EUROPEAN ACADEMIC RESEARCH
Vol. XIV, Issue 2/ May 2026

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Surgical Case Report: Laparoscopic Cholecystectomy for a Giant Gallbladder Mucocele (16 cm) Presenting as an Incidental Finding

Dr. AWAB MOHIELDEEN[1]
Dr. MOHAMED SOUD
Dr ALI TAHIR
Dr. BABEKIR ELMOSTAFA[2]
Department of General Surgery, Police Hospital, Wad Madani
Sudan University of Elimam Elmahdi, College of Medicine and Surgery, Sudan

Abstract

Introduction: *Giant gallbladder mucocele is a rare entity that can present significant technical challenges during laparoscopic cholecystectomy. While cholecystectomy is the standard of care, gallbladders of unusually large size increase the risk of bile duct injury due to distorted anatomy.*

Case Presentation: *We report the case of a 45-year-old male with a three-year history of recurrent right hypochondrial pain radiating to the right shoulder, initially misdiagnosed as gastritis. Ultrasound revealed cholelithiasis. Laparoscopic cholecystectomy was planned. Intraoperatively, the gallbladder was found to be massively distended, measuring 16 cm with a large impacted stone at the neck. Controlled needle decompression aspirating 70 ml of mucoid fluid facilitated retraction. Dissection was complicated by limited visualization of Calot's triangle and the presence of a mesenteric draining vein, which was carefully identified and clipped. The gallbladder was successfully mobilized and removed laparoscopically without complications.*

Discussion: *Giant gallbladders are extremely rare, with only a few cases documented in the literature. The laparoscopic approach, though technically demanding, can be safely performed with appropriate modifications such as decompression, alternative retraction, and meticulous dissection.*

Conclusion: *This case highlights that giant gallbladder mucocele, though rare, is not a contraindication for laparoscopic surgery when performed with careful planning and adherence to safe surgical principles.*

Keywords: Giant gallbladder; Gallbladder mucocele; Laparoscopic cholecystectomy; Case report

INTRODUCTION:

Laparoscopic cholecystectomy is widely considered the gold standard for treating gallstone disease, and it has largely replaced the open surgical technique. (1) it is a minimally invasive approach, which include reduced postoperative pain, a shorter hospital stay, and a faster recovery time. (2)

The execution of laparoscopic cholecystectomy is subject to various challenges stemming from congenital anomalies of the gallbladder, bile ducts, and their vascular

[1] Corresponding author: Department of General Surgery Police Hospital, Wad Madani, Sudan. Email: awababdallah180@gmail.com Phone: +249-999522521
[2] Corresponding author: Emergency department, RPM Holding /ADNOC off sure project. Email: babekirelmostafa@outlook.com Phone: 00971588232500

supply. Preoperative recognition of these anatomical variations is therefore critical for the safe and successful performance of the surgical procedure. (3)

Gallbladder mucocele, also referred to as gallbladder hydrops, is a pathological process characterized by the distension of the gallbladder due to an accumulation of sterile, clear, or mucoid fluid (4) (5). The primary etiological factor is a prolonged, complete obstruction of the cystic duct, most commonly caused by an impacted gallstone (6). This blockage leads to the cessation of bile flow from the gallbladder, while the gallbladder epithelium continues to secrete mucin and electrolytes into the lumen. Simultaneously, the bile salts and pigments that were originally present are reabsorbed through the gallbladder wall, resulting in the characteristic clear, non-inflammatory fluid that defines the condition (4) (5).

Clinically, gallbladder mucocele may be asymptomatic and discovered incidentally during radiological imaging or surgical procedures. However, in symptomatic cases, it can present with non-specific complaints such as epigastric pain and dyspepsia (5) (6). The definitive management for this condition is surgical, with a cholecystectomy being the standard of care to prevent potential complications such as gallbladder wall ischemia, necrosis, or rupture (4) (6)

The average length of a normal adult gallbladder ranges from 7 to 10 cm, with a typical transverse diameter of 3 to 4 cm.(7) (8). A gallbladder with a measurement of 16 cm is considered a statistically rare anomaly, significantly exceeding the established range for a healthy adult (8)(9). This dimension places it well outside the standard physiological parameters observed in the general population (10) . Unusually such large gallbladders present significant technical challenges due to anatomical distortion and poor visualization of critical structures, increasing the risk of bile duct injury which carries higher morbidity and a longer recovery time for the patient (11) .

This report documents the successful treatment of a highly unusual case of a giant gallbladder. We seek to share the surgical strategies employed, providing other surgeons with the guidance required to safely handle similar complex situations and avoid major complications .

This report has been written in line with the SCARE criteria as described by Agha et al. for the SCARE Group. (Agha et al., *International Journal of Surgery*, 2016) (12)

CASE PRESENTATION:

A 45-year-old male presented to the surgical department with a three-year history of recurring right hypochondrial pain that radiated to the right shoulder and was associated with vomiting. The patient reported that his symptoms had previously been attributed to gastritis. He denied any associated symptoms of fever, chills, or jaundice. The patient's past medical history was unremarkable, with no reported comorbidities such as diabetes or hypertension. He had no previous history of abdominal surgery .

On physical examination, the patient was vitally stable. His abdomen was soft, with no palpable masses. However, it was tender to palpation in the epigastric and right upper quadrant, consistent with his presenting symptoms.

Ultrasongropic findings of small stones and sludge (cholelithiasis) .

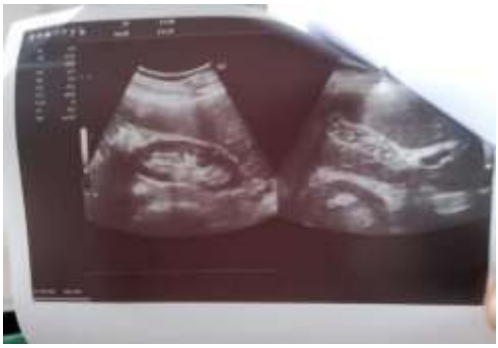

Figure 1. Preoperative abdominal ultrasonography showing a markedly distended gallbladder with multiple small calculi and biliary sludge, consistent with gallbladder mucocele.

Laparoscopic cholecystectomy was planned. Pneumoperitoneum was established, followed by the placement of four laparoscopic ports. Intraoperatively, the following findings were noted:

1- The gallbladder appeared markedly distended on inspection
2- There was a large impacted stone at the neck of the gallbladder .
3- Controlled needle decompression of the gallbladder was performed using a Veress needle, aspirating approximately 70 ml of mucoid fluid to facilitate dissection.
4- The fundus was retracted and difficult to grasp without the decompression .
5- Hartman pouch was grasped and dissection of the cystic duct and artery after clipping.
6- It was difficult to reach calot's triangle therefore extreme head up at the right position was done.
7- During mobilization of the gallbladder from the liver bed, an accessory draining mesenteric vein was encountered.
8- The vein was traced to the base of the gallbladder and clipped .
9- The gallbladder was dissected from the liver bed and it was difficult dissecting the fundus from the liver bed so the gallbladder was flipped onto the liver surface, and dissection was continued in a downward direction .
10- The gallbladder was dissected and extracted successively without any complications.
11- The maximum linear dimension of the resected gallbladder was measured at 16 cm using an electronic ruler with centimeter markings, a readily available device in the operating theater.

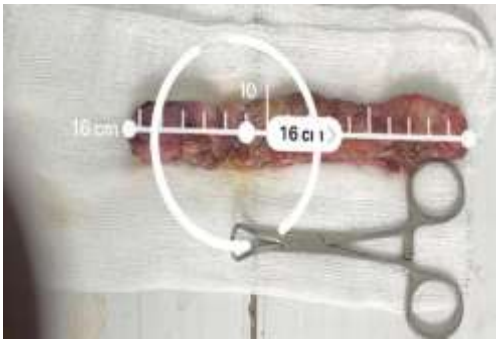

Figure 2. Resected gallbladder specimen following laparoscopic cholecystectomy, measuring 16 cm in maximal length.

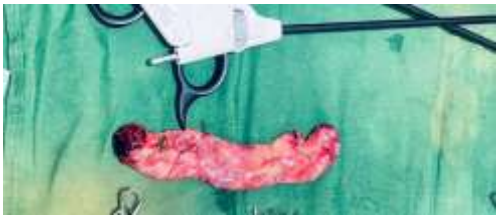

Figure 3. Intraoperative photograph showing the excised giant gallbladder specimen placed on the surgical field following laparoscopic removal.

The patient underwent an uneventful laparoscopic cholecystectomy. Oral intake was resumed the same evening, and he was discharged the following day. Patient followed for 14 days with no complains.

DISCUSSION:

This case report highlights the successful laparoscopic management of an exceptionally rare giant gallbladder mucocele measuring 16 cm, a size that falls far outside the normal anatomical range.

The finding of a 16 cm gallbladder mucocele in our patient represents an exceptionally rare anomaly. While the normal adult gallbladder measures between 7 and 10 cm in length, cases of significantly enlarged gallbladders, often termed "giant," are sparsely documented in the literature. (7) (8) (13)

In a more extreme case, a gallbladder measuring 30 cm was successfully removed laparoscopically, though the authors noted the procedure required specialized techniques, such as a fundus-first approach. (3) Conversely, some reports have documented conversions to open cholecystectomy for gallbladders measuring over 14 cm due to technical challenges such as anatomical distortion and a high risk of bile duct injury. (11) (13)

The successful laparoscopic management of our case, without the need for conversion, reinforces the growing body of evidence that, in experienced hands, even a massive gallbladder is not an absolute contraindication for a minimally invasive approach.

TECHNICAL IMPLICATIONS

The management of this giant gallbladder mucocele presented several unique intraoperative challenges that necessitated a deviation from standard laparoscopic cholecystectomy techniques. The sheer volume of the distended gallbladder significantly limited the working space within the abdominal cavity, making it exceptionally difficult to achieve a stable grasp on the fundus and adequately retract the gallbladder for a clear view. This distorted anatomy obscured the common bile duct and the critical Calot's triangle, creating a heightened risk of biliary or vascular injury.

To safely proceed, a controlled decompression of the gallbladder was performed . This maneuver was crucial as it reduced the organ's size, allowing for improved maneuverability and a clearer operative field. Furthermore, the immense size of the gallbladder made dissection from the liver bed challenging. Finally, the presence of an anomalous mesentery draining vein, while a potential complication, was carefully managed.

CONCLUSION AND TAKE-HOME MESSAGE

This case demonstrates that while giant gallbladder mucoceles are rare and pose significant technical hurdles, a safe and successful laparoscopic approach is achievable. The key surgical "pearls" learned from this case are: (1) controlled decompression of an over-distended gallbladder to improve exposure and grasp, (2) the willingness to deviate from a standard approach and employ alternative dissection techniques, and (3) meticulous identification and management of all anatomical structures, including anomalous vessels, to maintain the critical view of safety. This case serves as a testament to the fact that with careful planning and surgical adaptability, even a massive gallbladder is not an absolute contraindication to a minimally invasive procedure.

PATIENT PERSPECTIVE

The patient expressed high satisfaction with the outcome of the laparoscopic cholecystectomy. He reported a complete resolution of his symptoms and was able to return to work without the need for the medications he had been taking for three years prior to the surgery.

Informed Consent

Written informed consent was obtained from the patient for the publication of this case report.

Conflict of Interest

The authors declare no conflicts of interest.

Acknowledgements

The authors would like to thank the surgical staff and nursing team at the Police Hospital in Wad Madani for their invaluable assistance and support during the management of this case.

Funding

This case report received no specific grant from any funding agency .

Figure Legends

Figure 1. Preoperative abdominal ultrasonography showing a markedly distended gallbladder with multiple small calculi and biliary sludge, consistent with gallbladder mucocele.

Figure 2. Resected gallbladder specimen following laparoscopic cholecystectomy, measuring 16 cm in maximal length.

Figure 3. Intraoperative photograph showing the excised giant gallbladder specimen placed on the surgical field following laparoscopic removal.

REFERENCES:

1. Cholecystectomy (gallbladder removal) - Mayo Clinic [Internet]. [cited 2025 Aug 27]. Available from: https://www.mayoclinic.org/tests-procedures/cholecystectomy/about/pac- 20384818
2. Cleveland Clinic [Internet]. [cited 2025 Aug 27]. All About Gallbladder Removal (Cholecystectomy). Available from: https://my.clevelandclinic.org/health/procedures/21614-gallbladder-removal
3. Yadav R, Kankaria J. Longest gallbladder: A case report. Int J Surg Case Rep. 2017 Feb 28;33:127–9.
4. Jones MW, Lewis TG, Deppen JG. Gallbladder Mucocele. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 [cited 2025 Sep 6]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK513282/
5. Thiravialingam A, Sriganeshan K, Bahmad HF, Polit F, Ahmed A, Joshi D, et al. Incidental gallbladder mucocele mimicking acute cholecystitis: A case report and review of literature. World Journal of Experimental Medicine [Internet]. 2025 Sep 20 [cited 2025 Sep 6];15(3). Available from: https://www.wjgnet.com/2220-315X/full/v15/i3/107248.htm
6. Gallbladder Mucocele [Internet]. American College of Veterinary Surgeons. [cited 2025 Sep 6]. Available from: https://www.acvs.org/small-animal/gallbladder-mucocele/
7. Gaillard F. Radiopaedia. [cited 2025 Sep 6]. Gallbladder | Radiology Reference Article | Radiopaedia.org. Available from: https://radiopaedia.org/articles/gallbladder
8. Jones MW, Hannoodee S, Young M. Anatomy, Abdomen and Pelvis: Gallbladder. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 [cited 2025 Sep 6]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK459288/
9. Gallstones Size Chart | Risk And Treatment [Internet]. [cited 2025 Sep 6]. Available from: https://www.pristyncare.com/treatment/gallstone/size-chart/
10. Jahantab MB, Salehi V, Mehrabi S, Abedini L, Yavari Barhaghtalab MJ. Cholecystomegaly: A Case Report and Review of the Literature. Case Rep Gastrointest Med. 2020 Aug 20;2020:8825167.
11. Sharabash M, Ahmed M, Lolah M, Mohammed MS. Difficulties during laparoscopic cholecystectomy. Menoufia Med J. 2014;27(2):469.
12. Agha RA, Fowler AJ, Saeta A, Barai I, Rajmohan S, Orgill DP, et al. The SCARE Statement: Consensus-based surgical case report guidelines. Int J Surg. 2016 Oct;34:180–6.
13. Kuznetsov AV, Borodach AV, Fedin EN, Khromova AD. Giant gallbladder: A case report and review of literature. Int J Surg Case Rep. 2014 Aug 12;5(10):673–6.