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Gallbladder perforation into the greater omentum following sleeve gastrectomy: A case report study

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ABSTRACT

INTRODUCTION: Obesity is considered a major risk factor for gallstone formation and is important due to its increasing prevalence worldwide. Many studies have reported an increased incidence of gallstone formation following bariatric surgery. This report documents a rare case of a complicated cholecystitis following sleeve gastrectomy and describes our management of the case and the management options for gallbladder disease in bariatric patients.

PRESENTATION OF CASE: A 60-year-old male was diagnosed with asymptomatic cholelithiasis at the time of sleeve gastrectomy for obesity treatment. Two months after the procedure, he presented to the emergency department with symptoms of acute cholecystitis, which were initially managed conservatively. Six weeks later, he underwent a laparoscopic cholecystectomy. Intra-operative findings revealed a rare case of a complicated cholecystitis where the gallstone was half-eroded into the greater omentum.

DISCUSSION: A notable proportion of bariatric patients develop symptomatic complicated cholecystitis following laparoscopic sleeve gastrectomy, compared to the normal population. Furthermore, complications develop quickly and technical difficulties are associated with subsequent surgeries. Thus, early cholecystectomy is justified.

CONCLUSION: Patients with asymptomatic cholelithiasis, undergoing sleeve gastrectomy, may benefit from concomitant cholecystectomy. The question is yet controversial. This highlights the need for more clinical research in the field.

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1. Introduction

Recent studies have reported an increased incidence of cholelithiasis in obese populations compared to the general population [1]. An increased risk has been shown to be associated with excessive weight, following bariatric surgery [2].

Gallbladder perforations are mostly rare complications of acute cholecystitis. Laparoscopic cholecystectomies have also been identified as a cause, with a risk as high as 16.7% [3]. Patient awareness, diagnostic procedures such as ultrasound and CT scans and a high index of suspicion should be regarded as a cornerstone for the pre-operative diagnosis of cholelithiasis and cholecystitis.

This is a report of a rare complicated case of cholecystitis, following sleeve gastrectomy. The report also discusses concomitant cholecystectomy in patients, with asymptomatic gallstones, under-

going sleeve gastrectomy. Due to confidentiality being one of the core duties of medical practice, the patient's name in this study was not disclosed.

The work has been reported in line with the SCARE criteria [4].

2. Case report

A 60-year-old male patient was referred to our Clinic following sleeve gastrectomy, which was performed 2 months earlier. At the time of presentation, he had lost 20 kg, weighing 135 kg (BMI of 48.4 kg/m²). Prior to surgery, he was diagnosed using an ultrasound, with asymptomatic cholelithiasis, with two gallstones measuring 22 mm and 37 mm in diameter.

The patient had a history of myocardial infarction, hypercholesterolemia, hypertension and non-insulin dependent type 2 diabetes mellitus. Both hypercholesterolemia and diabetes mellitus type 2 resolved after sleeve gastrectomy. The patient was also prescribed antihypertensive drugs, Plavix and Aspirin. Apart from obesity and surgical scars, physical examinations revealed negative findings

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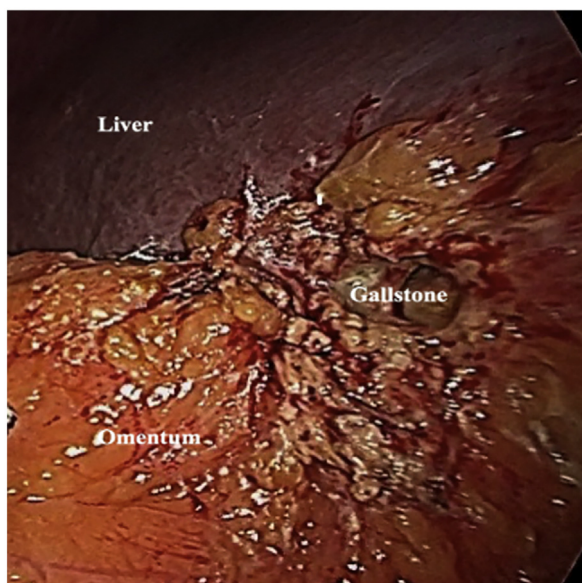


Fig. 1. Laparoscopic image of the half-eroded gallstone into the greater omentum.

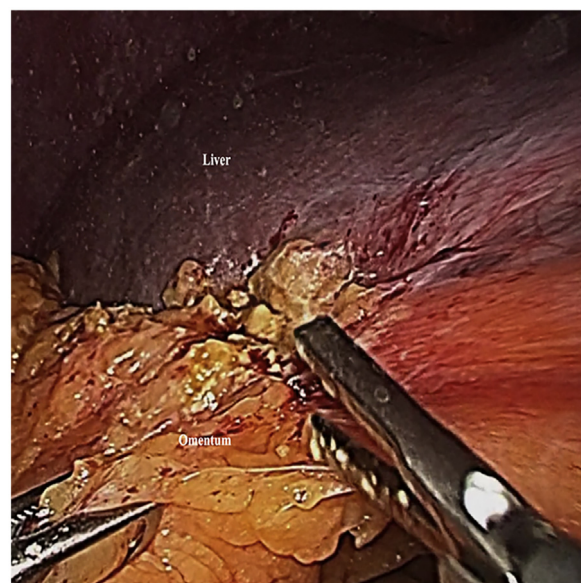


Fig. 2. Laparoscopic image of the greater omentum covering the gallbladder.

and stable vital signs. Blood tests were normal and an abdominal ultrasound (US) confirmed cholecystolithiasis.

65 days postoperatively, the patient was admitted to the Emergency Department presenting with acute right upper quadrant (RUQ) pain radiating to the back and right shoulder. Vital signs were notable for a temperature of 39°C. Examination findings included abdomen tenderness, guarding and rebound in the RUQ area. An abdominal ultrasound (US) was performed and showed two significant stones within the gallbladder, thickened-edematous gallbladder wall and no free or pericholecystic fluid. Laboratory testing revealed an elevated white blood cell count of 18,000 cells/mcl (normal range: 4500–10000 cells/mcl), Gamma-Glutamyl Transpeptidase (GGT) of 80 U/L (normal range: 8–65 U/L) and C-reactive protein of 97 mg/dl. Liver function tests, lipase and amylase were within the normal range.

(Normal ranges according to the U.S. National Library of Medicine)

The patient was counseled on the need for surgery, but he refused any surgical intervention and insisted on conservative treatment instead. He was administered intravenous antibiotics (Ceftriaxon and Metronidazole) and analgesia (Perfalgan) and was hospitalized for 3 days. At discharge oral antibiotics and analgesia were prescribed for 6 weeks. During the 6 week conservative treatment period, the patient claimed of mild to moderate intermittent RUQ pain accompanied by elevated temperatures. Laboratory testing revealed that his white blood cell count was reduced to 13,000 cells/mcl (normal range: 4500–10000 cells/mcl). However, C-reactive protein was still elevated during the period. After 6 weeks of conservative treatment, the patient was prepared for a laparoscopic cholecystectomy. Plavix and Aspirin were withdrawn 1 week prior to surgery.

2.1. Intra-operative findings

dense adhesions at the site of sleeve gastrectomy with the omentum covering the fundus of the gallbladder, forming a conglomerate. No free fluid was observed. During the dissection of the omentum from edges of the right lobe of the liver towards the gallbladder, one of the gallstones was **half eroded into the greater omentum (not due to dissection)** (Figs. 1, 2).

Due to technical difficulties, a retrograde dissection was performed. The dissection was completed successfully and the patient

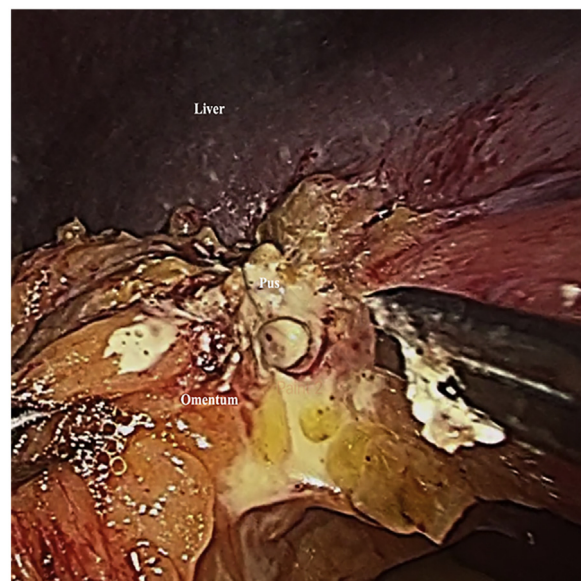


Fig. 3. Laparoscopic image of pus within the greater omentum.

was hospitalized for 2 days and was given intravenous antibiotics followed by 3 weeks of oral antibiotics at discharge.

2.2. Histology report

Signs of chronic calculous cholecystitis with extensive surface epithelial erosions and multi foci of cholesterol granulomas.

Culture of the specimen fluid showed *E. Coli*.

2.3. Diagnosis

Complicated gallbladder perforation into the greater omentum following sleeve gastrectomy.

*There were no postoperative complications and the patient returned to routine preoperative activities after 14 days (Fig. 3).



Fig. 4. Laparoscopic image of the half-eroded gallstone following greater omentum resection.

3. Discussion

The precise effect of bariatric surgery on cholelithiasis is yet to be determined. However, current research suggests that the approach to treat and manage cholelithiasis in bariatric patients is different than in the general population [5]. We report a patient who was admitted with complicated cholecystitis two months after sleeve gastrectomy (Fig. 4).

Literature review demonstrates that prior cholecystectomy is performed in 11–23% of bariatric patients. According to a study published by Li et al., the figure for patients undergoing sleeve gastrectomy is 32.79% [6]. The high numbers are explained by the increased risk of complicated gallstones following the rapid weight loss.

Cholelithiasis prior to sleeve gastrectomy was reported to increase the risk of complicated gallstones by 277.4% in the first 6–12 months post-surgery. This was confirmed both by a study published by Arias et al. and a study published by Li et al [7].

A Meta-Analysis published by Warschkow R in 2013 suggested that a prophylactic cholecystectomy during laparoscopic Roux-en-Y gastric bypass (LRYGB) should be avoided in patients with non-pathological gallbladders and should only be performed in patients with symptomatic cholelithiasis [8]. This was explained by the following findings of the study:

- The low rate of subsequent cholecystectomy following laparoscopic Roux-en-Y gastric bypass.
- Uncomplicated biliary disease being the main cause for subsequent cholecystectomy.
- The low conversion rate of subsequent cholecystectomy.
- The low complication risk of cholecystectomy following laparoscopic Roux-en-Y gastric bypass (0.1%).

Furthermore, the study also demonstrated that the rate of subsequent cholecystectomies did not decrease significantly if a concomitant cholecystectomy, during laparoscopic Roux-en-Y gastric bypass, was performed for asymptomatic patients compared to symptomatic patients. ($P = 0.273$) [8].

The case highlights the fact that patients, with asymptomatic cholelithiasis, may still benefit from a concomitant cholecystectomy. The simultaneous choice of surgery is due to the increased

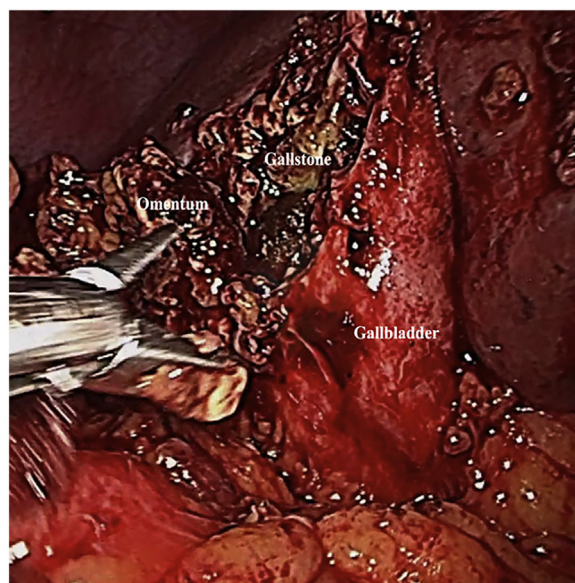


Fig. 5. Laparoscopic image of the gallbladder following greater omentum resection.

percentage of patients who develop gallstone complications, the fast development of complications, and the difficulties faced during subsequent cholecystectomies (eg: adhesions). Moreover, A study published in 2007 by Ahmed AR and a study published by Ju-Hee Lee in 2015 demonstrated that a concomitant surgery does not increase the hospital stay, the frequency of postoperative complications and adds only half hour to the operation time [9,10]. The surgeon's decision and gut feeling may still play a role in decision. It is fair to say that no decision should be considered wrong (Fig. 5).

4. Conclusion

Patients with asymptomatic cholelithiasis undergoing sleeve gastrectomy may benefit from concomitant cholecystectomy. The question is yet controversial. The reality is that the final decision lies with the surgeon. The need for further research is emphasized.

Conflicts of interest

The authors declare no conflict of interest.

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The study is self-funded by Suhaib J.S. Ahmad who is one of the authors.

Ethical approval

The study case report was exempt from ethical approval. As a result, there was no need for an ethical approval.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-chief of this journal on request.

Author contribution

Suhaib J.S. Ahmad contributed by collecting, analysing and writing the Data.

Sherif M. Hakky contributed by writing, analysing and editing.
Douglas McWhinnie contributed by writing, analysing and editing.

Claire J Stocker contributed by writing, analysing and editing.
Peter Thomas contributed by writing, analysing and editing.
Sami Ahmad contributed by collecting the Data, writing, analysing and editing.

Each author has reviewed the final version of the Work, believes it represents valid work, and approves it for publication.

Registration of research studies

researchregistry3399.

This is a case report. It was also registered and a UIN was obtained.

Guarantor

Suhaib J.S. Ahmad

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We obtained consent from the patient for publishing the case details and the images.

References

- [1] G.E. Njeze, Galltones, Niger. J. Surg. 19 (July (2)) (2013) 49–55.
- [2] M. Coupaye, B. Castel, O. Sami, G. Tuyeras, S. Msika, S. Ledoux, Comparison of the incidence of cholelithiasis after sleeve gastrectomy and Roux-en-Y gastric

- bypass in obese patients: a prospective study, Surg. Obes. Relat. Dis. 11 (July–August (4)) (2015) 779–784.
- [3] S.W. Suh, J.M. Park, S.E. Lee, Y.S. Choi, Accidental gallbladder perforation during laparoscopic cholecystectomy: does it have an effect on the clinical outcomes? J. Laparoendosc. Adv. Surg. Tech. A 22 (January–February (1)) (2012) 40–45.
- [4] R.A. Agha, A.J. Fowler, A. Saetta, I. Barai, S. Rajmohan, D.P. Orgill, for the SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (October) (2016) 180–186.
- [5] S. Amstutz, J.M. Michel, S. Kopp, B. Egger, Potential benefits of prophylactic cholecystectomy in patients undergoing bariatric bypass surgery, Obes. Surg. 25 (November (11)) (2015) 2054–2060.
- [6] E. Sioka, D. Zacharoulis, E. Zachari, D. Papamargaritis, O. Pinaka, Katsogridaki, G. Tzovaras, Complicated gallstones after laparoscopic sleeve gastrectomy, J. Obes. 23 (August (8)) (2014) 1174.
- [7] E. Sioka, D. Zacharoulis, E. Zachari, D. Papamargaritis, O. Pinaka, G. Katsogridaki, et al., Complicated gallstones after laparoscopic sleeve gastrectomy, J. Obes. 2014 (2014) 468203.
- [8] R. Warschkow, I. Tarantino, K. Ukegijini, U. Beutner, U. Güller, B.M. Schmied, et al., Concomitant cholecystectomy during laparoscopic Roux-en-Y gastric bypass in obese patients is not justified: a meta-analysis, Obes. Surg. 23 (March (3)) (2013) 397–407.
- [9] A.R. Ahmed, W. O'Malley, J. Johnson, T. Boss, et al., Cholecystectomy during laparoscopic gastric bypass has no effect on duration of hospital stay, Obes. Surg. 17 (August (8)) (2007) 1075–1079.
- [10] J.H. Lee, G. Han, Y.J. Kim, M.S. Jung, D. Choi, A technique for simultaneous cholecystectomy during bariatric surgery, JSLS 19 (October–December (4)) (2015).

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