

Advantages of Laparoscopic Treatment in Pelvic Static Disorders by Lateral Hystero/Colpopexy - A Single Center Experience

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Rezumat

Avantajele tratamentului laparoscopic în prolapsul simptomatic pelvin prin histero/colpopexie laterală - experiența unui singur centru

Introducere: Prolapsul organelor pelvine este cea mai frecventă și comună problemă de sănătate cu care se confruntă majoritatea pacientelor, reprezentând descensul în vagin sau dincolo de introitus a unui sau mai multor organe pelvine, implicând trei compartimente: anterior - vezica urinară, apical - uter și posterior - rect. Histero/colpopexie laterală este o abordare alternativă în repararea prolapsului simptomatic pelvin anterior și apical. Obiectivul principal constă în corectarea defectelor planșeului pelvin, restabilirea anatomiei, dispariția senzației de presiune și menținerea unei funcții sexuale normale.

Material and Metodă: Intervenția chirurgicală a fost aplicată la pacientele care au prezentat un prolaps mai mare de gradul II, conform sistemului internațional de cuantificare al prolapsului (POP-Q). Pentru prolapsul apical, anterior, se disecă peritoneul vezical și se montează o plasă de polipropilenă la ligamentele rotunde cu suspensia istmului și colului și fixarea bandetei cu tackuri tip CapSure urmată de închiderea peritoneului vaginal.

Rezultate: În timpul realizării tehnicii nu am avut parte de complicații intraoperatorii sau postoperatorii. Păstrarea uterului s-a dovedit a fi eficient pentru corectarea prolapsului, au fost observate îmbunătățiri semnificative ale calității vieții pacientelor, ale frecvenței nicturiei, ale gradului de dispareunie și ale simptomelor de urgență.

Concluzii: Conservarea uterului prin histero/colpopexie laterală este o metodă nouă, posibilă și de succes pentru tratarea prolapsului organelor pelvine.

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Cuvinte cheie: prolaps de organe pelvine, suspensie laparoscopică de plasă laterală, conservarea uterului, histeropexie, laparoscopie, repararea prolapsului laparoscopic

Abstract

Introduction: Pelvic organ prolapse is the most frequent and common health problem faced by most patients, representing the descent into the vagina or beyond the introitus of one or more pelvic organs, involving three compartments: anterior-bladder, apical-uterus and posterior-rectus. Lateral hystero/colpopexy is an alternative approach in the repair of symptomatic anterior and apical pelvic prolapse. The main objective is to correct pelvic floor defects, restore anatomy, relieve pressure and maintain normal sexual function.

Material and Methods: Surgical intervention was applied to patients with prolapse greater than grade II according to the international prolapse quantification system (POP-Q). For apical, anterior prolapse, the bladder peritoneum is dissected and a polypropylene mesh is fitted to the round ligaments with suspension of the isthmus and cervix and fixation of the mesh with CapSure tacks followed by closure of the vaginal peritoneum.

Results: During the performance of the technique I had no intraoperative or postoperative complications. Conservation of the uterus proved to be effective for prolapse correction, significant improvements in patient quality of life, frequency of nocturia, degree of dyspareunia and urgency symptoms were observed.

Conclusion: Uterine preservation by lateral hystero/colpopexy is a new, feasible and successful method for treating prolapse.

Key words: pelvic organ prolapse, laparoscopic lateral mesh suspension, uterus preservation, hysteropecty, laparoscopy, laparoscopic prolapse repair

Introduction

Pelvic organ prolapse is the best known, most frequent and most common health problem faced by the majority of patients worldwide (1,2,3). Laparoscopic lateral hystero/colpopexy is an alternative approach in repairing symptomatic anterior and apical pelvic prolapse, by this technique avoiding promontory dissection which could endanger the patient's life by vascular injury, bladder dysfunction by hypogastric nerve injury, spondylodiscitis, sacral root injury (4,5,6). The main objective is to demonstrate the advantages of laparoscopy, correct pelvic floor defects, restore anatomy, relieve pressure and maintain normal sexual function.

Material and Method

The study is conducted retrospectively from

january 2016 to december 2020 in the Surgery Clinic I of the Constanta Emergency County Clinical Hospital and includes 89 surgeries for uterine prolapse correction and 22 surgeries for vaginal vault prolapse, using both reconstructive and obliterative surgical techniques. After the operative steps were explained to the patients, surgery was performed after obtaining written informed consent.

Surgical intervention was applied according to the international prolapse quantification system (POP-Q) (*Table 1*) (7).

Table 1. International prolapse quantification system (POP-Q)

Stage	Description
0	Normal positioning of each locus.
1	Lowering into the vagina halfway to the hymen.
2	Lower to hymen.
3	Lowering halfway out of hymen
4	Maximum descent of each locus

Operating Technique

Patients with stress urinary incontinence underwent transobturator (TOT) urethral slinging procedure of the middle urethra during the second stage of surgery, vaginal time. Depending on the case, anterior and/or posterior colporrhaphy procedures were performed concomitantly.

All surgeries were performed under general anaesthesia with oro-tracheal intubation and followed the following operative times:

- Pneumoperitoneum with the Veress needle or in an open manner if patients have a history of surgery. After the pneumoperitoneum is performed, the optical trocar is inserted at the umbilical level followed by the insertion of the other trocars under optical control in the spino-umbilical line, 2 or 3 as needed. The patient will be positioned in Trendelenburg, with mobilization of bowel loops from the pelvis to the upper abdominal floor, possibly with lysis of adhesions in case of posthysterectomy vaginal vault prolapse.
- Round ligaments are identified and the uterus is tractioned exposing the isthmus, the vesico-vaginal peritoneum is sectioned and dissected (*Fig. 1*).
- Two minimal incisions are made at inguinal level and the extraperitoneal grasper penetrates through the inguinal canal to the level of the isthmus through the round ligament.
- Polypropylene mesh is inserted (*Fig. 2*) and fixed to the isthmus using absorbable fixation tacks (AbsorbaTack) (*Fig. 3*). Subsequently the arms of this strip will be extracted bilaterally through the round ligament to the level of the inguinal canal.
- Close the peritoneal defect with a continuous suture with absorbable thread. Traction of the two arms will pull the isthmus anteriorly and superiorly reducing the prolapse (*Fig. 4*).
- Haemostasis control and pelvic drainage.
- The excess mesh will be excised, leaving

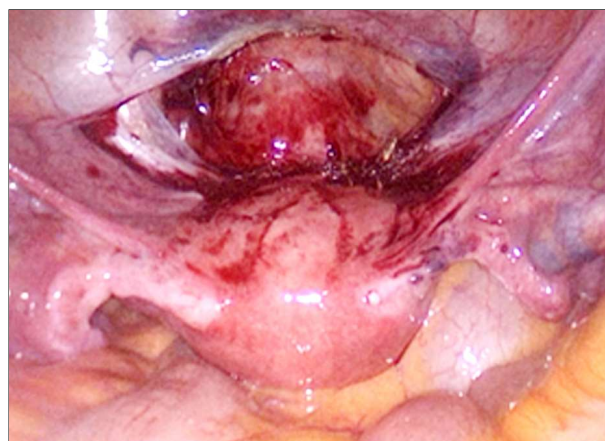


Figure 1. Vesico-vaginal peritoneum dissected

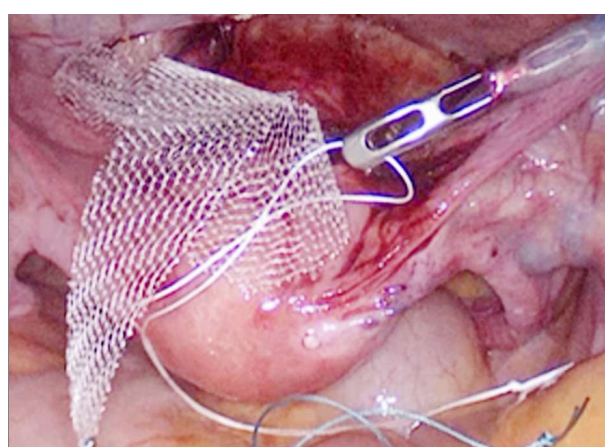


Figure 2. Extraction of the band (mesh) ends through the round ligament

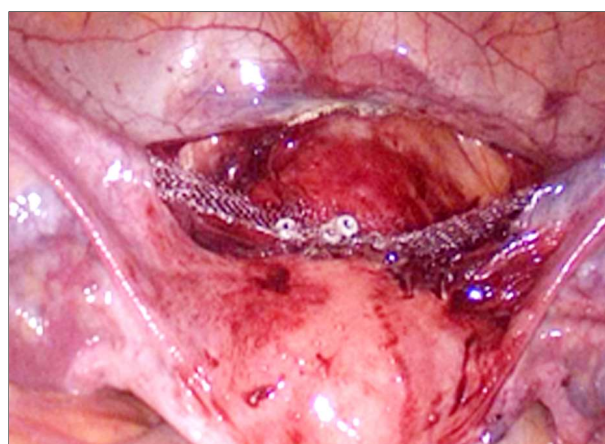


Figure 3. Fixation of mesh with tacks

the outer ends at the inguinal canal without exposure to avoid possible infection. Suturing of the tegument.

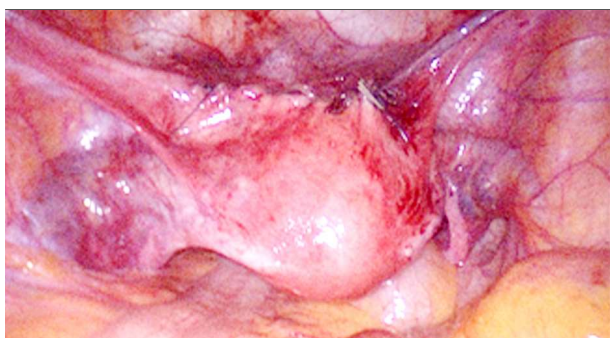


Figure 4. Closure of the vaginal peritoneum

Results

During the study period January 2016-December 2020, 89 surgeries for correction of uterine prolapse and 22 surgeries for correction of vaginal vault prolapse were performed using both reconstructive and obliterative surgical techniques.

The highest number of patients was recorded between 61-70 years old, while the second highest number of patients was in the age groups 71-80 and 51-60 years old. Uterine prolapse correction was performed only in patients who no longer wanted to procreate and in whom the prolapse was symptomatic, as intervention on an asymptomatic prolapse would not be of benefit and would expose the patient to perioperative risks.

The average duration of follow-up was 12 months (range 1-24 months). Laparoscopically, 4 hysterectomies, 12 hyster-sacropepy Oxford procedure, 49 hysteropexy (44.14%) out of 111 apical compartment correction operations were performed (due to the simplicity of the technique, short duration of the operation and very good results, with minimal complications), for vaginal vault prolapse we used the abdominal approach for laparoscopic sacrocolpopexy (6 cases - 5.40%) or for laparoscopic colpo suspension - lateral fixation procedure (12 cases - 10.81%) (*Table 2*).

The average duration of surgery was approximately 60 min and in cases where patients had simultaneous cystocele and/or rectocele the duration of surgery was increased by 15-20 minutes.

During the 12 months of patient follow-up we did not have any case of band erosion.

Dyspareunia occurred in a percentage of 4.08% after laparoscopic hysteropexy (lateral fixation procedure) compared to the open technique where we found that after fixation of the cervix to the bilateral sacrospinous ligament dyspareunia occurred in a higher percentage (13.33%).

As for intraoperative complications, during laparoscopic sacrocolpopexy in a patient with a history of urogynaecological surgery we experienced intraoperative bleeding, but it

Table 2.

Surgical intervention	Number of interventions	%
Classic hysterectomy	4	1.93%
Laparoscopic hysterectomy	4	1.93%
Vaginal hysterectomy	3	1.44%
Fixation of the cervix to the sacrospinous ligaments	15	7.24%
Laparoscopic hyster-sacropepy Oxford procedure	12	5.79%
Lateral laparoscopic hysteropexy	49	23.67%
Colposuspension at the sacrospinous ligaments	2	0.96%
Laparoscopic Sacrocolpopexy	6	2.89%
Lateral laparoscopic colpopexy	12	5.79%
Colpocleisis	6	2.89%
Posterior colporaphy + restoration of the perineal tendon centre (Klaus Goeschen technique)	73	35.26%
Posterior intravaginal banding with bilateral sacrospinous fixation + restoration of the perineal tendon centre using the Klaus Goeschen technique	16	7.72%
McCall's Culdoplasty + restoration of the perineal tendon center by Klaus Goeschen technique	5	2.41%
Total	207	100%

could be resolved laparoscopically and no conversion was necessary.

Immediate postoperative complications were more common when the colposuspension technique was used at the bilateral sacrospinous ligament vaginally: acute urine retention in one case (50% of cases) and perineal haematoma in another case (50% of cases). Acute urine retention was also encountered in one case (16.66% of cases) where laparoscopic sacrocolpopexy was performed. Laparoscopic colposuspension - lateral fixation procedure and colpocleisis had no intraoperative complications, the difference being statistically significant ($p \leq 0.05$) compared to the other procedures.

Late postoperative complications were encountered after bilateral sacrospinous ligament colposuspension vaginally and were represented by one case (50% of cases) with dyspareunia and one case (50%) of chronic pelvic pain. Laparoscopic procedures and colpocleisis had no late postoperative complications.

At one year postoperatively, of the 15 women operated by cervical fixation at the sacrospinous ligaments we observed only one recurrent uterine prolapse (6.66%); also only one recurrence of uterine prolapse was observed after laparoscopic hysteropexy Oxford procedure (8.33%), as well as after laparoscopic hysteropexy lateral fixation procedure (2.04%).

Laparoscopic sacrocolpopexy was performed in 6 cases with vaginal vault prolapse of which 2 had recurrence at 6 months postoperatively, which was maintained at 1 year postoperatively with a recurrence rate of 33.33%. Laparoscopic colposuspension by lateral procedure was performed in most cases (12 cases) and had a low recurrence rate (8.33%) at 1 year postoperatively.

Discussions

Laparoscopic lateral hysterectomy/colpopexy is a very good option in the treatment of pelvic static disorders. There are three observations that I consider important and that have

contributed to the development of the technique of laparoscopic hystero/colpopexy - lateral fixation procedure.

The first observation was that laparoscopy provides good intraoperative visibility and exposure allowing accurate tissue dissection without significant intraoperative bleeding, without complications of operative wounds (which are common in classic abdominal wall surgery), the laparoscopic approach is preferable in obese patients; laparoscopically operated patients recover faster than those operated classically and postoperative scars are tiny.

The second observation was that non-absorbable prosthetic materials offer increased strength over time through the persistence of the implant which forms a structure on which the connective structures are reorganised.

The third observation was that when an implant is used to improve pelvic statics it should be anchored to tissues with increased strength (periosteum, sacrospinous ligament, anterior sacral ligament), which is not influenced by decreasing estrogen levels.

The technique is similar to the Dubuisson procedure, a relatively recently developed procedure that suspends similarly, but at a different level, 4 cm above the iliac spine as well as other specific differences. This technique is simple, short operative time, minimal stress, no risk of vascular or urethral injury, low learning curve (8).

Laparoscopic hysteropexy is a difficult procedure associated with rare but potentially severe complications. Promontory dissection may expose potentially life-threatening intraoperative vascular injuries and sacral root or hypogastric nerve injuries. There are also a few case reports of spondylodiscitis with consecutive bone erosion of the lumbar vertebra (5).

In the literature, reported recurrence rates vary depending on the author and the surgical techniques used, ranging from 3.92% to 27% (9-11). In the present study, we recorded one recurrence of uterine prolapse at one year postoperatively after the bilateral sacrospinous ligament cervical fixation procedure,

one recurrence after laparoscopic hysteropexy Oxford procedure (8.33%) and one recurrence (2.04%) after laparoscopic hysteropexy lateral fixation procedure.

The best anatomical success rate was achieved by laparoscopic colposuspension using the lateral suspension procedure (91.67%) followed by laparoscopic sacrocolpopexy (66.66%) and colposuspension at the sacrospinous ligaments (50%). The only surgical technique that was not followed by recurrence was colpocleisis (2 cases), but this technique does not preserve vaginal function.

Regarding uterine prolapse, we have used operative techniques that preserve the uterus and cervix whenever possible, considering that it is not normal to remove a healthy organ, which in addition provides insertion for all ligaments and fasciae supporting the pelvic floor (12).

I believe that the best technique for hysterectomy to correct uterine prolapse is laparoscopic due to the short duration of surgery with minimal intra- and postoperative complications.

Initially we used laparoscopic hysteropexy - the Oxford procedure which involves suspension of the uterine isthmus at the anterior sacral ligament by the use of a polypropylene mesh. Using this technique, we recorded intraoperative bleeding in 16.66% of cases and postoperatively 8.33% of uterine prolapse cases recurred after one year, while 8.33% of cases had chronic pelvic pain.

Afterwards, the main laparoscopic technique used was laparoscopic hysteropexy - the lateral fixation procedure in which intraoperative bleeding was minimal, immediate postoperative complications were non-existent and late postoperative complications were recurrence 2.04%, dyspareunia 4.08% and urinary tract infection 2.04%. 91.83% of patients operated with this procedure had no late complications at the one-year postoperative consultation.

The sexual activity of the patients was improved, with dyspareunia in a lower percentage (4.08%) after laparoscopic hysteropexy. We can compare with other

studies (13,14) that evaluated the technique and reported a lower percentage of dyspareunia compared to surgical treatment of prolapse vaginally, especially with polypropylene mesh fitting, dyspareunia being between 5 and 38% (15,16).

Based on these constants I opine that laparoscopic hysteropexy should be applied to patients who present apical prolapse, are young and sexually active.

Compared to the study Sarlos et al. who performed laparoscopic sacrocolpopexy presented four cases with bladder injuries and three cases with rectal injuries, which required case conversion (17).

Laparoscopic sacrocolpopexy can present serious complications such as presacral haemorrhage which can be avoided with the help of lateral laparoscopic hysteropexy (18).

There are recent reviews demonstrating no recurrence of prolapse with laparoscopy, with a success rate of 92-95% (19,20).

In conclusion, in order to surgically treat uterine prolapse we must start by answering the question: can we or can we not keep the uterus and cervix?

Only then do we ask ourselves the next question: which surgical technique is more suitable for the patient in question?

We cannot keep the uterus if the patient is likely to develop genital cancer, if she has cervical decubitus lesions or if she imperatively asks us for a hysterectomy.

If we have decided that we can keep the uterus and cervix as the central supporting element of the pelvic floor we can have 3 situations:

1. If the patient is elderly, with significant comorbidities and no sex life the most appropriate technique is the obliterative technique, colpocleisis.
2. If the patient is sexually active and the preoperative assessment contraindicates abdominal surgery we will use cervical fixation at the sacrospinous ligaments.
3. If the patient can tolerate abdominal surgery, laparoscopic hysteropexy will be performed, either by the Oxford procedure (suspension of the uterine isthmus

at the anterior sacral ligament) or by the lateral fixation procedure which has the best results over time.

Conclusions

Hysterosis/colposuspension - a lateral fixation procedure, fulfils the four major goals of prolapse surgery: reduction of prolapse, lack of functional symptoms, patient satisfaction and avoidance of complications. The technique is simple, requires a short operative time with minimal operative trauma, rapid post-operative recovery with high quality of life satisfaction and early socio-professional integration of the patient. This technique is preferable for obese patients, where other types of surgery are accompanied by significant technical difficulties, intraoperative risks and additional postoperative morbidity. From an economic point of view the application of this technique is advantageous due to the short hospitalisation time and the rapid socio-professional integration.

Conflict of Interest

The authors declare no conflict of interest. All authors have common law.

Ethical Statement

All procedures performed were in accordance with the ethical standards of the 1964 Helsinki Declaration and its later amendments.

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