Techniques in Coloproctology (2019) 23:1019–1020
https://doi.org/10.1007/s10151-019-02090-y

CORRESPONDENCE

Purulent meningitis as a rare complication following laparoscopic ventral rectopexy: suspected etiopathogenesis and treatment

Antoine Ailhaud[1] · Bertrand Trilling[1,2] · Jean-Luc Faucheron[1,2]

Received: 20 May 2019 / Accepted: 9 September 2019 / Published online: 3 October 2019

Dear Sir,

Laparoscopic ventral rectopexy using synthetic mesh is nowadays considered as the gold standard treatment for external rectal prolapse, enterocele and internal rectal prolapse [1]. In a recent review of the literature, we found that complications, mainly benign in nature, occurred in 17.4% of patients [2]. Seven mesh-related complications (1.2%) were reported, pointing out the rarity of this complication. No case of purulent meningitis following a rectopexy has been published yet.

A 71-year-old woman, with hypertension, diabetes, scleroderma and a previous hysterectomy was operated on for a full-thickness rectal prolapse by the senior author (JLF). The already published procedure [3] involves use of two synthetic meshes measuring 20 × 1.5 cm (ParietexTM ProsupTM Tyco Healthcare, United States Surgical, Norwalk, CT, USA) that are fixed on the left and right anterior aspect of the lower rectum, respectively, using five 4 mm titanium staples (Endo Universal* 65° 4.0 mm, ref 173054, Autosuture*, Tyco Healthcare, United States Surgical, Norwalk, CT, USA)—and fixed together to the right side of the promontory using three spiked chromium staples (Protack* 5.0 mm, ref 174006, Autosuture*, Tyco Healthcare, United States Surgical, Norwalk, CT, USA). No complications occurred during the procedure. The patient was discharged the following day and her early postoperative course was uneventful. 40 days later, she was admitted to the emergency unit of the local hospital for an acute septic syndrome associated with signs of meningitis. The computed tomography scan revealed an L4–L5 and L5–S1 spondylodiscitis without abscess or perforation, but with a sacral area inflammation. Magnetic resonance imaging (MRI) revealed bifocal spondylodiscitis. A blood test showed *Escherichia coli* bacteremia. *Escherichia coli* was also found in the cerebrospinal fluid. Rectal examination was normal. Rectosigmoidoscopy did not reveal any abnormality, and specifically no perforation by the staplers, tackers or meshes. However, the diagnosis was purulent meningitis secondary to sacral rectopexy. The patient was treated with cefotaxime and ofloxacin. After a stay in the intensive care unit, an explorative laparoscopy was proposed to identify the cause of the infection and to remove the mesh. During surgery, no collection or any technical or anatomical problem was found. The two meshes were easily removed, as well as the ten staples and the three tackers. The patient was treated with antibiotics for 3 months. An MRI was performed 6 months after the surgery and found no collection. There was a clear regression of the contrast enhancement of the sacral area. A blood test performed at the same time found no indices of residual inflammation. The patient fully recovered from this episode and was asymptomatic at the last follow-up visit 4 years later.

Bacterial meningitis represents 14% of all the meningitis in adults hospitalized in the USA [4]. *Escherichia coli* seems to be the most common Gram-negative organism causing meningitis. Only four articles reporting pyogenic spondylodiscitis after laparoscopic sacral rectopexy using a mesh have been published [5–8], so this complication can be considered rare after ventral rectopexy. To the best of our knowledge no case of purulent meningitis after rectopexy has yet been published. This raises the question about the etiopathogenesis of this specific complication. As surgeons, we first of all suspected that the infection was due to rectal erosion or perforation from the mesh with contiguity transmission through the meshes, staplers or tackers to the intervertebral disc. However, in this particular case, no rectal perforation was demonstrated by rectal examination, rectosigmoidoscopy or MRI. Another explanation for the onset

✉ Jean-Luc Faucheron
JLFaucheron@chu-grenoble.fr

[1] Colorectal Unit, Ambulatory Unit, Department of Surgery, Michallon University Hospital, CS 10 217, 38000 Grenoble Cedex, France

[2] University Grenoble Alps, UMR 5525, CNRS, TIMC-IMAG, 38000 Grenoble, France

of meningitis could have been a previous infection of the meshes, staplers or tackers before insertion. However, the technique we use never uses direct hand manipulation of the foreign bodies: meshes are inserted from packaging into the trocar, as well as staplers or tackers [3]. A third explanation for the occurrence of infection could be the transfixing of the staples through the rectal wall. This is technically impossible as the staple size we used to fix the meshes to the rectal muscular wall is less than 4.0 mm deep and therefore the staples cannot protrude into the rectal lumen. In fact, the choice of staples instead of sutures is based on the fact that the fixation of the meshes is safer. Up to now we have used this mesh fixation technique for more than 400 cases and never observed this kind of complication. Another cause of meningitis might have been hematogenous transmission of *Escherichia coli* from another site of infection, for instance urinary infection, so that meningitis would have been considered as a coincidence following the rectopexy. However, owing to the rarity of purulent meningitis in the general population, this assertion is purely speculative. We do not know if the purulent meningitis was a surgical complication, or a coincidence. Both seem difficult to believe, but there is no other explanation for this disease. Colorectal surgeons, general surgeons and other physicians must be aware of this rare but acute complication that can occur following laparoscopic mesh rectopexy.

Acknowledgements The authors want to thank Dr Edouard Girard and Dr Pierre-Yves Sage for their help in looking at the literature, reviewing the manuscript and taking care of the patient.

Funding None.

Compliance with ethical standards

Conflict of interest Jean-Luc Faucheron has a consulting agreement with AMI, Covidien, Medtronic, Ethicon, MSD, Legrand, and Johnson & Johnson Beauté Santé France. This has had no impact on the results of this study. Antoine Ailhaud and Bertrand Trilling have no conflicts of interest or financial ties to disclose.

Ethical approval The study has been performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments. Submission of the data to a Committee for the Protection of Individuals was unnecessary.

Informed consent For this type of study formal consent is not required.

References

1. Reche F, Faucheron JL (2015) Laparoscopic ventral rectopexy is the gold standard treatment for rectal prolapse. Tech Coloproctol 19:565–566
2. Faucheron JL, Trilling B, Girard E, Sage PY, Barbois S, Reche F (2015) Anterior rectopexy for full-thickness rectal prolapse: technical and functional results. World J Gastroenterol 21:5049–5055
3. Faucheron JL, Voirin D, Riboud R, Waroquet PA, Noel J (2012) Laparoscopic anterior rectopexy to the promontory for full-thickness rectal prolapse in 175 consecutive patients: short- and long-term follow-up. Dis Colon Rectum 55:660–665
4. Mount HR, Boyle SD (2017) Aseptic and bacterial meningitis: evaluation, treatment, and prevention. Am Fam Physician 96:314–322
5. Draaisma WA, van Eijck MM, Vos J, Consten ECJ (2011) Lumbar discitis after laparoscopic ventral rectopexy for rectal prolapse. Int J Colorectal Dis 26:255–256
6. Propst K, Tunitsky-Bitton E, Schimpf MO, Ridgeway B (2014) Pyogenic spondylodiscitis associated with sacral colpopexy and rectopexy: report of two cases and evaluation of the literature. Int Urogynecol J 25:21–31
7. Pasquer A, Djeudji F, Pechoux A, Barth X (2017) Spondylodiscitis after rectopexy: diagnostic of a rare complication. Tech Coloproctol 21:63–64
8. Formijne Jonkers HA, Poierrie N, Draaisma WA, Broeders IAMJ, Consten ECJ (2013) Laparoscopic ventral rectopexy for rectal prolapse and symptomatic rectocele: an analysis of 245 consecutive patients. Colorectal Dis 15:695–699