

Giant Gallstone Disease Managed by Laparoscopic Cholecystectomy - A Rare Case Report from India

Dr. Monika Joshi¹, Dr. Amey Sonawane², Dr. Nitish Jhawar³

¹DNB General Surgery resident, Apollo hospitals, Navi Mumbai

²Senior Consultant, Dept of Medical Gastroenterology, Apollo hospitals, Navi Mumbai

³Senior Consultant, Dept of General Surgery, Apollo Hospitals, Navi Mumbai

Abstract: Giant gallstone disease (>5 cm) is rare and very few cases have been described in published scientific literature. Here, we present a case of a 50-year-old male who presented to surgical OPD with history of post-prandial pain in the abdomen and dyspepsia for 1 year. Physical examination revealed mild tenderness on palpation in the right hypochondriac region. Contrast-enhanced computed tomography and ultrasound of abdomen revealed large gallstone of 5 cm size. Patient underwent laparoscopic cholecystectomy, which led to extraction of a solitary gallstone measuring 8 cm x 7 cm (about 100 grams). Post-operative course was uneventful, and patient was discharged on third post-operative day with the drain, which was removed on 5th postoperative day. The histopathological report revealed acute on chronic cholecystitis and no evidence of malignancy. This is a rare case from India wherein a patient with an unusually large gallstone underwent a successful laparoscopic cholecystectomy surgery.

Keywords: Giant Gallstone, Laparoscopic cholecystectomy, Gall bladder, Surgery

1. Introduction

Gallstones is a chronic recurring hepatobiliary condition caused by the poor metabolism of cholesterol, bilirubin, and bile acids. Gallstones are thought to be present in 4% of people in India and 10% of individuals in Western nations.¹ Over 80% of gallstones are asymptomatic, and just 1% to 2% of them become symptomatic annually with rare instances of complications. In those who have no biliary symptoms, gallstones are commonly unintentionally found during ultrasonography, computed tomography scans, abdominal radiography, or laparotomy. About 3% of asymptomatic people develop symptoms each year. Nearly two-thirds of people with asymptomatic gallstones continue to be symptom-free after 20 years.²

Gallstones that measure more than 5 cm in diameter are referred to as "giant gallstones." Giant gallstones are uncommon and just a few cases that have been documented in the literature.³ While certain authors favour an open cholecystectomy for large gallstones,⁴ others support a laparoscopic procedure.⁵ Literature search revealed a lack of published data on giant gallstone disease from Indian hospitals. Present case report gives details of a giant gallstone case successfully managed by laparoscopic cholecystectomy at a tertiary care Indian hospital.

2. Case Report

A 50-year-old male presented to our surgical OPD with history of post-prandial pain in the abdomen and dyspepsia for 1 year. He was a known case of hypertension and Gilberts syndrome. Patient reported that 10 days back, he had been to an outpatient clinic with complaints of mild pain and nausea. Latest liver Function Tests (LFTs) were within normal range, including the complete Blood Count (CBC) and leucocyte count. This patient weighed 90 kg and had a height of 180 cm. His body Mass Index (BMI) was calculated to be 28 kg/m²,

placing him in "overweight" category as per World Health Organization (WHO) BMI classification for adults. The key physical examination finding was mild tenderness on palpation in the right hypochondriac region.

An ultrasound for abdomen was performed, which revealed large gallstone of 5 cm size showing diffuse posterior wall shadowing (figure 1). The gallbladder gave a "wall echo-shadow" sign. No pericholecystic fluid collection was noted, and neither was any intra or extra hepatic biliary duct dilatation found. The pancreas was normal in size and texture.

Contrast-enhanced computed tomography (CECT) for abdomen revealed a 5 cm gallstone occupying the whole body of the gallbladder, with thickened organ wall. No pericholecystic fat stranding or fluid was noted. Patient's carcinoembryonic antigen (CEA) and CA19-9 were noted to be within the normal limits. The patient was further counselled about laparoscopic cholecystectomy as the management option and was then planned.

After the necessary pre-operative work, patient was posted for surgery. He was placed in supine position, and pneumoperitoneum was created using a Veress needle at supraumbilical site. A 10-mm camera port was placed at supraumbilical area. Ports for instrumentation were placed at subxiphoid (10-mm), right hypochondrium (5-mm), and right lumbar (5-mm). An extra port was placed for duodenal retraction at left hypochondrium (5-mm). Gallbladder was visualised and fundus was retracted (figure 2). Adhesions between omentum and gallbladder (body and fundus) were noted, which were released with the help of electrocautery. The gallbladder was nearly filled with the gallstone, making the wall tense and difficult to grasp using non-traumatic forceps. Critical view of safety was obtained. Cystic duct and cystic artery were clipped and cut. Gallbladder was dissected from cystic plate and extracted out in a bag. The gallbladder specimen measured 12 cm x 6.6 cm x 5.3 cm (figure 3) and on the cut section, a solitary gallstone measuring 8 cm x 7 cm

(about 100 grams) was recovered (figure 4). Supraumbilical port site incision was increased for gallbladder extraction along with the stone. Incision was closed with a loop PDS suture. Haemostasis was achieved and pneumoperitoneum deflated.

Post - operative course was uneventful. The patient was discharged on third post - operative day with the drain, which was removed on 5th postoperative day. The histopathological report revealed features of acute on chronic cholecystitis and no evidence of malignancy.

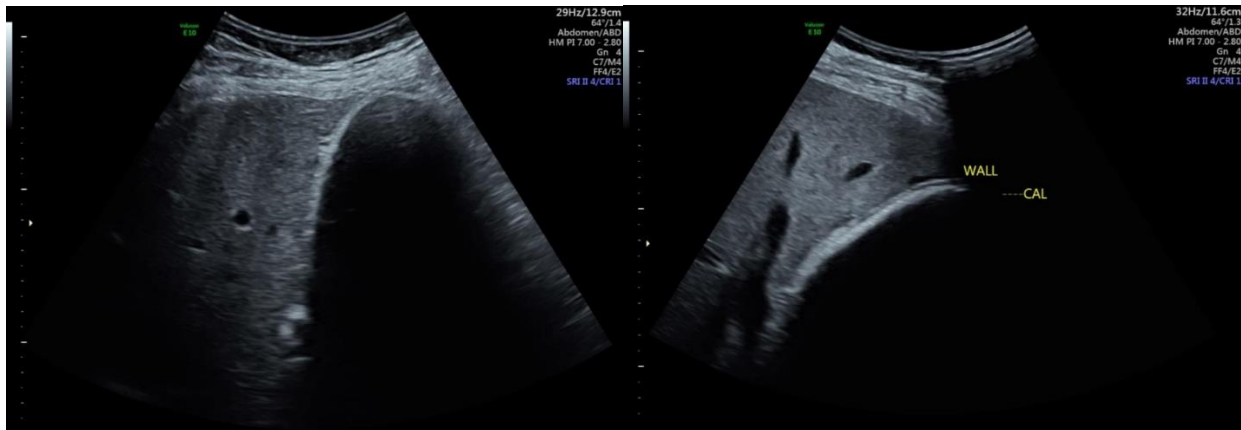


Figure 1: Gallstone noted on Ultrasonography.

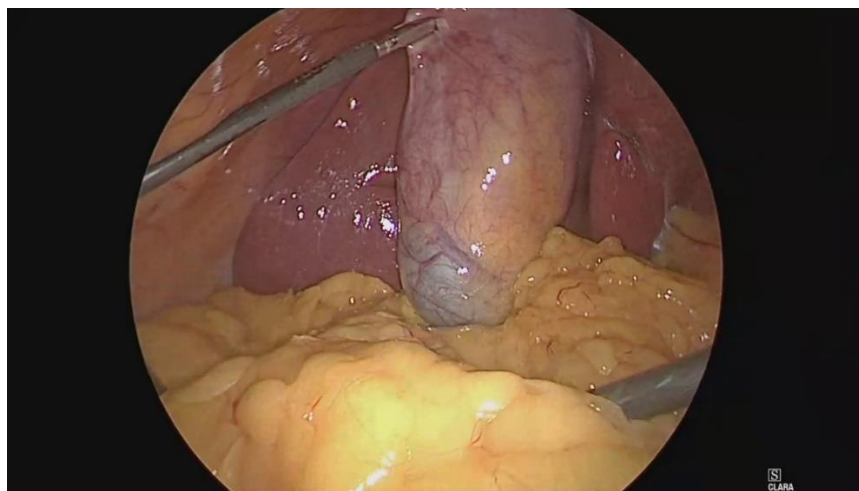


Figure 2: Gall bladder of patient visualised via laparoscope.



Figure 3: Extraction of specimen from the supraumbilical port.



Figure 4: Size of the specimen - gallbladder measuring 10 cm x 4 cm; gallstone measuring 8 cm x 7 cm and weighing 100 gm.

3. Discussion

Based on demographic data published, women are more likely to develop gallstones than males, particularly in the reproductive years. This is possibly because oestrogen levels rise during this time, which may lead to an increase in bile cholesterol and a decrease in gallbladder activity.⁶ In our case, the presentation of male patient is atypical, which adds to the novelty factor of the case. When it comes to age, the likelihood of gallstones rises with age, being 4–10 times more common after the age of 40 years.⁷ 60%–80% of gallstones are asymptomatic,⁸ and are usually detected during regular abdominal ultrasonography. Depending on where they are, symptomatic gallstones may manifest as biliary discomfort, cholecystitis, or biliary blockage. The most common approach for identifying cholelithiasis and cholecystitis is USG (90–95% specificity and sensitivity), which may also detect and correctly measure stones as tiny as 2 mm and reveal thickening of the gallbladder wall.⁹ For our patient, abdominal ultrasound revealed the size of the enormous gallstone, with measures that were quite accurate to those discovered following surgery. Such a thorough evaluation of a large gallstone before surgery informs the surgeon of any potential complications and the potential for conversion to open cholecystectomy.⁵

When compared to individuals without gallstones, those with gallstones larger than 3 cm have been noted to have an extremely high relative risk for developing gallbladder cancer.¹⁰ Additionally, although the exact frequency of this development is unknown, gallstones larger than 3 cm pose a risk of developing biliary enteric fistula and gallstone ileus, which may necessitate surgical intervention for intestinal blockage.¹¹ The optimum first strategy is laparoscopic cholecystectomy conducted by a skilled surgeon, unless

technical challenges and an inability to expose the anatomy justifies switching to open cholecystectomy.¹² A Cochrane review of 38 randomized controlled studies found that laparoscopic cholecystectomy was more efficient than open cholecystectomy in terms of complications, hospital stay, and recovery time.¹³ Without the need for conversion, there were no intra- or post-operative problems, and recovery was smooth when we employed the laparoscopic method on our patient.

A higher likelihood of converting from laparoscopic to open cholecystectomy is linked to giant gallstones as well. Gallbladder wall thickening and inflammation would be more severe in the case of giant gallstones. Additionally, the large gallstone would make it impossible for the laparoscopic tools to hold the gallbladder and reveal the crucial Calot's triangle anatomy.¹⁴ Besides the surgeon's expertise, other factors like inflammatory nature of gallbladder, emergency surgery, comorbidities, advancing age, and male patients are all strong predictors of conversion to open cholecystectomy.¹⁵ Although open cholecystectomy is a safe alternative if the Calot's triangle is difficult to expose due to adhesion or difficulty to grip the gallbladder, laparoscopic cholecystectomy may still be tried.^{16, 17} This is a rare case from India wherein a patient with an unusually large gallstone underwent a successful laparoscopic cholecystectomy surgery.

4. Conclusion

Giant gallstone of the size >5 cm in diameter is rare. Clinical evidence supports laparoscopic cholecystectomy as the preferred therapeutic method in such cases. If the anatomy cannot be exposed or if there are any technical issues during the operation, the option of converting to open surgery should be taken into consideration.

References

- [1] API Textbook of Medicine.2019. Accessed on June 6, 2023. Available on: <https://www.allthingsmedicine.com/api-textbook-of-medicine-9th-edition-pdf/>.
- [2] Patel AM, Yeola M, Mahakalkar C. Demographic and Risk Factor Profile in Patients of Gallstone Disease in Central India. *Cureus* 2022; 14 (5): e24993.
- [3] Alishi Y, Howaish F, Alhamdan F. Prevalence and risk factors for gallstones among population in Riyadh City, KSA 2017. *Egypt J Hosp Med*.2017; 69: 2384 - 8.
- [4] Dalal S, Pankaj, Bhorival S, Kumar R, Sujata. Giant Gallstone: A Rare Indication of Open Cholecystectomy. *JCR* 2014; 4: 17 - 9.
- [5] Xu X, Hong T, Zheng C. Giant gallstone performed by emergency laparoscopic cholecystectomy. *Int J Surg Case Rep*.2013; 4 (12): 1163–4.
- [6] Al Zoubi M, El Ansari W, Al Moudaris AA, Abdelaal A. Largest case series of giant gallstones ever reported, and review of the literature. *Int J Surg Case Rep*.2020; 72: 454 - 59.
- [7] Shaffer EA. Epidemiology and risk factors for gallstone disease: has the paradigm changed in the 21st century? *Curr Gastroenterol Rep*.2005; 7 (2): 132 - 40.
- [8] Festi D, Sottili S, Colecchia A, Attili A, Mazzella G, Roda E, Romano F. Clinical manifestations of gallstone disease: evidence from the multicenter Italian study on cholelithiasis (MICOL). *Hepatology*.1999; 30 (4): 839 - 46.
- [9] Trotman BW, Petrella EJ, Soloway RD, Sanchez HM, Morris TA 3rd, Miller WT. Evaluation of radiographic lucency or opaqueness of gallstones as a means of identifying cholesterol or pigment stones. Correlation of lucency or opaqueness with calcium and mineral. *Gastroenterology*.1975; 68 (6): 1563 - 6.
- [10] Andrea C, Enzo A. Cholesterol Gallstones Larger Than 3cm Appear to Be Associated With Gallbladder Cancer: Identification of a High Risk Group of Patients That Could Benefit From Preventive Cholecystectomy. *Ann Surg*.2016; 263 (3): e56.
- [11] Freeman MH, Mullen MG, Friel CM. The Progression of Cholelithiasis to Gallstone Ileus: Do Large Gallstones Warrant Surgery? *J Gastrointest Surg*.2016; 20 (6): 1278 - 80.
- [12] Igwe PO, Diri ON. Laparoscopic cholecystectomy for giant gall stone: Report of two cases. *Int J Surg Case Rep*.2020; 67: 207 - 10.
- [13] Keus F, de Jong JA, Gooszen HG, van Laarhoven CJ. Laparoscopic versus open cholecystectomy for patients with symptomatic cholecystolithiasis. *Cochrane Database Syst Rev*.2006; (4): CD006231.
- [14] Gholipour C, Fakhree MB, Shalchi RA, Abbasi M. Prediction of conversion of laparoscopic cholecystectomy to open surgery with artificial neural networks. *BMC Surg*.2009; 9: 13.
- [15] Kama NA, Doganay M, Dolapci M, Reis E, Atli M, Kologlu M. Risk factors resulting in conversion of laparoscopic cholecystectomy to open surgery. *Surg Endosc*.2001; 15 (9): 965 - 8.
- [16] Banigo A. Huge gallstone complicating laparoscopic cholecystectomy. *BMJ Case Rep*.2013; 2013: bcr2012007012.
- [17] Ekici Y, Yağmurduur MC, Moray G, Haberal M. A giant gallstone. *Turk J Gastroenterol*.2007; 18 (2): 133 - 4.