

Laparoscopic Uterine Conservation in Uterovaginal Prolapse

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ABSTRACT

Objective: To evaluate outcomes and patient satisfaction in cases of uterine prolapse treated with laparoscopic hysteropexy while preserving the uterus in premenopausal cases.

Materials and Methods: This is a retrospective cohort study that included all patients operated for prolapse by laparoscopic repair method while preserving the uterus between January 2011 and April 2017. Data included: patients pre-and post-operative symptoms, POP-Q and operative complications, post-operative pregnancy rate. Patients operated for prolapse were called by phone between April and July 2017 and control examinations were performed. The face-to-face survey method was used to assess the patient's satisfaction. Success was defined as prolapse below than stage 2, healing in preoperative symptoms and sexual relationship, post-operative pregnancy rate.

Results: Fifty-two patients with pelvic organ prolapse stage 2-3 were included. Mean follow-up was 30 months. Success rate of the laparoscopic procedure aimed to repair uterine prolapse was 88,4% (46/52), with mean point C at -6 (range (-1) - (-9)). As a major intra operative complication a bowel injury as a major intra operative complication was occurred. The face-to-face questionnaire was conducted post-operatively 28 months on average. Conditions with

negative effects on quality of life, such as urinary, bowel and sexual functions, physical discomfort, psychological problems and embarrassment were evaluated. Ninety four percent of women were satisfied with the decision to preserve their uterus. Eighteen patients (34,6%) received prior consultation elsewhere for hysterectomy due to their prolapse, and decided to have the operation at our center in order to preserve the uterus.

Conclusions: Uterine preservation applies from whichever way found to be a safe and effective treatment, even in cases with advanced uterine prolapse particularly desiring pregnancy. Most patients prefer to keep their uterus. Uterus preservation options should be discussed with every premenopausal and sexually active patient before surgery for pelvic organ prolapse.

Keywords: Hysteropexy; Laparoscopy; Pelvic organ prolapsed; Uterine conservation; Uterovaginal prolapsed

INTRODUCTION

Pelvic organ prolapse (**POP**) is a definition of anatomical change. Some such changes may well be considered within the range of normality for certain women. A diagnosis of POP ideally demands clear clinical evidence, starting with a woman having symptoms related to the “downward displacement” of a pelvic organ [1]. POP has significant negative impact on the quality of life, including physical discomfort, sexual and psychological problems and embarrassment. The estimated prevalence of any degree of genital prolapse in women between 20 and 59 years is about 30% [2]. The lifetime risk of undergoing surgery for pelvic organ prolapse is estimated to be about 11% and around 30% will undergo repeat surgery for a recurrence of the prolapse [3].

The goals of surgery for POP include restoration of normal anatomy, to maintain or restore urinary, bowel and sexual functions and to improve quality of life. The traditional treatment for uterine prolapse has been the vaginal hysterectomy, even in the absence of uterine disease. Hysterectomy alone does not address the deficiencies in pelvic support and does not correct the underlying pathophysiology, hence the higher incidence of recurrence and vault prolapse [4,5]. Hysterectomy also leads to unnecessary removal of a healthy organ with associated increased morbidity, blood loss and operating time [6,7]. Uterine conservation is important for women who wish to preserve fertility and is seemingly associated with improvements in sexuality, confidence and self-esteem of women [8]. Women may also request preservation of the uterus due to personal beliefs or to retain a sense of identity [9], hence recently there has been much interest in preserving the uterus during prolapse surgery [10] and an increasing number of women are requesting uterine conservation [11]. Compared with hysterectomy and prolapse repair, hysteropexy is associated with a shorter operative time, less blood loss, and a faster return to work. Other advantages include maintenance of fertility, natural timing of menopause, and patient preference. Disadvantages include the lack of long-term prolapse repair outcomes and the need to continue surveillance for gynecological cancers [12]. Vaginal, abdominal, laparoscopic,

and robotic methods are defined in uterine preserving surgery but there is not yet a consensus on which of them should be chosen. In choosing the proper technique, the patient's general status, accompanying disease, correct indication, and the surgeon's experience are all important. The most studied approaches to hysteropexy are the vaginal sacrospinous ligament hysteropexy and the abdominal sacrohysteropexy, which have similar objective and subjective prolapse outcomes compared with hysterectomy and apical suspension. The advantages of the laparoscopic approach include reduced blood loss, decreased postoperative pain, lower rate of wound complications, decreased hospital stay and fewer adhesion formation, which is particularly beneficial to women wishing to preserve fertility [13,14]. Ureteric injury is also minimal compared to the vaginal approach, due to direct visualization of the ureters [15]. The laparoscopic approach also minimizes the possibility of contamination, if mesh is used and also induces less postoperative vaginal fibrosis [16]. Disadvantages of laparoscopic surgery include a steep learning curve and longer operating times. Pregnancy and delivery have been documented after vaginal and abdominal hysteropexy approaches, although very little is known about outcomes following parturition.

It is unknown whether simultaneous hysterectomy during prolapse surgery is indispensable for effective treatment of this condition so we aimed to explore anatomic and functional outcomes in women undergoing hysteropexy by laparoscopic method and observe complication, recurrence and reoperation rates in these patients.

MATERIAL AND METHODS

In this study, 52 patients who underwent laparoscopic uterine preservation surgery for pelvic organ prolapse were evaluated between January 2011 and April 2017. Before operation, Papanicolaou smear were obtained from all women and women with a normal uterus as documented by a pelvic examination and routine endometrial sampling can undergo conservation of the uterus as part of the prolapse repair, assuming the risks and benefits of hysteropexy. Cervical elongation and stage 4 prolapsus according to POPQ were not included in the study. Before studying, hormone assays were performed to demonstrate that the patients were in the premenopausal period. Hysteropexy have been carefully reviewed by the physician and patient and the patient gives informed consent. The objective cure rates indicate anatomic outcomes after surgery and were measured by the improvement in the POP-Q (Point C) measurements. All laparoscopic procedures were performed through three trochars and homeostasis achieved with bipolar coagulation. After entering the wrist; the peritoneum was opened over the sacral promontory and right pelvic sidewall between the ureter and rectum toward the pouch of Douglas. Each broad ligament at the level of the cervico-uterine junction was also opened through the vascular area and the bladder dissected distally. Then, the uterus was suspended from the sacral promontory using a bifurcated polypropylene type-1 monofilament macro porous non-absorbable mesh (Ethicon, USA), which, prior to sacral fixation, was wrapped around the cervix, via the broad ligament windows created. The two arms of the mesh were transfixed anterior

to the cervix with three non-absorbable polyester 2-0 sutures (Ethibond Excel TM; Ethicon). The anterior peritoneum in the cervico-ischemic region was dissected and 5 mm of Mersilene tape (Ethicon, USA) was tightly fastened to the front of the myometrium in the cervicomic area without uterine vessels dissipating laterally. All patients received information on the study and the computerized treatment of their data, their written informed consent was obtained. The study was approved by the hospital's Research and Ethics Committee (80576354-050-99/49, 01/03/2017). The data were analyzed for those who had completed at least eighteen months follow-up and patient satisfaction was measured by the Patient Global Impression of Improvement (**PGI-I**). The calculation of aggregated results is based on objective outcome measures.

STATISTICAL ANALYSIS

The process involved descriptive statistics and the descriptive data were presented as mean \pm standard deviation, median and ratio. Non-parametric Mann-Whitney U test was used to compare the mean of the data among the groups. $P < 0.05$ was considered significant. Statistical Package for Social Sciences (**SPSS**) for Windows 20 (SPSS for Windows, SPSS, Chicago) was used for statistical analysis.

RESULTS

During the study period of 6 years, there were a total of 94 pelvic organ prolapse in our university hospital and 52 cases eligible for study were diagnosed and treated by laparoscopic hysteropexy. Of the women included in the study, 11.5% were first gestations and 23.1% were second gestations. The proportion of women with "3 and over" stories of pregnancy was 61.6%. When evaluated in terms of parity, 15.4% of women have delivered once, 3 and over the rate of women giving birth was 50%. 38.5% of the women who participated in the study had 1, 9.6% of them had a drop of 2 or more (Table1).The mean age and BMI of patients were 37 ± 5 and 27.1 ± 4.3 respectively.

Table 1: Percent distribution of gravida, parity and abort us in laparoscopic hysteropexy.

Gravida	Number (n=52)	(%)
0	2	3.8
1	6	11.5
2	12	23.1
3 and over	32	61.6
Parity		
0	2	3.8
1	8	15.4
2	16	30.8
3 and over	26	50
Abort us		
0	27	51.9
1	20	38.5
2 and over	5	9.6
Total	52	100.0

When evaluated the cases in terms of risk factors, 8 (15,4%) patients had chronic constipation, 14 (26,9%) patients had chronic obstructive pulmonary disease and 5 (9,6%) patients had genetic factors. 48,1% of women with a POP have no known risk factors. 37 of our patients were housewives and primary school graduates and 15 were university graduates. When patients were evaluated in terms of symptoms, uterine sagging 30 (57,7%), low back pain 14 (26,9%), unable to urinate 4 (7,7%), fullness in vagina 4 (7,7%) were the main symptoms mentioned. The mean duration of symptoms were 34 ± 6 months and postoperative follow-up time of the cases were 41 ± 23 months. 38 of the cases had laparoscopic sacrohysteropexy alone and in 14 cases in addition to laparoscopic sacrohysteropexy, laparoscopic abdominal Burch, transobturator tape and colporaphy anterior and posterior were performed in 6, 3, 3 and 2 of cases respectively.

Table 2: Used surgical method, recurrence and pregnancy rate of the laparoscopic procedure.

Surgical method	Number (n=52)	%	Material	Number (n=52)	%	Recurrence	%	Pregnancy number (n=43)	%
Laparoscopic sacrohysteropexy	38	73	Tape	36	69	6	15.8	7	16.3
Laparoscopic sacrohysteropexy+ addition surgery	14	27	Mesh	16	31	3	18.7	2	4.6

Nine patients had a pregnancy after operation in average of 24 month follow-up. Seven were in laparoscopic sacrohysteropexy and two were in laparoscopic sacrohysteropexy and addition surgery group. The average birth week was $35,4 \pm 6$. In 88,9% of cases, pregnancy reached 34 weeks and over. Intrauterine mort fetus was detected at 29th week in one of the cases, where mesh was used for hysteropexy. All patients who were pregnant after surgery, required delivery by scheduled caesarean section. The mesh around the cervix is comparable with abdominal cervical cerclage and cervical dilatation would be impossible in labor. Although potential difficulty with caesarean section due to mesh was a concern, a well formed lower segment had developed above the mesh.



Figure 1: A pregnancy (14th week) after laparoscopic hysteropexy with mersilene tape.

9 patients (17,3% of women) who underwent a laparoscopic hysteropexy for a mean follow-up of 22 months postoperatively had uterine descensus of Pelvic Organ Prolapse Quantification System (POP-Q) stage II or greater. Four patients with recurrence of prolapse who have symptoms of prolapse needed further surgery to treat the recurrence (7,7% of women).

Table 3: Postoperative complication and additional analgesic requirement.

Complication	Laparoscopic sacrohysteropexy (n=52)	%	Analgesic requirement	Laparoscopic sacrohysteropexy (n=52)	%
Febrile morbidity(pneumonia)	3	5.7	Additional analgesic	23	44
Urinary tract infection	5	9.6			
Bowel injury	1	1.7	Total dose of morphin	14	27
Excessive blood loss	6	11.5			
Wound infection	4	7.7			
Urinary retention	4	7.7			
Major vessel injury	2	3.8			
Deep vein thrombosis	1	1.7			

Complications related to the laparoscopic sacrohysteropexy include major vessel injury (3,8%), deep vein thrombosis(1,7%), excessive blood loss (11,5%), rectal injury (1,7%), urinary tract infection (9,6%), and urinary retention (7,7%). Postoperative analgesia was required for 71% of cases.

DISCUSSION

Pelvic organ prolapse (**POP**) is described as the protrusion of pelvic organs to the vagina and is an important health problem especially in patients of older age. Nowadays, most women with POPs prefer uterine protective surgery because of changes in lifestyle, beliefs, desire for pregnancy, and understanding of the role of uterus in sexual function. For this reason, the need for more minimally invasive surgery, reduced intra operative and postoperative risks, and newer surgical procedures involving a faster recovery period are increased in POP surgery. The aims of surgery for POP comprise restoration of normal anatomy, to sustain or restore urinary, bowel and sexual functions and to improve quality of life. Conservative treatment of uterovaginal prolapse (observation, pessary or pelvic floor physical therapy) in women with uterovaginal prolapse should be the first-line treatment for women planning an attempted pregnancy. However, hysteropexy can be considered in women who have severe prolapse or whose symptoms cannot be corrected by conservative treatment.

In women with symptomatic uterine prolapse requiring surgery we obtained good anatomical cure rates of 82,7% with laparoscopic hysteropexy by mean follow-up of 30 months. Significant improvements in point C measurements on the POP-Q staging were achieved and this improvement was continued over the follow-up period. Quality of life questionnaire to evaluate the subjective improvement was used and significant subjective improvements in vaginal (prolapse) symptoms, sexual wellbeing and related quality of life were observed. The subjective success in our study was 96%, failure and reoperation rates were 17, 3% , 7,7% respectively. Our study had a long follow-up period but had no an independent assessor examining the patients postoperatively. Our major complications with laparoscopic hysteropexy included major vessel injury, rectal perforation, deep vein thrombosis and pneumonia. The overall risk of these major complications was around 13%. Postoperative pains were more common minor complications that needed analgesic requirement rates of 71%. Other minor complications reported with laparoscopic hysteropexy were urinary retention, urinary tract and port-site infections, and constipation. The overall risk of minor complications was around 25%. The overall risk of any complication (major or minor) was 38%.

A study conducted by Gracia M et al. found that laparoscopic subtotal hysterectomy with sacral colpopexy had statistically significant superior anatomic cure rates compared to laparoscopic hysteropexy [17]. Another study comparing laparoscopic hysteropexy to laparovaginal hysterectomy with uterosacral colpopexy had a similar conclusion, but also found that reoperation rates were similar in the two groups [18]. However as the comparator surgeries used were different in three studies, these groups are not comparable, and further randomized trials may be needed to draw any conclusion about the efficacy of laparoscopic hysteropexy when compared to other surgeries for prolapse.

In the large cohort study by Rahmanou et al. [5], 91% of the women underwent at least one additional concomitant procedure that was performed once apical support was achieved with hysteropexy. Although 86% of them had posterior colpoproterorrhaphy, significant subjective improvements in vaginal (prolapse) symptoms, sexual wellbeing and related quality of life were observed. Compared to this study, our work is more realistic in respect of the circumstances mentioned above because in our study only 27% of the women underwent at least one additional concomitant procedure [19]. Since our case numbers are not sufficient to make a conclusion in cases of laparoscopic hysteropexy further research is needed in order to assess in isolation (excluding the cases with concomitant vaginal surgery) the effects of the hysteropexy on the quality of the sexual life.

One of the most commonly used methods to protect the uterus in pelvic organ prolapse is sacrospinous hysteropexy, and a large study evaluating this procedure showed a 84% satisfaction rate [20]. Studies using POP-Q measurements have evaluated objective or anatomical success as improvement of apical measurement represented by C-point. The overall POP-Q stage, POP-Q stage 0 or stage 1 was considered anatomic success in all studies. In majority of studies above 90% of anatomical or objective treatment rates were reported. Final healing rates indicate postoperative anatomical results and are measured by improvement in POP-Q (Point C) measurements. We investigated that similar subjective success rates could be achieved with laparoscopic sacrohysteropexy. Therefore, we suggested that this procedure was comparable to conventional uterine protective techniques and in present study because of the no need for lateralization of the uterine vessels with the laparoscopic hysteropexy technique applied during the procedure, there was no major bleeding due to trauma of these vessels. One advantage of the laparoscopic hysteropexy operation was that there was no risk of slipping due to tissue passage (through myometrium).

Until now, there is no specific study on pregnancy after hysteropexy. However, multiple pregnancy cases and delivery have been reported in larger outcome trials. In a similar way, little is known about how pregnancy and birth affects hysteropexy. However; more cases with longer follow-up are required to consolidate the data for pregnancy and hysteropexy. Since all of our pregnant cases had passed 12 months longer than their birth were called to assess the effect of pregnancy on hysteropexy. According to the outcomes pregnancy has no harmful affect on apical support in women post-hysteropexy, quality of life and sexual function. The repair remained intact and there was no recurrence of the prolapse one year after delivery. Although the pregnancy outcomes were favorable and none had a recurrence of the prolapse after delivery, the numbers are too small to draw any meaningful conclusion. Further data is needed about pregnancies after laparoscopic hysteropexy. Although to date, there are not enough data to make a standard recommendation regarding the type of hysteropexy in women who desire future pregnancy, and there is not a recommended mode of delivery in our current study achieved pregnancy rate of was 20.9% (9/43) and all patients who were pregnant after surgery, required delivery by scheduled

caesarean section; so this study suggests that uncomplicated pregnancy to full term is possible following laparoscopic hysteropexy technique.

Compared with the current literature, our recurrent rate was slightly higher. This is due to the fact that our mean follow-up period is longer than these studies and that in most cases we were applied mersilene tape as a laparoscopic hysteropexy technique.

Our study is retrospective and does not have a separate control group. This is the limiting feature of our work. On the other hand, it is not ethically appropriate to plan a prospective randomized controlled trial in cases that are candidates for hysteropexy. Another handicap of our work was that women with stage IV uterovaginal prolapse or cervical elongation were excluded because the available studies note a very high rate of prolapse recurrence in these patients and other was not independent assessor examining the patients postoperatively. This suggests that more long term data is needed to draw definitive conclusions of the long term efficacy and durability of laparoscopic hysteropexy

CONCLUSION

Women who require surgery to correct uterovaginal prolapse and who are seeking protection of the uterus should be recommended for hysteropexy as one of the options and should be consulted about the relatively low evidence of these procedures. They should be informed that the procedure has a successful rate in terms of the rate of anatomical treatment and resolution of symptoms after surgery. Failure rates are usually low, but if the prolapse is repeated, reoperation may be necessary.

In present study, laparoscopic hysteropexy was associated with more than 82,7% of good anatomic healing rates, so surgical correction of uterovaginal prolapse is a feasible alternative for women who need and want to protect their uterus due to various reasons. However uterine-sparing procedures require further research but remain an acceptable option for most patients with uterovaginal prolapse after a balanced and unbiased discussion reviewing the advantages and disadvantages of this approach. We think that it is the most important point of careful selection of patients for laparoscopic uterine-sparing procedure in the light of our data.

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