



Pregnancy outcomes after laparoscopic pectopexy surgery: A case series

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Abstract

Aim: We aimed to present the outcomes of five pregnant women who had laparoscopic pectopexy in their past.

Methods: In this retrospective cohort study, we reviewed all female patients who underwent modified laparoscopic pectopexy between 2016 and 2018 at our hospital. Polypropylene monofilament mesh was used for the pectopexy procedure in 36 cases of women suffering from apical pelvic organ prolapse (POP). Five women were pregnant at different dates after the surgery; we included them in the study ($n = 5$). We collected data including age, gravidity, parity, magnetic resonance image, sonographic image, POP – Quantification scores, neonatal results from the hospital database.

Results: After uneventful examinations during pregnancy, four women delivered via caesarean section; one of them got pregnant again and delivered successfully. We did not see relapse in apical prolapse or other compartments 3, 6 and 12 months after delivery. All women gave high satisfaction scores regarding POP at 12 months after delivery.

Conclusion: Laparoscopic pectopexy is an effective and alternative procedure for women with POP and a good option for preserving fertility. We found that pregnancy did not adversely affect the short-term success of laparoscopic pectopexy, and vice versa.

Key words: laparoscopic pectopexy, pelvic organ prolapse, pregnancy.

Introduction

Pelvic organ prolapse (POP) is the result of weakness or injury in the pelvic floor supports, causing one or more vaginal compartments to descend (anterior, apical and/or posterior).¹ Several treatments and surgeries have been described for the treatment of POP. Particularly for patients of reproductive age, abdominal, vaginal or laparoscopic procedures are preferred to preserve fertility. Sacral colpopexy is considered to be the gold standard POP surgery for apical prolapse.^{2,3} More recently, the Cochrane Review has concluded that sacral colpopexy is associated with a lower risk of prolapse, recurrent prolapse on

examination and repeat surgery for prolapse than a variety of vaginal interventions.³ However, pregnancy outcomes after hysteropexy have seldom been reported. Over a 10-year period in a large cohort of women, Jefferis *et al.* reported that hysteropexy might be a safe procedure for pregnancy, as complication rates were low, and very importantly, mesh complication rates were minimal.⁴ Banerjee and Noe developed a new POP treatment, laparoscopic pectopexy, that is an alternative to sacral hysteropexy for treating apical compartment defect, especially in obese women.⁵ While researchers have expressed some concerns about pregnancy outcomes, mesh complications, adhesion formation and postpartum recurrence after

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hysteropexy surgeries (vaginal or abdominal approach), there is limited knowledge on the topic.^{4,6} Further, while laparoscopic pectopexy had been performed for the last 10 years, there is no information on pregnancy outcomes after pectopexy.

In our study, modified laparoscopic pectopexy was performed for all patients with apical prolapse; other compartments of POP (if they co-existed) were corrected with other interventions at our institution.⁷ We present the results of five women who became pregnant after modified laparoscopic pectopexy below.

Description of modified laparoscopic pectopexy procedure

Initially, the bladder was dissected and the vesicouterine fold was identified. Dissection on the right side was carried out using the round ligament as a landmark. The iliopectineal ligament was identified at the base of the triangle; it is bordered by the round ligament, external iliac vein and obturator nerve.

A non absorbable polypropylene monofilament surgical mesh was used for fixation (three stitches to the cervix and one to each pectineal ligament). The mesh was stabilized tension-free and the peritoneal layer was closed with number 2/0 absorbable sutures (Fig. 1). In contrast to one study,⁵ in which polyvinylidene fluoride monofilament mesh was fixed to each iliopectineal ligament with two stitches, polypropylene monofilament surgical mesh was fixed to each iliopectineal ligament with one stitch. All of the patients were discharged on postoperative day one. All patients were examined at first week, at 3 months, 6 months and 1 year postoperative period.

Methods

This was a retrospective cohort study. We reviewed 36 patients who underwent modified laparoscopic pectopexy between 2016 and 2018 at Gazi Yaşargil research and training hospital in Diyarbakır/Turkey; we included those who we found had later been pregnant in the study. Subjects had apical POP in stage 2 or 3 uterine prolapse according to the pelvic organ prolapse quantification (POP-Q) system. Polypropylene monofilament mesh was used in a pectopexy procedure in 36 cases of women suffering from apical POP. We detected five pregnant individuals at the

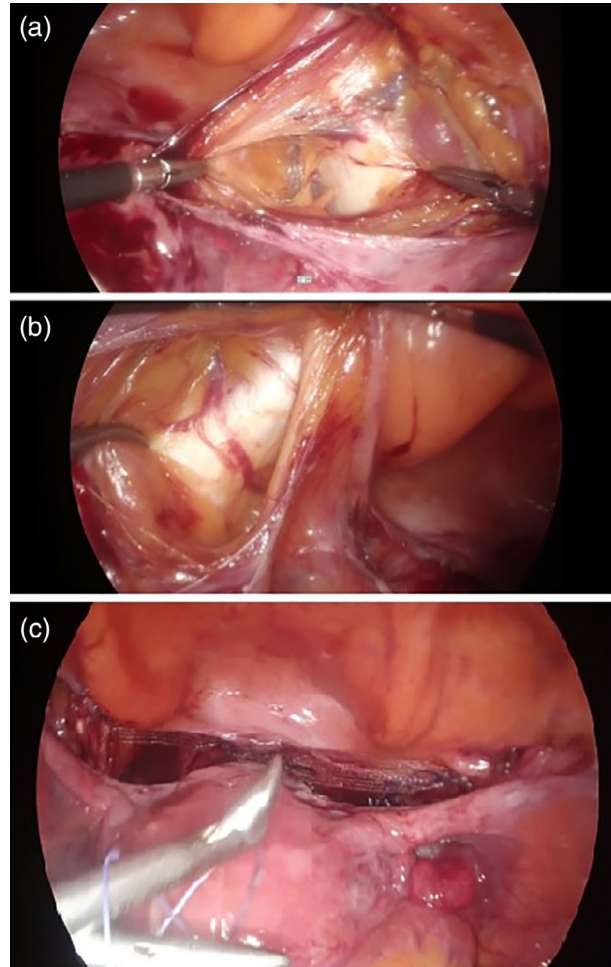


Figure 1 A view from modified laparoscopic pectopexy.

postoperative controls and evaluations. We collected data including age, gravida, parity, magnetic resonance imaging (MRI), sonographic image, POP-Q scores and neonatal results from the hospital database. We selected caesarean section (CS) as the optimal delivery option after consulting with the pregnant women. We used MRI to gather scientific evidence on all the pregnancies, especially before CS, to evaluate the pelvic floor and the mesh placement. However, just one pregnant woman consented to having an MRI before undergoing CS (at 37 weeks and 4 days of gestation), and just one underwent MRI 1 week after delivery. We asked them to rate their satisfaction level at year one after birth on a Likert-type

scale as 0 = unsatisfied, 1 = satisfied and 2 = very satisfied. We detail information about each case below.

Case 1

A 36-year-old gravida 2 para 2 woman with no history of surgery was referred to the hospital with stage 3 uterine prolapse as indicated by the POP-Q system. The POP-Q measurements were Aa: +2, D: +0.5, Ap: -1, Ba: 0 and C: +1. We discussed all possible approaches with the patient; we performed modified laparoscopic pectopexy⁵ and anterior colporrhaphy. Three months postoperative, the POP-Q measurements were Aa: -2, D: -6, Ap: -2, Ba -2 and C: -6. Six months later, the patient attended our clinic and was 6 weeks pregnant. Her antenatal visits were uncomplicated. We performed an uncomplicated CS at 38 weeks and 2 days of gestation; it was caused by premature rupture of the membrane. We did not note any adhesion. We dissected the visceral peritoneum and performed a Kerr incision. A baby boy (2600 g) was delivered (1 and 5 min APGAR scores: 9–10). The mesh and prolene sutures were visible under the visceral peritoneum (Fig. 2). The mesh remained securely attached to both pectineal ligaments and the cervix. We did not explore the mesh—simply, we palpated under the visceral peritoneum of the bladder. Her postpartum course was uneventful, and she was discharged on postpartum day two. She was evaluated in our outpatient department 6 weeks later; no prolapse was evident, and her MRI showed that the mesh remained attached to both the pectineal ligaments

(Fig. 1). After 6 months, she had no prolapse or sense of bulging. Eight months after CS, she was pregnant again and had a healthy baby girl. To the best of our knowledge, this is the first case in the literature of a woman getting pregnant twice after apical prolapse surgery. After 3 years of POP surgery, we examined the patient; we could see the mesh parts in the adnexa via ultrasonography (Fig. 3).

Case 2

A 39-year-old gravida 3 para 3 (vaginal delivery) woman was referred to our hospital with stage 3POP and stress urinary incontinence (SUI). The POP-Q measurements were Aa: +2, Ba: 0, Ap: 0, C: +2 and D: +1. She underwent surgical intervention because of sexual discomfort and her desire to preserve fertility. We performed laparoscopic pectopexy and transobturator taping (TOT) procedures. Three months later, her POP-Q measurements were Aa: -2, Ba: -1, Ap: -3, C: -6 and D: -6. A few months later, she visited our clinic as 8 weeks pregnant. Her antenatal course was uncomplicated. We performed an MRI 1 week before a scheduled CS; relation of the mesh, ligaments and cervix uteri was appropriate (Fig. 2). We performed an uncomplicated CS at 38 weeks and 3 days of gestation due to regular uterine contractions. A baby boy weighing 3100 g was delivered; the 1 and 5 min Apgar scores were 8–9. The intraoperative views were similar to those of our first case, as washer postpartum condition and her POP-Q scores.

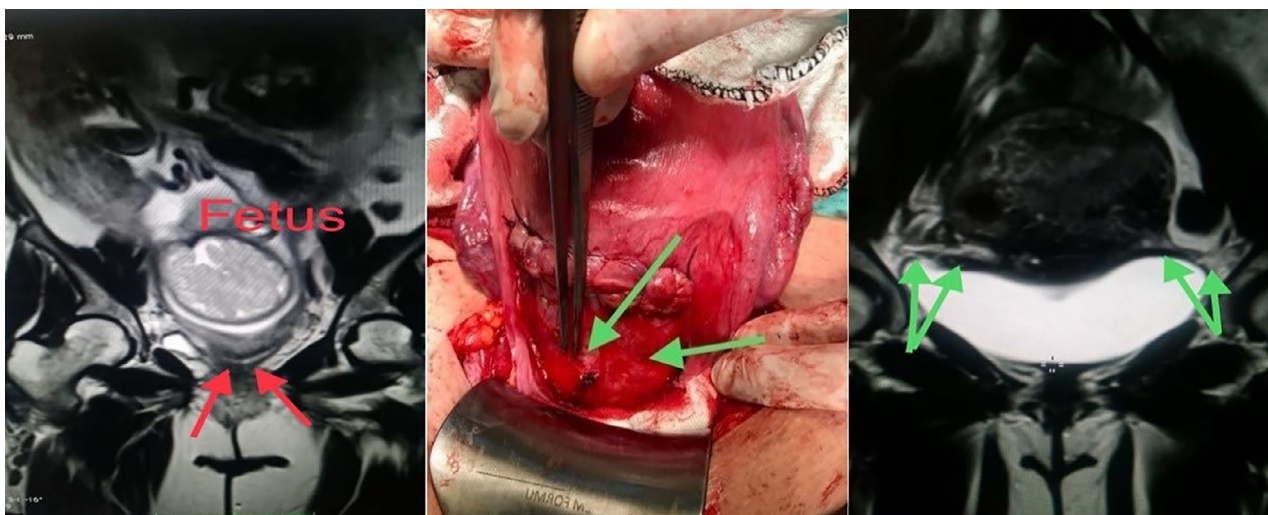


Figure 2 Prepartum magnetic resonance imaging (MRI), intraoperative (caesarean section) view and postpartum MRI show relation of mesh, uterus and pectineal ligament respectively.



Figure 3 An ultrasound scan, relation of uterus and mesh.

Case 3

A 37-year-old multigravida woman was admitted to our clinic with symptoms of vaginal bulging; her POP-Q measurements were Aa: +2.5, Ba: +1, Gh: 3, Pb: 3, TVL: 9, Ap: 0, Bp: 0.5 and C: +1.5. Fourteen months after successful laparoscopic pectopexy, she was diagnosed as pregnant. Patient follows-up during pregnancy was uneventful. We performed CS at 39 weeks of gestation, with no unfavorable conditions for either the baby or the mother.

Case 4

A 36-year-old multigravida woman was admitted to our clinic complaining of the sensation of something descending into her vagina. Her POP-Q measurements were Aa: +2, Ba: +0.5, Gh: 2.5, Pb: 2.5, TVL: 9, Ap: 0.5, Bp: 0 and C: +1. Twenty-five months after successful laparoscopic pectopexy, we found the woman to be pregnant. Patient follow-up during pregnancy was uneventful. We performed CS at 39 weeks of gestation, with no unfavorable conditions for either the baby or the mother.

Case 5

We evaluated a 39-year-old multigravida (three vaginal births and one CS) patient complaining of POP. Her POP-Q measurements were Aa: +2, Ba: +1, Gh: 3, Pb: 2.5, TVL: 8 Ap: 1, Ap: +0.5, Bp: +0.5 and C: +1.5. Twenty-two months after undergoing POP surgery, she had reached 6 weeks of gestation. She underwent dilatation curettage (DC) upon her request.

Results

All of the women who decided to carry out their pregnancies to term reached 38 or more weeks of gestation, none of them experienced preterm birth threats and all underwent CS. During the procedure, we did not encounter any difficulties dissecting the bladder peritoneum from the lower uterine segment. Also, in all cases, we placed the mesh under the level of the Kerr incision; the integrity of mesh between pectineal ligaments and uterine cervix was well established. In two patients, the mesh could be seen properly at the attached places in their MRI; mesh placement was not affected by pregnancy. The fifth patient underwent D/C at 6 weeks of gestation depend on her request. There was no recurrence of prolapse at 3, 6 and 12 month controls after birth or D/C. The satisfaction rates of regarding POP were very high for all subjects upon their latest examinations. All of the cases are summarized in Table 1. The time intervals between surgery and delivery or D/C were 16, 22, 25, 34 and 30 months, respectively. Even the first case conceived twice after pectopexy; the second pregnancy in case one concluded without any problems.

Discussion

Vaginal delivery, older age, high body mass index and collagen tissue diseases leading to joint hypermobility are known risk factors for POP.^{8,9} Although risk of POP increases with age, it can be a problem even for women of reproductive age, especially in Turkey and the broader region, where young women in their early reproductive years tend to have many children. In such women, organ-preserving surgery is important. Ridgeway listed the following advantages of uterine preservation: reduced surgical time and blood loss, maintenance of fertility, later natural menopause, avoidance of an unnecessary procedure, preservation of the roles played by the uterus and cervix in terms of pelvic stability and sexual satisfaction, minimal invasiveness, more rapid recovery, decreased risk of mesh exposure, good short-term outcomes and patient preference.¹⁰ Although some data on pregnancies after sacrohysteropexy or sacrospinous fixation are available, there are no data in the literature about pregnancies after laparoscopic pectopexy. When we searched to learn of previous delivery routes after POP surgery, although not a general rule, expert opinions were to perform CS. Cavkaytar *et al.* concluded that CS was

Table 1 Clinical characteristics of the study patients

Patient	Age	Body mass index	Case summary	Outcomes	Time interval between pectopexy and delivery/DC (months)	Intraabdominal adhesion/mesh avulsion	Complications	Recurrence of prolapse (3 and 6 month and 1 year after CS/DC)
1	36	28.3	G5, 38 week gestation	CS, 2600 gr, healthy newborn	16	Non	Non	Non
2	39	25	G4, 38 week gestation	CS, 3100 gr, healthy newborn	22	Non	Non	Non
3	37	29	G5, 39 week gestation	CS, 3300 gr healthy newborn	25	Non	Non	Non
4	36	31	G4, 39 week gestation	CS, 2900 gr healthy newborn	34	Non	Non	Non
5	39	30	G7, 6 week gestation	DC (patient request)	30	?	Non	Non

DC, dilatation curettage; CS, caesarean section.

reliable and satisfactory for women who had undergone transvaginal sacrospinous hysteropexy,¹¹ whereas Kovac *et al.* preferred vaginal delivery;⁶ Cavkaytar *et al.* found the rate of POP recurrence after CS to be 12.5%, whereas Kovac *et al.* found it to be 20% after vaginal delivery. Thus, we chose CS after consulting with each patient.

In an earlier report on a woman who underwent abdominal sacrohysteropexy for POP and got pregnant after surgery, delivery was done vaginally because the cervix was fully dilated when she was admitted to the emergency room. No recurrence of POP was observed at 12 months postpartum.¹² Abdominal sacrohysteropexy, transvaginal sacrospinous hysteropexy and/or laparoscopic sacrohysteropexy preserve fertility and allow for later successful delivery.^{10–13} When we searched the literature, as similar our study, we found the number of case series were between five and eight women who got pregnant after uterus-preserving surgery in the different studies.^{4,6,13} In a recent study on laparoscopic hysteropexy, six patients got pregnant; no apical prolapse was seen after delivery.⁴ There is theoretical concern that the mesh that encircles the uterine arteries may result in abnormal placental function and growth restriction,⁴ even after a simplified single sheet mesh sacrohysteropexy uterine torsion is detected at term pregnancy.¹⁴ Sacrohysteropexy changes the vaginal axis so that torsion can occur. However, in laparoscopic pectopexy, mesh is symmetrically attached to both sides,

so in the sagittal perspective, the vaginal axis cannot be changed. The mesh also stabilizes the anterior cervix, theoretically ensuring that uterine blood flow is not affected. Recent studies showed that pectopexy is a feasible tool, especially in obese women; they also found that de novo constipation was higher in sacral col-pocervicopexy.^{5,15} However, more studies are needed to compare two particular techniques for pregnancy and pregnancy outcomes. The standard approach is to advise women to complete their fertility prior to any pelvic floor surgery, but in some cases, this may not possible due to impaired quality of life and sexual dysfunction.^{4,6} However, Adegoke *et al.* concluded that sacrohysteropexy for POP could be done without waiting to complete fertility because recurrence of POP after pregnancy was low.¹⁶

In conclusion, these cases showed that pregnancy did not affect pectopexy success in the short and intermediate term; thus, pectopexy could be a safe alternative surgical method for POP in symptomatic woman of reproductive age who wish to preserve fertility. However, a long-term follow-up period is needed after delivery.

Disclosure

The authors have no conflict of interest and nothing to disclose.

References

1. Bureau M, Carlson KV. Pelvic organ prolapse: A primer for urologists. *Can Urol Assoc J* 2017; **11**: S125–S130.
2. Culligan PJ, Murphy M, Blackwell L, Hammons G, Graham C, Heit MH. Long-term success of abdominal sacral colpopexy using synthetic mesh. *Am J Obstet Gynecol* 2002; **187**: 1473–1482.
3. Maher C, Feiner B, Baessler K, Schmid C, Haya N, Brown J. Surgery for women with apical vaginal prolapse. *Cochrane Database Syst Rev* 2016; **10**: CD012376.
4. Jefferis H, Price N, Jackson S. Laparoscopic hysteropexy: 10 years' experience. *Int Urogynecol J* 2017; **28**: 1241–1248.
5. Banerjee C, Noé KG. Laparoscopic pectopexy: A new technique of prolapse surgery for obese patients. *Arch Gynecol Obstet* 2011; **284**: 631–635.
6. Kovac SR, Cruikshank SH. Successful pregnancies and vaginal deliveries after sacrospinous uterosacral fixation in five of nineteen patients. *Am J Obstet Gynecol* 1993; **168** (6 Pt 1): 1778–1783.
7. Tahaoglu AE, Bakir MS, Peker N, Bagli İ, Tayyar AT. Modified laparoscopic pectopexy: Short-term follow up and its effects on sexual function and quality of life. *Int Urogynecol J* 2018; **29**: 1155–1160.
8. Vergeldt TF, Weemhoff M, IntHout J, Kluivers KB. Risk factors for pelvic organ prolapse and its recurrence: A systematic review. *Int Urogynecol J* 2015; **26**: 1559–1573.
9. Veit-Rubin N, Cartwright R, Singh AU, Digesu GA, Fernando R, Khullar V. Association between joint hypermobility and pelvic organ prolapse in women: A systematic review and meta-analysis. *Int Urogynecol J* 2016; **27**: 1469–1478.
10. Ridgeway BM. Does prolapse equal hysterectomy? The role of uterine conservation in women with uterovaginal prolapse. *Am J Obstet Gynecol* 2015; **213**: 802–809.
11. Cavkaytar S, Kokanali MK, Tasdemir U, Doganay M, Aksakal O. Pregnancy outcomes after transvaginal sacrospinous hysteropexy. *Eur J Obstet Gynecol Reprod Biol* 2017; **216**: 204–207.
12. Balsak D, Eser A, Erol O, Deniz Altıntaş D, Aksin Ş. Pregnancy and vaginal delivery after sacrohysteropexy. *Case Rep Obstet Gynecol* 2015; **2015**: 305107.
13. Pandeva I, Mistry M, Fayyad A. Efficacy and pregnancy outcomes of laparoscopic single sheet mesh sacrohysteropexy. *Neurourol Urodyn* 2017; **36**: 787–793.
14. Bagli I, Erdem S. Uterine torsion at term pregnancy associated with a previous pelvic organ prolapse (POP) surgery. *J Obstet Gynaecol* 2019 Aug; **8**: 1–2.
15. Noé KG, Schiermeier S, Alkatout I, Anapolski M. Laparoscopic pectopexy: A prospective, randomized, comparative clinical trial of standard laparoscopic sacral col-pocervicopexy with the new laparoscopic pectopexy-postoperative results and intermediate-term follow-up in a pilot study. *J Endourol* 2015; **29**: 210–215.
16. Adegoke TM, Vragovic O, Yarrington CD, Larrieux JR. Effect of pregnancy on uterine-sparing pelvic organ prolapse repair. *Int Urogynecol J* 2019; **31**(3): 657–662.