DOI: 10.38103/jcmhch.83.8

Original Research

A REPORT OF LAPAROSCOPIC PROMONTOFIXATION WITH UTERINE PRESERVATION

Hoang Trong Nam[1] ✉

[1] Center of Obstetrics and Gynecology, Hue Central Hospital

ABSTRACT

Background: *Pelvic organ prolapse is a common disease, accounting for 31.8% to 97.7% of women at clinical examination, of which clinical symptoms account for 2.9% to 11.4%. Pelvic floor disorders, including urinary incontinence, anal incontinence, and genital prolapse, are highly prevalent, affecting approximately one-third of adult women. While these conditions are not life-threatening, their social and economic consequences may be significant. Nowadays, there are many methods to treat female pelvic prolapse, including laparoscopic surgery, laparotomy and vaginal surgery. Choosing a method of treating pelvic organ prolapse is still controversial. Endoscopic surgery is a method having many advantages. In this study, we reported the treatment results for Pelvic organ prolapse by laparoscopic promontofixation without hysterectomy.*

Methods: *A study was conducted on 19 female patients with pelvic organ prolapse, who were treated with the laparoscopy promontofixation for uterin preservation at Hue Central Hospital from June 2019 to June 2021.*

Results: *The average age was 65 years old, the rate of hard work was 77.8%, and the average number of births was 3.8. The rate of macrosomia is 28%. The rate of bladder prolapse stage 2 accounted for 42%, and bladder prolapse stage 3 accounted for the highest rate of 58%. The stage 2 cervical prolapse rate was 32%, of which stage 3 cervical prolapse accounted for the highest rate of 68%. The stage 1 rectal prolapse rate was 50%, and stage 2 rectal prolapse was 1%, of which stage 3 was 42%. The rate of urinary incontinence was 89%. The median hospital stay for surgery was 6.57 days. The average time for laparoscopic promontofixation was 142 minutes, of which the longest time was 180 minutes and the fastest was 60 minutes. There were no complications during surgery. Complications appear after surgery: Burning pain in the lower abdomen was highest at 44%, dull pain in the low back at 33%, constipation at 22%, cystitis at 11%, pain when defecating at 11%. The success rate of the treatment of bladder prolapse after surgery was 100%, the success rate of cervical prolapse was 87.5%, the success rate of rectal prolapse was 88.9%. The rate of no urinary incontinence after 12 months was 75%, the success rate of dysuria treatment was 100%.*

Conclusions: *Our initial experience renders the use of laparoscopic promontofixation with uterine preservation to be safe and efficient in experienced hands. However, it is difficult to perform this technique; the number of samples is small, and we need further research.*

Keywords: *Treatment of pelvic organ prolapse, laparoscopic sacral hysteropexy, uterine-sparing surgery*

Received:
05/04/2022
Revised:
30/4/2022
Accepted:
09/05/2022

Corresponding author:
Hoang Trong Nam
Email:
namhoang2711@gmail.com
Phone: 0988804645

I. INTRODUCTION

Pelvic organ prolapse is a common disease, accounting for 31.8% to 97.7% of women at clinical examination, of which clinical symptoms account for 2.9% to 11.4%.

Pelvic organ prolapse is the prolapse of one or more pelvic organs from their normal anatomical position through the vagina, such as the bladder, uterus, vagina, rectum, intestines, and connective tissues due to damage and weakening of the fascia, muscle and ligamentous structures that support the pelvic floor [2]. Pelvic organ prolapse causes urinary disorders, digestive disorders, sexual disorders and affects the quality of life of women. This disease often occurs in women with postmenopause, pregnancy and multiple births, obesity, heavy work, chronic constipation, chronic respiratory disease and pelvic surgery.

Depending on the severity, pelvic organ prolapse can be treated conservatively with physical therapy (pelvic floor muscle exercises, electromyography …) or surgery [3]. Surgical techniques for the treatment of pelvic organ prolapse in women can be transvaginal or transabdominal. However, transabdominal surgery is the most effective and sustainable method to correct pelvic floor defects and ensure the quality of the patient's sex life. The strong development of laparoscopy creates favorable conditions to treat laparoscopic sacrocolpopexy. We reported the treatment results of 19 cases of pelvic organ prolapse in women by laparoscopic promontofixation with uterine preservation at Hue Central Hospital to describe the treatment results of this case series.

II. PATIENTS AND METHODS

2.1. Study population

Including 19 cases of female patients with pelvic organ prolapse treated by laparoscopic promontofixation with uterine preservation at Hue Central Hospital from June 2019 to June 2021.

Inclusion criteria: appearance of urogenital prolapse of grade 2 or higher according to the traditional grade of pelvic organ prolapse of 2 authors (Baden-Walker). Functional symptoms caused by pelvic organ prolapse alter the patient's quality of life and consent to surgical treatment.

Exclusion criteria: contraindication to laparoscopic surgery, history of pelvic radiotherapy, history of immunosuppressive therapy that is a cause of graft rejection, and history of urogenital dysplasia.

2.2. Measures

Sample size: A convenience sample.

Research steps: All patients underwent gynecological examination to evaluate the stage of pelvic organ prolapse according to the classification of Baden and Walker [4,5]. Evaluation of pelvic organ prolapse stage by Valsalva maneuver during examination. Levator ani muscle stimulation test to evaluate the anal sphincter. Use the Bonney and Ulmsten test [6] to detect urinary incontinence. The degree of urinary incontinence based on Stamey's classification includes 3 stages: stage 0: involuntary urination. Stage 1: draining urine during vigorous activities such as coughing, sneezing, lifting heavy objects. Stage 2: draining urine with moderate activity such as long walking or standing. Stage 3: urine drainage occurs all the time regardless of posture or activity.

Surgical technique:

Step 1: The patient is placed in a gynecological position, with his back close to the operating table, his legs are set at an angle of 135 degrees. A 10 mm trocar is inserted directly into the umbilicus to provide access to the optique. Comprehensive view of the pelvis and abdomen. Two trocars 5 mm above the pubic bone are located on either side of the superficial epigastric artery and one 10 mm trocar is located above the pubic bone in the left midline.

Step 2: Exposing the surgical field: using vicryl 1.0 thread to sew on the perirectal fat and pull it to the left iliac fossa. Anterior and ascending uterine orientation is fixed to the anterior abdominal wall by suturing the vicryl 1.0 thread through the uterine body.

Step 3: The dissection of the posterior vaginal fornix: using scissors to open the posterior abdominal wall to reveal the central tendon of the perineum and the bilateral levator ani muscle.

Step 4: locate the division into the common iliac artery of the abdominal aorta, find the sacral promontory just below 5cm, open the peritoneum with scissors to expose the anterior longitudinal ligament of the spine. The peritoneal separation on the right side extends to the position where the posterior vaginal fornix was opened.

Step 5: Use the first mesh made of polypropylene with size 25 x 3 cm with Y shape fixed to the posterior vaginal wall by prolenne 2.0 nonabsorbable sutures, the first and second points on the position of the levator ani muscle were exposed bilaterally, the 3rd and 4th points are inserted into the posterior vaginal wall and the last two points are fixed to the bilateral uterosacral ligaments.

Step 6: expose the anterior wall of the bladder - uterus: separate the peritoneal bladder - uterus to the

triangle of the bladder (trigone), extend to the right on the broad ligament, find the avascular site where the puncture is through the broad ligament to access the back of the uterus.

Figure 1: Exposing the surgical field (step 2)

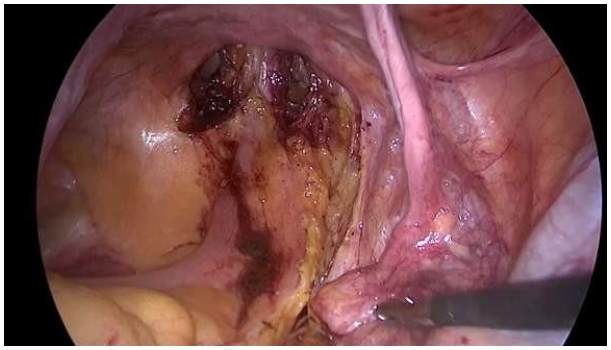

Figure 2: The dissection of the posterior vaginal fornix (step 3)

Figure 3: Exposing the sacral promontory (step 4)

Figure 4: Fixing the mesh to the posterior vaginal wall (step 5)

Figure 5: Exposing the anterior wall of the bladder - uterus (step 6)

Step 7: Prepare a second mesh made of polypropylene 20cm long 3cm wide to fix to the anterior vaginal wall with prolenne 2.0 thread, including 5 fixing points: the first point is the top of the trigone, the remaining 4 points to the face anterior of the cervix - uterus.

Step 8: After being fixed to the anterior vaginal wall, the anterior wall mesh will be passed through the hole in the broad ligament created in the previous step to reach the sacral promontory together with the posterior wall mesh.

Step 9: fix the sacral promontory meshes to the sacral promontory using two prolenne 2.0 non-absorbable stitches through the anterior longitudinal ligament to pull the two polypropylene meshes simultaneously to the sacral promontory. Excessive stretching or slackening should be avoided by transvaginal observation.

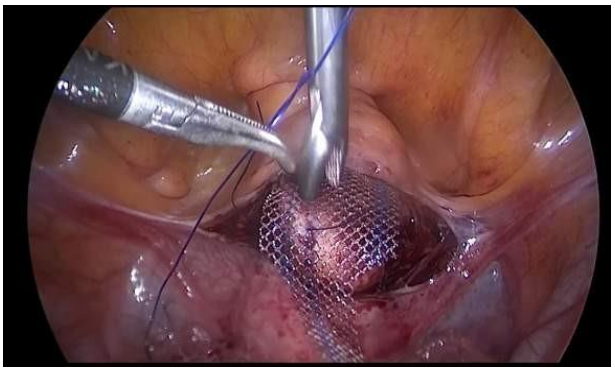

Figure 6: Fixing the mesh to the anterior vaginal wall (step 7)

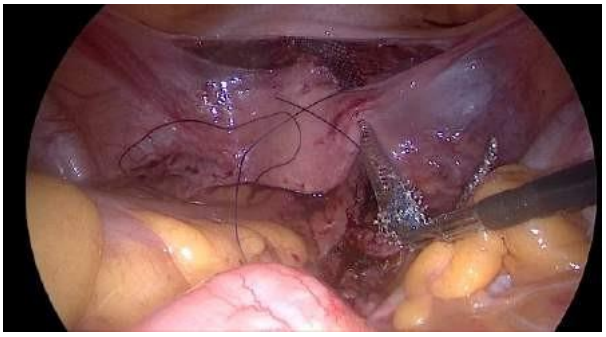

Figure 7: Piercing the mesh through the broad ligament (step 8)

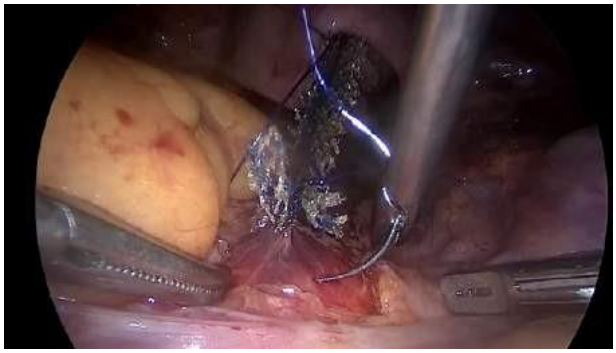

Figure 8: fixing the meshes to the sacral promontory (step 9)

Step 10: The two meshes were completely covered with vicryl 3.0 suture by the whip-stitch method to completely close the posterior wall peritoneum.

Then, cover the entire anterior wall peritoneum to avoid exposing the mesh by whip-stitch suturing with vicryl 3.0 sutures.

The method of hanging the uterus to the sacral promontory with 2 meshes was applied to all patients. However, depending on the clinical presentation, we only used a mesh placed on the anterior vaginal wall in the absence of rectal prolapse.

III. RESULTS

3.1. General characteristics

The average age was 65 years old, 100% in rural areas, 77.8% in heavy labor, 22.2% in light labor and the average number of births was 3.8, the rate of macrosomia was 28%, of which the rate of giving birth to a baby less than 3.5 kg is 72%, characteristics of the distribution of urinary incontinence (graded according to Stamey's grading table): the rate of urinary incontinence is 89%, of which the rate of urinary incontinence is the highest with 89%, the rate of urinary incontinence is 11%.

3.2. Clinical characteristics of pelvic organ prolapse (according to Baden-Walker)

Bảng 1. Clinical characteristics of pelvic organ prolapse

Pelvic organ prolapse	**Stage 1**	**Stage 2**	**Stage 3**
Bladder prolapse	0%	8 (42%)	11 (58%)
cervical prolapse	0%	6 (32%)	13 (68%)
Rectal prolapse	6 (50%)	1 (8%)	5 (42%)

Bladder prolapse stage 2 accounts for 42%, bladder prolapse stage 3 accounts for the highest rate: 58%. The stage 2 cervical prolapse rate is 32%, of which stage 3 cervical prolapse accounts for the highest rate at 68%. The rate of stage 1 rectal prolapse was 50%, the rate of stage 2 rectal prolapse was 1%, of which stage 3 was 42%.

3.3. Hospital stay and surgery time

The average hospital stay for the surgery was 6.57 days, of which the longest was 9 days and the lowest was 5 days. The average surgery time was 142 minutes; the longest was 180 minutes and the fastest was 60 minutes.

3.4.Results of methods used in surgery

Table 2. Results of methods used in surgery

Method	**N**	**%**
Combining 2 meshes	6	32%
Using a mesh	13	68%
Conserving the uterus	19	100%

The surgical method of combining 2 meshes to fix the anterior wall and the posterior wall of the vagina - uterus accounts for 32%, of which the method of using a mesh to fix the anterior wall of the vagina - uterus accounts for 68%, the uterus-conserving surgery method accounts for 100%.

3.5. Intraoperative and postoperative complications:

Table 3. Intraoperative and postoperative complications

Rate of complications in surgery	**Rate of Complications after surgery**		
	Symptom	**After 3 months**	**After 12 months**
Switch to open surgery (0%)	Cystitis	11%	0%

Rate of complications in surgery	Rate of Complications after surgery		
	Symptom	**After 3 months**	**After 12 months**
Bladder injury (0%)	The hypogastrium pain	44%	0%
Rectum injury (0%)	Rectal fistula	0%	0%
Bleeding over 500ml (0%)	painful defecation	11%	0%
	Constipation	22%	0%
	Lumbar pain	33%	0%

There were no complications during surgery, complications appeared after surgery: Burning hypogastrium pain at 44%, dull lumbar pain at 33%, constipation at 22%, cystitis at 11%, pain when defecation at 11%.

3.6. Results of treatment for pelvic organ prolapse at 12-month follow-up:

The rate of bladder prolapse before surgery was 100%, the success rate after surgery was 100%. All cases of cervical prolapse are grade 2, 3 and account for 100%, the success rate is 87.5%. Rectal prolapse after 12 months of treatment, returning to grade 0 accounted for 85.7%, the success rate was 88.9%.

3.7. Results of treatment for urinary disorders

Table 4. Results of treatment for urinary disorders

Time / Urinary disorders	**Before surgery**	**No disorder after 3 months**	**No disorder after 12 months**
Urinary incontinence	(88,9%)	(75 %)	(75%)
Dysuria	(44,4%)	(100%)	(100%)

The rate of urinary incontinence before surgery was 88.9%, of which the rate of no urinary incontinence after 12 months of surgery was 75%. The rate of dysuria before surgery is 44.4%, the success rate after surgery is 100%.

IV. DISCUSSION

In evaluating the degree of pelvic organ prolapse in female patients, we classified it according to the Baden - Walker classification system. We accept this classification system to confirm pelvic organ prolapse as recommended by the International Continence Society (ICS) and consistent with author Markus Huebner in 2018 [5].

The method of slinging to the anterior longitudinal ligament of the spine corresponding to the position of the sacral promontory was performed with an open incision and placement of two meshes, one anterior and one posterior, with extensive dissection of the posterior vaginal fornix. Many surgeons systematically perform partial hysterectomy or cerclage according to the Burch technique to treat or prevent secondary urinary incontinence, and even suture the levator ani muscles to treat rectal prolapse. Although laparoscopic instruments are quite fully supported, this technique is still limited and difficult. That is a long surgical time, in our study, the average surgical time was 142 minutes, of which the shortest was 60 minutes and the longest was 180 minutes. Our surgical time is also consistent with that of author Susana Mustafa (162 minutes to 196 minutes) [7] Our surgery time is faster than M. Cosson [8] et al. Average time was 286 minutes (225 minutes to 360 minutes) due to the use of only an anterior vaginal-uterine mesh in some cases without rectal prolapse.

In our study, the rate of intraoperative complications was 0%, there was no conversion to open surgery, no bladder or rectal injury complications, and the average blood loss was 81.4 ml. The results of our study are consistent with the study of complications in surgery, ranging from 2.2% to 17.4% [9-11]. The most common postoperative complication we encountered was dull hypogastrium pain, accounting for 44%, according to author M. Kdous [12], this symptom is also the most common in laparoscopic sling surgery to treat pelvic organ prolapse and accounts for half of this surgery, in addition, spondyloarthritis may cause this symptom, which can be improved by antibiotic treatment, Rozet [13] and Bui [14] reported these cases. Aseries of reports has published a very variable rate of postoperative complications ranging from 2.7% to 15% [15-17]. Rates of early intervention vary from 0% to 3.9% [18] and few studies have reported long-term complications of laparoscopic sling surgery. Erosion of the mesh is the most distinctive complication and the most common, but this complication occurs quite late, on average between 6 months and 36 months, mesh exposure can be vaginal or intra-abdominal and requires consideration of re-intervention. Mesh erosion is

the most distinctive and frequent complication, and mesh exposure can be vaginal or intra-abdominal and requires consideration of re-intervention. According to the literature, this complication rate is 2.7% [18]. We have not encountered this situation in our study, perhaps because of the short follow-up time and the small number of samples.

Anorectal complications often arise secondary to altered perfusion distribution and altered neurologic distribution after extensive surgical dissection and/ or excessive retraction of the posterior wall mesh. In our study, constipation accounted for 22.2%, painful defecation accounted for 11.1%, the results are consistent with the results of Ganatra et al. [18], accounting for 9.8% (0-25%), including constipation, anal pain and dyschesia, most of which disappeared after 6 months of surgery without treatment.

Laparoscopic promontofixation surgery is a proven technique for treating female pelvic organ prolapse in the short and medium term. The surgical success rate after 2 years is 100% for medial prolapse, the success rate for anterior prolapse is 97.5% (2.5% recurrence of bladder prolapse), 89.2% for the posterior wall (10.8% recurrent rectal prolapse). In our study, the surgical success rate up to 12 months was 87.5% for medial prolapse, the surgical success rate for anterior prolapse was 100%, and the surgical success rate for posterior prolapse was 85.7%. The lowest recurrence rate is the middle layer, some authors announced the highest recurrence rate is the posterior layer [19,20]. However, others have reported that the most common recurrence rate is the anterior layer [13,21]. This is explained by the unstandardized definition of recurrent pelvic organ prolapse and the difficulty in collecting follow-up data.

Urinary incontinence is one of the common complications of urogenital prolapse, and Rivoire et al. reported a prevalence of 44% [21]. In our study, the rate of urinary incontinence was 88.9%. This complication often persists after surgery to treat pelvic organ prolapse. In the study of the author Moez Kdous, the recurrence rate of urinary incontinence after surgery was 7.5%. However, our study's success rate for 6 months was 75%. Our assessment of urinary incontinence is based on Stamey's classification, so patients with occult urinary incontinence are likely to go undetected, which explains the higher rate of urinary incontinence treated by laparoscopic surgery compared with other studies.

Opinions on hysterectomy and preservation of the uterus: the authors Oana Madalina Acsinte, Benoit Rabischong, Nicolas Bourdel, Michel Canis, Revaz Botchorishvili [22] always performed hysterectomy at the same time as laparoscopic promontofixation for pelvic organ prolapse. However, domestic authors Nguyen Van An, Nguyen, Thi Vinh Thanh, Nguyen Ba My Nhi [2,3,23] advocate preserving the uterus during laparoscopic surgery for pelvic organ prolapse. Therefore, in our study, we also advocated preservation of the uterus.

V. CONCLUSION

Our initial experience renders the use of laparoscopic promontofixation with uterine preservation to be safe and efficient in experienced hands. However, it is difficult to perform this technique; the number of samples is small, and we need further research.

REFERENCES

1. Antoine T, Kayembe, Andy M, Muela, Alex M, Baleka, Dieudonné S, Mushengezi, Rahma R, Tozin. Genital prolapse: epidemiology, clinic and therapeutic at Saint Joseph Hospital of Kinshasa. PAMJ. 2020. 37.
2. Nguyễn Văn Ân VTTP, Phạm Hữu Đoàn. áp dụng phẫu thuật nội soi treo âm đạo vào mỏm nhô để điều trị sa sinh dục nặng. Y Học TP. Hồ Chí Minh. 2014. 18: 428-429.
3. Nguyễn Bá Mỹ Nhi, Phan Thị Nga, Văn Phụng Thống. Nhận xét bước đầu sử dụng mảnh ghép tổng hợp trong điều trị ngoại khoa bệnh lý sa tạng chậu nữ tại bệnh viện Từ Dũ. Tạp chí phụ sản. 2012. 10: 228-236.
4. Baden WF, Walker TA, Lindsey JH. The vaginal profile. Tex Med. 1968. 64: 56-8.
5. Huebner M, DeLancey JOL, Reisenauer C, Brucker SY, Preibsch H, Fleischer S, et al. Magnetic resonance imaging of vaginal support structure before and after Vecchietti procedure in women with Mayer-Rokitansky-Küster-Hauser syndrome. Acta Obstet Gynecol Scand. 2018. 97: 830-837.
6. Ingelman-Sundberg A. Urinary incontinence in women, excluding fistulas. Acta Obstet Gynecol Scand. 1952. 31: 266-91.
7. Mustafa S, Amit A, Filmar S, Deutsch M, Netzer I, Itskovitz-Eldor J, et al. Implementation of laparoscopic sacrocolpopexy: establishment of a learning curve and short-term outcomes. Arch Gynecol Obstet. 2012. 286: 983-8.
8. Cosson M, Bogaert E, Narducci F, Querleu D, Crépin G. [Laparoscopic sacral colpopexy: short-term results and complications in 83 patients]. J Gynecol Obstet Biol Reprod (Paris). 2000. 29: 746-750.

9. Agarwala N, Hasiak N, Shade M. Laparoscopic sacral colpopexy with Gynemesh as graft material--experience and results. J Minim Invasive Gynecol. 2007. 14: 577-83.
10. Antiphon P, Elard S, Benyoussef A, Fofana M, Yiou R, Gettman M, et al. Laparoscopic promontory sacral colpopexy: is the posterior, recto-vaginal, mesh mandatory? Eur Urol. 2004. 45: 655-61.
11. North CE, Ali-Ross NS, Smith AR, Reid FM. A prospective study of laparoscopic sacrocolpopexy for the management of pelvic organ prolapse. Bjog. 2009. 116: 1251-7.
12. Moez K JD, Monia F, Fethi Z, *La double promontofixation coelioscopique : un échec pour l'étage postérieur ?* Vol. 94. 2016: LA TUNISIE MEDICALE
13. Rozet F, Mandron E, Arroyo C, Andrews H, Cathelineau X, Mombet A, et al. Laparoscopic sacral colpopexy approach for genito-urinary prolapse: experience with 363 cases. Eur Urol. 2005. 47: 230-6.
14. Bui C, Ballester M, Chéreau E, Guillo E, Daraï E. [Functional results and quality of life of laparoscopic promontofixation in the cure of genital prolapse]. Gynecol Obstet Fertil. 2010. 38: 563-8.
15. Claerhout F, Roovers JP, Lewi P, Verguts J, De Ridder D, Deprest J. Implementation of laparoscopic sacrocolpopexy--a single centre's experience. Int Urogynecol J Pelvic Floor Dysfunct. 2009. 20: 1119-25.
16. Ross JW , Preston M. Laparoscopic sacrocolpopexy for severe vaginal vault prolapse: five-year outcome. J Minim Invasive Gynecol. 2005. 12: 221-6.
17. Sarlos D, Brandner S, Kots L, Gygax N, Schaer G. Laparoscopic sacrocolpopexy for uterine and post-hysterectomy prolapse: anatomical results, quality of life and perioperative outcome-a prospective study with 101 cases. Int Urogynecol J Pelvic Floor Dysfunct. 2008. 19: 1415-22.
18. Ganatra AM, Rozet F, Sanchez-Salas R, Barret E, Galiano M, Cathelineau X, et al. The current status of laparoscopic sacrocolpopexy: a review. Eur Urol. 2009. 55: 1089-103.
19. Gadonneix P, Ercoli A, Salet-Lizée D, Cotelle O, Bolner B, Van Den Akker M, et al. Laparoscopic sacrocolpopexy with two separate meshes along the anterior and posterior vaginal walls for multicompartment pelvic organ prolapse. J Am Assoc Gynecol Laparosc. 2004. 11: 29-35.
20. Higgs PJ, Chua HL, Smith AR. Long term review of laparoscopic sacrocolpopexy. Bjog. 2005. 112: 1134-8.
21. Rivoire C, Botchorishvili R, Canis M, Jardon K, Rabischong B, Wattiez A, et al. Complete laparoscopic treatment of genital prolapse with meshes including vaginal promontofixation and anterior repair: a series of 138 patients. J Minim Invasive Gynecol. 2007. 14: 712-8.
22. Acsinte OM, Rabischong B, Bourdel N, Canis M, Botchorishvili R. Laparoscopic Promontofixation in 10 Steps. J Minim Invasive Gynecol. 2018. 25: 767.
23. Nguyễn TVT, Nguyễn BMN, Vũ AT. Phân tích các biến chứng phẫu thuật đặt mảnh ghép điều trị sa tạng chậu trong thời gian theo dõi 2 năm. Tạp chí Phụ sản. 2018. 16: 107 - 110.