

## Introduction

Pelvic organ prolapse (POP) presents a significant medical concern and needs to deal with effective and minimally invasive treatment approaches. Laparoscopic sacrocolpopexy is the gold standard of treatment, albeit challenged by a demanding learning curve and extended procedure duration. Addressing these limitations, the laparoscopic pectopexy technique seems to be an alternative POP treatment strategy

Laparoscopic pectopexy, a contemporary surgical method, involves securing the uterus to the pelvic sidewall through mesh and sutures. This technique offers advantages over those of traditional sacrocolpopexy, including shortened learning curves for operators and a shorter operative time. However, the potential risk of recurrent prolapse still exists. Our study presents the three-year recurrence rate of laparoscopic pectopexy and other complication scenarios, and discusses the advantages and disadvantages of this surgical procedure.

## Methods and Materials

### Study Design

A retrospective analysis was conducted on a cohort of patients diagnosed with pelvic organ prolapse (POP) stages II to IV who underwent uterus-preserving laparoscopic pectopexy between the years 2019 and 2022.

### Patient Selection

A total of 34 patients were included in the study based on the specified inclusion criteria. These patients exhibited POP ranging from stage II to IV.

### Surgical Procedure

The uterus-preserving laparoscopic pectopexy technique was performed for all enrolled patients. During the procedure, a mesh was fixed to the anterior cervix stump and the lateral portions of the Iliopectineal ligament. In cases where deemed necessary, concomitant anterior/posterior colporrhaphy and mid-urethral sling procedures were performed.



Figure 1. Uterine prolapse with elongation of round ligaments

Figure 2. Identified the vesical uterine fold and exposed cervix

Figure 3. Fixation the mesh to low cervix



Figure 4. Exposure of bilateral iliopectineal ligaments

Figure 5. Fixation of the mesh to bilateral iliopectineal ligaments

Figure 6. Re-peritonization and Complete the surgery

### Follow-Up

Post-operative follow-up assessments were conducted over a period ranging from 12 to 54 months, with an average follow-up duration of 3 years.

## Results

All laparoscopic pectopexy procedures were executed successfully. Patient demographics, peri-operative reports, and post-operative outcomes are detailed in Table 1. No severe complications were observed during or following the surgeries. Besides, minimal blood loss, short operation durations, catheterization, and hospital stays were recorded.

Over a mean 3 year follow-up period, a total of 5 cases showed recurrence of prolapse(5/34, 14.7%), all of which were characterized by recurrent stage II prolapse (with a leading point of less than +1cm). Among these cases, 3 were situated in the apical region. Two patients had presented with stage IV total prolapse preoperatively, and all 5 cases were engaged in occupations involving heavy lifting.

Recurrence in these cases might be attributed to apical mesh detachment. An additional 2 cases experienced recurrent anterior prolapse, though all remained asymptomatic. No occurrences of complications such as pelvic pain, dysuria, de novo stress urinary incontinence (SUI), de novo constipation, or mesh erosion were found.

Table 1. Data of patients who underwent laparoscopic pectopexy.

Patient characteristics	Value	Range
<b>General data</b>		
Mean age (year)	56.4	(36~76)
Median parity	3	(2~5)
Mean body mass index (kg/m <sup>2</sup> )	24.1	(18.8~29.9)
% Menopause	76.5%	(26/34)
<b>Peri-operative data</b>		
Mean hospital stay (days)	3.6	(2~7)
Mean Foley drainage (days)	1.3	(1~2)
Mean operating time (minutes)	126.2	(79~190)
Mean estimated blood loss (ml)	77.9	(25~150)
<b>Surgical effectiveness</b>		
Anterior compartment	94.1%	32/34
Apical compartment	91.2%	31/34
Posterior compartment	100%	34/34
<b>Surgical complications</b>		
% pelvic hematoma formation	0	0/34
% Pelvic inflammatory disease	0	0/34
% delayed free voiding (>7 days)	0	0/34
% Vaginal mesh extrusion	0	0/34
% denovo SUI	0	0/34
% denovo constipation	0	0/34

## Discussion

Laparoscopic pectopexy presents a novel and promising approach for correcting POP, offering practical benefits such as reduced operating times, a shortened learning curve for surgeons, and fewer complications compared to laparoscopic sacrocolpopexy.

In a study conducted by Noé et al., the recurrence rate of apical prolapse was notably lower in the laparoscopic pectopexy group (2.5%) compared to the laparoscopic sacrocolpopexy group (9.8%). Additionally, a study by Biler et al. demonstrated encouraging outcomes, with no instances of recurrence observed in both the laparoscopic pectopexy and laparoscopic sacrocolpopexy groups during a comprehensive 6-year follow-up period.

However, the impact of lifestyle and occupation factors was not extensively explored in these previous studies. These aspects play a pivotal role in the recurrence and efficacy of POP correction procedures. Future investigations should delve into the potential influence of lifestyle and occupation on the outcomes of laparoscopic pectopexy. Furthermore, this information should be addressed with patients before surgery.

## Conclusions

In conclusion, laparoscopic pectopexy emerges as a significant advancement in the treatment of POP, utilizing a bilateral mesh fixation technique to secure the pelvic organs and restore anatomical positioning.

Based on our experience, there remains a risk of recurrence, particularly in patients with advanced stage IV prolapse and physically demanding occupations. In contrast to the conventional approach of sacrocolpopexy, laparoscopic pectopexy requires caution regarding suture placement and cervix detachment, as it solely involves the fixation of the anterior cervix. Despite these considerations, the procedure proves to be an effective surgical intervention, characterized by a favorable complication profile and swift patient recovery.

As we continue to refine our understanding and procedural techniques, laparoscopic pectopexy stands as a valuable addition to the treatment methods for pelvic organ prolapse, offering a balance between efficacy, minimal invasiveness, and patient well-being.

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