Annals of Clinical Case Reports

Case Report
Published: 11 Feb, 2020

Pyogenic Liver Abscess Post Sleeve Gastrectomy Complicated by Leak: A Case Report and Literature Review

Heba Al Faris, Mohammed Al-Aqeel, Ibrahim Hazza Al-onazi, Wassim Abou Yassine and Abdullah Al Qurashi*

Department of Metabolic and Bariatric Surgery, King Saud Medical City, Saudi Arabia

Abstract

Background: Laparoscopic Sleeve Gastrectomy (LSG) is the most popular bariatric and metabolic operation performed. Its rapid rise in popularity coupled with good initial results made it a major component of patient care for the treatment of morbid obesity and its comorbid medical problems. LSG is a relatively safe procedure but has rare, sometimes serious complications such as staple line leak, bleeding and strictures. Liver abscess is a rarely reported complication of LSG. An infected material in the gastrosplenic area after LSG due to hematoma or staple line leak has the potential to cause spread of the bacterial content to the liver and later on pyogenic liver abscess.

Methods: A case report study type with literature review.

Results: We report a rare case of liver abscess as a complication of LSG.

Conclusion: Although rare, clinicians should be aware of liver abscess after LSG due to the serious consequences and the high mortality rate. Image-guided percutaneous drainage plus intravenous antibiotic therapy is usually sufficient.

Furthermore, it is advisable to repeat the diagnostic imaging in the follow up of patients.

OPEN ACCESS

Correspondence:
Heba Al Faris, Department of Metabolic and Bariatric Surgery, King Saud Medical City, Riyadh, Saudi Arabia, Tel: +966-542450199; E-mail: heba.alfaris@gmail.com

Received Date: *06 Jan 2020*
Accepted Date: *07 Feb 2020*
Published Date: *11 Feb 2020*

Citation:
Al Faris H, Al-Aqeel M, Hazza Al-onazi I, Abou Yassine W, Al Qurashi A. Pyogenic Liver Abscess Post Sleeve Gastrectomy Complicated by Leak: A Case Report and Literature Review. Ann Clin Case Rep. 2020; 5: 1798.

ISSN: 2474-1655

Introduction

Laparoscopic Sleeve Gastrectomy (LSG) is the most popular bariatric and metabolic operation performed. It was initially added as a modification to Biliopancreatic Diversion (BPD) and then combined with a Duodenal Switch (DS) in 1988. It was first performed laparoscopically in 1999, as part of DS. Subsequently, Gagner et al. [1] began to perform the gastric resection portion of the DS operation, as a first-stage procedure in 2000. With the revelation that patients experienced weight loss after LSG, interest in using this procedure as a bridge to more definitive surgical treatment has risen.

LSG has various advantages over other bariatric procedures. The technique is relatively easy, it does not need anastomosis as it preserves the pylorus; avoidance of complications associated with malabsorptive operations such as dumping syndrome and diarrhea.

Furthermore, the need for trace elements and vitamin supplements is less or much less than the other types. On the other hand, LSG remains to have significant complications, including, but not limited to, bleeding, staple line leak, twist and dehiscence [2,3]. The aim of this work is to discuss a unique presentation of liver abscesses after LSG.

Case Presentation

A 37-year-old man, not known to have chronic medical illnesses. His BMI was 33 kg/m^2, presented to the Emergency Department (ED) 10 days after he had Laparoscopic Sleeve Gastrectomy (LSG) in another tertiary care hospital outside the Kingdome and was admitted under the bariatric surgery care. Until three days of presentation, the postoperative course was uneventful. He was discharged home after tolerating clear liquids a day post operatively. Upon presentation in ED, he was complaining of abdominal pain and back pain that increased in severity prior to his presentation. On examination, he was dyspneic and looking sick. His temperature was 36.7, with spikes of fever at midnight, pulse rate 123/min, BP 127/75 mmHg. His abdomen was soft on examination, with mild tenderness on deep palpation. Laboratory studies revealed leukocytosis with a count of 31,000/mm^3

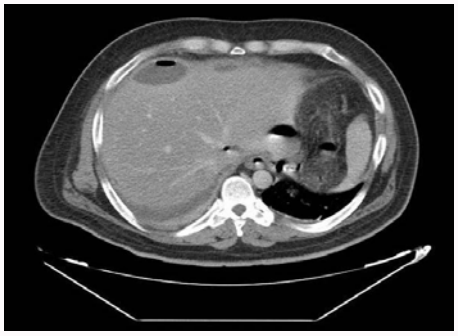

Figure 1: CT abdomen with oral and IV contrast showing multiple liver abscesses.

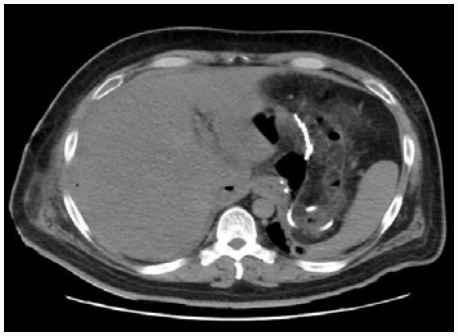

Figure 2: CT abdomen with oral and IV contrast showing a loculated collection with an air-fluid level.

Figure 3: Gastrografin study showinggastroesophageal junction leak.

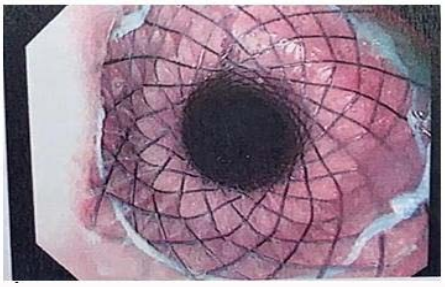

Figure 4: Gastroesophageal stent.

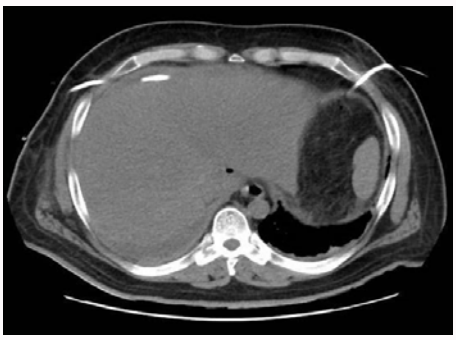

Figure 5: CT abdomen showing almost complete resolution of collections in perigastric and hepatic areas. Two abdominal drains are seen here.

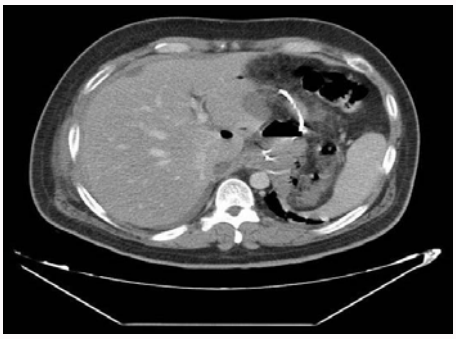

Figure 6: CT abdomen showing a significant decrease in the size of hepatic collections.

(4.5-11.00), serum albumin 22.7 g/l (35-45 g/l). The rest of the results were unremarkable. CT abdomen with oral and IV contrast showed a loculated collection with air-fluid level measuring 7 cm × 5 cm, seen in close contact to the left lateral aspect of the fundus and body of the stomach with evidence of extraluminal encysted large air bubbles with mild thick fluid component at the gastrosplenic area. Overall appearance is in keeping with gastric sleeve leakage. Large elongated linear hypodensity measuring 6 cm containing air bubbles seen in left liver lobe segments 2 and 3. Two large collections with foci of air, one in the anterior right dome of the liver, segment 4a and the other one in segment 6. Three smaller collections noted in the left lobe, segment 6, posterior to caudate lobe and another one anterior to that. Portal vein, hepatic veins and IVC are patent. No obvious contrast extravasation. Moderate diffuse dirty mesentery in upper abdomen and right paracolic gutter area suspicious for focal peritonitis. Mild free fluid in right paracolic gutter and mild to moderate one in the pelvis. Right mild pleural effusion with partial collapse of the right lower lobe. Minimal atelectatic changes in left lower lobe (Figure 1).

The patient was started on fluid boluses through peripheral IV lines, plus a broad spectrum antibiotic and an antifungal.

Two right subcapsular hepatic collections, segment 6 and 4A were drained by interventional radiology under US guidance utilizing 10-French × 30 cm pigtail catheters. Large amount of pus was drained. The perigastric collection was targeted under CT guidance using 19 G × 13.8 cm through a coaxial needle followed by the insertion of 10F pigtail catheter over wire. Turbid greenish and smelly fluid was drained. Collection in the left lobe was not drained.

Gastrografin study was undertaken later which showed a gastroesophageal junction leak (Figure 2).

CT abdomen with oral and IV contrast was repeated after 3 days as the drains were accidentally removed. Redemonstrations of extravasation of the intraluminal contrast in the left upper quadrant along with interval increase in the size and number of liver abscesses. The one in anterior dome of right lobe returned back to same size

before drainage. The segment 6 abscess became smaller. The 3 collections in left lobe noted previously are slightly larger now.

Reinsertion of pigtail drains for both collections in right lobe was done successfully.

Esophagogastroduodenoscopy (EGD) was performed and revealed a very small opening measuring 4 mm at the gastroesophageal junction. This was stented with an 18 mm × 140 mm double Niti-S stent under fluoroscopic guidance.

Septic work up showed a growth of *streptococcus anginosus* in the liver abscess. Another culture also from the liver abscess sent a week later showed *Acinetobacter baumanni* (MDRO). Antibiotics were adjusted accordingly.

Follow-up CT abdomen one week after aspiration demonstrated again the perigastric complicated fluid collection containing multiple foci of pneumoperitoneum. Stable appearance of multifocal subcapsular loculated fluid collections in segment 4A, with tip of drain tube seen within it. Mild decrease in the size of the two subcapsular fluid collections, seen at segment 6 and 7. Another CT abdomen a week later showed a complete resolution of the right lobe collections and significant decrease in size for the left lobe ones.

Discussion

LSG is emerging to be one of the commonly performed bariatric procedures worldwide for patients with different degrees of obesity. This procedure has several advantages. It is technically simpler to perform without the need of an anastomosis. It induces a reduction in ghrelin causing appetite suppression, which adds to the effect of restriction. It has been reported to have a lower morbidity and mortality rate in comparison to Roux-en-Y gastric bypass or biliopancreatic diversion with or without duodenal switch. It can be performed concomitantly with other procedures.

LSG can be associated with three significant complications, which include staple line gastric bleeding, staple line gastric leaks and gastric strictures. Of these, a gastric leak after sleeve gastrectomy is associated with significant and prolonged morbidity, remaining one of the most feared complications. A gastric leak can present as peritonitis, abscesses, cutaneous or other fistulas, sepsis, organ failure and even death [4].

In this case report, we present an unusual complication post sleeve gastrectomy as a consequence of leak and/or infected hematoma leading to peritonitis and liver abscess. Also, we demonstrated that not all liver abscesses appear on first presentation and repeat CT is sometimes required to fully visualize the whole picture of the abscesses.

A liver abscess is defined as a pus-filled mass in the liver that can develop from injury to the liver or an intra-abdominal infection disseminated from the portal vein [5]. The majority of these abscesses are categorized into pyogenic or amoebic, and less frequently caused by parasites and fungi [6].

Pyogenic Liver Abscess (PLA) is caused by a Bacterial infection of the liver parenchyma consists of inflammatory cells and the collection of Pus [7].

The usual pattern of formation is the leakage of bowel to the abdominal cavity travelling to the liver through the portal vein. Many cases have an infected biliary tract may cause an abscess *via* direct contact.

Another classification of liver abscesses is based on the location in the liver. 50% of solitary liver abscesses occur in the right liver lobe (a more significant part with more blood supply); less commonly in the left liver lobe or caudate lobe.

Historically, PLA was most commonly a complication of acute appendicitis, occurred predominantly in young men, and was associated with high mortality [8].

Infection of the biliary tree (cholangitis) represents 40% to 50% of liver abscess diagnoses, usually as a result of obstruction, often leads to the formation of multiple lesions.

Bacterial seeding of the liver parenchyma either through the hepatic artery (e.g. in endocarditis) or by direct drainage from the portal venous system (pylephlebitis associated with appendicitis, diverticulitis, omphalitis, pancreatitis, or postoperative infection) each account for roughly 5% to 15% of these hepatic infections. Direct extension from a contiguous focus of infection (e.g. subphrenic abscess) and traumatic events (either penetrating or blunt) are presumed to be the source of infection in 5% to 10% and 1% to 5% of cases, respectively [9]. The organism can enter into the liver *via* vessels of the bile ducts or even directly by contiguity [7].

Radiographic imaging is essential to diagnose pyogenic liver and splenic abscesses. Contrast-enhanced CT scans and ultrasonographic are the most useful. Both of these imaging studies have a sensitivity of 98% [10].

The most common finding at contrast-enhanced CT is a well-defined, low-attenuation, round mass with an enhancing peripheral rim.

The hepatic abscess was most often found in the right hepatic lobe (56%), left lobe abscess (34%) or bilobar abscesses (9%) respectively.

The majority of patients presented with a single cavity, but 31% had multiple abscesses [9]. Presence of gas and rim enhancement is suggestive of abscess.

In 1938, Ochsner et al. reported the first comprehensive case series of PLA, in which the case-fatality rate was 77%. Nowadays, with the improvement in diagnostic imaging and the development of minimally invasive therapies, mortality rate had decreased to below 20% [10]. A series from Memorial Sloan Kattering Cancer center (MSKCC) has reported a 3% mortality rate.

Surgery remained the therapy of choice until the mid 1980s, when percutaneous drainage was shown to be a safer alternative in many cases [8].

Currently, the treatment of pyogenic liver and splenic abscesses almost always requires a combination of drainage and antimicrobial therapy. Percutaneous image-guided drainage procedures are preferred to surgery. Nonetheless, surgical intervention may be required if percutaneous drainage cannot be accomplished or management of coexistent intra-abdominal disease is necessary.

Medical treatment of liver and splenic abscesses alone should only be reserved for very small lesions not amenable to drainage or if the circumstances are such that the risk of drainage is too high.

Antimicrobial therapy is usually provided for four to six weeks; the first one half of which preferably is given parenterally [9]. Post

LSG, an infected material in the gastrosplenic area due to hematoma or staple line leak has the potential to spread of the bacterial content to the liver which can result in pyogenic liver abscess. Although this probability is extremely rare, there are previously reported few cases with liver abscess after LSG.

There are two possible sources or risk factors for the development of liver abscess after LSG. First is the leak at the staple line resulting in migration of the bacteria to the liver? Second is ascending migration of bacteria from the portal venous system due to pylephlebitis of the portomesenteric veins secondary to leak-related collection [2]. Reviewing the literature, two cases of a pyogenic liver abscesses and two cases of splenic abscesses were reported after LSG in gulf countries [9].

Another case of liver abscess post sleeve was report in Turkey [2]. In 2017, Abdelhadi et al. [9] published two cases of liver abscess and two cases of splenic abscess occurring after the LSG procedure. The liver abscesses developed after a gastric leak (managed by endoscopic stenting) and were treated using antibiotic therapy and percutaneous drainage in one case and laparoscopic drainage in the other. The splenic abscesses involved a gastric leak in one case that was managed by endoscopic stenting, and a partial splenic tear is the other complication that required blood transfusion and diagnostic laparoscopy on postoperative day one with no further intervention. In the case of failure of treatment by percutaneous drainage and antibiotics, the abscess was managed by open or laparoscopic splenectomy. In 2012, Alfalah et al. published a case of liver abscess in a 32-year-old woman 44 days after LSG. No gastric leak was observed, and her treatment included percutaneous drainage with antibiotic therapy [11].

Fever and abdominal pain are the chief presenting complaints in patients with liver and splenic abscesses. More often than not, concurrent gastrointestinal symptoms such as vomiting, diarrhea, and abdominal cramps are absent. Our patient came complaining upper abdominal pain, repeated vomiting, and intermittent fever.

Radiographic imaging is essential to diagnose pyogenic liver and splenic abscesses. Contrast-enhanced CT scans and ultrasonographic are the most useful. Both of these imaging studies have a sensitivity of 98% [9].

Surgery remained the therapy of choice until the mid 1980s, when percutaneous drainage was shown to be a safer alternative in many cases [8].

Nowadays, treatment of pyogenic liver and splenic abscesses almost always requires a combination of drainage and antimicrobial therapy. Percutaneous image-guided drainage procedures are preferred to surgery. Nonetheless, surgical intervention may be required if percutaneous drainage cannot be accomplished or management of coexistent intra-abdominal disease is necessary. In some patients, percutaneous aspiration without placement of an indwelling catheter may be adequate. Medical treatment of liver and splenic abscesses alone should only be reserved for very small lesions not amenable to drainage or if the circumstances are such that the risk of drainage is too high.

Antimicrobial therapy is usually provided for 4 to 6 weeks, the first one half of which preferably is given parenterally [9]. Our patient was diagnosed, with staple line leak (managed by endoscopic stenting), intra-abdominal collection and multiple liver abscesses, ten days post LSG based on CT scan. The abscesses were successfully managed with CT guided drainage and antibiotics.

Conclusion

In conclusion, although the development of pyogenic liver abscess after LSG is rare, clinicians should be aware of it to reduce the morbidity and mortality of this life-threatening condition. Image-guided percutaneous drainage plus intravenous antibiotic therapy is usually sufficient. Repeating the diagnostic imaging after a period of time to get the full picture of this complication is worth considering.

References

1. Gumbs AA, Gagner M, Dakin G, Pomp A. Sleeve gastrectomy for morbid obesity. Obes Surg. 2007;17(7):962-9.
2. Demir H, Ozdemir K, Karaman K. Pyogenic liver abscess after laparoscopic sleeve gastrectomy. Pak J Med Sci. 2018;34(3):767-9.
3. Zhang Y, Wang J, Sun X, Cao Z, Xu X, Liu D, et al. Laparoscopic sleeve gastrectomy versus laparoscopic Roux-en-Y gastric bypass for morbid obesity and related comorbidities: A meta-analysis of 21 studies. Obes Surg. 2015;25(1):19-26.
4. Praveenraj P, Gomes RM, Kumar S, Senthilnathan P, Parthasarathi R, Rajapandian S, et al. Management of gastric leaks after laparoscopic sleeve gastrectomy for morbid obesity: A tertiary care experience and design of a management algorithm. J Minim Access Surg. 2016;12(4):342-9.
5. Mischnik A, Kern WV, Thimme R. [Pyogenic liver abscess: Changes of Organisms and Consequences for Diagnosis and Therapy]. Dtsch Med Wochenschr. 2017;142(14):1067-74.
6. Czerwonko ME, Huespe P, Bertone S, Pellegrini P, Mazza O, Pekolj J, et al . Pyogenic liver abscess: Current status and predictive factors for recurrence and mortality of first episodes. HPB (Oxford). 2016;18(12):1023-30.
7. Damanik EH, Ginting F. Case report: Liver abscess pyogenic after peritonitis appendix perforation. Published under licence by IOP Publishing Ltd, IOP Conference Series: Earth and Environmental Science. 2018;125(1):1-4.
8. Rahimian J, Wilson T, Oram V, Holzman RS. Pyogenic liver abscess: Recent trends in etiology and mortality. Clin Infect Dis. 2004;39(11):1654-9.
9. Abdelhadi MH, Salama AF, Karam M, Bashah M. Solid organ infections: Rare complications after laparoscopic sleeve gastrec- tomy: A report of four cases. PubMed National Center for Biotechnology Information Obes Surg. 2017;27(5):1374-80.
10. Christein JD, Kendrick ML, Que FG. What affects mortality after the operative management of hepatic abscess? HPB (Oxford). 2006;8(3):175-8.
11. Avallone M, Iossa A, Termine P, Silecchia G. Splenic and concomitant liver abscess after laparoscopic sleeve gastrectomy. Case Report SLS. 2018.