

Deciding to Remove or Leave a Peritoneal Loose Body: A Case Report and Review of Literature

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Authors' Contribution:
Study Design A
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Conflict of interest: None declared

Patient: Male, 58
Final Diagnosis: Peritoneal loose body
Symptoms: Abdominal pain • hematuria
Medication: —
Clinical Procedure: Diagnostic laparoscopy
Specialty: Surgery

Objective: Unusual clinical course





Background: Peritoneal loose bodies, also known as peritoneal mice, are rare findings and they present either with nonspecific symptoms or are found incidentally during exploration and autopsy. Usually, they have no clinical significance and require no specific treatment. We report a case of a giant peritoneal loose body found incidentally in the abdominal cavity of a patient who presented with abdominal pain and hematuria.

Case Report: Our patient was a 58-year-old man who presented with abdominal pain and hematuria. Abdominal non-contrast computed tomography (CT) and subsequent CT abdomen and pelvis with intravenous and oral rectal contrast were performed preoperatively, showing a well-circumscribed and calcified lesion of undetermined etiology in the abdominal cavity. The lesion was removed laparoscopically with no complications. Histopathologically, the lesion was reported as calcified tissue with fat necrosis, most likely an infarcted appendix epiploicae.

Conclusions: Loose peritoneal bodies can present a challenging diagnostic problem to the surgeon, with confusing findings that can point towards malignancy. It often requires a number of investigations; however even with these investigations, operative exploration, either open or laparoscopic, can be the ultimate diagnostic and therapeutic modality, and the mobility of these calcified lesions may give a preoperative clue to the etiology. It is important to distinguish peritoneal loose bodies from neoplastic or metastatic lesions and to consider it in the differential diagnosis of a calcified mobile pelvic mass. Laparoscopic surgery is safe and effective in the retrieval of symptomatic peritoneal loose bodies.

MeSH Keywords: Appendices Epiploicae • Boiled Egg • Hematuria • Laparoscopic Surgery • Peritoneal Loose Body

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Background

Peritoneal loose bodies (PLBs), also known as “peritoneal mice”, are uncommon small lesions found incidentally during exploration or autopsy with few cases reported in the literature. The presentation can be very nonspecific and can present a diagnostic dilemma requiring sophisticated radiological investigations; even then, it is often diagnosed intra-operatively. It is interesting to note that of all cases in the literature, only 1 case was diagnosed preoperatively [1]. Commonly, they present with mild or no symptoms; however, there are reports of serious presentations such as bowel obstruction or perforation. Earlier cases were treated by laparotomy, but with the introduction of minimally invasive surgery, a number of cases have been managed laparoscopically. We report a case of a giant peritoneal loose body presenting with urinary symptoms and abdominal pain.

Case Report

A 58-year-old man known to have diabetes mellitus type II and hypertension presented to our hospital Emergency Department with complaints of bilateral flank pain and fever of 3-day duration associated with dysuria and hematuria. He had no other relevant gastrointestinal symptoms and no history of trauma or surgery.

On examination, he was vitally stable but febrile with right iliac fossa and bilateral flank tenderness. Blood tests showed raised leukocyte count and a urine dipstick test was positive for blood and leukocytes. An abdominal non-contrast CT was performed, which showed a well-circumscribed lesion with calcification in the right lower quadrant measuring approximately 4.9×4.1 cm (Figure 1). Multiple areas of calcification were noted in the liver and tiny gravel was noted in the right kidney. There was no evidence of hydronephrosis or mass lesion of the kidneys.

For further characterization of the lesion, the patient underwent a CT abdomen and pelvis with contrast, showing that the lesion was now located on the left side of the pelvis, with some impression on the left posterior superolateral wall of the urinary bladder (Figure 2), and it also revealed multiple areas of very high density in the liver and spleen.

Given the possibility of a mobile intra-abdominal mass, informed consent for exploratory laparoscopy was obtained and the patient underwent laparoscopy. On diagnostic laparoscopy, we found a hard, oval-shaped mass freely mobile in the pelvic cavity (Figure 3) and 2 small, calcified lesions also were seen in the falciform and ileocecal junction. The lesion was laparoscopically retrieved and sent for histopathology. The patient



Figure 1. Abdominal enhanced non-contrast computed tomography showing well-circumscribed lesion with central calcification (arrow) in the right lower quadrant.



Figure 2. Abdominal enhanced computed tomography with contrast showing peritoneal loose body with multiple central high densities (arrow) in the left lower quadrant. Note the mobility of loose body between the contrast and non-contrast CT abdomen.

had an uneventful postoperative course with complete resolution of his symptoms.

Macroscopically, the mass was oval in shape and firm, measuring 6×4.8×4.2 cm, with a smooth, white surface (Figure 4). Cut surfaces reveal tan-yellow, firm material with a focally calcified center (Figure 5). Histologically, the mass consisted of hyalinized and calcified tissue with fat necrosis, most likely representing an infarcted appendix epiploicae.

The patient had an uneventful postoperative course with complete resolution of his symptoms. He was discharged from the hospital on the following day.

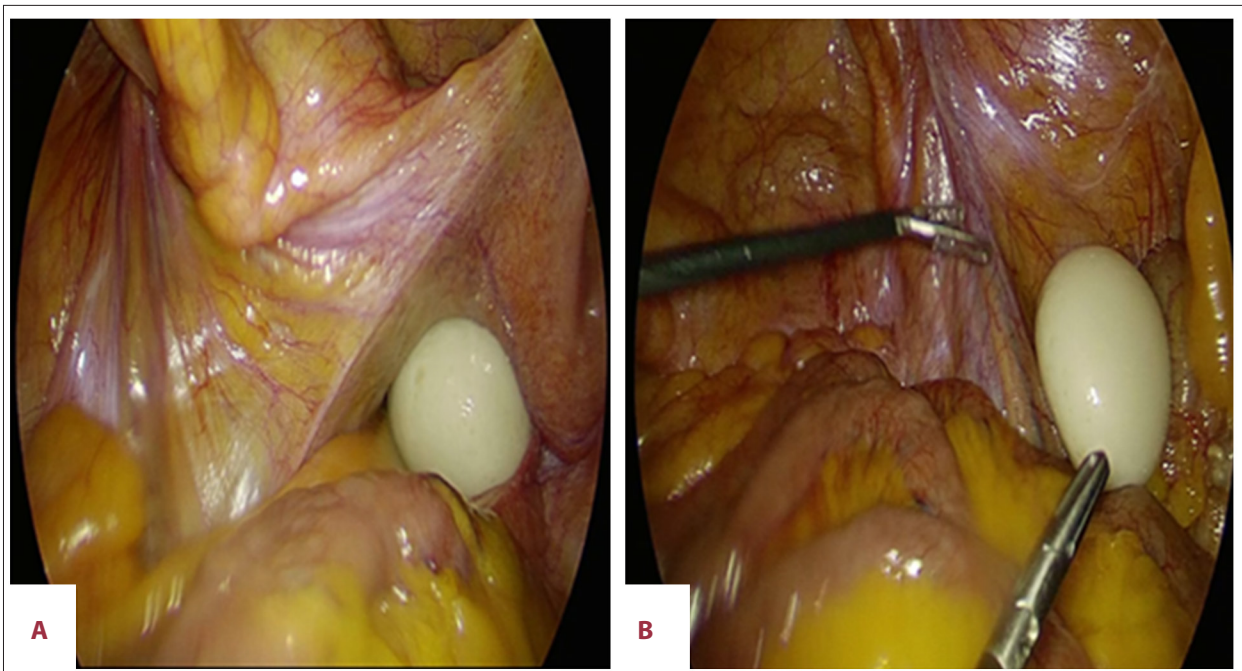


Figure 3. Laparoscopic surgical view. (A, B) Free peritoneal loose body as seen through a zero-degree laparoscope in the pelvic cavity.



Figure 4. Extracted peritoneal loose body showing as white and oval-shaped (“boiled egg” appearance).

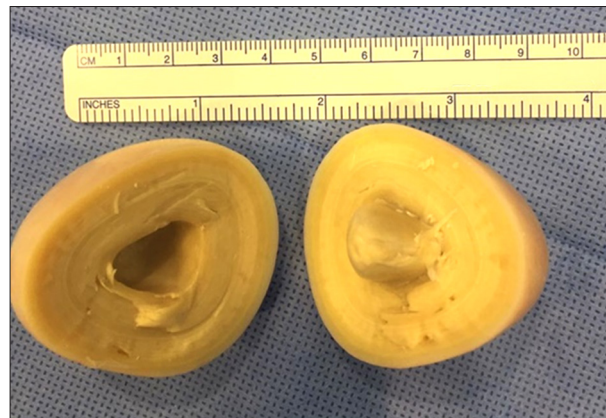


Figure 5. Extracted peritoneal loose bodies cut surfaces showing tan-yellow firm material with a focally calcified center.

Discussion

Peritoneal loose bodies are an uncommon intra-abdominal finding. The first case was reported by Littre in 1703 [2]. They are more common in males ages 40–70 years [2], with only 1 case reported in an infant [3]. Usually, they have a small diameter (0.5–2.5 cm) and “giant peritoneal loose bodies” rarely exceed 5 cm [2]. Mohri et al. report a case of a huge peritoneal loose body in a 73-year-old man that increased gradually in size from 7.3×7.0 cm to 9.5×7.5 cm over 5 years [1].

The exact origin of peritoneal loose bodies is unknown, but many authors suggest that they form from a detached appendix epiploicae secondary to torsion and ischemia followed by saponification,

calcification, and fibrosis, with gradual increase in size as a result of albumin accumulation from exudative peritoneal fluid [4,3]. It was also reported that giant peritoneal bodies in females can arise from auto-amputated adnexa or a uterine leiomyoma [5]. Rarely, peritoneal bodies receive blood supply from attachment to the surrounding omentum (a parasitized peritoneal body) [6].

The epiploic appendices are small pouches (0.5–5 cm) of the peritoneum filled with fat protruding from the external surface of the colon into the peritoneal cavity; their function is unknown. They are more vulnerable to torsion and infarct because of their pedunculated shape and restricted blood supply from 1 or 2 small end arteries branching from the vasa recta longa of the colon.

Harrigan (1917) was the first to believe that the appendices epiploicae may detach and lie free in the peritoneal cavity [7], but Virchow in 1863 was the first to come up with a description of a peritoneal loose body [8]. Other possible origins include the omentum, auto-amputated adnexa, or fat tissue in the pancreas.

Clinical presentations

In most cases, peritoneal loose bodies are asymptomatic, but giant bodies can present with various symptoms secondary to compression, as in intestinal obstruction, urinary retention, or urinary tract infection (UTI) [3,4]. Interestingly, our patient presented with urinary tract symptoms, including macroscopic hematuria, which was not reported before in the literature. Common causes of hematuria include urinary tract calculi and UTI, as well as urinary tract malignancies, which are typically painless [9]. In our case, we hypothesized that chronic irritation by PLB led to urinary tract infection and hematuria. However, as the symptoms were acute and totally resolved after surgery, he was referred to urology, so we cannot trace the patient for further investigations and, hence, the hematuria may or may not be related to PLB.

Peritoneal loose bodies can present a diagnostic dilemma to the surgeon and are rarely diagnosed preoperatively, but it was suggested that additional scanning of the patient in the prone position or a follow-up imaging study can demonstrate mobility of a loose body and can help in the diagnosis [10].

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Radiological features

On ultrasound, PLB manifests as a mobile, hypoechoic, round mass with wide lateral shadowing [11]. CT, however, shows a round or oval-shaped, well-defined mass with central calcification, surrounded by peripheral soft tissue [12]. It also shows no fluorodeoxyglucose (FDG) uptake on positron emission tomography (PET) scan and no enhancement with contrast, which can be helpful in differentiating PLBs from leiomyomas and calcifying fibrous pseudotumors [10,13]. On T1- and T2-weighted magnetic resonance imaging, PLB appears as a low-intensity mass comparable to muscle tissue or collagen fiber, with a central high-intensity on T1-weighted images [14].

Conclusions

Loose peritoneal bodies can present a challenging diagnostic problem to the surgeon, with confusing findings that can point towards malignancy. It often requires a number of investigations, but even with these investigations, operative exploration, either open or laparoscopic, can be the ultimate diagnostic and therapeutic modality. The mobility of these calcified lesions may give a preoperative clue to the etiology. It is important to distinguish peritoneal loose bodies from neoplastic or metastatic lesions and to consider it in the differential diagnosis of a calcified mobile pelvic mass. Laparoscopic surgery is a safe and effective modality in the retrieval of symptomatic peritoneal loose bodies.

Conflicts of interest

None.