

## CASE REPORT

# Splenic abscess caused by *Streptococcus anginosus* following laparoscopic sleeve gastrectomy: a case report of a rare complication of bariatric surgery

Miguel E. Cervera-Hernandez<sup>1</sup> and Dieter Pohl<sup>2,\*</sup><sup>1</sup>Department of Internal Medicine, Roger Williams Medical Center, Boston University, Providence, Rhode Island, USA and <sup>2</sup>Department of Surgery, Roger Williams Medical Center, Providence, Rhode Island, USA

\*Correspondence address. Department of Surgery, Roger Williams Medical Center, Providence, Rhode Island, USA. Tel: 401-521-6310; Fax: 401-861-9596; E-mail: dpohlmd1@me.com

## Abstract

Splenic abscess as a complication of laparoscopic sleeve gastrectomy (LSG) is rare. There have only been six cases in the literature. In most of these cases, the classic predisposing factors for developing splenic abscess were absent, leading to the hypothesis that transient bacteraemia caused by mucosal disruption during the surgical procedure and splenic ischaemia may play a role. These patients usually present in the late post-operative period with abdominal pain, fever and leucocytosis. The preferred treatment is intravenous antibiotics and percutaneous drainage or splenectomy. We report a case of splenic abscess caused by *Streptococcus anginosus* that occurred 20 days after LSG in a 45-year-old woman without immunosuppressive conditions. The patient was successfully treated with antibiotic therapy and percutaneous drainage.

## INTRODUCTION

Laparoscopic sleeve gastrectomy (LSG) is currently one of the most commonly performed bariatric surgeries in the world. Known perioperative complications include haemorrhage, leak, small bowel obstruction and infections (mostly wound and intra-abdominal abscess) [1]. Intra-abdominal abscess presents in <1% of all procedures, and, to the best of our knowledge, only six cases of splenic abscess as a complication of LSG exist in the literature [2–6]. We report a case of splenic abscess caused by *Streptococcus anginosus* after LSG.

## CASE PRESENTATION

A 45-year-old woman with a past medical history significant for essential hypertension, asthma and morbid obesity status post LSG 20 days before admission, presented with abdominal pain of

10 days duration. The pain was localized to the left upper quadrant and was associated with fever, chills, nausea and infrequent vomiting. At the time of the LSG, her post-operative course was uneventful and she was discharged home 3 days after admission. She had started liquid oral intake and then transitioned to bland diet. However, she had not attempted any solid food due to nausea. On admission, her vital signs were temperature of 38.7 °C, 120 b.p.m., 20 r.p.m. and blood pressure of 80/44 mm Hg. Physical exam was significant for mild pain on palpation of the left upper abdominal quadrant. Her laboratory results were remarkable for leucocytosis, anaemia and hypokalaemia. A computed tomography (CT) of the abdomen was obtained and showed a well-circumscribed 7.1 by 5.4 cm air-fluid collection in the medial aspect of the spleen. Of note, an upper gastrointestinal series with Gastrografin showed no evidence of leak from her gastrectomy staple line. The patient was started on empiric piperacillin/tazobactam and a CT-guided drainage of the abscess was

Received: December 10, 2016. Accepted: April 2, 2017

Published by Oxford University Press and JSCR Publishing Ltd. All rights reserved. © The Author 2017.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact [journals.permissions@oup.com](mailto:journals.permissions@oup.com)

**Table 1** Characteristics of previous case reports of splenic abscess as a complication of LSG.

Case (reference)	Age/ sex	Immunosuppression	Immediate complications	Post-operative day of presentation	Treatment	Evidence of leakage	Cultured organism
Rojas et al. [4]	46/F	No	Haemoperitoneum, splenic hilum and hepatic injury	14	IV antibiotics, percutaneous drainage	Yes	<i>S. anginosus</i>
Sakran et al. [3]	36/F	No	No	60	IV antibiotics, splenectomy	–	<i>Streptococcus</i> spp., <i>Escherichia coli</i> , <i>Enterococcus faecalis</i>
Sakran et al. [3]	35/F	–	No	75	IV antibiotics, percutaneous and laparoscopic drainage	No	<i>Staphylococcus</i> spp., <i>Enterobacter</i> <i>cloacae</i> , <i>Streptococcus mitis</i> and <i>oralis</i>
Avulov et al. [2]	19/M	No	No	14	IV antibiotics, percutaneous drainage, splenectomy	No	<i>Salmonella</i> spp.
Schiavo et al. [5]	26/M	–	No	77	IV antibiotics, percutaneous drainage	No	<i>S. anginosus</i>
Singh et al. [6]	44/M	No	No	70	IV antibiotics, percutaneous drainage, splenectomy	No	<i>Klebsiella pneumoniae</i> , <i>Streptococcus</i> <i>pneumoniae</i> , <i>Acinetobacter</i> spp.
Current study, 2016	45/F	No	No	20	IV antibiotics, percutaneous drainage	No	<i>S. anginosus</i>

performed. Abscess fluid and blood cultures grew *S. anginosus*. The patient was treated with meropenem and linezolid for 4 days, and then switched to intravenous ceftriaxone once the microbiology results became available. She was discharged home to complete 2 weeks of intravenous antibiotics. However, after 3 weeks the patient returned to the hospital with new left upper abdominal pain that referred to the left shoulder, poor oral intake, fever and shortness of breath. A repeat CT of the abdomen showed an air-fluid collection in the medial spleen comparable in size to the one present at post drainage. A CT-guided drainage of the splenic abscess was performed and the patient was discharged home to complete 2 weeks of intravenous ceftriaxone and oral metronidazol. The patient has remained asymptomatic since.

## DISCUSSION

Splenic abscess is a rare occurrence, with the vast majority of the available literature consisting of case reports and series from tertiary care centres. The most commonly described predisposing factors are immunosuppression, trauma and concurrent infection [7].

Splenic abscess as a complication of LSG appears to be an extremely rare entity with only six cases in the literature [2–6]. These patients were ages 19–46, none had a reported immunosuppressive condition, presented in the late post-operative period, and only one had an intraoperative complication (Table 1). Previous authors have pointed out that splenic abscess in the bariatric population could have a different aetiology from the classically described in the general population. Among the proposed factors are extension from a gastric staple-line leak, splenic injury during surgery and inadvertent splenic ischaemia [3, 6]. Regarding the latter, in a recently published series of

565 LSG, 0.53% presented with splenic abscess in post-operative Days 9–14. Interestingly, the authors of this paper reviewed the video recordings of all cases and reported a rate of spleen infarcts of 7.79%. All splenic abscesses in this series had evidence of infarct during the original procedure, leading them to suggest that they are both related [8]. A similar study with closer follow-up suggested this as well [9]. In our case, there was no evidence of intraoperative injury to the spleen, staple-line leak or splenic ischaemia. The causative agent was *S. anginosus*, usually found as a commensal of the oral cavity and gastrointestinal tract, but capable of suppurative infections that are often associated with antecedent disruption of the gastrointestinal mucosa [10]. In the present patient, without any obvious perforation or anastomotic leak, haematogenous spread caused by transient bacteraemia during the surgical procedure is certainly a possibility. She responded well to the combination of intravenous antibiotics and percutaneous drainage, and there was no need for splenectomy.

In conclusion, splenic abscess is an uncommon complication of LSG, albeit one that should be entertained in the patient with abdominal pain and fever given its high mortality. A CT of the abdomen with contrast is the preferred diagnostic tool; patients should be treated with a combination of intravenous antibiotics and either percutaneous drainage or splenectomy. Further studies with a larger sample of LSG patients should be conducted in order to elucidate the role of splenic ischaemia in abscess formation.

## FUNDING

This study was financed with internal funds. No competing financial interests exist.

## CONFLICT OF INTEREST STATEMENT

None declared.

## REFERENCES

1. Pradarelli JC, Varban OA, Ghaferi AA, Weiner M, Carlin AM, Dimick JB. Hospital variation in perioperative complications for laparoscopic sleeve gastrectomy in Michigan. *Surgery* 2016;**159**:1113–20.
2. Avulov VMD, Mizusawa M, Brams D. Splenic abscess after sleeve gastrectomy. *Soc Am Gastrointest Endosc Surgeons* 2014.
3. Sakran N, Ilivitzki A, Zeina AR, Assalia A. Splenic abscess after sleeve gastrectomy: a report of two cases. *Obes Facts* 2012;**5**:635–9.
4. Rojas A, Opazo M, Munoz P, Carvajal C. [Splenic gangrene due to *Streptococcus anginosus* after a sleeve gastrectomy. Report of one case]. *Rev Med Chil* 2010;**138**:1539–43.
5. Schiavo L, Scalera G, De Sena G, Ciorra FR, Pagliano P, Barbarisi A. Nonsurgical management of multiple splenic abscesses in an obese patient that underwent laparoscopic sleeve gastrectomy: case report and review of literature. *Clin Case Rep* 2015;**3**:870–4.
6. Singh Y, Cawich S, Aziz I, Naraynsingh V. Delayed splenic abscess after laparoscopic sleeve gastrectomy. *BMJ case Rep* 2015;**2015**.
7. Phillips GS, Radosevich MD, Lipsett PA. Splenic abscess: another look at an old disease. *Arch Surg* 1997;**132**:1331–5. discussion 1335–1336.
8. Szewczyk T, Janczak P, Janiak A, Gaszynski T, Modzelewski B. Laparoscopic sleeve gastrectomy - 7 years of own experience. *Wideochir Inne Tech Maloinwazyjne* 2014;**9**:427–35.
9. Stamou KM, Menenakos E, Gomatos IP, Panousopoulos SG, Smparounis S, Leandros E, et al. Clinical implications of sleeve gastrectomy as a source of spleen infarction or ischemia. *Obes Surg* 2011;**21**:1490–3.
10. Bert F, Bariou-Lancelin M, Lambert-Zechovsky N. Clinical significance of bacteremia involving the ‘*Streptococcus milleri*’ group: 51 cases and review. *Clin Infect Dis* 1998;**27**: 385–7.