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Surgery for chronic mesh infection occurred 10 years after sacrectomy – Mesh resection and mesenteric leaf repair: A case report



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ABSTRACT

INTRODUCTION: Sacrectomy to treat malignant tumors is often results in large pelvic defects to require reconstruction, using a prosthetic mesh. Importance is to avoid its direct contact of mesh with intestine to prevent adhesion between them.

PRESENTATION OF CASE: An 83-year old woman who was diagnosed with a mesh infection caused by a small bowel penetration 10 years after sacrectomy combined with mesh reconstruction for chordoma. In the first operation, because of incomplete re-peritonealization due to a large defect in the retroperitoneum, a mesh unavoidably was compelled to contact with the small intestine. We subtotally removed the mesh and performed mesenteric leaf repair of the pelvic defect.

The postoperative course was complicated by infection of the pelvis. She was discharged 59 days after surgery with a little purulent discharge from perineal wound, which was persisted for two years after operation.

DISCUSSION/CONCLUSION: We used the mesenteric leaf to repair the pelvic defect at the operation. This procedure might be the best alternative, when the use of mesh has to be avoided like present case. To our knowledge, this is the first report of mesh infection after sacrectomy, so we report herein.

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1. Introduction

Total or partial sacrectomy is occasionally required to treat malignant tumors involving the sacrum, such as chordomas, osteosarcomas, and recurrent or invasive colorectal cancer. These radical surgical procedures result in a large pelvic defect that requires soft-tissue reconstruction [1].

The defect is associated with a high risk of complications, such as perineal wound dehiscence, hernia, bowel obstruction, and abscess [2,3,4]. Various techniques can be used to repair pelvic defect, including primary suture repair, myocutaneous flaps, and prosthetic mesh [1,5,6,7]. Here, we report a case of chronic infection caused by small intestinal penetration 10 years after a sacrectomy and abdominosacral resection. We treated by performing subtotal removal of the mesh and reconstruction of the pelvic defect using the mesenteric leaf and omentum.

2. Presentation of case

An 83-year-old woman, presented with sacralgia and low-grade fever. The skin around back was swollen with reddish and fever. She had undergone an S2-S5 sacrectomy and abdominosacral resection to treat sacral chordoma 10 years ago. At that time, pelvic defect had been reconstructed using a polypropylene mesh (Marlex mesh™). Interim 10 years, she had occasionally suffered low-grade fever with an elevation of serum inflammatory markers.

Pelvic CT and MRI showed fluid build-up, with free air around the dorsum of the mesh (Fig. 1). This finding suggested an infectious process involving gas-producing bacteria, and/or a perforation of the intestine.

The infection was not improved by administration of antibiotics (Sulbactam/Cefoperazone; 1 g/day for 1 day and Meropenem; 1.5 g/day for 3 days), and then, the operation was indicated.

At the operation, the penetrated small intestine adhered severely to pelvic mesh. We performed partial resection of small bowel and subtotal removal of the mesh, because of severe adhesion of a part of mesh with sacrum (Figs. 2 and 3). The mesenteric leaf and omentum were used to cover the pelvic defect (Fig. 4).

Post operatively, the patient's general condition is fair except for persistent infection of the pelvic cavity with a little plurent discharge from the surgical wound. Enterobacteria, *Candida albi-*

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Fig. 1. Arrow indicates fluid collection with air around the dorsum in MRI (T2).

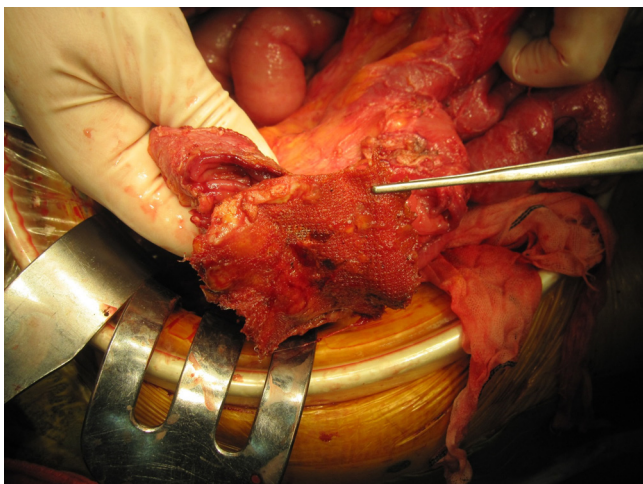


Fig. 2. A subtotaly resected mesh adhered severely to the small intestine.

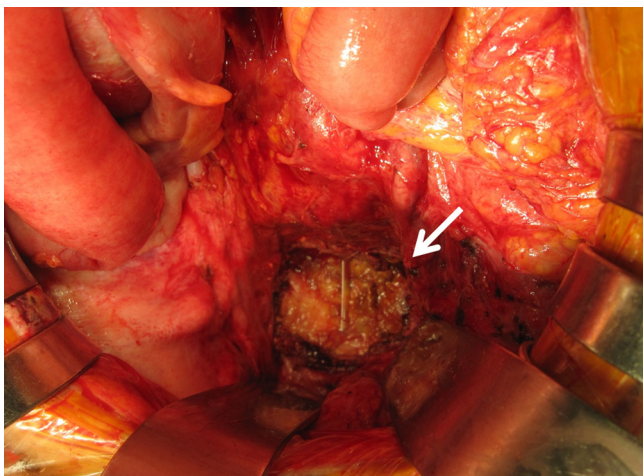


Fig. 3. Pelvic defect (arrow) after subtotal removal of the mesh and a preoperatively inserted percutaneous drainage tube.

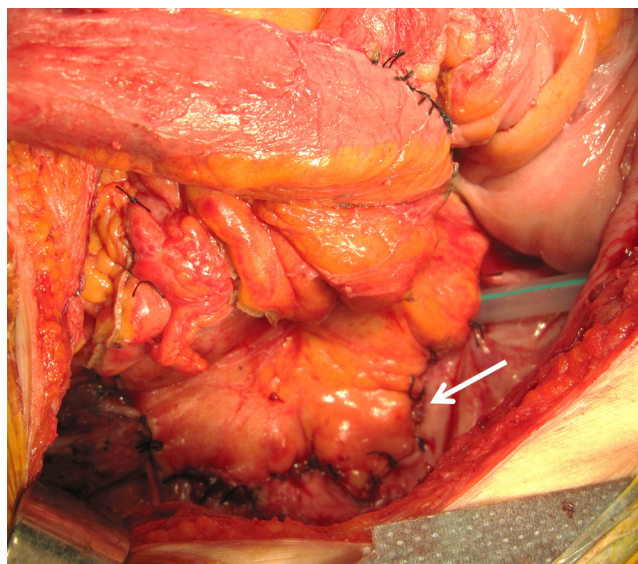


Fig. 4. Mesenteric leaf (arrow) reconstruction of the pelvic defect.

cans, and methicillin-resistant *Staphylococcus aureus* were detected in culture of the discharge. She was treated with antibiotics and drainage of abscess cavity. The patient was discharged 59 days after surgery, and returned to normal activity, although small amount of discharge from perineal wound was persisted for two years.

3. Discussion

Sacrectomy is occasionally results in a large pelvic defect that requires soft-tissue reconstruction. The procedure can also injure the sacral nerves, resulting in bowel and bladder incontinence, weakness in the lower extremities and attenuation of the pelvic floor musculature [1–4].

To prevent such complications, many repair techniques have been reported, such as primary suture, repair using myocutaneous flap and prosthetic mesh reconstruction [1,5–8].

In several studies, mesh reconstruction of the pelvic floor has been used to treat sacral hernia [1,6–9]. Importance is an onlay position of the mesh to avoid its direct contact with the small intestine, colon and rectum.

In the present case, the patient had undergone an S2–S5 sacrectomy and abdominosacral resection to treat sacral chordoma. A polypropylene mesh (Marlex mesh™) was used to reconstruct the pelvic floor by peritoneal approach. A large defect in the retroperitoneum resulted in incomplete re-peritonealization. It caused direct contact of mesh with the small intestine.

After the patient's first operation, interim 10 years, follow up MRI showed fluid collection around the sacral defect. And she had occasionally suffered low-grade fever with an elevation of serum inflammatory markers. Chronic inflammation of the surgical site (including the mesh), was probably related to penetration of small intestine 10 years after the first operation.

Chronic mesh infections are difficult to treat using antibiotics with or without simple surgical drainage. In many cases, the infected mesh must be completely removed associated with debridement of the infected area [10–12]. In our case, severe adhesion of a part of the mesh with sacrum resulted in incomplete removal of the mesh completely. Residual of the mesh probably causes persistent purulent discharge. But she returned to usual activity with small amount of discharge for two years.

Alexander et al. introduced the mesenteric leaf procedure for pelvic reconstruction [13]. But there is no other report which used

this procedure. In the same manner, we used the mesenteric leaf and the omentum to repair the pelvic defect at the operation. This procedure has not been used as a usual procedure for pelvic reconstruction because of necessitates resection of the small intestine. But this procedure might be the best alternative, when we need to resect small intestine and the use of mesh have to be avoided like present case.

To our best knowledge in English literature, this is the first report of operation for mesh infection after sacrectomy: the likely cause of infection was direct contact between the mesh and small intestine with resultant penetration. This case educates us, when the mesh and intestine are inevitably in contact, pelvic reconstructions should be performed using another procedure such as the myocutaneous flap or mesenteric leaf, not using a mesh.

4. Conclusions

In conclusion, when a biomaterial mesh is used in surgery, surgeons should avoid direct contact between the mesh and abdominal organs such as the digestive tract. In this regard, mesentery leaf repair is a useful procedure by which pelvic defects can be reconstructed.

Conflicts of interest

All authors have no conflict of interest to declare.

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None.

Ethical approval

Written informed consent was obtained from the patients for publication of these case reports and accompanying images.

Consent

This patient was properly informed and gave consent for her clinical information to be included in an Elsevier publication [14].

Author contribution

Makoto Koyama and Yuta Yamamoto and Akira Suzuki participated in preoperative, intraoperative, and postoperative care.

Satoshi Ishizone mainly performed the surgery.

Shinichi Miyagawa, Masato Kitazawa, Yusuke Miyagawa reviewed critically the manuscript.

Guarantor

Dr. Shinichi Miyagawa.

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