Effectiveness of Laparoscopic Sacral Colpopexy for Pelvic Organs Prolapse Diseases

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Sacral colpopexy, a surgical treatment for middle compartment defects, connects the uterus or the top of the vagina with the sacral anterior longitudinal ligament by bridging grafts. It is currently the recognized gold standard of prolapse surgery,[1] with a long-term success rate of 74–98%. It is suitable for patients with uterine prolapse or Stage II–IV vaginal vault prolapse and recurrence after the operation,[2,3] particularly for younger patients who are sexually active. In the present article, we analyzed the clinical and follow-up data of 204 patients (mean age: 59.7 ± 8.8 years, range: 40–75 years) who underwent laparoscopic sacral colpopexy (LSC) treatment for pelvic organ prolapse (POP) in the Second Hospital of Shandong University from January 2012 to June 2015.

Inclusion criteria were: POP mainly of middle compartment defects (≥ POP quantification [POP-Q] III), symptomatic vaginal vault prolapse (≥ POP-Q II), and POP postoperative recurrence at the top of the vagina (symptomatic and ≥ POP-Q II). Patients whose uterus had exocervix or endometrium lesions were excluded from the study. Operation methods include laparoscopic hysterectomy + bilateral salpingo-oophorectomy + sacral colpopexy (144 cases), laparoscopic sacrocolpopexy (33 cases), and laparoscopic sacral hysteropexia (27 cases). Burch operation was also given to patients with stress urinary incontinence during their surgery.

During the operation, the patient was under general anesthesia with the bladder lithotomy position (Trendelenburg position). The vesicovaginal space and the rectovaginal space were cleared. Judging from the vaginal wall prolapsed degree, the vaginal anterior wall should be separated in 4–6 cm, the posterior wall of the vagina, 4–7 cm. When the presacral region was separated, the patient took Trendelenburg position and with the right higher than the left to expose the right paracolic gap so as to identify the right ureter. The anterior peritoneum of presacral promontory was opened longitudinally to expose the presacral region, and the avascular zone of the S1 anterior vertebra was chosen as the suture site, then, the peritoneum was opened along the inner side of the right uterosacral ligament till the vaginal vault. The finished product of a Y-shaped mesh was selected, or a polypropylene mesh was cut into Y-shaped. The mesh was sutured and fixed on the fibromuscular layer of the anterior and posterior wall of the vagina in ranks and discontinuously. The length of the Y-shaped mesh tail was adjusted. The tail of the mesh was fixed on the presacral longitudinal ligament of the S1 anterior vertebra using nonabsorbable suture. The posterior peritoneum was closed to embed the mesh. The procedure of sacral colpopexy and sacrocolpopexy was almost the same, while the difference was that the mesh was fixed around the cervix.

The follow-up was conducted 6 weeks, 6 months, and 1 year (1 year later, once every year) after the operation. The items included inquiry, gynecological examination, and questionnaire. Six weeks after the surgery, patients with

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POP-Q 0 were objectively cured; patients with POP-Q I, no subjective discomfort and no need of surgery intervention were subjectively cured, which meant the operation was effective; patients with POP-Q II or above meant the operation was invalid. One year after the operation, if a patient was rechecked as POP-Q II or above, her disease would be determined as recurrence.

The operations were all performed successfully with no complication occurred during the operation. Three patients had postoperative urinary retention, one patient had lower abdominal pain, two patients had ache of lower limbs, two patients had lower limb venous thrombosis, and three patients had a postoperative fever. They were all treated symptomatically and cured. Five patients who had no symptoms of urinary incontinence before the operation developed lower urinary tract symptom after the operation, showing different degrees of frequent urination, urinary urgency, and urine dripping wet, among whom two patients had mild mixed urinary incontinence. Four patients had postoperative sexual intercourse discomfort, with no obvious vaginal contracture and other diseases after physical examination. Three patients had dyschezia or frequent constipation after the surgery. Three patients had chronic pelvic pains in the lumbosacral region at different stages. One patient had mesh exposure problem.

The follow-up rate at 6 weeks was 100%. The loss to the follow-up rate at 6 months was 3/204 (1.47%). The loss to the follow-up rate at 1 year was 9/204 (4.41%). A comparison of POP-Q scores before and 6 weeks after the operation is listed in Table 1. There was no statistical significance between the change of vagina length before and after the operation, whereas the other indicators showed statistical significances before and after the surgery (all $P < 0.05$). Two cases were found POP-Q II during the 1-year follow-up, so the recurrence rate was 3/195 (1.54%).

Sacral colpopexy had become the most effective surgery treating vagina top prolapsed after decades of development. The objective cure rate of LSC was 94% according to Perez *et al*.'s report.[4] Ganatra *et al*.[5] showed that the objective cure rate of LSC was 92% and the subjective cure rate of LSC was 94%. Moreover, our results might serve as an additional reference for the safety and effectiveness of LSC operations.

Table 1: Comparison of POP-Q scores before and 6 weeks after the operation

Items	Preoperative	Postoperative
Anterior wall A	1 (3.5)	−3 (0)*
Anterior wall B	1 (5.25)	−3 (0)*
Cervix or cuff	4 (6)	7 (1)*
Posterior A	−1.75 (2.5)	−3 (0)*
Posterior B	−1.75 (4)	−3 (0)*
Genital hiatus	4.5 (1)	4 (0.5)*
Perineal body	3 (0.5)	2.5 (0.5)*
Total vaginal length	8 (2)	8 (1.5)

Values are median (interquartile range). *P<0.05 versus preoperative data. POP-Q: Pelvic organ prolapse quantification.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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