

# Initial evaluation treatment results of laparoscopic pectopexy in the management of uterine prolapse

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doi: 10.46755/vjog.2023.1.1561

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Received: 28/01/2023 - Accepted: 20/02/2023.

## Abstract

**Background:** In recent years, laparoscopic pectopexy has become increasingly prevalent in the treatment of pelvic organ prolapse; nonetheless, this technique has only been used at Khanh Hoa General Hospital since 2020.

**Objectives:** To evaluate the effectiveness of laparoscopic pectopexy in patients with uterine prolapse and to evaluate the quality of life of patients after the surgery.

**Subjects and methods:** A case series with follow-up on 58 patients with uterine prolapse  $\geq$  grade 2, who had laparoscopic pectopexy at Khanh Hoa General Hospital between February 2020 and July 2021.

**Results:** Complication rates during and after the procedure were low, blood loss was minimal, and there were no instances requiring blood transfusions during the procedure. During a 6-month follow-up, no patient had surgical infection, erosion, or transplant rejection. The typical procedure lasted between 90 and 120 minutes. Most postoperative patients only had minor discomfort. The recurrence rate was minimal (1.7%) during the 6-month follow-up period. 95% of patients were satisfied with the surgical procedure. Prior to surgery, the QoL of patients was relatively poor, with a mean PFDI-20 (Pelvic Floor Distress Intervention) score of 130 and a PFIQ-7 (Pelvic Floor Impact Questionnaire) score of 148. The worse the uterine prolapse, the worse the patient's quality of life. Three months after surgery, the average PFDI-20 score was 8 and the average PFIQ-7 score was 10; six months after surgery, the average scores for these two indices were nearly 0.

**Conclusion:** If there are no contraindications, laparoscopic pectopexy should be utilized to treat uterine prolapse.

**Keywords:** pelvic organs prolapse, laparoscopy pectopexy, PFDI-20, PFIQ-7.

## 1. INTRODUCTION

Pelvic organ prolapse is a condition of the organs in the pelvic area caused by a weakening of the support system of the pelvic floor, leading to a descent of the uterus, bladder, and rectum into the vagina. Nearly 50% of women over the age of 50 who have given birth have experienced pelvic organ prolapse, causing discomfort and affecting their daily activities. Pelvic floor dysfunction may present as urinary incontinence, pelvic organ prolapse, sexual dysfunction, and pelvic pain, greatly impacting quality of life. Pelvic organ prolapse accounts for one fifth of all gynecologic surgeries, and this rate is increasing and has a high rate of recurrence of 25% [1-4].

There are many treatment methods for pelvic organ prolapse such as pelvic floor exercises, hormones therapy, vaginal pessary, classical surgeries such as hysterectomy, reconstruction of the anterior and posterior vaginal walls, vaginal occlusion. However, some of these methods left severe sequelae and high recurrence rate. Laparoscopic promontofixation was applied and gave good results. The choice of treatment method depends on the extent of the prolapsed organs, the accompanying diseases, the patient's health status, the level and experience of the surgeon. For young

patients, there is a desire to have children, the need for prolonged sexual activity after menopause and the desire to remain a woman, so the issue of preserving the uterus is raised [1, 3-5]

In the world, laparoscopic promontofixation is considered the standard technique to treat urogenital prolapse. However, it is costly, longer operative time, and has more complications after a period of postoperative follow-up [1, 6, 7]. In 2009, Noé KG. performed the first laparoscopic technique of placing synthetic grafts in the treatment of urogenital prolapse, fixing the uterus on the lateral parts of the iliopectineal ligament. This is a relatively new technique, with high efficiency, low invasiveness, fast surgery time, small surgical scars, recovery time, fast return to daily activities and reduced complications. In recent years many authors have implemented this method and reported high success rates, safety [8, 9].

At Khanh Hoa General Hospital, we have started to apply the laparoscopic pectopexy from 2020. Therefore, we carry out this study for two purposes:

1. To evaluate the effectiveness of laparoscopic pectopexy in patients with apical prolapse.
2. To evaluate the quality of life of patients after the surgery.

## 2. METHODS

### 2.1. Study design

A case series with follow-up on patients with uterine prolapse  $\geq$  grade 2, who had laparoscopic pectopexy at Khanh Hoa General Hospital between February 2020 and July 2021.

#### Inclusion criteria

- Patients with grade 2 apical prolapse who have an indication for surgery or a desire for abdominal surgery.
- Grade 3 and 4 uterine prolapse requires surgery to fix the uterus on the lateral parts of the iliopectineal ligament.
- Failure of previous surgical treatment of pelvic organ prolapse.

#### Exclusion criteria

- Contraindications for laparoscopic surgery.
- Contraindications to the use of synthetic grafts.
- Inflammation, ulceration of the cervix, vaginal.

- Malignant diseases or suspected malignancy of the cervix and vaginal.

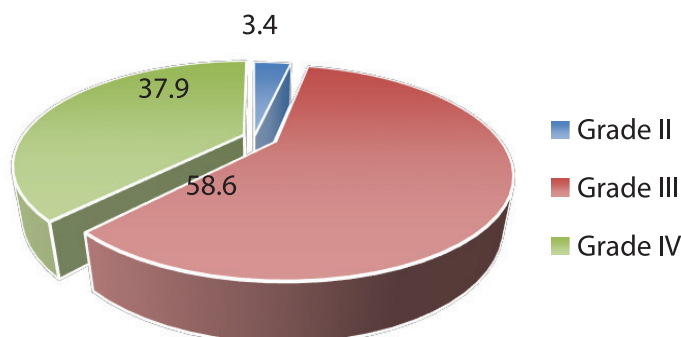
- Systemic diseases are not eligible for surgery

### 2.2. Statistical analysis

Absolute and relative frequency calculations were performed on categorical variables. For continuous variables, the mean, standard deviation, or median and interquartile ranges were determined, based on whether or not the data displayed a normal distribution. Wilcoxon signed-rank test is used to conduct a paired difference test of repeated measurements on a single sample. The Kruskal-Wallis H test (one-way ANOVA on ranks) used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. The statistical software package used was SPSS (version 22.0; SPSS, Inc., Chicago, IL).  $p < 0.05$  was considered as statistically significant.

## 3. RESULTS

### 3.1. Clinical features and quality of life before surgery



**Figure 1.** Degree of pelvic organ prolapse before surgery

The rate of pelvic organ prolapse of grade III and IV accounted for 58.6% and 37.9%, respectively.

**Table 1.** Quality of life before surgery according to PFDI-20 and PFIQ-7

Characteristics	mean $\pm$ SD	median	interquartile range	min-max
PFDI-20	137.22 $\pm$ 49.83	130	96 - 180.25	51 - 255
POPDI-6	70.83 $\pm$ 19.88	75	58 - 88	29 - 100
CRADI-8	22.03 $\pm$ 19.18	12	6 - 41	0 - 72
UDI-6	44.33 $\pm$ 19.91	44	29 - 55	8 - 96
PFIQ-7	167.10 $\pm$ 68.92	148	114 - 240.5	24 - 300
POPIQ-7	71.34 $\pm$ 19.42	71	62 - 86	10 - 100
CRAIQ-7	37.31 $\pm$ 32.97	24	10 - 71	0 - 100
UIQ-7	58.33 $\pm$ 25.47	57	38 - 81	10 - 100

The mean score of PFDI-20 was 130, of which the mean high score in the symptom group of prolapsed mass (POPDI-6) was 75 and the symptom of lower urinary tract disorder (UDI-6) was 44. The lowest was

anorectal symptom group (CRADI-8):12

The average score of PFIQ-7 is 148 and in which two groups of symptoms affect the quality of life: POPIQ-7 (71) and UIQ-7 (57).

### 3.2. Surgical features

**Table 2.** Surgical features

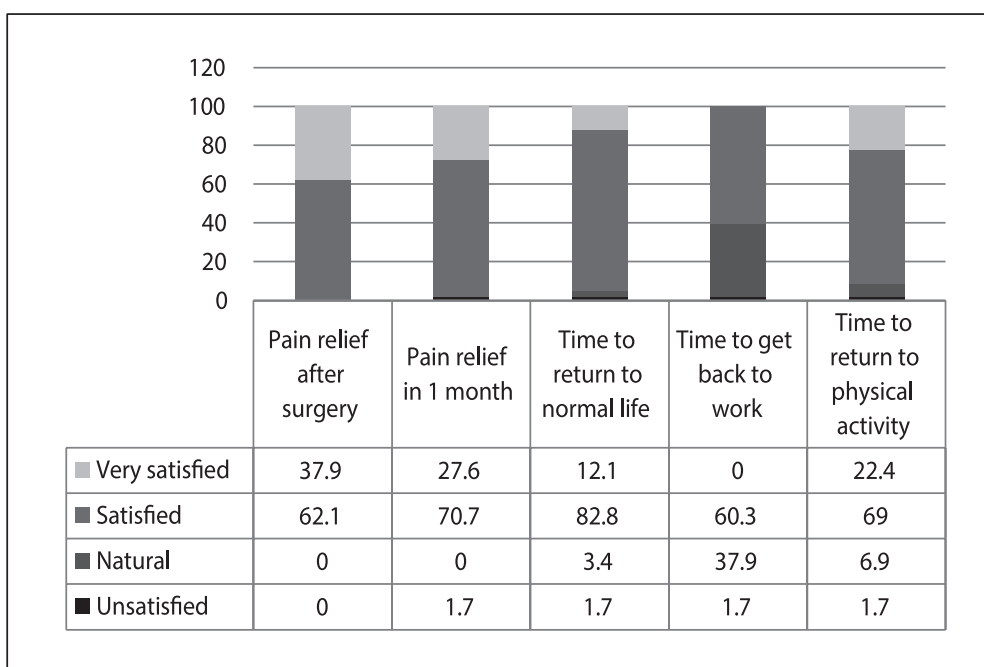
Surgery time (min)	n	%	Blood lost during surgery (ml)			Urinary disorder on day 5		
			n	%		n	%	
< 90	16	27.6	< 10	1	1.7	No	53	91.4
90 - 120	31	53.4	10 - 30	56	96.6	Dysuria	3	5.2
> 120	11	19.0	30 - 50	1	1.7	Frequent urination	2	3.4
			> 50	0	0,0	SUI	0	0.0
mean ± SD	104.59 ± 20.06		16.91 ± 6.86					

The average surgical time was 104 minutes, the shortest was 75 minutes and the longest was 170 minutes. The proportion of patients undergoing surgery in 90 - 120 minutes accounted for 53.4%; under 90 minutes is 27.6% and over 120 minutes is 19%.

The average blood loss was 16.91 ml, 96.6% blood

loss was from 10 - 30 ml. There was no case of blood loss > 50 ml and no patient required blood transfusion during and after surgery

Most patients did not have urinary disorders after surgery, accounting for 91.4%.



**Figure 2.** Patient satisfaction characteristics of postoperative pain relief and time to return to other activities  
 100% of patients are satisfied with the pain relief factor after surgery.  
 95% of patients are satisfied with the time it takes to return to a normal life.

### 3.3. Results of follow-up on treatment effectiveness and quality of life of patients 3 months and 6 months after surgery

**Table 3.** Comparison of quality of life before and after 3 months of surgery

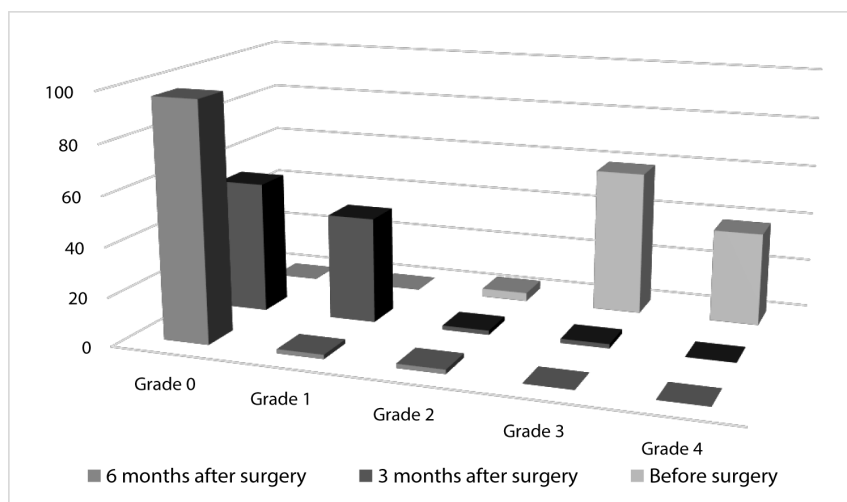
	Before surgery		After surgery		p
	median	interquartile range	median	interquartile range	
PFDI-20	130	96 - 180.25	8	4 - 23	< 0.001
POPDI-6	75	58 - 88	4	0 - 8	< 0.001
CRADI-8	12	6 - 41	0	0 - 6	< 0.001
UDI-6	44	29 - 55	4	0 - 8	< 0.001
<b>PFIQ-7</b>	<b>148</b>	<b>114 - 240.5</b>	<b>10</b>	<b>5 - 30</b>	<b>&lt; 0.001</b>
POPIQ-7	71	62 - 86	5	0 - 14	< 0.001
CRAIQ-7	24	10 - 71	0	0 - 5	< 0.001
UIQ-7	57	38 - 81	5	0 - 11	< 0.001

There is a statistically significant difference in the quality of life scores of all scales between the two time points before and 3 months after surgery with  $p < 0.001$ . After surgery, there was a significant improvement in quality of life in both PFDI-20 and PFIQ-7 groups

**Table 4.** Quality of life 3 months and 6 months after surgery

	3 months		6 months		p
	median	interquartile range	median	interquartile range	
<b>PFDI-20</b>	<b>8</b>	<b>4 - 23</b>	<b>0</b>	<b>0 - 11</b>	<b>&lt; 0.001</b>
POPDI-6	4	0 - 8	0	0 - 4	< 0.001
CRADI-8	0	0 - 6	0	0 - 0	< 0.001
UDI-6	4	0 - 8	0	0 - 4	< 0.001
<b>PFIQ-7</b>	<b>10</b>	<b>5 - 30</b>	<b>0</b>	<b>0 - 14</b>	<b>&lt; 0.001</b>
POPIQ-7	5	0 - 14	0	0 - 5	< 0.001
CRAIQ-7	0	0 - 5	0	0 - 0	0.042
UIQ-7	5	0 - 11	0	0 - 5	< 0.001

Scores of PFDI-20 and PFIQ-7 at 6 months were much lower than at 3 months. It shows that the quality of life of patients after surgery has improved over time. This comparison is statistically significant with  $p < 0.01$ .



**Figure 3.** Degree of uterine prolapse before surgery, after surgery 3 and 6 months

Before surgery, the rate of uterine prolapse of grade III was 58.6% and grade IV to 37.9%. After 3 months of surgery, this rate decreased to grade III was 1.7% and grade IV was 0%, and after surgery 6 months, there is no longer grade III and IV uterine prolapse. After 3 months of surgery, the rate of uterine prolapse of grade I was 43.7% and grade II was 1.7%, but after 6 months, this rate had improved to only 1.7% of grade I and 1.7% of prolapse grade II.

#### 4. DISCUSSION

Most of the patients have a prolapsed mass and mainly grade III or higher prolapse, accounting for 96.5%, of which grade IV uterine prolapse accounts for 37.9%. The degree of uterine prolapse is directly proportional to the occurrence of symptoms and greatly affects the quality of life of the patient [10, 11]. Patients often complain that the bulge in the vagina causes severe pain, discomfort and prolapse when walking and working. Some patients even had to use a wheelchair because uterine prolapse made the patient unable to walk.

We apply 2 questionnaire systems proposed by Baber (2005) to survey the quality of life of patients with pelvic organ prolapse. The PFDI-20 questionnaire was used to investigate how symptoms of prolapse, lower urinary tract, and rectum affect patients. The PFIQ-7 questionnaire investigates the impact of pelvic organ prolapse on patients' lives in many aspects [12]. In this study, the mean score of PFDI-20 was 130, while that of PFIQ-7 was 148. The higher the score, the worse the patient's quality of life, and quality of life scores are strongly correlated with the severity of prolapse [6, 11, 12].

The safety of surgery is reflected in the amount of blood loss during surgery, intraoperative and postoperative complications and postoperative infection. The low intraoperative blood loss was estimated at 19.1 ml on average and no patient required blood transfusion during or after surgery. Laparoscopic fixation of the uterus on the lateral parts of the iliopectineal ligament is assessed to limit blood loss if performed correctly. This is also evident in the research of other authors, including the same group of authors who proposed this method [7, 8, 13]. Intraoperative complications can occur and are characterized by damage to large blood vessels, damage to the corona mortist vascular system, damage to the obturator nerve and bladder [8, 9, 14]. Therefore, the first prerequisite to achieve the safety of this surgical method is to clearly define the anatomical landmarks and make meticulous dissection, clearly revealing the iliopectineal ligament [14, 15]. Following that principle, we did not encounter any complications related to damage to the bladder, large blood vessels, nerves during and after surgery.

Our results are similar to those of other authors [7-9, 13, 16-18]. During the hospital stay, we found that about 5.2% of dysuria and 3.4% of frequent urination were present, but only appeared on day 2 and most of them resolved on day 4. When conducting the quality of life survey. At the 3rd and 6th month after surgery, we noticed that there were some patients with frequent urination and urgency in the 3rd month, but almost completely disappeared by the 6th month after surgery. This is similar to the research of other authors [16, 18-20].

In this study, we evaluated the effectiveness of the surgical method through criteria such as surgery time, hospital stay, postoperative pain reduction, improvement of postoperative uterine prolapse, improvement of symptoms. due to uterine prolapse caused before surgery such as constipation, dysuria, frequent urination, and patient satisfaction after surgery.

In our study, the average surgical time was 107 minutes, the time from 90-120 minutes accounted for 53.4%. Time > 120 minutes, accounting for about 19%, mainly falls in cases of grade IV prolapse, obesity revealing the iliopectineal ligament requires a lot of meticulousness and time. Our results are similar to that of author G. K. Noé et al. in a large study of 501 patients, multicenter with 13 surgeons performed at 11 major medical centers in Europe, and results in operative time. The average technique is about 135 minutes, accounting for 71% [18].

The anatomical recovery of uterine prolapse and the improvement of associated symptoms are the most important goals that pelvic floor repair surgeries aim to achieve. In our study, 100% of patients immediately after surgery had no uterine prolapse (POP-Q  $\geq$  1) and improved accompanying symptoms such as difficulty urinating, frequent urination, or constipation after surgery. Patients also feel much more comfortable when they no longer feel severe pain or discomfort due to discharge due to uterine prolapse. An important issue that patients care about is whether the uterus will prolapse after surgery? In our study, when following patients for 3 to 6 months, only 1.7% of uterine prolapse with POP-Q = 2 (score C). There are many studies with follow-up time longer than 12-24 months, the rate of uterine prolapse is 2.5-10% in a meta-analysis of NICE but that rate is quite low in one study. Other studies ranged from 1 to 2.3% over a follow-up period of 12 to 32 months [7, 16, 20, 21].

Before surgery, the average PFDI score was 130, the average score of PFIQ-7 was 148, in which the highest was 240/300 points. After 3 months of surgery, the average score of PFDI and PFIQ -7 has improved markedly to only 8 and 10 points. Especially the symptoms of dysuria and constipation have been completely treated, most of the patients are satisfied to return to their previous normal life. Besides, the

symptoms of severe pain and pressure in the lower abdomen due to uterine prolapse accompanied by frequent urination were still present in 3 patients, corresponding to POP-Q class II and III, accounting for about 3.5%. Especially in the study group, there was 1 patient, although the uterine prolapse was significantly improved (grade 0) but the patient still had persistent pain in the vulva and lower back, even the patient had difficulty walking. back and felt very sad and disappointed with her surgery.

We continued to follow up through the 6th month after surgery, most of the patients had very low mean scores of PFDI and PFIQ-7. Only one patient had grade II uterine prolapse (grade IV before surgery) and still had frequent urination. The improvement in PFDI and PFIQ-7 scores indicates a better quality of life for patients over time. This can be explained by the time the pelvic floor has been restored, the body has accepted the presence of the composite graft, and the graft has done a good job of supporting the pelvic floor without causing complications. problems such as rejection, erosion, or exposure of the intra-abdominal graft. Paulina Szymczak MD et al performed a large literature review of 1002 patients with pelvic organ prolapse, performed laparoscopically by 17 surgeons, and the follow-up period was 1 month to 8 months. years (2010-2019), concluded that laparoscopic fixation of the uterus to the iliac band is safe, effective, and importantly, greatly improves the quality of life of patients after surgery [22].

Our initial study has very positive and encouraging results. We found that laparoscopic pectopexy for the treatment of patients with grade  $\geq 2$  uterine prolapse is safe, effective and improves the quality of life of patients after surgery. The limitation of our study is that at the time of the epidemic covid-19 in the world, patients with apical prolapse came for examination and treatment were few, and patients dropped out of follow-up quite a lot. From February 2020 to December 2021, we have performed 78 surgeries, but only 58 cases were eligible for follow-up because of the lack of follow-up contact. In addition, the follow-up time was also short, only 6 months, so the results of monitoring complications and quality of life after surgery were incomplete.

## REFERENCES

1. Bệnh viện Từ Dũ. Sa các tạng vùng chậu. Phác đồ điều trị sản phụ khoa. 2019. 192-205.
2. Phan Trường Duyệt. Phẫu thuật Sản Phụ khoa: NXB Y học; 2013; 709-785.
3. Bộ Y tế. Sa sinh dục. Hướng dẫn chẩn đoán và điều trị các bệnh Sản Phụ khoa. 2017; 143-149.
4. Nguyễn Trung Vinh. Sa vùng đỉnh âm đạo. Sản chậu học: NXB Y Học; 2015: 369-392.

5. Nguyễn Trung Vinh. Phẫu thuật bảo tồn tử cung trong điều trị sa sinh dục độ 3,4. Hội nghị sản chậu học lần thứ 14; TP Hồ Chí Minh. 2019.
6. Nguyễn Bá Mỹ Nhi. Đánh giá bước đầu hiệu quả và độ an toàn của phẫu thuật treo tử cung vào môm nhô qua nội soi ổ bụng trong điều trị sa tử cung tại bệnh viện Từ Dũ: Bệnh viện Từ Dũ; 2009.
7. Kale A, Biler A, Terzi H, Usta T, Kale E. Laparoscopic pectopexy: initial experience of single center with a new technique for apical prolapse surgery. *Int Braz J Urol.* 2017;43(5):903-9.
8. Banerjee C, Noe KG. Laparoscopic pectopexy: a new technique of prolapse surgery for obese patients. *Arch Gynecol Obstet.* 2011;284(3):631-5.
9. Noe KG, Schiermeier S, Alkatout I, Anapolski M. Laparoscopic pectopexy: a prospective, randomized, comparative clinical trial of standard laparoscopic sacral colpopocervicopexy with the new laparoscopic pectopexy-postoperative results and intermediate-term follow-up in a pilot study. *J Endourol.* 2015;29(2):210-5.
10. Barber MD. Questionnaires for women with pelvic floor disorders. *Int Urogynecol J Pelvic Floor Dysfunct.* 2007;18(4):461-5.
11. Doaee M, Moradi-Lakeh M, Nourmohammadi A, Razavi-Ratki SK, Nojomi M. Management of pelvic organ prolapse and quality of life: a systematic review and meta-analysis. *Int Urogynecol J.* 2014;25(2):153-63.
12. Barber MD, Walters MD, Bump RC. Short forms of two condition-specific quality-of-life questionnaires for women with pelvic floor disorders (PFDI-20 and PFIQ-7). *Am J Obstet Gynecol.* 2005;193(1):103-13.
13. Schachar JS, Matthews CA. Updates in Minimally Invasive Approaches to Apical Pelvic Organ Prolapse Repair. *Current Obstetrics and Gynecology Reports.* 2019;8(2):26-34.
14. Pulatoglu C, Dogan O, Medisoglu MS, Yassa M, Ellibes Kaya A, Selcuk I, et al. Surgical anatomy of the pectineal ligament during pectopexy surgery: The relevance to the major vascular structures. *Turk J Obstet Gynecol.* 2020;17(1):21-7.
15. Kostov S, Slavchev S, Dzhankov D, Stoyanov G, Dimitrov N, Yordanov AD. Corona mortis, aberrant obturator vessels, accessory obturator vessels: clinical applications in gynaecology. *Folia Morphol (Warsz).* 2021;80(4):776-85.
16. Noe KG, Spuntrup C, Anapolski M. Laparoscopic pectopexy: a randomised comparative clinical trial of standard laparoscopic sacral colpo-cervicopexy to the new laparoscopic pectopexy. Short-term postoperative results. *Arch Gynecol Obstet.* 2013;287(2):275-80.
17. de Mattos Lourenco TR, Pergialiotis V, Durnea C, Elfituri A, Haddad JM, Betschart C, et al. A systematic review of reported outcomes and outcome measures in randomized controlled trials on apical prolapse surgery. *Int J Gynaecol Obstet.* 2019;145(1):4-11.

18. Noe GK, Schiermeier S, Papathemelis T, Fuellers U, Khudyakov A, Altmann HH, et al. Prospective international multicenter pectopexy trial: Interim results and findings post surgery. *Eur J Obstet Gynecol Reprod Biol.* 2020;244:81-6.
19. Astepe BS, Karsli A, Koleli I, Aksakal OS, Terzi H, Kale A. Intermediate-term outcomes of laparoscopic pectopexy and vaginal sacrospinous fixation: a comparative study. *Int Braz J Urol.* 2019;45(5):999-1007.
20. Tahaoglu AE, Bakir MS, Peker N, Bagli I, Tayyar AT. Modified laparoscopic pectopexy: short-term follow-up and its effects on sexual function and quality of life. *Int Urogynecol J.* 2018;29(8):1155-60.
21. Biler A, Ertas IE, Tosun G, Hortu I, Turkay U, Gultekin OE, et al. Perioperative complications and short-term outcomes of abdominal sacrocolpopexy, laparoscopic sacrocolpopexy, and laparoscopic pectopexy for apical prolapse. *Int Braz J Urol.* 2018;44(5):996-1004.
22. Szymczak P, Grzybowska ME, Wydra DG. Comparison of laparoscopic techniques for apical organ prolapse repair – a systematic review of the literature. *Neurourology and Urodynamics.* 2019;38(8):2031-50.