Schloffer’s tumor: Case report and review of the literature

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ABSTRACT

INTRODUCTION: The so-called Schloffer tumor (ST) is a rare inflammatory pseudotumor. It usually appears several years after abdominal surgery or trauma.

PRESENTATION OF CASE: A 32-year-old man was referred to our hospital complaining of a painful mass in the left hypochondrium, postprandial distension and a weight loss of about 14 kg. He had had a left inguinal hernioplasty without mesh the previous year. Ultrasonography of the abdomen showed a 2 cm × 2 cm hypoechoic lesion in contact with the abdominal wall. Computerized tomography of the abdomen showed a heterogeneous mass in the great omentum.

Laparoscopic exploration revealed an omental mass firmly attached to the abdominal wall. A great deal of purulent fluid spread during the procedure. Due to the difficult exploration, the procedure converted to hand assisted laparoscopy. We find an omental tumor involving the stomach and the transverse colon. Inside the mass there were purulent material and non-absorbable sutures. A drain was left inside the cavity of the abscess. Histological examination showed chronic inflammation.

DISCUSSION: ST characteristically presents a central chronic abscess containing non-absorbable sutures. It has been described after appendectomy, hernioplasty, hysterectomy, gastrectomy or colonic resections. Although benign, its progressive growth and infiltrating behavior resemble malignant tumors.

CONCLUSION: We suggest that a mini-invasive approach should always be performed. The interesting thing about this case is the appearance of the tumor in a place far away from the previous surgical site. A simple drainage and removal of suture material solves the problem of these patients.

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1. Introduction

The so-called Schloffer tumor (ST) is a rare inflammatory pseudotumor with aggressive connective tissue proliferation and frequent infiltration of neighboring abdominal organs. It usually appears several years after abdominal surgery or trauma, and causes substantial problems with the interpretation of clinical and morphological findings.¹

There are few case-reports published and all of them show tumors in the surgical site of the previous surgery. The tumor’s frequency is unknown. In this article we describe one case and its treatment with an alternative mini-invasive approach. Finally, we make a literature review of the abdominal case reports.

2. Presentation of case

A 32-year-old man was referred to our hospital complaining of a painful mass in the left hypochondrium, postprandial distension and a weight loss of about 14 kg in the previous three months. He had no fever, chills or any history of similar episodes of pain.

He had had a left inguinal hernioplasty without mesh the previous year. He did not present any medical disease. Routine laboratory tests were normal. At physical examination a left hypochondrium tenderness was detected.

Plain abdominal X-ray was normal. Ultrasonography (USG) of the abdomen showed a 2 cm × 2 cm hypoechoic lesion in contact with the abdominal wall (Fig. 1). Computerized tomography (CT) of the abdomen showed a heterogeneous mass in the great omentum below the stomach and above the transverse colon (Fig. 2). Upper endoscopy and colonoscopy were normal.

Laparoscopic exploration revealed an omental mass firmly attached to the abdominal wall. A great deal of purulent fluid spread during the procedure. Due to the difficult exploration of the abdominal cavity, the procedure was converted to hand assisted laparoscopy by means of a wound retractor (Alexis®, Applied Medical, Rancho Santa Margarita, CA, USA), enlarging 4 cm the incision of the 5 mm trocar on the left hypochondrium.

We find an omental tumor involving the stomach and the transverse colon. Inside the mass there were purulent material and...
non-absorbable polypropylene sutures (Figs. 3 and 4). Debridement of the wall abscess was performed and a piece of the wall was sent for frozen histology examination which proved intra-operative, negative for neoplastic cells.

An intra-operative fistulography revealed that the abscess cavity was not communicated with the bowel lumen. A drain was left inside the cavity of the abscess.

The patient had a full recovery and was discharged three days after surgery. Final histological examination showed chronic inflammation.

3. Discussion

This tumor was first described by Schloffer in 1809. He evaluated four patients with chronic inflammatory tumor of the abdominal wall following inguinal hernioplasties.

ST characteristically presents a central chronic abscess containing non-absorbable sutures. Bacteriologic study reveals low virulent germ, generally Staphylococcus, and a thick wall of fibrous tissue.

Macroscopically, they are hard consistent and strongly adherent to neighboring tissues. The volume varies from a small tumor to giant masses of 2 or 3 kg with a central abscess.

Histological examination reveals abundant fibrous granulation tissue and lymphocyte infiltration caused by foreign body reaction. These tumors occur postoperatively after an undetermined free period, which can range from months to years. In abdominal surgery it has been described after appendectomy, hysterectomy, oophorectomy, gastrectomy, cholecystectomy, biliary surgery or colonic resections.

Abdominal wall, stomach, colon, omentum, testis and bladder can be invaded. Although benign, its progressive growth and infiltrating behavior resemble malignant tumors.

The tumor-like symptoms predominate over inflammatory symptoms, and general status is not affected.

The sonographic appearance of suture granulomas is characterized by hyper echoic double lines (rail-like lines) or single lines within a hypoechoic lesion. These sonographic signs enable the correct preoperative diagnosis in a high percentage of cases.

Desmoid tumors, organized hematomas and fibrosarcomas must be considered in differential diagnosis. Therefore biopsy is a most crucial procedure.

It was suggested that ST should also be taken into consideration as differential diagnosis in patients with a history of past operations and cumulative operative wounds of the abdomen revealed by FDG-PET.

Fig. 1. USG showed a hypoechoic lesion measuring 2 cm × 2 cm with abdominal wall contact.

Fig. 2. Pre-operative CT scan showed a heterogeneous mass in greater omentum in contact with abdominal wall.

Fig. 3. Omental tumor involving stomach and transverse colon, with purulent material and non-absorbable polypropylene sutures.

Fig. 4. Non-absorbable sutures (polypropylene).
Accumulation images in FDG (ring-shaped appearance) should alert surgeons of the possibility of diagnosing foreign body granuloma, in addition to patient’s history, US and CT findings. The suggested treatment is surgery. Some authors suggest that complete tumor resection should always be performed, and others just simply drain the tumor. In our case, we only performed abscess drainage and removal of non-absorbable suture material after histological confirmation of benignity.

The interesting thing about this case is the appearance of the tumor after a one-year interval, in a place far away from surgical site. We think it was possibly linked with polypropylene sutures of omentum during the hernioplasty. The patient relates he had had a large left hernia, surely with omentum inside.

4. Conclusion

When a tumor appears after surgery, ST should always be suspected. In many laparotomies performed on daily basis using non-absorbable suture material, suture threads intolerance produces small abscesses. The formation of these tumors would be due to a single local overreaction factor.

We suggest that a mini-invasive approach to these tumors should always be performed. Complete resection is not required, if we have a negative frozen histologic examination. A simple drainage and removal of suture material, without major resections, solves the problem of these patients.

**Conflict of interest**

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**Ethical approval**

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

**Author contributions**

All the authors have contributed in this study. Federico J. Yazi: writing up case report. Carlos M. Canullan, Nicolas F. Baglietto and Roberto F. Klappenbach: performed the operation. Facundo Alonso Quintas: collected data for this work. Juan Alvarez Rodriguez, Luis T. Chiappetta Porras: study design and interpretation.

**Key learning points**

- Schloffer tumor is an inflammatory pseudotumor.
- It usually appears several years after abdominal surgery.
- We suggest a mini-invasive approach, a simple drainage and removal of suture material, without major resections.

**References**

1. Lorenz G, Braun E. The Schloffer tumor. Morphology and clinical aspects of 3 cases. Zentralbl Allg Pathol 1988; 134(4–5): 479–84.
2. Schloffer H. Über chronisch entzündliche Bauchdesken-tumoren nach Herniooperationen. Arch Klin Chir 1908; 88: 1.
3. Lanza O, Heidenreich A, Bun R. Inflammatory tumors of Braun and Schloffer. Prensa Med Argent 1965; 52(36): 2228–30.
4. Mohadeb M, Ormaechea IR, Serrano E. Braun and Schloffer’s tumor. Sem Med 1963; 12(7): 196–8.
5. Yoshida R, Tanaka K, Konohana A, Shin H, Sato T, Karube M, et al. A case of Schloffer tumor. Jpn J Clin Dermatol 2006; 60(7): 601–3.
6. Jurado P. Schloffer’s tumor. Apropos of 2 cases. Bol Trab Soc Cir B Aires 1961; 45(7): 377–85.
7. Bortini AC. Apropos of Schloffer’s tumor. Bol Trab Soc Cir B Aires 1961; 45(October): 703–5.
8. Galeano F, Desideri IM. Schloffer’s tumor. Testicular invasion. Prensa Med Argent 1961; 48: 2136–9.
9. Matsuda K, Masaki T, Toyoshima O, Ono M, Muto T. The occurrence of an abdominal wall abscess 11 years after appendectomy: report of a case. Surg Today 1999; 29(9): 931–4.
10. Augustin G, Korolja D, Skegro M, Jakic-Razumov J. Suture granuloma of the abdominal wall with intra-abdominal extension 12 years after open appendectomy. World J Gastroenterol 2009; 15(32): 4083–6.
11. Shibata T, Katsuramaki T, Mizuguchi T, Hirata K. A case of Schloffer tumor with false-positive results in PET screening. J Jpn Surg Assoc 2006; 67(12): 2975–8.
12. Maeda K, Adachi A, Hashimoto N, Takano N, Uchiyama T. A case of a Schloffer tumor and a Braun tumor which were difficult to differentiate from metastatic tumors due to FDG-PET positive. Nihon Rinsho Geka Gakkai Zasshi 2007; 68(12): 3106–9.
13. Rettenbach T, Macheiner P, Hollerweger A, Gritzmann N, Weismann C, Todor-off B. Suture granulomas: sonography enables a correct preoperative diagnosis. Ultrasound Med Biol 2001; 27(3): 343–50.
14. Ogawa M, Kubo S, Yamamoto T, Tanaka S, Tsuda Y. A Schloffer tumor treated 27 years after appendectomy. Osaka City Med J 2007; 53(2): 105–8.
15. Tabata K, Miyata K, Yusa N, Takeuchi E, Goto Y, Kobayashi Y. A case of abdominal foreging granuloma showing a ring-shape appearance in FDG-pet. Nihon Rinsho Geka Gakkai Zasshi 2009; 70(2): 594–8.
16. Imperiale L, Marchetti C, Salerno L, Iadarola R, Bracchi C, Vertechy L, et al. Nonabsorbable suture granuloma mimicking ovarian cancer recurrence at combined positron emission tomography/computed tomography evaluation: a case report. J Med Case Rep 2014; 8 (June): 202.
17. Takahara K, Kakinoki K, Ikoma S, Ueno K, Tobu S, Satoh Y, et al. Suture granuloma showing false-positive findings on FDG-PET. Case Rep Urol 2013; 2013: 472642.
18. Relles B, Talbott VA, Fong Z, Maxwell IV PJ. Symptomatic suture granuloma of the cecum after silk suture appendectomy. Am Surg 2013; 79(May (5)): E197–8.
19. Arora A, Negi SS, Thapar S, Mukund A, Jain D, Bhatia V, et al. Post cholecystectomy pseudotumor: beware of this masquerader! Trop Gastroenterol 2012; 33(July–September (3)): 222–5.
20. Uzcátegui-Paz E, González-Paredes G. Foreign body granuloma simulating malignant disease in the bilary tract. Gastroenterol Hepatol 2009; 32: 32–5.
21. Lynch TH, Waymont B, Beacock CJ, Wallace DM. Paravesical suture granuloma: a problem following herniorrhaphy. J Urol 1992; 147: 460–2.
22. Mathai AM, Naik R, Kumar S, Pai M. Postoperative intestinal perforation with multiple suture granulomas. Trop Gastroenterol 2009; 30 (April–June (2)): 102–4.
23. Miyake M, Takashima K, Hiramatsu T, Hirao K. Paravesical suture abscess diagnosed 4 years after transvaginal hysterectomy. Nihon Hinyokika Gakkai Zasshi 2006; 97 (November (7)): 844–7.