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Case Report

A comprehensive case study of cholecystectomy in a patient with a gallbladder laden with 442 stones

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ABSTRACT

Cholelithiasis (gallstones), crystalline formations in the gallbladder, presents a common yet intricate medical concern. These stones can vary in size and composition, ranging from cholesterol to pigment-based stones. Treatment often involves surgical intervention, with laparoscopic procedures being a minimally invasive and effective option. However, complications arise when multiple stones are present, leading to heightened inflammation and recurrent symptoms. In this study, we present a case of a 34-year-old, male who came with complaints of abdominal pain and bloating, intermittent nausea, vomiting, and jaundice for more than 5 days. He was diagnosed with multiple calculi in the gallbladder (acute cholecystitis with cholelithiasis) based on ultrasonography. Since the patient had jaundice, he was suggested to get a magnetic resonance cholangiopancreatography (MRCP) to rule out any pathoanatomy. He received treatment by laparoscopic cholecystectomy and showed improvement within 5 days of surgery.

Keywords: Cholelithiasis, Laparoscopic cholecystectomy, MRCP

INTRODUCTION

Cholelithiasis, also known as gallstones, are solid concretions formed within the gallbladder or bile duct, resulting from increased cholesterol or bilirubin, constituents found in excessive amounts of bile. Gallstones are a prevalent and clinically significant condition affecting millions of individuals worldwide.[1,] The prevalence of gallstones ranges between 5.9-21.9% in Asian countries.[2] however, in India, it lies between 2-29%.[3] The risk of gallstone-related complications is intricately tied to factors such as the number and size of stones. Larger and multiple stones have a higher tendency for gallstone symptoms.[4] Gallstones may exhibit a spectrum of sizes, influencing both the clinical significance as well as the choice of treatment.[1] Small gallstones, similar to sand grains, may remain asymptomatic and could be easily treated with to non-invasive measures such as dietary modifications and medications.[5] Medium-sized stones, ranging from 5 mm to 2.9 cm, might necessitate interventions like endoscopic procedures or laparoscopic cholecystectomy if symptoms arise.[6] Larger stones, more than 3 cm, often require surgical removal due to an increased likelihood of causing symptoms, complications, or bile duct obstruction.[7]

Laparoscopic cholecystectomy, a minimally invasive surgical approach, has become the gold standard for the removal of gallbladder-containing stones.[5,8] This technique involves small incisions, reducing recovery time and postoperative complications compared to traditional open surgery.[5,8] It is uncommon to find more than four hundred (442) gallstones in general, and there are no reports of such findings in the literature. This study aimed to present the case of a thickened and internally adhered gallbladder with more than four hundred stones inside.

CASE REPORT

The patient was a 34-year-old man who came to our surgical outpatient department. He presented with complaints of pain in the right upper quadrant of the abdomen radiating to the back, bloating after meals (especially fried food), intermittent nausea, and vomiting for more than 5 days. Patient was suffering from jaundice at the time of consultation. He mentioned experiencing these complaints of nausea and fatty food intolerance for the past 3-4 years. He sought help from a local medical practitioner and was suggested to have ultrasonography and blood test. The ultrasound report revealed more than ten stones in his gallbladder, with the largest stone measuring 1.5 cm in diameter. Liver function tests (LFT) showed elevated bilirubin levels indicating hyperbilirubinemia. There was no history of previous surgeries, hemolytic disease/any other chronic disorders.

Investigations

The patient was examined and the previous USG and LFT reports were evaluated. Since patient was suffering from jaundice, he was advised to have MRCP to rule out any pathoanatomy and presence of stones in bile duct (Figure 1A). The MRCP report showed multiple calculi in the gallbladder, with one 5 mm stone causing neck obstruction. The gallbladder wall thickened up to 2 mm, and there were indications of mild hepatosplenomegaly.

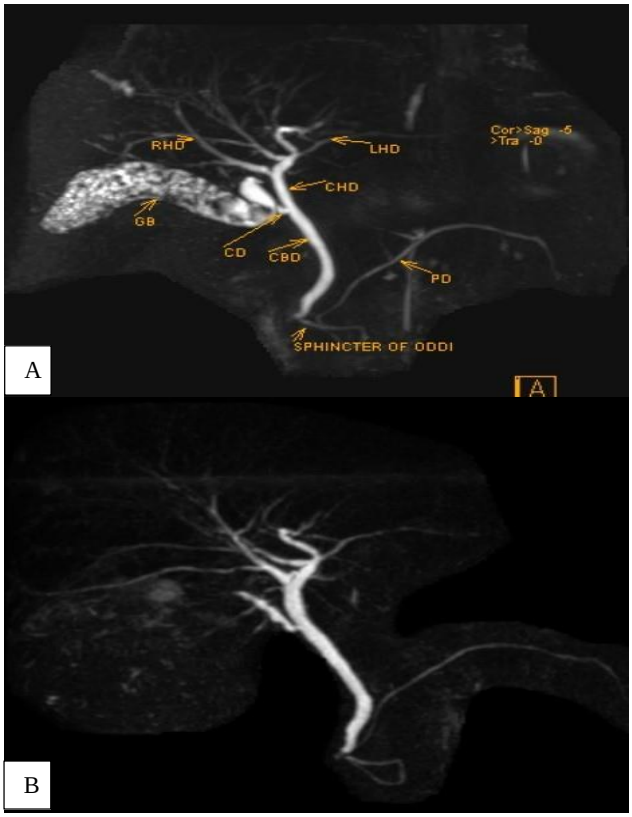

Figure 1 (A and B): MRCP graph of patient showing gallbladder full of stones before surgery and absence of gallbladder after surgery.

Treatment

Diagnosed with acute cholecystitis, the patient was recommended to go for laparoscopic cholecystectomy, a minimally invasive surgery. The patient underwent laparoscopic cholecystectomy with adhesiolysis. The time consumed in the operating procedure was about 45 minutes with less than 5 ml of blood loss. The patient was discharged after 24 hours of surgery.

Observations

Dense adhesion between the gallbladder, duodenum, stomach, omentum, and adjacent structures was observed. The length of the cystic duct was short. Multiple (442) gallbladder calculi of different sizes were observed **(**Figure 2A and B). A calculus measuring 1.5-2 cm was present in the neck of the gallbladder, causing obstruction. Mirizzi syndrome-type-I with distended GB compressing the CBD without fistula formation was observed.

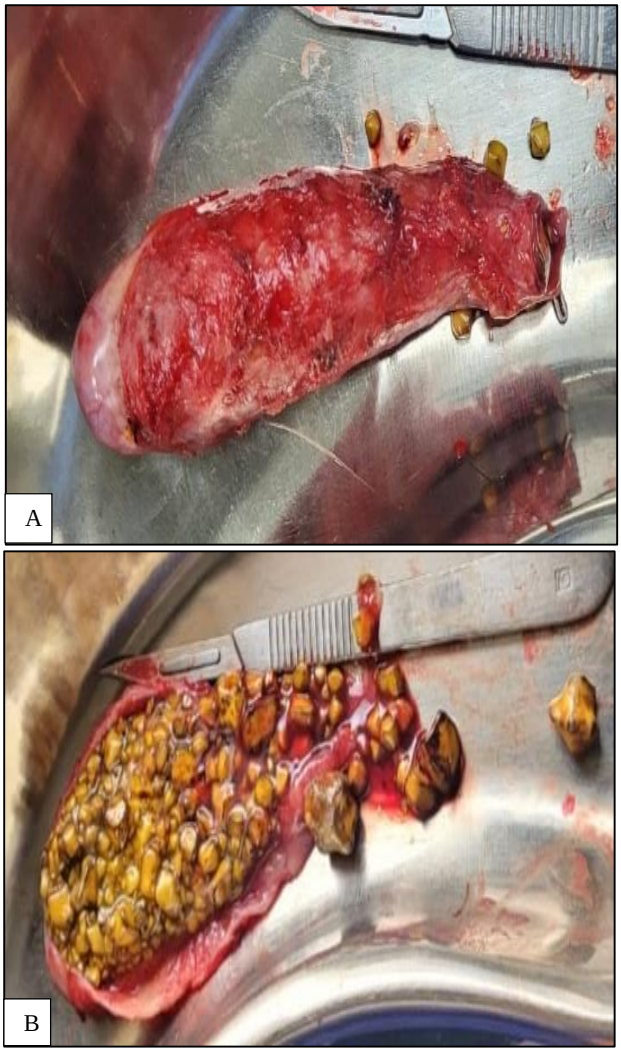

Figure 2 (A and B): Gallbladder after surgical removal closed gallbladder and gallbladder showing numerous stones.

DISCUSSION

Cholelithiasis (gallstone disease) has been a prevalent gastrointestinal disorder throughout history, and addressing its complications imposes a substantial economic burden. The management of this condition remains a significant challenge, demanding careful attention and innovative solutions to mitigate its impact on both individuals and healthcare systems.[9] The pathogenesis of gallstone formation involves a complex interplay of genetic, environmental, and metabolic factors.[10] Cholesterol and pigment stones, the two primary types, form when bile becomes supersaturated with cholesterol or when there is an excess of bilirubin, respectively.[10,11] Epidemiological studies underscore the role of genetic predisposition, obesity, rapid weight loss, and metabolic conditions such as diabetes in the development of gallstones.[11-13]

In this study, the patient was suffering from jaundice at the time of the OPD consultation, and his previous reports confirmed that he was having gallstones. To rule out any pathoanatomy or the presence of stones in the common bile duct, he was suggested to get an MRCP. The MRCP report showed that the patient was suffering from Mirizzi's syndrome type I with distended GB and a stone-flooded gallbladder. Mirizzi 's syndrome is a condition that implies extrinsic compression of the bile duct by pressure applied upon it indirectly by a gallstone stuck in the infundibulum (neck)of the gallbladder. It is characterized by right upper abdominal pain, jaundice (yellowing of the skin and eyes), and other unpleasant symptoms.[14]

Multiple stones tend to cause low inflammation and are associated with older patients, However, in this case, the patient was young and had multiple stones at the same time. The stones were present with a high degree of inflammation counting about 442 stones and the size ranged between 0.5-2 cm.[15]

The management of gallstones is multifaceted, guided by factors such as size, composition, symptoms, and overall health. For small cholesterol stones, lifestyle modifications, including dietary changes to reduce cholesterol levels, may be recommended.[16-18] Medications, such as bile acid pills, might be prescribed to dissolve certain types of gallstones over time.[19] In cases of symptomatic or larger stones, surgical interventions become pivotal.[7] Laparoscopic cholecystectomy, a minimally invasive surgical approach, has become the gold standard for the removal of gallbladder-containing stones.[5,8] This technique involves small incisions, reducing recovery time and postoperative complications compared to traditional open surgery.

Here in this case the patient went under laparoscopic surgery and survived the operation procedures very well with minimum blood loss. Also, the postoperative period in the hospital was uneventful. The patient resumed walking/ambulation 6 hours after surgery. The patient started feeding on the next day of surgery and was discharged after 48 hours in healthy and fine condition. The MRCP report after surgery confirms the absence of gallbladder (Figure 1B). The post-operative serum bilirubin and LFT were done and found normal. The patient resumed his regular activities and work on the 5th day postoperatively.

The number and size of gallstones vary among different patients considering size as the most important and variable risk factor rather than the number of gallstones[20]. However, whether gallstone numbers also impact the risk or complications remains an unsolved question. This study stands as a rare contribution to the existing literature, as only a limited number of investigations have delved into the presence of multiple stones in the gallbladder. Notably, none of the prior studies have explored stone quantities that closely align with the extensive number of stones found in this research, underscoring the unique and comprehensive nature of our findings.

CONCLUSION

Cholelithiasis is a common gastrointestinal condition. Laparoscopic cholecystectomy (removal of the gallbladder) is the most effective treatment for cholelithiasis. In this study, we presented a rare case of multiple gallstones in a 34-year-old patient, who was treated successfully by cholecystectomy. Post-op results ensured healthy recovery confirming the effectiveness of surgery. However, multiple stones with higher degrees of inflammation are associated with older gallbladder cancer patients. The presence of this much larger number (442) of stones in young patients is quite unusual and there should be some associations to be further examined.

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REFERENCES

1. Lammert F, Gurusamy K, Ko CW, Miquel JF, Méndez-Sánchez N, Portincasa P, et al. Gallstones. Nat. Rev Dis Primers. 2016;2(1):1-7.
2. Chuang SC, Hsi E, Lee KT. Genetics of gallstone disease. Adv Clin Chem. 2013;60:143-85.
3. Mohan H, Punia RP, Dhawan SB, Ahal S, Sekhon MS. Morphological spectrum of gallstone disease in 1100 cholecystectomies in North India. Indian J Surg. 2005;67(3):140-2.
4. Al Zoubi M, El Ansari W, Al Moudaris AA, Abdelaal A. Largest case series of giant gallstones ever reported, and literature review. Int J Surg Case Rep. 2020;72:454-9.
5. Gutt C, Schläfer S, Lammert F. The Treatment of Gallstone Disease. Dtsch Arztebl Int. 2020;117(9):148-58.

6. Friedman GD, Raviola CA, Fireman B. Prognosis of gallstones with mild or no symptoms: 25 years of follow-up in a health maintenance organization. J Clin Epidemiol. 1989;42(2):127-36.
7. Shabanzadeh DM, Sørensen LT, Jørgensen T. A Prediction Rule for Risk Stratification of Incidentally Discovered Gallstones: Results from a Large Cohort Study. Gastroenterology. 2016;150(1):156-67.
8. 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.
9. Terho PM, Leppäniemi AK, Mentula PJ. Laparoscopic cholecystectomy for acute calculous cholecystitis: a retrospective study assessing risk factors for conversion and complications. World J Emerg Surg. 2016;11:54.
10. 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.
11. Schafmayer C, Hartleb J, Tepel J, Albers S, Freitag S, Völzke H, et al. Predictors of gallstone composition in 1025 symptomatic gallstones from Northern Germany. BMC Gastroenterol. 2006;6:36.
12. Shoda J, Oda K, Suzuki H, Sugiyama Y, Ito K, Cohen DE, et al. Etiologic significance of defects in cholesterol, phospholipid, and bile acid metabolism in the liver of patients with intrahepatic calculi. Hepatology. 2001;33(5):1194-205.
13. Li VK, Pulido N, Fajnwaks P, Szomstein S, Rosenthal R, Martinez-Duartez P. Predictors of gallstone formation after bariatric surgery: a multivariate analysis of risk factors comparing gastric bypass, gastric banding, and sleeve gastrectomy. Surg Endosc. 2009 (7):1640-4.
14. Chen H, Siwo EA, Khu M, Tian Y. Current trends in the management of Mirizzi Syndrome: A review of literature. Medicine (Baltimore). 2018;97(4):e9691.
15. Domeyer PJ, Sergentanis TN, Zagouri F, Tzilalis B, Mouzakioti E, Parasi A, et al. Chronic cholecystitis in elderly patients. Correlation of the severity of inflammation with the number and size of the stones. *In Vivo*. 2008;22(2):269-72.
16. Di Ciaula A, Garruti G, Frühbeck G, De Angelis M, De Bari O, Wang DQ, et al. The Role of Diet in the Pathogenesis of Cholesterol Gallstones. Curr Med Chem. 2019;26(19):3620-38.
17. Tsai CJ, Leitzmann MF, Hu FB, Willett WC, Giovannucci EL. Frequent nut consumption and decreased risk of cholecystectomy in women. Am J Clin Nutr. 2004;80(1):76-81.
18. Johansson K, Sundström J, Marcus C, Hemmingsson E, Neovius M. Risk of symptomatic gallstones and cholecystectomy after a very-low-calorie diet or low-calorie diet in a commercial weight loss program: 1-year matched cohort study. Int J Obes (Lond). 2014;38(2):279-84.
19. Guarino MP, Cocca S, Altomare A, Emerenziani S, Cicala M. Ursodeoxycholic acid therapy in gallbladder disease, a story not yet completed. World J Gastroenterol. 2013;19(31):5029-34.
20. Zhu Z, Luo K, Zhang B, Wang G, Guo K, Huang P, et al. Risk factor analysis and construction of prediction models of gallbladder carcinoma in patients with gallstones. Front Oncol. 2023;13:1037194.

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