

The Value of Laparoscopic Approach and Endoscopy in the Treatment of Abdominal Foreign Bodies Require Intervention

Fatin R Polat^{1*}, Yasin Duran¹ and Ibrahim Fatih Polat²

¹Department of Surgery, Tekirdag Namik Kemal University Medical Faculty, Tekirdag, Turkey

²Department of Mechanical Engineering, Tekirdag Namik Kemal University Engineering Faculty, Tekirdag, Turkey

*Corresponding Author: Fatin R Polat, Associate Professor of Surgery, Department of General Surgery, Namik Kemal University School of Medicine, Tekirdag, Turkey.

Received: January 02, 2019; Published: January 31, 2019

Abstract

Aim: The anatomic location and size of the lesion (foreign body) is more important than another peculiarity in the laparoscopic surgery. The aim of this study is to discuss the effects and feasibility of laparoscopically removal of foreign body in the abdomen and emphasizing the importance of diagnostic/therapeutic endoscopic procedure before surgery.

Patients and Method: Records belonging to a total of 10 patients diagnosed with foreign body in the abdomen were retrospectively evaluated. The patients were admitted to the emergency department due to abdominal pain. Endoscopic or surgical intervention were applied to the patients.

Results: Of the 10 patients, the majority were males (n = 8, 80%). Six patients were underwent laparoscopic surgery. The surgical approach of two from these 6 patients is converted to open surgery. Four cases were underwent therapeutic endoscopy and foreign body was removed endoscopically. No surgical intervention was performed in the endoscopic approach selected cases. Neither morbidity nor mortality were observed in any patients.

Conclusion: Foreign body in the abdomen may result in many complications in the gastrointestinal tract. To prevent complications, endoscopic or surgical (either open or laparoscopic) intervention should be applied. It is not always possible to remove a foreign body in the abdomen laparoscopically. When laparoscopic surgery is considered to be applied, the size, nature and location of foreign body should be known firstly.

Keywords: Laparoscopy; Endoscopy; Abdomen; Gastrointestinal System; Foreign Body

Introduction

Laparoscopic surgery is going to be the first-line operative technique for a variety of benign or some malign lesions in the abdomen [1-3]. Almost all general surgical procedures can be performed using minimally invasive techniques [3].

The anatomic location of the foreign body and size of the mass are more important than another peculiarity in the laparoscopy [1,2]. The aim of this report is to discuss the effects and feasibility of laparoscopic removal of foreign body into the abdomen cavity. Additionally it is discussed the place of diagnostic/therapeutic endoscopic procedure before the surgical intervention.

Patients and Method

Records belonging to a total of 10 patients diagnosed with abdominal foreign body who presented to Van State Hospital, Sakarya Toyota State Hospital and Tekirdag Namik Kemal University Faculty of Medicine Research Hospital's between September 2010 and June 2017. The cases were evaluated retrospectively. Patients were admitted to emergency service because of diffuse mild abdominal pain. In the physical examination, the abdomen was soft, and intestinal sounds were normal in all of the patients. Foreign body into abdomen was diagnosed as a result of abdominal pain or incidentally during a diagnostic work-up, and the diagnosis was confirmed by abdominal plain X-ray, computed tomography (CT) or magnetic resonans imaging (MRI). Since the abdominal pain did not relieve, endoscopic or surgical (either open or laparoscopic) intervention were applied to the patients. Coagulation screening tests and routine blood tests were within normal limits in all of cases. The distribution of abdominal foreign bodies in this study was as following (Table 1): Intra uterine device

(IUD) in 2 patients (20%), needle (one safety pin, one sewing needle and one forgotten surgical needle) in 3 patients (30%), forgotten trocar piece during surgical intervention in 1 patient (10%), coin in 1 patient (10%), two big forgotten gauze in 1 patient (10%), forgotten rubber drain in 1 patient (10%), foreign body in the rectum in 1 patient (10%).

Statistical analysis

Statistical analysis was performed with using SPSS (version 20.0, SPSS Inc., Chicago, IL, USA). P value < 0.05 was considered as statistically significant.

Results

Of the 10 patients, the majority were males (n = 8, 80%) with a mean age of 29.7 years (ranging between 13 - 51 years). Laparoscopic surgery to 6 (60%) patients and endoscopic intervention to 4 patients (40%) were performed. Laparoscopic surgery was converted to open surgery in 2 of 6 the patients (p < 0.05). The reasons of this conversion to open surgery were due to peritoneal adhesions (gauze) and foreign body (IUD) not being found in the abdominal cavity. (Case-1) A 36-year old female presented with history of diffuse mild abdominal pain that was persisting for fourteen days. Radiologic evaluation revealed a 7 cm radiopaque material (IUD) in the abdomen (Figure 1). The patient was underwent laparoscopic surgery but foreign body was not found in abdominal cavity. Therefore the approach was considered as conventional surgery. The object (IUD) was found in the lumen of transverse colon by the palpation of the colonic segments and was removed by colotomy (Figure 2). In another patient (Case-3), a 50-year-old female presented with a long time history of diffuse mild abdominal pain. Radiologic assessment showed two (10 x 11,9 cm and 10,2 x 12,7 cm) mass in the abdominal cavity (Figure 3). These two big forgotten gauze which had been adherent to the bowel. Conventional surgery was performed and the masses were removed (Figure 4). Three of the patients (surgical needle, trocar piece, rubber drain) and one another patient having IUD, were treated laparoscopically. On the other hand before planning surgery, last three patients (Table 1) were underwent esophagogastroduodenoscopy (EGD) and endoscopically foreign bodies were removed. The other last patient had foreign body in the rectum, the foreign body could not be removed manually during the rectal examination. The patient was transferred to the endoscopy unit, foreign body was taken out through the anal canal with proctosigmoidoscopy. No surgical intervention was performed in these patients. Therefore the last four patients were treated by therapeutic endoscopy. (Case-9) A 19-year-old female presented with two-days-long history of diffuse mild abdominal pain. In this patient, the needle had been sinking from the soles of her right foot and had migrated to the abdomen. Radiologic evaluation demonstrated a 3 cm radiopaque material (needle) between the stomach and pancreas (Figure 5). The needle was removed transorally via EGD (Figure 6). There was no any complication during the interventions. Neither morbidity nor mortality were observed in all patients.



Figure 1: Abdominal plain X-ray graph shows a radiopaque foreign body at left lower quadrant of the abdomen, indicating the IUD (arrow).



Figure 2: Open surgical procedure. Intrauterine device is shown in the lumen of transvers colon (arrow).



Figure 3: Magnetic resonance imaging, coronal plane T2-weighted image demonstrates two large masses (10 x 12 cm and 10,2 x 12,7 cm) of gossypiboma in the abdominal cavity.

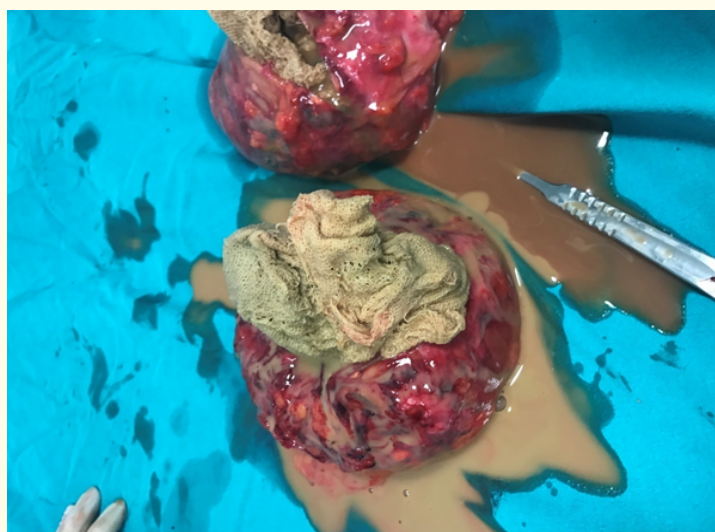


Figure 4: The two large forgotten gauze were removed from the abdominal cavity surgically.



Figure 5: Computed tomography shows a hyperdense material (sewing needle) between the stomach and pancreas.



Figure 6: Image shows the needle removed endoscopically and the area of the needle entry.

| Cases | Foreign Body | Type of intervention |
|-------|---------------------------|---|
| 1* | Intra Uterin Device (IUD) | Surgical (laparoscopic convert to open) |
| 2 | Inra Uterin Device (IUD) | Surgical (laparoscopic) |
| 3* | Forgotten Gauzes | Surgical (laparoscopic convert to open) |
| 4 | Trocar piece | Surgical (laparoscopic) |
| 5 | Forgotten rubber Drain | Surgical (laparoscopic) |
| 6 | Surgical Needle | Surgical (laparoscopic) |
| 7 | Coin | Endoscopic (esophagogastroduodenoscopy) |
| 8 | Safety Pin (needle) | Endoscopic (esophagogastroduodenoscopy) |
| 9* | Sewing Needle | Endoscopic (esophagogastroduodenoscopy) |
| 10 | Smooth metal in Rectum | Endoscopic (proctosigmoidoscopy) |

Table 1: Type of foreign body and kind of intervention.

Discussion

Foreign body in the abdomen is a commonly seen condition in emergencies, only 1% of them finally needs surgery [4]. Foreign bodies which are forgotten after surgery, those migrated from any part of the body or swallowed mistakenly, are mostly encountered conditions [1]. If foreign body is not passed spontaneously, it may cause stricture, inflammation, perforation or fistula in the gastrointestinal tract. To prevent such complications, interventional procedures (either open or laparoscopic) should be applied. Traditional, exploratory laparotomy has been the main stay of the treatment for patients requiring surgery. Currently, there are two methods for foreign body extraction from the abdomen including endoscopic and surgical approaches (either open or especially laparoscopic) [1].

However surgeons are highly tempted to use laparoscopy in emergency settings. Laparoscopic surgery, for the patients who had foreign body in the abdomen, allows more earlier discharge after surgery and ensure returning to social activities due to its minimal invasive property. With regard to foreign body, laparoscopy is a technique showing its advantages resulting from a minimally invasive approach [5]. A basic limitation of using laparoscopic technique is the migration of foreign body and depending on size of mass. Also, the nature of foreign body is very important. Laparoscopic removal of fragile items, such as a thermometer, is obviously feasible but associated with substantial risks [6].

However, it is not always possible to remove a foreign body from the abdomen laparoscopically. The rate of conversion from laparoscopic surgery to open surgery in patients with foreign body in the abdomen is reported as 20% [1]. In the current study, this rate was found as 33,3% [6,7]. There is no any clearly review study in the literature. Before the laparoscopic surgery, the location of foreign body should be investigated and well assessed in the lumen or abdominal cavity endoscopically. Additionally, nature and size of foreign body should be known previously.

In case of suspicion of the foreign body in the lumen of alimentary tract, endoscopic intervention should be applied firstly. Thus unnecessary surgical intervention is prevented. In this study, in the last four cases EGD or proctosigmoidoscopy were applied and foreign bodies were removed before surgical intervention. Thus any unnecessary surgical intervention was avoided. Whereas in the first six cases, EGD and/or proctosigmoidoscopy were not performed prior to surgery. In one of these cases, foreign body (IUD) was found in lumen of the transverse colon. This retrospective study clearly demonstrates that in case of suspected foreign body in the the alimentary tract lumen, proctosigmoidoscopy and/or EGD should be done to all patients pre-operatively.

When performing endoscopic extraction, protection of the airway tract is of vital importance [1,4]. Therefore, the procedure should be performed with the patient in the Trendelenburg position to prevent the object from falling into the trachea during removal [1].

Foreign body is rarely seen in the rectum [8]. An attempt to manually remove the foreign body should be tried during the rectal examination. However, in most patients, endoscopic intervention using proctosigmoidoscopy with a forceps is necessary for successful removal [9]. The foreign object inserted into the rectum may migrate to peritoneal cavity without peritonitis [7]. Such patients need surgery. Especially minimally invasive surgery is effective in this area.

Gallstone is the most common type of foreign body which reaches the bowel by transmural migration [1,10]. In two patients at this study, the foreign bodies reaching the bowel and stomach by transmural migration, were IUD and sewing needle.

Conclusion

Endoscopy should be performed before the surgical interventions (especially laparoscopy) for removal of foreign bodies as were included in this study. However, prospective control trials are needed to be used in routine.

Acknowledgements

A part of this scientific paper was presented at the minimally invasive surgery week, International meeting of Laparoendoscopic Surgeon, SLS Annual meeting, Endo Expo 2017, in San Francisco, California, USA.

Informed Consent

Informed Consent was not received due to the retrospective nature of the study.

Author Contributions

Concept, Design, Supervision, Resource, Materials, Data Collection and/or Processing- FRP; Analysis and/or Interpretation, Literature Search, Writing, Critical Reviews, FRP, YD, IFP.

Conflict of Interest

No conflict of interest was declared by the authors.

Financial Disclosure

The authors declared that this study has received no financial support.

Bibliography

1. Aaron S Fink. "Chapter 44. Fundamentals of Laparoscopic Surgery". Michael J Zinner, Editors. Maingot's Abdominal Operations. 12th edition. London: Prentice Hall International Inc (2013): 189-237.
2. Steelman VM., *et al.* "Retained surgical sponges: a descriptive study of 319 occurrences and contributing factors from 2012 to 2017". *Patient Safety in Surgery* 12 (2018): 20-21.
3. Polat FR., *et al.* "The importance of intraoperative cholangiography during laparoscopic cholecystectomy". *Journal of the Society of Laparoendoscopic Surgeons* 4.2 (2000): 103-107.
4. Mohamed Aboulkacem B., *et al.* "Laparoscopic assisted foreign body extraction from the small bowel: A case report". *International Journal of Surgery Case Reports* 41 (2017): 283-286.
5. Szeliga J and Jackowski M. "Laparoscopy in small bowel obstruction - current status – review". *Wideochirurgia i Inne Techniki Małoinwazyjne* 12.4 (2017): 455-460.
6. Bogdanovic J., *et al.* "Successful Laparoscopic Removal of a Self-Inflicted Thermometer that Spontaneously Migrated into the Peritoneal Cavity". *Urology Journal* 14.6 (2017): 5071-5073.
7. Kamali A and Moudi E. "Unusual presentation of an abdominal foreign body: A case report". *Caspian Journal of Internal Medicine* 8.2 (2017): 126-128.
8. Atar C., *et al.* "Successful endoscopic removal of a foreign body in the rectum". *Turkish Journal of Gastroenterology* 25.4 (2014): 442-443.
9. Singaporewalla RM., *et al.* "Use of endoscopic snare to extract a large rectosigmoid foreign body with review of literature". *Surgical Laparoscopy Endoscopy and Percutaneous Techniques* 17.2 (2007): 145-148.
10. Lucerna A., *et al.* "Ingested Foreign Body Migration to the Liver: An Unusual Cause of Persistent Abdominal Pain in a 54-Year-Old Female". *Case Reports in Emergency Medicine* (2018): 8745271.

Volume 6 Issue 2 February 2019

©All rights reserved by Fatin R Polat, *et al.*