

CASE REPORT

Laparoscopic gastric band removal complicated by splenosis

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Introduction

Following traumatic spleen rupture or surgery, heterotrophic autotransplantation of the spleen tissue occurs in a process called splenosis. It can occur anywhere in the abdominal cavity and can even reach the brain tissue. Due to the fact that splenosis is a rare incident, the pathogenesis is not fully understood. Yet in order to predict when splenic implants will occur, some assume that the spillage of the damaged splenic pulp into the adjacent cavity leads to the seeding or it may be due to hematogenous spread. Manipulation of splenosis can lead to many severe complications like obstruction and bleeding that can occur as a result of splenotic tissue overgrowth [1, 2].

In 1995, Higgins and Crain [3] reported the first successful laparoscopic procedure for pelvic splenosis and ever since it has been the treatment of choice for splenosis [3, 4]. In this case, while undergoing a bariatric surgery, we report an incidental finding of splenosis in a morbidly obese patient who underwent splenectomy due to a traumatic injury 10 years ago.

Key Clinical Message

In any patient, the occurrence of postsplenectomy splenosis can complicate the planning of further surgeries. In our case, the gastric sleeve procedure was aborted, as it would have put the patient's life in danger. Therefore, only the gastric band was removed, eliminating future erosion.

Keywords

Gastric band removal, laparoscopy images, splenosis.

Case Report

A 30-year-old female, known to have hypertension and diabetes, complained of excessive weight gain, after her 1 year gastric band lost its effectiveness. After further questioning, the patient shared that she had a laparoscopic splenectomy 10 years ago after a trauma. Nonetheless, a laparoscopic gastric band removal and conversion into sleeve gastrectomy was still planned.

During the operation, implanted splenic bodies were incidentally found all over her abdomen such as in the stomach, liver, gallbladder, diaphragm, and at the left upper quadrant, except the lower pelvis, as seen in the images below.

Beginning the laparoscopic surgery according to plan, unaware of her splenotic condition, she had three trochars inserted into her abdomen in preparation for the gastric sleeve. When the camera was first inserted, we directly observed multiple spleens implanted, covering the abdomen and concluded the diagnosis to most likely be splenosis as the patient underwent a splenectomy in the past. After observing splenosis all over the stomach,

the gastric sleeve procedure became complicated and difficult to fulfill as the splenotic implants were also found on the greater curvature of the stomach (Fig. 1). Moreover, implanted spleens were found surrounding the gastric band, thus it was an emergency to remove the gastric band before any erosion occurs, injuring the spleen and causing a massive bleed. In a meticulous manner, laparoscopic dissection of the fibrosis around the gastric band was done, avoiding the surrounding splenic nodules (Fig. 2). The band was then cut and withdrawn from the stomach and out of the abdominal cavity. Then some spleens were dissected and sent for pathological examination to confirm our diagnosis. Five fragments were removed (Fig. 3) and the pathology report confirmed

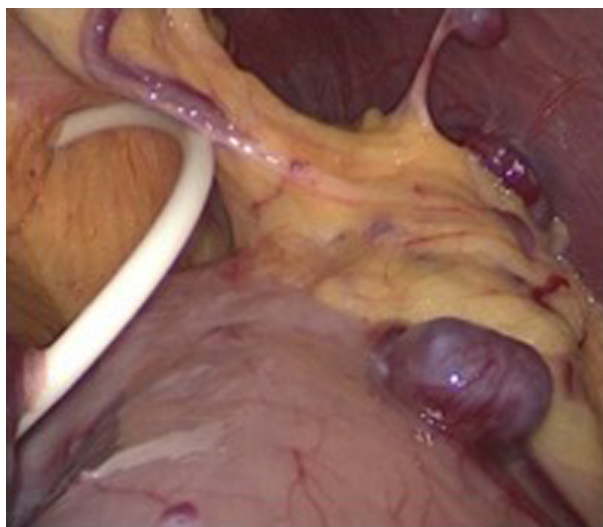


Figure 1. Splenosis on the stomach.

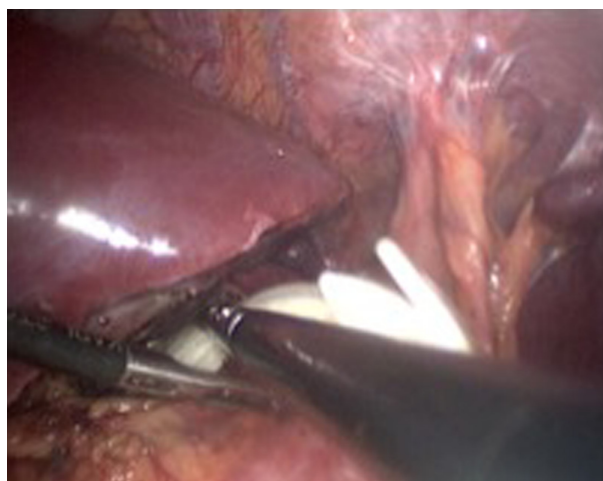


Figure 2. Gastric band removal.

splenosis. Moreover, a very rare event of splenosis was found, silently surrounding and obstructing the gallbladder of the patient (Fig. 4); which should be checked on a regular basis in case of cholecystitis or other gallbladder abnormalities. Another interesting finding is the seeding on the diaphragm as seen in Figs 5–7.

Postoperatively, the patient was informed about the complication that arose in the procedure that led to aborting the gastric sleeve surgery. She was then consulted by a nutritionist in order to guide her through a healthy lifestyle of diet and exercise.

The patient remained in the hospital for 3 days in order to monitor her stability and assess the risk of any postoperative complications with the splenic implants.

Pathology: Received in formalin are two fatty fragments enclosing around seven dark brownish nodular formations. Multiple splenic nodules, consistent with suggested diagnosis of splenosis, no evidence of other pathologies. Well encapsulated.

Discussion

Splenosis is known as heterotopic splenic tissue autotransplantation in a different anatomical location than that of the normal spleen, usually after trauma or surgical avulsion of the spleen or even hematological diseases. Although these implants acquire the normal function of the spleen, it is a benign acquired disease unlike the congenital accessory spleen, which arises from the dorsal mesogastrium [5] and is found near the splenic hilum. They have the normal splenic histology and are supported by the splenic artery.

However, in splenosis, the splenic tissues have poorly formed capsules, no hilum and vary in shape and size [5,

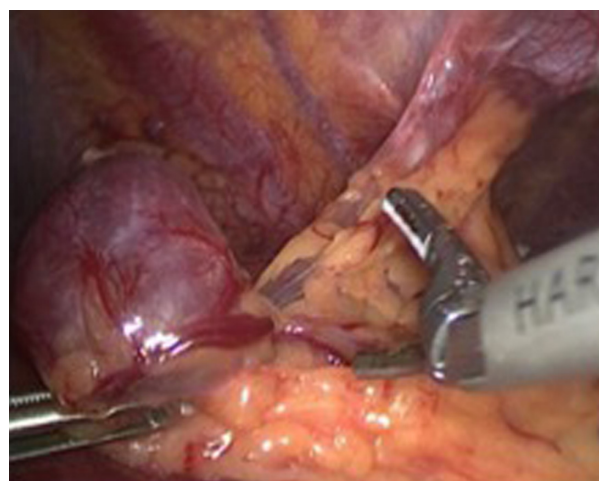


Figure 3. Laparoscopic splenosis removal.

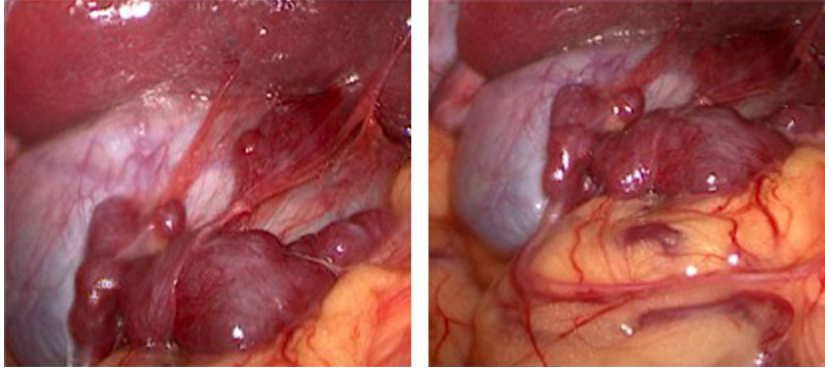


Figure 4. Gallbladder splenosis.

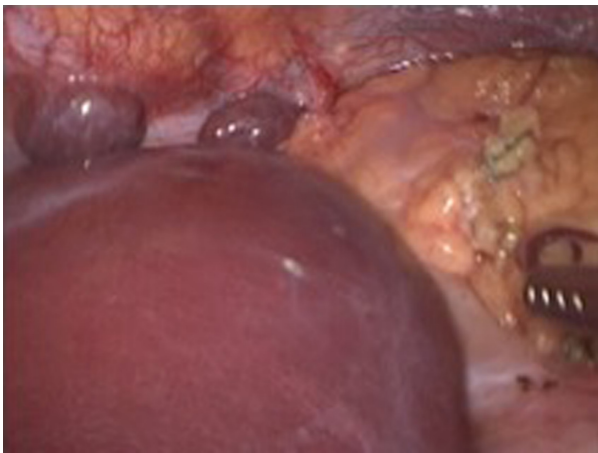


Figure 5. Diaphragm splenosis.

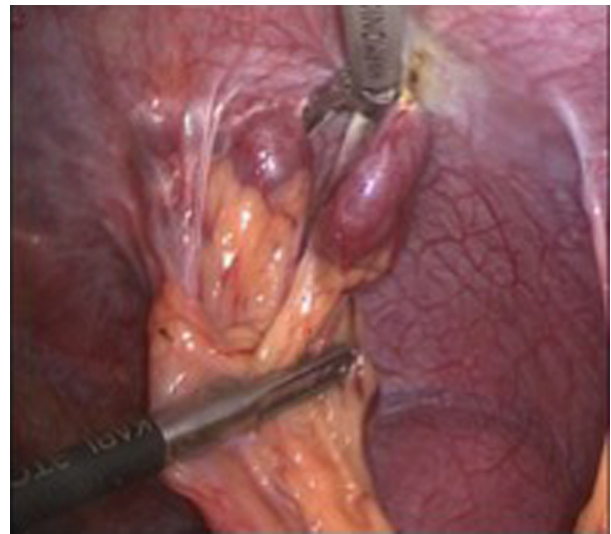


Figure 7. Liver splenosis.



Figure 6. Splenosis.

6]. They even differ by their blood supply; splenic implants use the surrounding peritoneal vessels, rather than the splenic artery [7].

Splenosis can occur anywhere in the body, but it is mainly found in the abdomen, usually at port sites of previous surgeries [6, 7]. Statistically, it has been shown to occur in 16–17% of patients who undergo elective splenectomy for hematological disease, and in 44–76% of patients with a posttraumatic splenectomy due to spillage after traumatic insult [6, 8]. In our case, although the patient did not report any hematological diseases, the patient underwent a splenectomy due to a trauma, thus increasing the risk of splenic tissue spillage in the most common location, the abdomen.

In light of splenosis usually being asymptomatic, it is most commonly incidentally discovered, during any

abdominal surgery or through an evaluation for another disease. It is usually suspected in patients with a history of a splenectomy and symptomatic. In this case, our patient was asymptomatic, nor did she experience any discomfort. Her main complaint was her failure to lose weight. Although the first part of the surgery was completed, gastric band removal, it was solely due to the fear of an erosion or inflammation of the gastric band that can later on cause an easily avoidable complication. Thus, only the gastric band was removed and the sleeve gastrectomy was aborted due to the splenotic implant locations that made the surgery anatomically difficult and dangerous as there was a high risk of bleeding.

On the other hand, symptoms of splenosis can be non-specific, for example, abdominal pain due to an infarction, enlarging mass, obstruction from the adhesions, gastrointestinal bleeding, hydronephrosis, or pressure by mass effect [9]. Although our patient was asymptomatic, she did experience an enlarged abdomen which was thought to be a result of her weight gain. Looking back, this may also be an effect of the splenosis, rather than simply from the retired gastric band.

The diagnosis of splenosis is normally well established by a radionuclide scintigraphic study of the liver and spleen with technetium-99 m sulfur colloid, which can accurately detect splenic tissue as small as 1 cm in diameter [5]. Scintigraphy with technetium-99 m radiolabelled heat-damaged erythrocytes or with indium 111-labeled platelets, and ferumoxides-enhanced MRI are other valuable tools for diagnosing splenosis [10, 11]. Once splenosis is confirmed, no further workup is necessary unless the patient is symptomatic. Unfortunately, our patient's case was found incidentally upon laparoscopic surgery, which is rarely used to diagnose. We were able to recognize it through direct observation. Usually splenosis is confirmed by radionuclide scintigraphic study, which did not apply in our case.

Despite not knowing the degree of function of the spilled splenic tissue, splenosis may be immunologically functional. This may be demonstrated by a peripheral blood smear and noting the presence of damaged, non-functional RBCs, like H-J bodies, Heinz bodies, and pitted red cells, which increase in the asplenic state.

Earlier in medicine, the preferred treatment of choice for identification and removal of ectopic splenotic implants is by surgery. Nowadays, since one can visualize the retrogastric pouch in laparoscopic surgery, which is not seen through the open approach, laparoscopic surgery is now preferred as it decreases the risk of spillage, using an endo-bag. Although, "the seeding of spilled splenic cells under high-pressure pneumoperitoneum during a slightly longer procedure is a new and specific problem being faced in laparoscopic splenectomy, minimally invasive surgery such as laparoscopy remains the ideal treatment for

patients with symptomatic splenosis" [12]. Although, there hasn't been a lot of research concerning laparoscopic surgery in an asymptomatic patient, in our case, the sole purpose of the surgery was for a gastric band removal followed by a gastric sleeve, which was then complicated by the incidental finding of splenosis in the abdomen.

Conclusion

In conclusion, great technical and meticulous care is required during laparoscopic procedures, specifically splenectomy, in order to avoid rupturing the splenic capsule, spilling, and splenetic implantations known as splenosis. Nevertheless, in the case of splenosis, it is not necessarily considered as a potential life threatening and dangerous incident, especially in asymptomatic patients and do not require surgery unless they are symptomatic. Although known to be a rare incidence with only a few reported cases after laparoscopic splenectomy [7], splenosis cases are expected to increase in the future.

Conflict of Interest

None declared.

References

1. Storsteen, K., and W. Remine. 1953. Rupture of the spleen with splenic implants: splenosis. *Ann. Surg.* 135:551.
2. Vento, J. A., F. Peng, R. P. Spencer, and W. H. Ramsey. 1999. Massive and widely distributed splenosis. *Clin. Nucl. Med.* 24:845–846.
3. Higgins, R. V., and J. L. Crain. 1995. Laparoscopic removal of pelvic splenosis: a case report. *J. Reprod. Med.* 40:140–142.
4. Barbaros, U., A. Dincag, and E. Kabul. 2006. Minimally invasive surgery in the treatment of splenosis. *Surg. Laparosc. Endosc. Percutan. Tech.* 16:187–189.
5. Fremont, R. D., and T. W. Rice. 2007. Splenosis: a review. *South. Med. J.* 100:589–593.
6. Vydianath, B., M. Gurumurthy, and J. Crocker. 2005. Solitary ovarian splenosis. *J. Clin. Pathol.* 58:1224–1225.
7. Kumar, R. J., and P. A. Borzi. 2001. Splenosis in a port site after laparoscopic splenectomy. *Surg. Endosc.* 15:413–414.
8. Wold, P. B., and M. A. Farrell. 2002. Pleural nodularity in a patient with pyrexia of unknown origin. *Chest* 122:718–720.
9. Tsitouridis, I., M. Michaelides, C. Sotiriadis, and M. Arvaniti. 2010. CT and MRI of intraperitoneal splenosis. *Diagn. Interv. Radiol.* 16:145–149.
10. Brancatelli, G., V. Vilgrain, M. Zappa, and R. Lagalla. 2005. Case 80: splenosis. *Radiology* 234: 728–732.

11. Imbriaco, M., L. Camera, A. Manciuira, and M. Salvatore. 2008. A case of multiple intra-abdominal splenosis with computed tomography and magnetic resonance imaging correlative findings. *World J. Gastroenterol.* 14:1453–1455.
12. Targarona, E. M., J. J. Espert, F. Lomena, and M. Trias. 1999. Inadequate detection of accessory spleens and splenosis with laparoscopic splenectomy. *Surg. Endosc.* 13:196–197.

Supporting Information

Additional Supporting Information may be found online in the supporting information tab for this article:

Video S1. Incidental Finding Of Splenosis.

Video S2. Laparoscopic Gastric Band Removal Complicated by Splenosis.