur, demanding a great deal of expertise for the retrieval of such foreign bodies. Fluoroscopy can guide in locating the missing foreign body which can be retrieved by an expert laparoscopic surgeon.

Keywords Laparoscopic retrieval · Foreign body · Intra-operative breakage · Retained surgical instrument · Fluoroscopic guidance

Introduction

With the application of laparoscopy to a wide variety of conditions, rare events like intra-operative breakage of the laparoscopy instruments will be observed. Such events entail a risk of a foreign body being retained in the abdomen and, hence, may have medico-legal implications. The retrieval of such foreign bodies is difficult, significantly prolongs the duration of the surgery and demands a great deal of expertise from the operating surgeon. Use of fluoroscopy can guide us in pin-pointing the exact location of the foreign body inside the abdomen. Here, we present a case of broken tip of

laparoscopic needle holder lost in the abdomen, retrieved by a second laparoscopic surgery under fluoroscopic guidance.

Case Report

A 50-year-old lady, parity four, with no co-morbidities, underwent total laparoscopic hysterectomy with bilateral salpingoophorectomy at a private nursing home for abnormal uterine bleeding. During the closure of the vault, while catching the needle, the tip of the needle holder broke inside the abdomen. The primary surgeon tried to fetch the broken tip, which was initially visible in the field of surgery. However, bowel movements displaced the broken tip and even after a meticulous search, it could not be located. Therefore, the primary surgeon concluded the surgery with the tip of the instrument still retained inside the abdomen. Postoperatively, the patient and the attendants were explained about the rare occurrence and the patient was referred to us for further management.

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On arrival to our hospital, the patient was conscious and her vitals were stable. Her general physical and systemic examination was within normal limits. Her abdominal examination revealed sterile dressing at the supra-umbilical region and at the site of accessory ports (two on the left side and one on the right side). Rest of the abdominal examination and local examination revealed no abnormality. Per speculum and per vaginal examination was avoided due to postoperative status. The patient's haemoglobin was 10.1 gm/dl, and rest of the blood and urine investigations were within normal limits. The patient underwent an abdominal X-ray which showed the broken tip of the needle holder in the right lumbar quadrant of the abdomen (Fig. 1).

After pre-operative fitness, the patient was subjected to laparoscopy the next day. The surgery was performed from the same ports. Fluoroscopic guidance was availed, which showed the missing tip of the needle holder in the right hypochondrium (Fig. 2). Search was made in the same region, and laparoscopic grasper was directed towards the missing tip by retracting the bowel loops continuously, as guided by the fluoroscopic evaluation. The broken tip was visualized with the help of laparoscopy and retrieved using the grasper. The surgery was concluded and the patient was shifted to the postoperative ward. The patient made an uneventful recovery and was discharged on the second postoperative day.

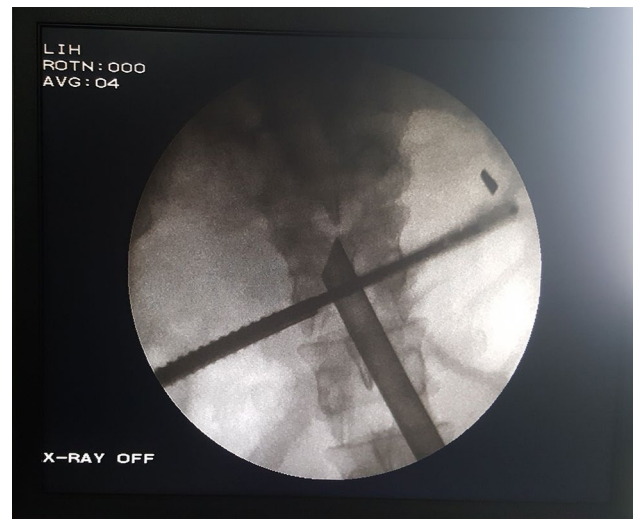


Fig. 2 Image from real-time fluoroscopy showing the missing tip of the needle holder

Discussion

Retained surgical instruments in laparoscopic surgeries are an uncommon occurrence. In the literature, there are reports of management of intra-operative lost needles during laparoscopy. However, foreign body in the abdomen due to breakage of laparoscopic instrument is rarely reported.

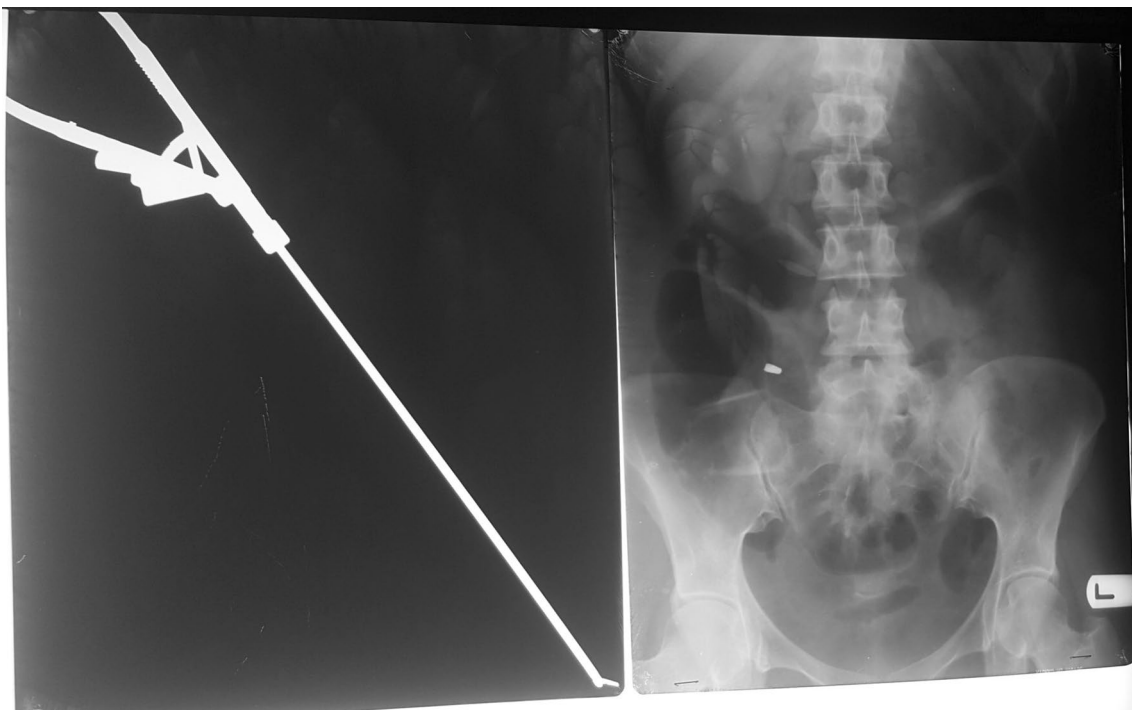


Fig. 1 Abdominal X-ray showing the tip of the broken needle holder in the abdominal cavity

Since more surgeons are getting trained in laparoscopy and are utilizing it for a wide variety of conditions, including complex cancer surgeries, awareness for such complications is needed. There is a risk of such foreign bodies being overlooked and being retained in the abdomen, leading to medicolegal problems. The retrieval of such foreign bodies can be challenging even for a highly skilled and experienced surgeon. The foreign body migrates due to bowel movements and therefore locating it can be an uphill task.

Fluoroscopic guidance can be utilized at the time of laparoscopy to aid in the retrieval. In cases where fluoroscopy is needed but is unavailable, it is advisable to transfer the patient to a setup where fluoroscopy can be availed. Fluoroscopy has been used in the removal of a broken tip of a fascial closure device during laparoscopy [1]. Fluoroscopy-assisted laparoscopic removal of glucose sensor wire from the omentum [2] and broken claw of a harmonic scalpel has been reported [3]. X-ray guidance has been utilized in cases where the foreign body is present in a relatively fixed space like extra-peritoneal space or in or just below the cannula sheath [4].

The size of the lost object is crucial as small objects are difficult to locate and take longer to retrieve. The object may break into multiple parts, and each part needs to be looked for and removed individually. Such events lead to an increase in the cost of care due to prolongation of operative and anaesthesia time or due to calling an expert laparoscopic surgeon for intra-operative assistance or due to subjecting the patient to a second surgery. Besides, there is a risk of radiation exposure, increased tissue handling and chances of conversion to laparotomy. Certain methods which avoid radiation exposure have been described, like creating a reverse trendelenberg position with saline irrigation [5], and use of magnetic probe [6].

A retrospective study from Tokyo highlights that laparoscopic instruments break intra-operatively more often than those of open surgery, as the instruments are more delicate and sophisticated [7]. They reported an incidence of 0.88% for the intra-operative breakage of laparoscopic instruments. The two most common reasons highlighted by the study were inappropriate use and wearing out. Repeated autoclaving may also lead to breakage of the delicate parts. Instruments that face direct trauma or increased resistance through the ports, as with the fascial closure device, can also break [1]. The same could be the reason in the present case, as the needle holder faces direct trauma by being inserted through the port directly, without a cannula sheath. Inspection under the accessory ports should be done before looking for the broken tip in the abdominal cavity.

In the current practice, no measure exists for the prevention of such an adverse event, except meticulous inspection of the instruments. The role of the nursing and the technical staff is crucial in ensuring the integrity of the instruments during

and after surgery. Hospital guidelines should be made and all instruments should be thoroughly inspected before completion of the surgery. Timely replacement of old instruments is essential. Such events should be documented and reported to the hospital authorities and to the manufacturer.

Conclusion

Laparoscopy instruments can break intra-operatively. The operating team should be vigilant and should thoroughly inspect all the instruments prior to completion of surgery. Fluoroscopy can guide in locating the missing foreign body. Retrieval of the foreign body needs advanced laparoscopic skill and expertise.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interests.

Informed Consent Patient's identity is not revealed as only X-ray and fluoroscopic images are being sent for publication.

References

1. Katara AN, Bhandarkar DS, Shah RS, Udwardia TE. Breakage of fascial closure device during laparoscopic surgery. *J Mini Access Surg.* 2005;1(2):79.
2. Sang AX, Lal R, August A, Danzer E, Buckingham B, Mueller CM. Fluoroscopic-assisted laparoscopic retrieval of retained glucose sensor wire from the omentum. *Clin Case Rep.* 2019;7(9):1717–20.
3. Rani BD, Jarugulla S. Retained surgical instrument in minimally invasive surgery. *J Obstet Gynecol India.* 2019; 1–2.
4. Lynch CM, Powers AK. Management of a broken needle at the time of laparoscopic burch. *JSL J Soc Laparoendosc Surg.* 2000;4(3):275.
5. Duhan N, Malik R, Hooda MR. A broken cautery tip lost in the abdomen at laparoscopic ovarian cystectomy. *Open J Clin Med Case Rep.* 2016;2(2):1067.
6. Kandioler-Eckersberger D, Niederle B, Herbst F, Wenzl E. A magnetic probe to retrieve broken metallic parts of instruments during laparoscopic procedures. *Surg Endos Other Interv Tech.* 2002;16(1):208–9.
7. Yasuhara H, Fukatsu K, Komatsu T, Murakoshi S, Saito Y, Uetara Y. Occult risk of broken instruments for endoscopy-assisted surgery. *World J Surg.* 2014;38(11):3015–22.

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