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Case Report

Laparoscopic hysterectomy with anterior four-arm mesh implant technique in the surgical treatment of a woman with pelvic organ prolapse and urinary incontinence: a case report and review of the literature

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Summary

Purpose: A woman with pelvic organ prolapse (POP) and stress urinary incontinence (SUI) who was treated with a technique utilizing laparoscopic hysterectomy followed by the placement of a four-arm polypropylene mesh. *Materials and Methods:* Patient who applied to the clinic due to recurrent postmenopausal bleeding, urinary incontinence, and vaginal swelling underwent alternative laparoscopic hysterectomy due to such factors as previous recurrent pelvic surgery, lack of isolated uterine descensus, and difficulty of vaginal hysterectomy. In the same session, the patient was treated with anterior four-arm POP mesh implant. *Results:* Postoperative six-month follow up, both functional and anatomical improvement were observed as the patient's SUI became continent, and there was an improvement in POP. *Conclusion:* The combination of laparoscopic hysterectomy, POP four-arm mesh implant and anti-incontinent surgery in the hysterectomy plan is functional and effective for benign reasons in patients with POP and SUI. Future studies are needed to evaluate the utility of this technique.

Key words: Laparoscopic hysterectomy; Pelvic organ prolapse; Urinary incontinence; Four-arm mesh implant.

Introduction

Postmenopausal bleeding is the bleeding that occurs a year after menstrual periods have stopped due to menopause. Endometrium is expected to be atrophic in postmenopausal period. Therefore, uterine bleeding that occurs during this period should be regarded as an abnormal symptom [1].

Pelvic organ prolapse (POP) is defined as the prolapse of the pelvic organs toward or through the vaginal opening as a result of the weakening of the combination of nerves, muscles, and fascia which normally protects and supports the physical position of pelvic organs [2, 3].

The purpose of this case report is to provide laparoscopic hysterectomy in cases where hysterectomy is planned due to recurrent postmenopausal bleeding, but pelvic surgery is difficult due to previous pelvic surgical vaginal hysterectomy and also to provide anatomical and functional improvement in the surgical treatment of urinary incontinence together with current anterior POP. For this purpose, synthetic, polypropylene mesh was used in order to compensate for the vesico-vaginal facial defect on the basis of POP. This method also enables tension-free midurethral sling with the purpose of treating urinary incontinence. It also aims to prevent long term recurrence in postoperative apical prolapse and in anterior-posterior POP and to provide anatomic and functional improvement. The present authors believe that this case report will make a minimal invasive surgical contribution. However future studies are needed to evaluate the utility of this technique.

Case Report

A 65-year-old patient with gravida: nine, parity: seven, abortion: two, number of living children: seven with no chronic illness history nor chronic drug use and had previous repeated pelvic surgery history (ovarian cyst) was referred to this clinic with recurrent postmenopausal bleeding, urinary incontinence, and vaginal prolapse complaints. In her examination anterior POP (Figures 1A, B) (cystocele, paravaginal defect grade III- IV) and SUI, recurrent postmenopausal bleeding were detected. Her ultrasonographic endometrium thickness was 11 mm, uterus was a little larger than normal, and adnexal atrophy was consistent with age. Preoperative probe curettage report was atrophic endometrium. Laparoscopic hysterectomy + anterior four-arm mesh implant + posterior POP repair operations were performed.

CO2 infusion was performed in the lithotomy position under general anesthesia, with umbilicus' Veress needle in order to create intra-abdominal pressure of 14 mm/hg. After a 10-mm optic trocar was inserted, and 5-mm trocar and dissectors were inserted in both lower quadrants of abdomen (Figure 1-A).

Pelvic adhesions were removed by sharp and blunt dissection (Figures 1B, C). Ligamentum rotundum bilateral electrocautery

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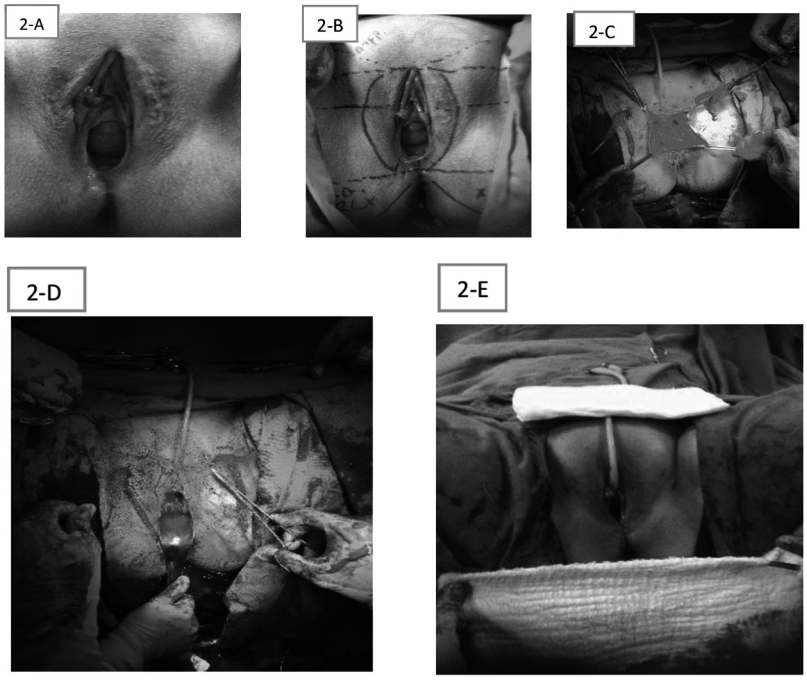

Figure 1. — A, B) Urinary incontinence and vaginal prolapse complaints. In anterior POP cystocele, paravaginal defect grade III- IV and stress urinary incontinence. C, D) Distal part of mesh is passed from obturator foramen; four-arm anterior mesh implant is inserted in a way so it could pass from midurethral and bladder body. E) Postopoerative view.

bipolar tissue dissection device was cauterized and cut. Arteria uterina, cardinal, and sacrouterine ligaments were cauterized and cut. The uterus was removed from the vaginal cuff by dissecting from the cervix at the level of the uterine manipulator and the vaginal cuff was closed with 2/0 vicryl.

In the same session, vesico-vaginal fascia was placed back with linear incision performed at 2.5 cm underneath the urethra until the bladder floor. Proximal part of the mesh was passed over arcus tendinius fascia pelvis (ATFP) with obturator fossa guide using four-arm mesh; distal part was passed from the obturator foramen. Four-arm anterior mesh implant was performed in a way so it could pass from midurethral and bladder body (Figures 1C, D).

Posterior fringes of four-arm mesh were fixed to sacrouterine and cardinal ligaments. Posterior mesh arms at skin level were fixed at the skin by performing traction; anterior side was not fixed at midurethral and skin level, and tension-free was performed. Vagina mucosa was sutured with n. 2/0 vicryl. In the same session, fascia dissection was performed from the posterior vagina; fascia defect purse suture and posterior repair were performed. Following bleeding control, the operation was ended by placing two tampons in the vagina (Figure 1E).

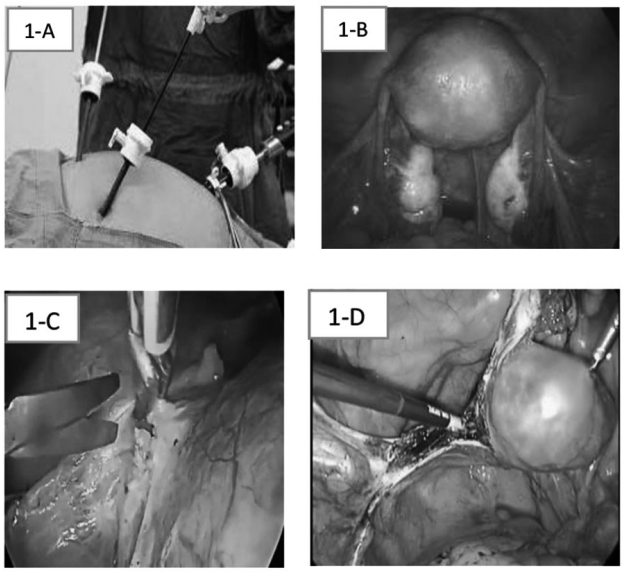

Figure 2 — A) Trocar and dissectors are inserted in both lower quadrants of abdomen. B-D) Pelvic adhesions are removed by sharp and blunt dissection.

Discussion

POP is defined as the prolapse of the pelvic organs toward or through the vaginal opening as a result of the weakening of the combination of nerves, muscles, and fascia which normally protects and supports the physical position of pelvic organs [2, 3].

POP and urinary incontinence are common complaints that might coexist in the same patient. The risk of having surgical operation because of POP is estimated at 11% [4]. On the other hand, almost one-third of these women require another surgery because of recurrence within the first four years [4, 5]. These insufficient results are based on the results of traditional operations (colporrhaphy anterior, Kelly plication). Classical colporrhaphy anterior operation, when applied alone, is reported to have recurrence in the proportion between 20% and 40% [5-7]. This high recurrence proportion indicates that classical plication (colporrhaphy anterior) of the anterior wall fascia is insufficient alone.

Mesh practices were first used vaginally by Julian *et al.*

in 1996 and recurrence proportions and complications were found to be significantly lower [8]. Succeeding studies have increased the place and importance of meshes in POP surgery [9-11].

According to American College of Obstetricians and Gynecologists (ACOG), decision for surgical procedure in hysterectomy surgery should be made according to the choice of the patient who was informed about the surgical indication, anatomic structure of the patient, all data about the surgical option and the approaches to be applied, and the experience and education of the surgeon [12].

Other determinant factors for the vaginal approach include a sufficiently large subpubic arch and an adequate length of distance between ischial tuberocytes. Vaginal approach might be especially limited in older cesarean section scars, previous pelvic surgeries, shortness of the anterior vaginal segment, narrow vaginal lumen, loss of vaginal flexibility, nulliparity, deep vagina, and menopause. Although being nulliparous is not considered to be an absolute contraindication to vaginal hysterectomy, vaginal approach can be applied in nulliparas with no descensus in only 8% of all hysterectomies [13]. When the indications of laparoscopic hysterectomy are investigated, it is possible to say that "today there is actually no absolute contraindication to laparoscopic hysterectomy"[14].

According to another view, besides the uterine size, perhaps the only indication for preferring vaginal approach is uterine prolapse [15]. However, because no apical prolapse and uterine descensus were observed aside from significant anterior POP, laparoscopic approach was chosen in the present case, due to the presence of a history of pelvic surgery.

Nearly 30% of the surgical treatments for POP are performed due to recurrence [4]. Although it is not a standard surgical method in approaching the patients, surgeons tend to undergo mesh practices with the intention to increase the positive outcomes. Furthermore, when compared to the existing conventional methods, it is predicted to be effective to avoid recurrence of POP and urinary incontinence surgical treatment, promoting anatomical and functional recovery. However, reports and literature information on the implementation and outcomes of this system are quite limited in number.

In this study the authors aimed to evaluate treatment results of four-arm mesh implementation, which is a relatively new method for POP and urinary incontinence, applied to a patient who was scheduled to undergo laparoscopic hysterectomy.

Conclusion

In addition to POP recovery, this surgical technique showed a significant improvement in the stress incontinence table and parameters in the early postoperative period (six months). It was predicted that both anatomical improvement and functional recovery would be provided by enabling midurethral sling application, as it would reduce recurrence in comparison to the conventional colposcopy methods that do not repair vesicovaginal fascial defect on the basis of POP. However, there is no standard consensus which treatment method should be used in certain patients. More comprehensive literature knowledge is required regarding this issue. Evaluation and planning of patients' long-term follow-up findings can shed more light on the issue to reach more comprehensive results.

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