

Giant peritoneal loose body with its snowball effect -A Rare case report

Abstract: We present a rare case of a 55-year-old unmarried woman with a giant loose peritoneal body, who presented with an unusual constellation of symptoms such as a palpable abdominal mass, increased frequency of micturition, urinary incontinence, and bilateral pedal edema. These symptoms gradually worsened over time, significantly impacting her quality of life. Clinical evaluation and imaging studies revealed the presence of a large, freely mobile peritoneal mass.

The patient underwent an exploratory laparotomy, during which the loose peritoneal body was identified and removed. This case is notable due to the exceptional size and weight of the peritoneal body, resembling a boiled ostrich egg, weighing 1.05 kg and measuring 16 x 14.5 x 11 cm. To our knowledge, this is the world's largest peritoneal loose body reported in the literature. Histopathological examination confirmed its benign nature. Remarkably, postoperatively, the patient experienced complete resolution of her symptoms. This highlights the importance of surgical intervention in symptomatic or suspicious cases, which can result in significant symptomatic relief.

Loose peritoneal bodies are exceedingly rare, particularly when they reach such significant size, and are often asymptomatic until they impinge upon surrounding structures. This case underscores the importance of considering this entity in the differential diagnosis of patients presenting with atypical abdominal or urinary complaints. Early recognition and surgical removal are crucial in preventing further complications and ensuring symptomatic relief.

Introduction:

Peritoneal loose bodies are rare occurrences, typically discovered incidentally during imaging or surgical procedures. These bodies often remain asymptomatic, with vague symptoms like mild abdominal discomfort or intestinal obstruction(1). In most reported cases, they measure less than 1 cm in diameter (2). However, in rare instances, giant loose bodies exceeding 5 cm have been documented, leading to more pronounced clinical manifestations. The formation of these bodies is often linked to the torsion, infarction, saponification and calcification of appendices epiploicae, though the precise pathogenesis remains unclear(3).

Here, we report a case of a giant loose peritoneal body, presenting with an unusual set of symptoms that significantly worsened over time and posed a diagnostic challenge. This particular case is notable for the exceptionally large size and weight of the peritoneal body, comparable to that of an ostrich egg. Upon review of the literature, no previous case reports have documented a peritoneal body of such remarkable size and weight—this is the first time such a size and weight has been mentioned(2–6). Additionally, this case highlights the dramatic symptomatic relief achieved through surgical intervention.

Case report

A 55-year-old, unmarried female, with no history of previous surgery presented with complaints of frequent urination, urinary incontinence and bilateral pedal edema for 3 months. On examination

there was a large palpable freely mobile intraabdominal mass seen in umbilical region. There was no h/o hematuria, burning micturition, pain abdomen, obstipation, malena or weight loss. On detailed history, symptoms seemed to vary with posture of patient. Frequent micturition, urinary incontinence and bilateral pedal edema were experienced by the patient when she stayed in the standing position for some time. On Contrast Enhanced CT scan of the whole abdomen – there was evidence of large 16 x 15 x 12 cm well encapsulated thick walled lesion in mid abdomen with central as well as peripheral calcification and patchy fat density foci within the lesion (**Fig. 1a,1b**). The lesion seemed to be lying in relation to the omentum with no obvious signs of infiltration/ abutment to any adjoining bowel or viscera. The radiological differentials included any benign mass arising from the omentum or a large peritoneal loose body.

Patient was planned for elective laparotomy. On exploration with mid-midline incision there was a large peritoneal loose body with no attachments. The peritoneal loose body was removed. Rest of the abdominal contents were normal. The giant loose body was shiny white in colour with island of fat in it, resembling like a boiled ostrich egg with yolk in it (**Fig. 2**). It was firm in consistency, well encapsulated, measuring 16 x 14.5 x 11 cm and weighed around 1.05 kg. Cut surface was grayish brown with peripheral firm to hard consistency and central soft necrotic appearance (**Fig. 3**). On histopathological examination, the mass revealed central infarcted and necrotic paucicellular adipose tissue with foci of calcification surrounded by thick fibrotic tissue (**Fig. 4,5**). Inflammation was minimal. No cellular area seen. No parasite seen. Histopathology confirmed its benign nature. Postoperatively, the patient experienced complete resolution of her symptoms, emphasizing the potential for significant improvement in quality of life through timely surgical management. Patient was discharged on POD2 with oral diet.

Discussion

Peritoneal loose bodies are rare entities. When the size exceeds 5 cm, these are referred to as 'Giant' bodies(2). Only a few case reports are available in the literature describing such giant loose peritoneal bodies. The largest described in the literature measured 10 cm X 9.5 cm X 7.5 cm and weighed 220gram (7,8). Giant loose peritoneal bodies can cause a range of symptoms, as reported in the literature, including abdominal discomfort, pain, intermittent constipation, small bowel obstruction, urinary retention, frequent urination, and infections(5,9). Our case presented with symptoms which could be explained due to sinking of the mass into the pelvis and thus causing pressure symptoms over urinary bladder and bilateral pedal edema due to mass effect over the veins draining the limbs. The exact pathogenesis of its formation is unknown. As widely hypothesized by many authors, peritoneal loose body formation from epiploic appendices involves the sequential process of torsion, infarction, saponification and calcification of epiploic appendices(3). This theory of formation appears to be convincing in nature, co-relating with CECT and histopathological features.

Discussing about Epiploic Appendices(EA), these are fat-filled serosal outpouchings of the large intestine ranging from 5 mm to 5 cm in size. Distributed along the external surface of the large intestine, from the cecum to the rectosigmoid, in numbers ranging from 50 to 100 (10). They have independent blood supply, by one or two arterioles and a single venule(11). These Epiploic Appendices(EA) are prone for spontaneous torsion, causing obstruction of their blood supply within the tissue and then ischemia, this inflammatory condition is called appendagitis(11). Sometimes, this

inflammatory condition is severe leading to necrosis, which in-turn undergoes gradual calcification and separation leading to the formation of peritoneal loose body (**Fig. 6**). This, freshly separated calcified loose body which is size of original epiploic appendices forms the core of large peritoneal loose body.

In literature the description of peritoneal loose body is boiled egg appearance. The yellow of the egg is formed by the core i.e the fat filled, calcified Epiploic Appendices. Surrounding the core, is the white layer that is formed by proteinaceous material that gets deposited gradually around the core forming the laminated outer thick wall(12). This proteinaceous material is secreted by body in peritoneal cavity. Histopathological examination of any large loose peritoneal body consists of central infarcted adipose tissue with peripheral fat necrosis and calcification surrounded by thick inflamed fibrotic tissue. These findings correlate with CT findings of peritoneal loose body, described as well-encapsulated thick walled lesion with central calcification. The rate of growth is uncertain but appears to be slow. Growth of peritoneal loose body is determined by the rate of proteinaceous material deposition. In one case report, a peritoneal loose body increased in size from 7.3 cm to 9.5 cm during observation period of five years(13). Sometimes, these loose bodies loses its free mobility and gets attached to surrounding structures/ omentum which is called Parasitisation(9).

Occasionally these peritoneal bodies originates from auto-amputated adnexa, uterine leiomyoma, as mentioned in the literature(14,15). At times, the imaging findings of loose body, its location/ origin/ mobility and nature is not characteristic and overlaps with the malignancy. Small Loose bodies (<5cm) which are incidental with characteristic findings on imaging can be observed if asymptomatic. Loose bodies which are Symptomatic/ Giant/ Suspicious in nature necessitates surgical removal either by laparoscopic/ open depending on its size.

Conclusion:

This case, reporting the world's largest peritoneal loose body documented in the literature highlights the rarity of such giant loose peritoneal bodies, particularly when they reach such significant sizes. Surgical intervention not only confirmed the diagnosis but also provided complete symptomatic relief, underscoring the importance of early recognition and management in such cases. Given the rarity of giant loose peritoneal bodies and their potential to mimic other abdominal pathologies, they should be considered in the differential diagnosis of patients presenting with atypical abdominal or urinary symptoms.

Consent

As per international standards or university standards, patient's written consent has been collected and preserved by the authors.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the authors.

Disclaimer (Artificial intelligence)

I hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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UNDER PEER REVIEW

Figures:

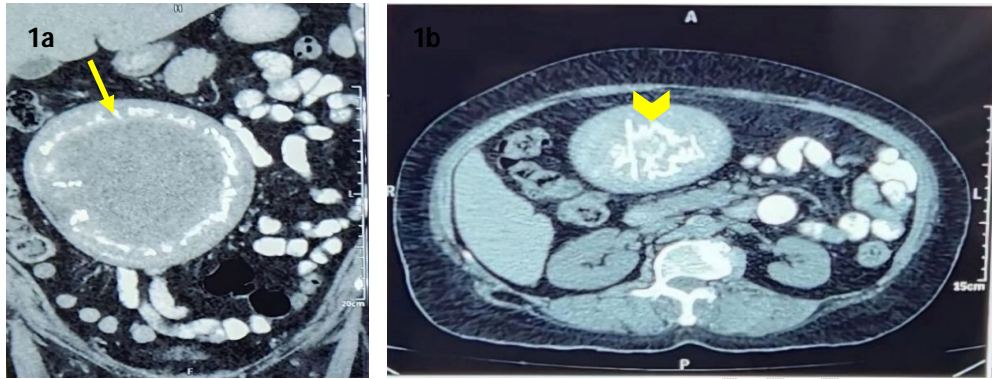


FIG. (1a,1b) CECT Whole Abdomen on CORONAL and AXIAL section- shows large 16 x 15 x 12 cm well encapsulated thick walled lesion in mid abdomen with central (arrowhead) as well as peripheral calcification (arrow) and patchy fat density foci within the lesion.



FIG. 2 Giant firm egg shaped mass with glistening white surface and an island of fat (site of attachment).

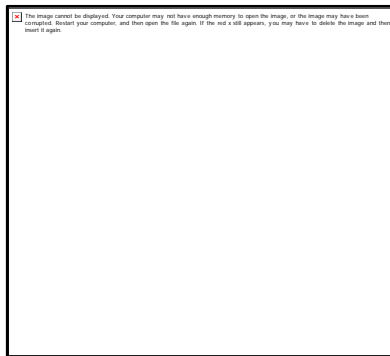


FIG. 3 Firm to hard consistency mass with peripheral white and central soft necrotic appearance.

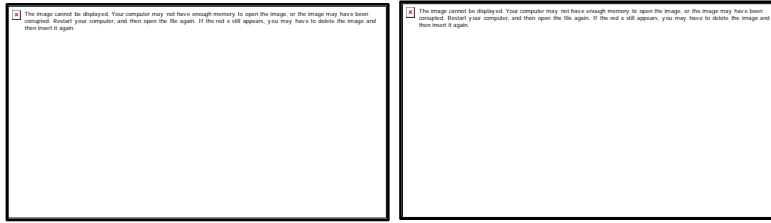


FIG. 4,5 Histopathological examination reveals central infarcted adipose tissue with fat necrosis and calcification, surrounded by fibrotic tissue (x400)

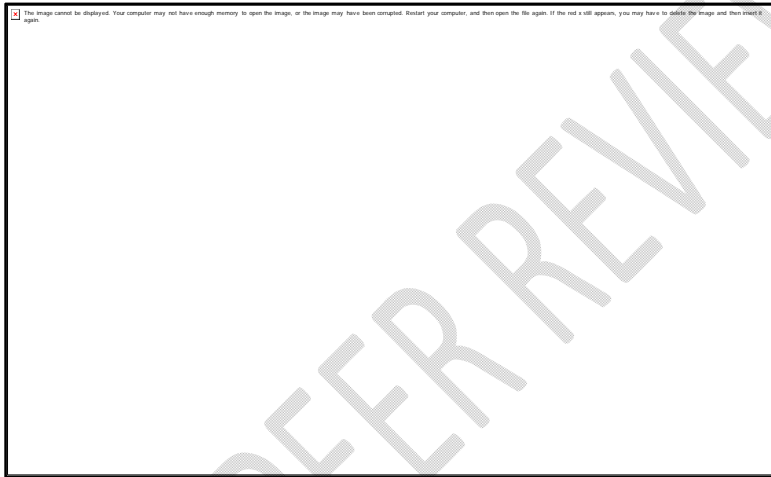


Fig. 6: Pathogenesis of Peritoneal loose body formation.