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A laparoscopic procedure for the treatment of uterine prolapse during pregnancy: A case series

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ABSTRACT

Objective: To demonstrate the outcomes of pregnancies with uterine prolapse who have undergone laparoscopic suspension via a new approach during the first and second trimesters.

Design: Retrospective case series study.

Patients: Three patients who had undergone surgical procedures for uterine prolapse during pregnancy.

Interventions: Laparoscopic treatment of uterine prolapse involves a procedure called 'vaginal assisted laparoscopic sacrocervicopexy'. The complications and difficulties of each case are described.

Results: The patients underwent surgical procedures at 12, 14 and 16 weeks of pregnancy. All cases were delivered at term. As the gestational age increased, the operation became more difficult and the operation time was prolonged. The patient who delivered vaginally was complicated with shoulder dystocia.

Conclusion: Three successful cases of uterine prolapse surgery during pregnancy are reported. Surgery can be performed during pregnancy if absolutely necessary, and does not need to be delayed until the postpartum period.

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Introduction

Herniation of pelvic organs through or beyond the vagina is a common condition, and is particularly common at postmenopausal ages. However, it is rare during pregnancy. In 1941, the incidence of pelvic organ prolapse in pregnancy was reported as 1 per 10,000–15,000 deliveries by Keettel [1,2]. Today, the estimated incidence seems to have decreased, likely due to the decreasing parity of women. There are few cases of herniation of pelvic organs through or beyond the vagina reported in the literature. The main risk factor for uterine prolapse is multiparity, and other risk factors include advancing age, obesity and white race [3–5].

Uterine prolapse during pregnancy usually presents in the first or second trimester in women who have a prolapse before pregnancy. Prolapses that exist before pregnancy usually resolve spontaneously by the end of the second trimester and recur after delivery. A prolapse that develops during pregnancy is usually diagnosed in the third trimester, and is typically managed conservatively until labour [6,7].

Preterm labour, preterm premature rupture of membranes and abortion are the major antepartum complications of uterine prolapse during pregnancy. Impaired blood flow and anoxia due to

cervical oedema can cause pregnancy complications [8]. The oedematous cervix is susceptible to trauma and infection due to protrusion, resulting in severe maternal discomfort. Recurrent urinary tract infections are common in pregnancies complicated with uterine prolapse. Acute urinary retention and uterine incarceration are possible complications of uterine prolapse during pregnancy [9].

In addition, dystocia and cervical lacerations are common during labour due to the oedematous cervix. Cases of uterine rupture are reported due to prolonged labour [10]. Women with uterine prolapse are more susceptible to puerperal infections. Fetal and maternal mortality were reported to be as high as 22.1% and 6.3%, respectively, at puerperium in a historical review (from 1925 to 1940) of 170 pregnancies complicated with uterine prolapse. Although these high mortality rates would not be expected today, the results of this review reinforce the importance of the condition [11].

There is currently no standard management of uterine prolapse during pregnancy. The general approach is conservative management with continuous use of vaginal pessaries until the onset of labour. When this fails, laparoscopic uterine suspension during early pregnancy is another treatment option [12]. In the literature, only two cases of surgically managed uterine prolapse during pregnancy were identified. This paper reports the authors' experience of three patients who underwent safe laparoscopic treatment of prolapse during pregnancy.

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Subjects and methods

Three cases of vaginal assisted laparoscopic sacrocervicopexy were identified. Details regarding the cases were obtained from retrospective chart review. The degree of prolapse was determined by pelvic organ prolapse quantification system (POP-Q) staging.

Source of patients

From January 2017 to January 2019, three patients underwent uterine prolapse surgery during pregnancy at the Obstetrics Department of Sanliurfa Education and Research Hospital, Sanliurfa, Turkey. Approval and permission for the provision of patient data were granted by the institutional review board, and ethical approval was granted by the Harran University School of Medicine Ethical Committee (Registration number: HRÜ/19.01.35).

Surgical procedure

Under general anaesthesia, following insertion of no.10 trochars from the umbilicus into the abdominal cavity, the abdominal cavity is inflated with CO₂ up to 13 mmHg pressure. No. 5 assistant trochars are inserted from the lateral abdominal walls to the abdominal cavity. In order to create an adequate surgical field, the sigmoid colon and right adnexa are suspended at the abdominal wall, and the uterus is elevated. The peritoneum above the promontorium is incised by approximately 20 mm.

At this point, the vaginal approach of the case commences. The cervix is visualized with the help of two lateral vaginal retractors. The cervix is suspended with the help of a tenaculum. A vertical incision (30 mm length) is made to the posterior cervix. After proper cleavage by scissors, the right spina ischiadicum is reached by blunt dissection. The promontorium is reached with a Forester clamp by crossing the ureter from the bottom of the peritoneum to the right medial spina ischiadicum. The Forester clamp is carried forward to the promontorium from the medial of the spina ischiadicum below the peritoneum. A 2-cm incision is made on the promontorium *via* the laparoscopic approach. A Forester clamp is reached into the abdomen from here. A 14-cm-long, 2-cm-wide mesh is delivered into the abdomen laparoscopically. One side of the mesh is held using a Forester pen and pulled to the posterior cervix. The mesh is sutured to the posterior cervix, and the cervical incision is closed. After manual positioning of the uterus to a natural position, the upper side of the mesh is fixed to the promontorium with a surgical tack. Then, the promontorial peritoneum is closed (Video 1).

Case 1

A 30-year-old (gravida 6, parity 2) woman at 12 weeks of pregnancy with POP-Q stage 3 pelvic organ prolapse was admitted to the study clinic with complaints of pregnancy and prolapse. The distal part of the cervix protruded approximately 3 cm below the hymen without complete vaginal eversion. The patient had unexplained recurrent pregnancy losses in her history. On her evaluation about recurrent losses, there was nothing significant. She had undergone three consecutive abortions between 10 and 15

weeks of pregnancy. She had two live children. After obtaining approval and written informed consent from the patient, she underwent surgery. The cervix was pulled to approximately 2 cm above the hymen during surgery. The pregnancy continued uneventfully after surgery, and the baby was delivered by caesarean section at 39 weeks of gestation. Prolapse did not recur after pregnancy. The patient was followed up 6 months after delivery.

Case 2

A 28-year-old (gravida 3, parity 2) woman at 16 weeks of pregnancy was admitted with complaints of severe abdominal pain and inability to void for over 24 h. Her abdomen appeared distended, and she had a tender, palpable bladder. She was catheterized with a 16F Foley urethral catheter, and 1100 ml of urine was drained. Pelvic examination revealed a POP-Q stage 3 pelvic organ prolapse. The distal part of the cervix protruded approximately 2 cm below the hymen without complete vaginal eversion. The patient did not accept intermittent urethral catheterization and preferred surgery. After obtaining approval and written informed consent from the patient, she underwent surgery. The cervix was pulled to approximately 2 cm above the hymen during surgery. Urinary retention did not recur, and the pregnancy continued uneventfully after surgery. Prolapse did not recur after pregnancy. The patient was followed up 6 months after delivery.

Case 3

A 30-year-old (gravida 4, parity 3) woman at 14 weeks of pregnancy with POP-Q stage 3 pelvic organ prolapse was admitted to the study clinic due to discomfort associated with the prolapse. The distal part of the cervix protruded approximately 3 cm below the hymen without complete vaginal eversion. Conservative management with a pessary was proposed, and the option of surgery was also given. The patient preferred not to use a pessary, and opted to undergo laparoscopic surgery. The cervix was pulled to approximately 2 cm above the hymen during surgery. The pregnancy continued uneventfully after surgery. The patient had a strong desire to deliver vaginally. After approval and informed consent from the patient about the risk of recurrence of the prolapse and obstetric complications, the delivery started spontaneously in the 38th week of pregnancy. The second stage of labour was complicated with shoulder dystocia that was resolved with interventional manoeuvres. Prolapse did not recur after pregnancy. The patient was followed up 6 months after delivery (Table 1).

Discussion

PubMed was searched for literature regarding the surgical treatment of uterine prolapse during pregnancy between 2002 and 2018. This search identified two case reports of surgical treatment of uterine prolapse during pregnancy. The first case was reported by Pirtea et al. (2017). These authors operated at 10 weeks of pregnancy due to unsuccessful treatment with pessaries. They named their procedure 'laparoscopic hysteropromontopexy'.

Table 1

Description of patients. GA, gestational age; POP-Q, pelvic organ prolapse quantification system; min, minutes.

	GA at surgery, weeks	POP-Q stage	Surgical indication	Surgical time (min)	Complications	GA at delivery (weeks), delivery type
Case 1	12	3	Recurrent pregnancy loss	65	–	39, caesarean
Case 2	16	3	Urinary retention	95	–	39, caesarean
Case 3	14	3	Patient's desire	70	Shoulder dystocia	38, vaginal delivery

Using a laparoscopic approach, these surgeons opened the vesicovaginal space laparoscopically and sutured the mesh to the anterior vaginal wall [13]. The second case, reported by Peker et al., underwent surgery during the 12th week of pregnancy due to unsuccessful treatment with vaginal pessaries. These authors completed the operation laparoscopically and sutured the distal part of the mesh to the posterior of the cervix at the level of the uterosacral ligaments [14].

The present authors named the surgical procedure 'vaginal assisted laparoscopic sacrocervicopexy'. In the authors' opinion, the advantage of this procedure is the replacement of the distal part of the mesh to all posterior cervical corpus transvaginally. This method gives additional strength to the cervix and seems to be safer because the areas opened during surgery are distant from the corpus uteri. Due to the need to manipulate a large, soft uterus, surgery becomes more difficult and takes longer to complete with advancing gestational age.

Management of uterine prolapse during pregnancy is commonly conservative, with the aim of protecting the cervix from external trauma and infection [15]. Given the high stakes, conservative options are favoured for the treatment of uterine prolapse during pregnancy. Surgery is generally reserved for conditions posing a health risk for the mother or the fetus. The use of vaginal pessaries is the preferred treatment option during pregnancy complicated by prolapse, especially an apparent prolapse of the cervix. The main aim of intervention for uterine prolapse during pregnancy is to preserve the cervix and keep it above the vaginal introitus. Smith-Hodgkin's pessary restores the cervix at the normal position above the hymen. This supports the cervix between the symphysis pubis and coccyx, providing paracervical support [16]. At the study clinic, the primary management method for uterine prolapse during pregnancy is the use of vaginal pessaries. The three cases described above underwent surgery for various reasons.

Cervical oedema due to external trauma on the prolapsed cervix and obstruction at the enlarged cervix of pregnancy seems to be associated with a high rate of pregnancy loss and prematurity. Recurrent pregnancy loss was the indication for surgery in Case 1; the patient underwent surgery at 12 weeks of pregnancy, the pregnancy continued uneventfully, and the baby was delivered by scheduled caesarean section at 39 weeks of gestation.

Acute urinary retention as a result of uterine prolapse during pregnancy was first described by Ozel in 2005, who managed the case using intermittent urinary catheterization [17]. The main complaint of Case 2 in the present study was difficulty in urination and recurrent urinary infections. This patient underwent surgery at 16 weeks of pregnancy, and her complaints regressed. She delivered at term by scheduled caesarean section.

Case 3 underwent surgery at 14 weeks of pregnancy due to the patient's strong preference for surgical management. She did not wish to use a vaginal pessary. She delivered vaginally after spontaneous labour at 38 weeks of gestation. Shoulder dystocia occurred during labour, which was resolved with interventional manoeuvres without complication. Prolapse did not recur after delivery, and the pelvic organs were in the proper position 3 months after delivery. In cases of uncorrected uterine prolapse during pregnancy, normal vaginal delivery may be dangerous due to cervical dystocia, cervical injury, uterine atony and risk of uterine rupture, and should be performed attentively in proper conditions [11]. Many studies have recommended caesarean section as the delivery route for pregnancies with pelvic organ prolapse surgery before delivery in order to prevent damage to the surgical repair [18]. With such a small number of cases, the present

authors are unable to draw a conclusion about the delivery route after uterine prolapse surgery, but the occurrence of shoulder dystocia during the single case of vaginal delivery appears to be a negative factor.

The main limitation of this study was the small number of cases. However, this is the first study to evaluate the results of uterine prolapse surgery during pregnancy.

In conclusion, surgery for uterine prolapse can be performed during pregnancy if conservative methods fail to restore the normal status of the pelvic floor, and surgery is absolutely necessary. Surgery should not be avoided to prevent pregnancy-specific complications. Vaginal assisted laparoscopic sacrocervicopexy is a safe and applicable procedure during pregnancy. In order to achieve a shorter operation time, the surgery should not be postponed until a later gestational age.

Funding

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Declaration of Competing Interest

None declared.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ejogrb.2019.09.002>.

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