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Laparoscopic extraction of a giant peritoneal loose body: Case report and review of literature

Keiso Matsubara[a], Yuji Takakura[a,*], Takashi Urushihara[a,b], Takashi Nishisaka[c], Toshiyuki Itamoto[a,b]

[a] Department of Gastroenterological Surgery, Hiroshima Prefectural Hospital, Japan
[b] Hiroshima University, Japan
[c] Department of Pathology Clinical Laboratory, Hiroshima Prefectural Hospital, Japan

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ABSTRACT

INTRODUCTION: A peritoneal loose body is a rare finding and is sometimes founded incidentally during laparotomy or autopsy. A giant peritoneal loose body, measuring more than 50 mm, is very rare, and only a few cases of laparoscopic extraction of these giant bodies have been reported in the literature.
PRESENTATION OF CASE: A 70-year-old man presented for evaluation of urinary frequency. He had no history of previous abdominal surgery or trauma. Computed tomography of the abdomen and pelvis showed a giant oval-shaped mass with calcification of the luminal core, measuring 58 mm in diameter. Magnetic resonance imaging revealed a lesion with low intensity in T1-/T2-weighted images. Exploratory laparoscopy was performed. During the procedure, a yellow-white, oval-shaped mass with a "Boiled egg" appearance was discovered in front of the rectum. The mass was freely floating in the peritoneal cavity, without attachment to any intraperitoneal organs. The giant peritoneal loose body was extracted through a small incision, using an enlarged trocar site.
DISCUSSION: Most peritoneal loose bodies are small, not exceeding 2 cm in diameter, and are asymptomatic. Only a few cases of giant peritoneal loose bodies exceeding 5 cm have been reported.
CONCLUSION: A giant peritoneal loose body is very rare and laparoscopic extraction was a useful technique. We report a case of a giant peritoneal loose body and review previously published series.

1. Introduction

A peritoneal loose body (PLB), also referred to as a "peritoneal mouse", is a rare finding, but is sometimes observed during laparotomy or autopsy by accident [1]. In most cases, PLBs are usually less than 1 cm in size [2]. Giant loose bodies measuring more than 5 cm, are very rare, and only a few cases have been reported in the literature. We report a 70-year old male with a giant PLB in the pelvic cavity, with extraction by laparoscopic surgery. We also review of the previous published reports of giant PLB. This work has been reported in line with the SCARE criteria [3].

2. Presentation of case

A 70-year-old man had been admitted to our hospital for evaluation of urinary frequency. He had no history of previous abdominal surgery or trauma. He had also no family history or drug history. No abnormality was found on physical examination including digital rectal examination. Tumor markers and other laboratory tests were within the normal range.

Computed tomography (CT) showed an oval-shaped lesion measuring 58 mm in diameter, with calcification of the luminal core (Fig. 1A, B). Magnetic resonance imaging (MRI) showed a lesion that shared a margin with the rectum, and that had signal intensity similar to that of nearby muscle tissues. The lesion showed low intensity in T1-/T2-weighted images (Fig. 2A, B). CT and MRI revealed no enhancement in the mass. Colonoscopy and barium enema showed no evidence of a tumor or inflammatory bowel disease, and only slight external compression of the rectum was observed.

Based on the preoperative imaging findings, a giant PLB was strongly suspected. However, neoplastic disease such as teratoma, leiomyoma, or stromal tumor could not be ruled out, and exploratory laparoscopy was performed.

Abbreviations: PLB, peritoneal loose body; CT, computed tomography; MRI, magnetic resonance imaging.

* Corresponding author at: Department of Gastroenterological surgery, Hiroshima Prefectural Hospital, 1–5–54, Ujina–Kanda, Minami–ku, Hiroshima, Japan.
E-mail address: ytaka0621@gmail.com (Y. Takakura).

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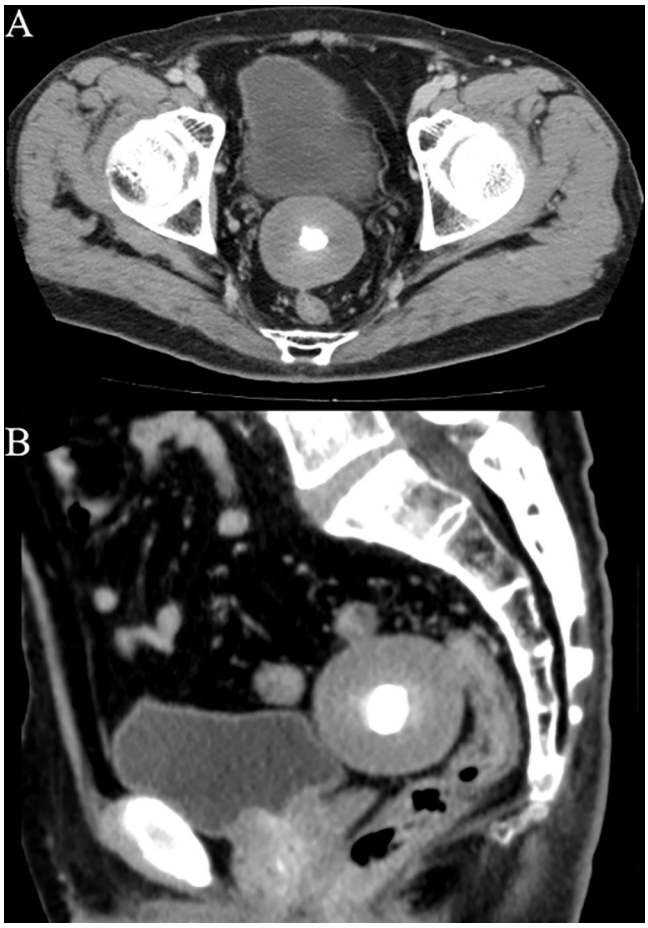

Fig. 1. Abdominal enhanced computed tomography. (A) Axial image showed a 50-mm nonenhanced mass with a central calcification. (B) Sagittal image showed the mass adjacent to the rectum in the pelvic cavity.

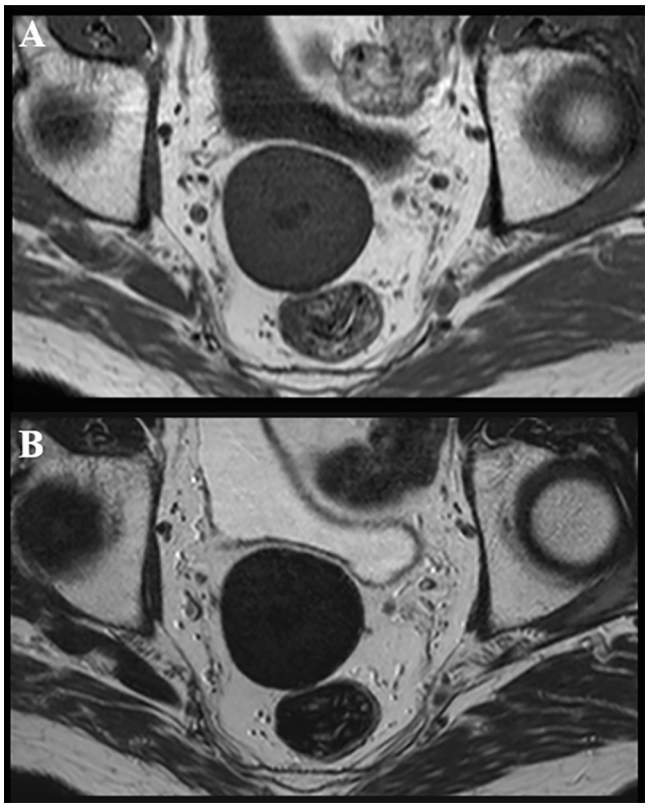

Fig. 2. Magnetic resonance imaging findings. (A), (B) Both T1- and T2-weighted images showed a low-intensity mass with the same degree of intensity as muscle tissue.

We planned reduced-port surgery, using only 1 port and 2 portless small needle forceps. Initially, a 12-mm trocar was placed at the umbilicus. Then, 2 needle forceps device, (Endo Relief; Hope Denshi, Chiba, Japan) with 2.4-mm diameter shafts, requiring no trocars, were inserted at the right upper and lower quadrants.

On exploration, a yellow-white, oval-shaped mass was discovered in the pelvic cavity, between the rectum and the urinary bladder (Fig. 3A). It was completely separated from the intraperitoneal organs, and resembled a "boiled egg." With the confirmed diagnosis of a giant PLB, the mass was placed into an endoscopic retriever bag (Fig. 3B) and taken out through the enlarged trocar site in the navel. The cut surface of the mass showed a bony-hard and smooth surface; with central calcareous deposition, the cut surface had the appearance of a typical boiled hen's egg, with a whitish exterior and a yellowish interior core (Fig. 4A).

Histologically, the mass included central fat necrosis and calcareous deposition over which fibrosis tissue formed a thin layer. There was no epithelial component in the mass (Fig. 4B).

The patient recovered well postoperatively. He was discharged from the hospital 3 days after surgery and the urinary frequency resolved immediately after removal of the mass.

3. Discussion

Giant PLBs are rare and few have been described. The pathogenesis of PLBs is not unclear; however, it is widely believed that the most common cause of a PLB is the chronic torsion of an epiploic appendix, followed by ischemia, saponification, and calcification. The epiploic Appendix finally detaches from the colon and becomes a PLB [2,4]. Over time, the size of the PLB gradually increases because of protein deposition from peritoneal serum [5], similar to "a pearl inside an oyster." Our histological findings supported this hypothesis, as the PLB had a central yellowish portion consistent with a calcified epiploic appendix, and surrounding layered white laminated fibroid material, hence giving the appearance of boiled egg. Rare cases of PLBs supported other etiologies. In women, PLBs with origin from auto-amputated adnexa, ovary, or uterine leiomyoma, have been reported [6–8].

Giant PLBs measuring more than 5 cm are very rare, and only a few cases have been reported. A literature search found 20 cases of giant PLBs (Table 1) [1,2,4–21]. Interestingly, as in our case, most giant PLBs occurred in men over age 50; three female cases were reported. These 3 cases may have had different pathogenesis from the other 17. As noted, these 3 female cases reportedly developed from auto-amputated adnexa or a uterine leiomyoma. In other words, giant PLBs resembling a boiled egg have only been described in male patients. This gender difference in the incidence of giant PLBs has not previously been reported. We speculate that the differences in the amount of visceral fat or hormones might be involved in the mechanism of PLB enlargement.

Small PLBs are usually asymptomatic; however, giant PLBs can cause acute or chronic symptoms due to extrinsic compression of the viscera [9]. Of 21 giant PLBs, 17 (80.9%) were symptomatic, with the most common symptom being abdominal pain or discomfort (7 of 21 cases, 33.3%), followed by urinary retention or frequency (6 of 21 cases, 28.5%), as in our case. There were 2 reported cases with lethal complications requiring emergency surgery, due to intestinal obstruction or perforation.

Possibly due to the rarity of giant PLBs, correct preoperative diagnosis is difficult, and was reported in only one case [12].