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# Lumbosacral spondylodiscitis due to rectal fistula following mesh penetration 7 years after colpopexy

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## ABSTRACT

**INTRODUCTION:** The primary source of spondylodiscitis cannot always be identified. However, not treating the original focus might preclude successful healing due to further spread of the causative microorganisms.

**CASE REPORT:** An 80-year-old woman presented with lumbar spondylodiscitis. She received surgical debridement and stabilization with transforaminal lumbar interbody fusion and tailored antibiotic therapy after isolation of *Enterococcus* spp. Despite appropriate treatment, the patient's condition continued to worsen. An extensive search for the primary infection source finally revealed a rectal fistula caused by a synthetic mesh that had been inserted 7 years before for abdominal sacrocolpopexy. Only after removal of the fistula and protective ileostomy did the patient's condition improve, allowing successful healing of the spondylodiscitis. After a follow-up period of one year no infection relapse was observed.

**CONCLUSION:** In cases of spondylodiscitis that are resistant to adequate treatment, a search for infection source must be continued until the focus is found and treated. The presence of uncommon enteric microorganisms causing spondylodiscitis, such as *Enterococcus* spp., is suggestive of contiguous spread and should therefore be further investigated.

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## 1. Introduction

Spondylodiscitis unrelated to a previous spinal procedure is a relatively common spinal disease. Microorganisms usually enter the intervertebral disc following hematogenous seeding from another infection focus. Alternatively, direct spread from contiguous infected tissue to the spine may occur [1]. In approximately 30% of the patients, the primary infectious source cannot be identified [2,3], and most of these cases resolve after appropriate antibiotic treatment.

We report on a patient who had spondylodiscitis caused by *Enterococcus faecalis* due to a rectal fistula caused by intrarectal penetration of a mesh that had been inserted 7 years before during abdominal sacrocolpopexy (ASC). The spondylodiscitis could not be properly managed until the infectious source had been found and successfully treated.

## 2. Presentation of case

An 80-year-old woman presented with history of increasing low back pain during 2 weeks, with radiating pain into the buttocks. No

previous spine-related medical history was reported. Her history included glaucoma, hysterectomy, cholecystectomy, augmentation of the urinary bladder and for recurrency of prolapse abdominal sacrocolpopexy 7 years before. The physical examination did not reveal any pathologic findings.

Initial imaging examinations (conventional radiographs and magnetic resonance imaging) of the lumbar spine showed age-related degenerative changes, but no significant pathological findings. She developed progressive right abdominal pain and had rising infection markers in blood tests. She was examined by the general surgeons. Diverticulitis was initially suspected, and she received ceftriaxone and metronidazole. However, the diagnosis was not confirmed after abdominal ultrasonography and contrast-enhanced computed tomography (CT), and the abdominal symptoms did improve.

The back pain progressively increased and radiating leg pain developed. The white cell count and C-reactive protein (CRP) level continued to rise; another magnetic resonance imaging (MRI) scan was therefore performed. Spondylodiscitis at L4/5 and L5/S1 and an epidural abscess extending from L3 to S1 were diagnosed (Fig. 1). When the first MRI from 6 days before was reexamined, no signs of infection were observed.

The patient started to develop a septic condition and developed progressive unbearable pain at both legs, so debridement, evacuation of the epidural abscess and dorsal instrumentation of

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**Fig 1.** (A) Magnetic resonance imaging (MRI) on the day of admission, with no signs of infection visible. (B) Lumbar MRI performed only 6 days later, showing spondylodiscitis at L5/S1 and an epidural abscess extending to L3.

L4–S1 with transforaminal lumbar interbody fusion (TLIF) were performed the following day.

*Enterococcus faecium* and *Enterococcus faecalis* were isolated in the intraoperative smears. In accordance with the antibiogram, tailored intravenous antibiotic therapy with vancomycin was initiated. In view of the atypical spectrum of the microorganisms isolated, abdominal ultrasonography was repeated, but again did not reveal any pathological findings. Endocarditis was ruled out after transesophageal echocardiography. Urinary studies were negative.

The patient's condition improved during the first three days after surgery but then, in spite of surgical debridement and tailored antibiotic therapy, she newly developed signs of sepsis with high fever, tachycardia, and hypotension. Infection markers continued to rise, and blood cultures were positive for the enteric flora previously isolated in the surgical samples. Therefore, a new MRI of the lumbar spine was performed 7 days after surgery. A new epidural abscess reaching the level of T12 was identified. Additionally, a new abscess in the left psoas muscle was seen. Surgical decompression and abscess drainage from L1 to L4 was performed. The psoas abscess was drained under CT guidance.

The new intraoperative samples were positive for *Bacteroides thetaiotaomicron*, *E. faecium*, and *E. faecalis*. Antibiotic therapy was accordingly changed toward linezolid, rifampicin, and imipenem.

Due to the persistent polymicrobial infection after both surgical and antibiotic treatment, a further search for another primary source of infection was carried out. Gastroscopy showed no pathological findings. A CT scan revealed the presence of a foreign body at the rectum, which had not been previously observed. A colonoscopy showed a rectosacral fistula with a synthetic mesh inside the rectal lumen and a transmural fistula, explaining the direct bacteria inoculation and therefore the uncontrollable spondylodiscitis (Fig. 2). The mesh had been inserted during ASC in 2006. The open exploration via lower midline laparotomy showed an almost “frozen” pelvis with tight adhesences of small bowel after repetitive pelvic procedures (see above). The rectosigmoidal tube was folded, surrounded by inflammatory scar tissue and tightly

attached to the pelvic floor. After its mobilisation an anterior rectotomy and simultaneous transanal rectoscopy had to be performed to localize the intraluminal foreign body (mesh). The cigar-like folded mesh – surrounded by fibrous tissue – could be dissected and liberated up on top of the right sacroiliac joint where it had been fixed by non-resorbable stitches. A fistula towards the spinal column could be opened and debrided. Both ureters were localized and protected. Open anterior rectosigmoidal resection with fistula extirpation, end-to-end anastomosis 8 cm above the anocutaneous line and a protective loop ileostomy were performed. The fistula towards the spinal column was packed with an antibacterial sponge.

After successful elimination of the infection focus with full resection of the fistula, the patient's clinical condition improved quickly and infection markers declined. Wound healing was uneventful. Antibiotic therapy was deescalated to vancomycin, ceftriaxone and rifampicin. The patient started further mobilisation, regaining her walking ability during the hospital stay.

The ileostomy was closed uneventfully after 6 weeks and antibiotic therapy was ended, with no further infection relapse after a follow-up period of one year.

### 3. Discussion

In patients with spondylodiscitis, the primary infection source must be treated vigorously in order to avoid subsequent episodes of bacteremia or further direct inoculation, which preclude successful infection healing, as in the present case. The most common primary source of infection in spondylodiscitis is the urinary tract, followed by the respiratory tract and oral infections [2,3]. However, an infection source is never found in 24–33% of cases [2,3]. In the present case the mesh was not initially considered as a potential source of infection, as the ASC had been performed over 7 years before.

ASC is a well-established surgical procedure for the treatment of pelvic organ prolapse, aiming to correct prolapse of the vaginal vault by replacing the natural anatomic support normally provided by the uterosacral and cardinal ligaments. This is achieved by tack-

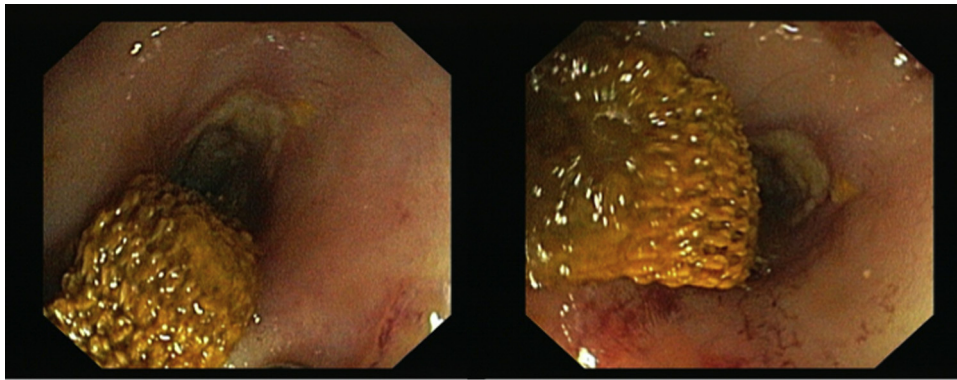


Fig. 2. Colonoscopic views of the synthetic mesh inside the rectal lumen.

ing the vagina (or the vaginal cuff in patients with hysterectomy) to the sacral promontory. One of the most commonly reported complications is mesh erosion into the vaginal vault, with a reported erosion risk varying between 3.4% and 7.6% [4,5], and reaching even 10.5% after 7 years of follow-up [6], but fistulization is relatively uncommon. Most mesh erosions can be successfully treated with transvaginal mesh removal [7] Bowel penetration by the mesh after colpopexy is a rarity, and a literature search identified only three isolated case reports [8–10]. None of them was associated with vertebral osteomyelitis.

Sacral osteomyelitis and lumbar spondylodiscitis are rare complications following ASC, with only a few cases reported to date. Propst et al. [11] recently published two cases and reviewed 26 previously published between 1957 and 2012. In 30% of the cases reviewed, spondylodiscitis was related to vaginal mesh erosion or to the presence of a fistulous tract from the vagina to the infected spine. Half of the reported cases included removal of the mesh as part of the treatment, and six cases (23%) were successfully managed with antibiotic treatment alone. Seventy percent of the reported patients presented with osteomyelitis within the first year after surgery. However, there were also some patients in whom the onset of symptoms started 7 or 8 years after ASC, as in the present case. To the best of our knowledge, this is the first report of bowel penetration by the mesh after colpopexy, presenting with spondylodiscitis as the initial symptom.

The isolation of *Enterococcus* spp. as a cause of spondylodiscitis is extremely uncommon and has only been described in a few isolated case reports. It is believed that enterococci may have a lower degree of affinity for joint tissue, as bone and joint infection by these microorganisms is rare in comparison with rates of enterococcal bacteremia and endocarditis [12]. In the few reported cases, the most common source of vertebral infection by *Enterococcus* spp. was either endocarditis [12–14] or the genitourinary tract [12,15]. Only one case was found in which polymicrobial spondylodiscitis, including infection with *Enterococcus faecalis*, was related to the intestinal tract, following contiguous spread through anastomotic leakage after rectal resection [16]. The unlikelihood of this microorganism as a cause of spondylodiscitis is worth noting. Its presence in cases of spondylodiscitis should immediately arouse a suspicion of contiguous spread from an enteric source, as seen in the present case and the one reported by Gottwald et al. [16].

#### 4. Conclusion

In patients with spondylodiscitis, all previous operations – even minor ones – should be taken into account in the patient's history, especially if foreign bodies have been implanted. A search for the primary source of infection is paramount in order to achieve successful treatment. When uncommon enteric microorganisms such

as *Enterococcus* spp. are isolated at the spine, possible contiguous spread should be suspected, investigated, and if necessary treated.

#### Conflict of interests

None of the authors has any potential conflict of interest in relation with this work.

#### Funding

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#### Ethical approval

Not required.

#### Consent

Written informed consent was obtained from the patient for the case report and accompanying images to be published.

#### Author's contribution

All four authors were directly involved in the patients' management and treatment. S. Núñez-Pereira and NV Huhman reviewed the literature and wrote the manuscript. KP Rheinwalt and V Bullmann analysed and reviewed the manuscript.

#### Guarantor

S. Núñez-Pereira.

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