Case Report

Laparoscopic lateral suspension for pelvic organ prolapse in a case with difficulty in performing laparoscopic sacrocolpopexy

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Abbreviations & Acronyms
ASIS = anterior superior iliac spine
LLS = laparoscopic lateral suspension
LSC = laparoscopic sacrocolpopexy
POP = pelvic organ prolapse
POP-Q = POP quantification

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Introduction: Mesh fixation at the promontory is the most important procedure in laparoscopic sacrocolpopexy. We present a case of pelvic organ prolapse wherein sacrocolpopexy was converted to lateral suspension intraoperatively due to tissue weakness of the promontory.

Case presentation: A 66-year-old woman with a sensation of bulge in the vagina presented to our clinic. She was diagnosed with uterine prolapse (grade III). Laparoscopic sacrocolpopexy was planned; exposure of the promontory and mesh fixation at the vesicovaginal and rectovaginal space could be smoothly performed. However, handling the needle at the promontory was impossible due to tissue weakness of the anterior longitudinal ligament of the sacrum. Consequently, mesh fixation was converted to lateral suspension.

Conclusion: Difficult mesh fixation at the promontory is not rare in laparoscopic sacrocolpopexy. Lateral suspension may be useful as a trouble-shooting procedure for laparoscopic sacrocolpopexy, and surgeons performing laparoscopic sacrocolpopexy should know this procedure.

Key words: conversion, laparoscopic lateral suspension, laparoscopic sacrocolpopexy, pelvic organ prolapse, promontory.

Keynote message

Mesh fixation at the sacral promontory is the most important procedure in LSC. However, we rarely experience difficulty with this process. LLS may be useful as one of the trouble-shooting procedures for LSC, and surgeons performing LSC should know this procedure.

Introduction

LSC has nowadays become the gold standard of surgical treatment for POP because it ensures high satisfaction levels and effectiveness.[1] However, mesh fixation at the sacral promontorium is a key procedure in LSC, and change of surgical strategy may be required in cases where it is difficult to fix the mesh at the appropriate position due to an anatomical anomaly and tissue weakness. We present a case of POP wherein the surgical procedure was changed from LSC to lateral suspension intraoperatively due to tissue weakness of the promontory, and favorable clinical outcome was demonstrated.

Case presentation

A 66-year-old woman with a complaint of sensation of a bulge in the vagina was admitted to our clinic. She was subsequently diagnosed with uterine prolapse (grade III prolapse according to the POP-Q system of the International Continence Society:[2,3] Aa +1, Ba +2, C +2, Ap 0, Bp 0, D −2). No abnormal findings, including expansion of the intervertebral disc and vessel anomaly, were preoperatively recognized on magnetic resonance imaging.

LSC was planned and the surgical processes and techniques followed the protocol by Wattiez *et al.*[4] The patient was kept in a 25° Trendelenburg position under general anesthesia. Four trocars were used: at the top of the umbilicus; halfway between the umbilicus and the pubic symphysis; the left iliac fossa; and the right iliac fossa. First, we exposed the promontory by dissection of the retroperitoneum and checked whether the promontory has an abnormal structure. Subsequently, laparoscopic supracervical hysterectomy was smoothly performed, and the vesicovaginal space was dissected deeply beyond the trigon level (just past the Aa point of the POP-Q), sparing the bladder pillars to prevent injury to the ureter or nerves. The rectovaginal space was dissected to an anorectal angle in the middle until the levator ani muscle (puborectalis muscle) fascia was reached on each lateral side. Two self-cut strip sheets of polypropylene mesh (Polyform™; Boston Scientific, Marlborough, MA, USA) could be fixed at the tip end of each dissected vesicovaginal space and rectovaginal space. However, handling the needle at the promontory was impossible due to tissue weakness of the anterior longitudinal ligament of the sacrum.

Mesh fixation was changed to LLS,[5,6] that is, another strip sheet of mesh was added to the anterior vaginal wall-like Y shape (Fig. 1a). From a bilateral 5-mm skin incision 2 cm above the iliac crest and 4 cm posterior to the ASIS (Fig. 2), retroperitoneal tunneling toward the round ligament was performed (Fig. 1b).[6] The strip sheets of the mesh could be pulled out using grasping forceps and similarly retracted backwards, thus adjusting the tension (Fig. 1c). Subsequently, the retroperitoneum was sutured, and the mesh was retroperitonized (Fig. 1d).

No perioperative complications were observed, and the postoperative course was uneventful. POP-Q scores 6 months postoperatively were Aa −2, Ba −2, C −8, Ap −3, Bp −3, D −8.

Discussion

LSC is considered an efficient and satisfactory surgical treatment for apical POP.[1] However, this technique requires dissection at the level of the promontory, which can be difficult, especially in obese patients with anatomical variations. Potential lesions could lead to serious ureteral, vascular, and/or neurological morbidity; hence, the procedure should be a contraindication in challenging cases with anatomic variation around the sacrum. LLS may be an alternative procedure that avoids dissection at the promontory, with favorable clinical outcomes, wherein 78.4% of patients were asymptomatic at 1 year, and anatomic success rates were 91.6%, 93.6%, and 85.3% for the anterior, apical, and posterior compartments in 417 patients, respectively.[6] In the present study, we successfully performed LLS in the case of difficulty in mesh fixation at the appropriate position due to tissue weakness of the anterior longitudinal ligament of the sacrum.

The conversion rate to laparotomy during LSC has been reported to be from 0% to 11%.[7,8] Although the accurate rate of cases with difficulty in mesh fixation in LSC has not been reported, Brian *et al.* reported failure-to-progress during dissection of the promontory in four cases (4.8%) of robotic

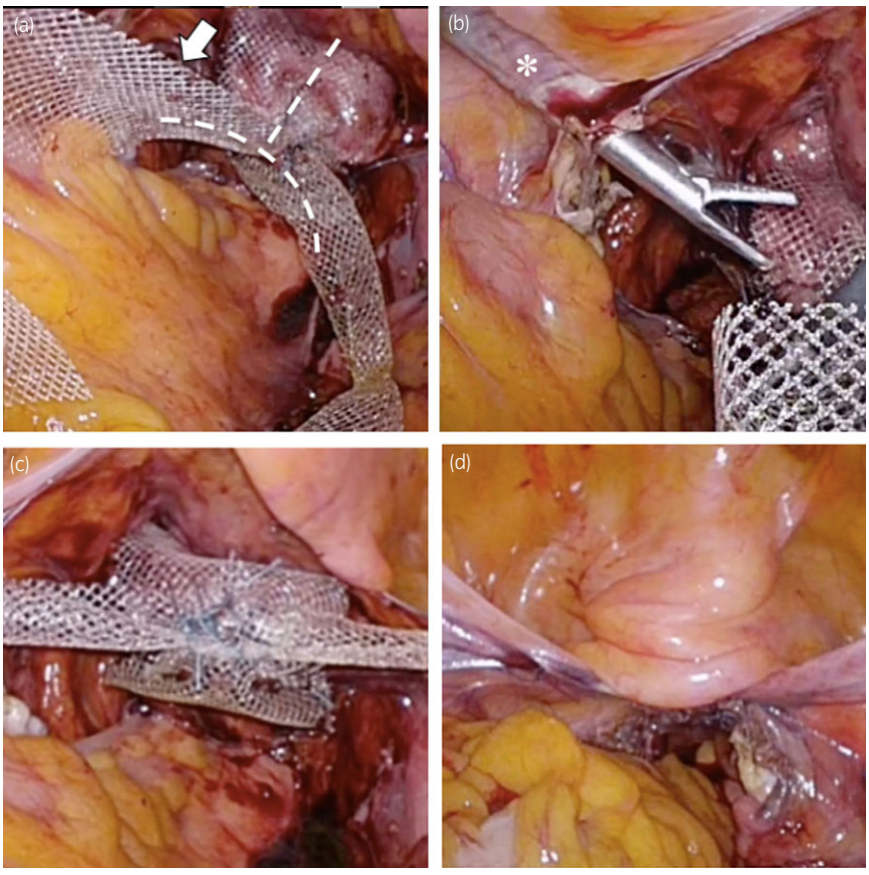

Fig. 1 (a) Addition of the left-side mesh (arrow). Another strip sheet of mesh was added to the anterior mesh-like Y shape (dot-line). (b) Grasping the mesh arm. Under transperitoneal visualization, retroperitoneal tunneling is performed, and the instrument is then pushed toward the round ligament (asterisk) at the level of its lateral peritoneal insertion. (c) After pulling both mesh arms toward the peritoneal cavity. After entering the peritoneal cavity, the side arms of the mesh can be grasped and retracted the same way backwards. (d) During the end of the surgery. The mesh was retroperitonized after the tension is adjusted.

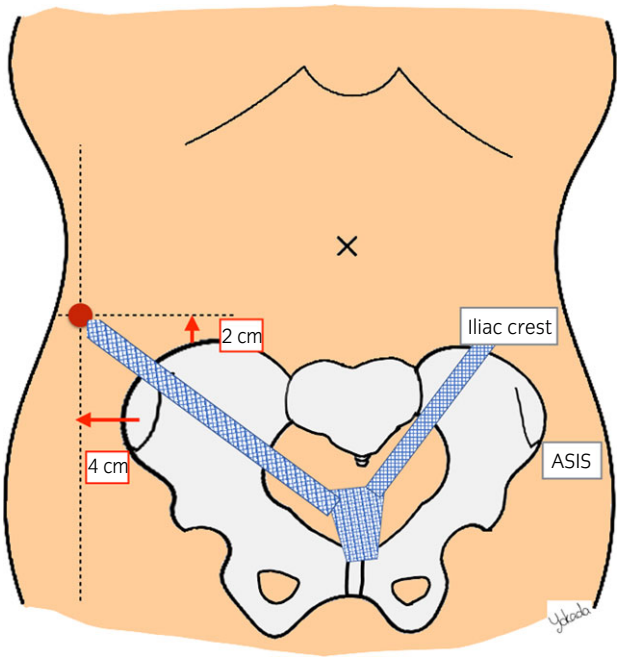

Fig. 2 Anatomical positioning of the mesh after LLS. Reticulated area represents the mesh. Red point indicates a 5-mm skin incision.

sacrocolpopexy.[9] We experienced 13 difficult cases (1.1%) of mesh fixation on the promontory among 1148 cases in our department (in four cases, we were not able to actually fix the mesh). Lazarou *et al.* reported a case in which it was impossible to fix the mesh to the promontory during abdominal sacrocolpopexy because of anatomic variation of the iliac veins.[10] These findings indicate that difficulty in mesh fixation at the promontory may not be rare in LSC. In the present case, dissection of the pelvis, including exposure of the promontory and mesh fixation at the vesicovaginal and rectovaginal space, was smoothly performed. However, it was impossible to fix the mesh on the vulnerable promontory. There is the opinion that exposure and handling the needle at the promontory should be done simultaneously in the first step of LSC for the purpose of confirming whether it is possible to continue LSC or not at the early stage of the surgery. But leaving a needle or multiple threads intraperitoneally can result in some problems such as bowel injury, the misplaced threads or entangling. Therefore, we usually only perform exposure of the promontory without handling the needle in the first step. LLS was feasible and useful using the mesh fixed at the vesicovaginal and rectovaginal space to avoid conversion to laparotomy in the present case.

The original procedure of LLS used a T-shaped graft, consisting of a central rectangular part (4 × 6 cm) and two lateral long arms (2 × 18 cm), and the mesh fixed over the dissected anterior wall of the vagina.[5] In the present case, we used rectangular meshes (3 × 18 cm), which are usually used by self-cutting in LSC, fixed at the vesicovaginal and rectovaginal space, and added another strip mesh at an anterior mesh-like Y shape (Fig. 1a).

Both LSC and LLS ensure high satisfaction and effectiveness,[1,6] but it is unknown which method is superior because no comparative study has been reported. This procedure may be useful for troubleshooting in LSC.

Conflict of interest

The authors declare no conflict of interest.

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