

10-step approach for laparoscopic pectopexy combined with supracervical hysterectomy

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ABSTRACT

Background: Apical prolapse, characterised by the descent of the vaginal apex, uterus, or cervix, is commonly treated by laparoscopic sacrocolpopexy, the current gold standard. Laparoscopic pectopexy (LP) has emerged as an effective alternative, particularly advantageous for obese patients due to its technical approach.

Objectives: To demonstrate a standardised 10-step surgical technique for performing laparoscopic pectopexy combined with supracervical hysterectomy, aiming to provide a safe and reproducible method for the treatment of apical prolapse.

Participant: A 68-year-old female patient presenting with symptomatic, advanced apical pelvic organ prolapse (POP-Q stage IV) consented to the procedure.

Intervention: The patient underwent LP following a 10-step surgical protocol: (1) division of the round ligaments and dissection towards the pelvic sidewall, (2) identification of the iliopectineal ligament, (3) division of the uterovesical peritoneum and development of the vesicovaginal space, (4) supracervical hysterectomy, (5) opening of the rectovaginal space, (6) closure of the cervical canal, (7) mesh insertion and fixation to cervix, anterior and posterior vagina, (8) bilateral anchoring of the mesh lateral arms to the iliopectineal ligaments, (9) closure of the overlying peritoneum, and (10) morcellation of the uterine corpus. The surgery was completed with minimal blood loss and no intraoperative complications.

Conclusions: LP combined with supracervical hysterectomy is a safe, effective, and reproducible surgical option for apical prolapse repair, demonstrating favourable perioperative outcomes and early discharge.

What is New? This video-based demonstration introduces a standardised 10-step approach to LP combined with supracervical hysterectomy, facilitating adoption of this technique by surgeons with advanced minimally invasive skills, and highlighting its potential benefits, especially in obese patients.

Keywords: Pectopexy, pelvic organ prolapse, laparoscopy

Introduction

Pelvic organ prolapse (POP) is defined as a protrusion or herniation of the pelvic organs through the vaginal walls and pelvic floor, a commonly-occurring condition which has a significant negative impact on women's quality of life.^{1,2} Apical compartment prolapse is

the result of the descent of the cervix or the vaginal vault after hysterectomy. The gold-standard method of surgical correction is sacrocolpopexy.^{3,4} The laparoscopic approach is preferred to laparotomy due to its numerous benefits for the patients, such as shorter recovery time, shorter hospitalisation and less postoperative pain.^{5,6} In 2010, a novel laparoscopic

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technique, known as laparoscopic pectopexy (LP), was introduced by Banerjee and Noé⁷ for the treatment of apical prolapse. LP was initially developed as an alternative to laparoscopic sacrocolpopexy (LS) for obese patients, in whom access to os sacrum and longitudinal ligament may be technically challenging. The anchoring points of the mesh in LP are the iliopectineal ligaments bilaterally.⁷ In this video article, we present a step-by-step surgical technique of LP with concomitant supracervical hysterectomy.

Methods

A 68-year-old patient was referred to our outpatient department with a one-year history of “vaginal dragging sensation” without co-existent urinary incontinence. The patient had 2 normal deliveries, a body mass index 27 kg/m², no previous abdominal surgeries and suffered from mild hypertension. Our clinical examination revealed the presence of a POP-quantification system (Q) IV prolapse. The patient was thoroughly counselled about management options of her condition and opted to undergo LP combined with supracervical hysterectomy. Informed written consent was obtained.

Under general anaesthesia, the patient was placed in lithotomy position and a vaginal examination was performed, confirming the presence of POP-Q IV prolapse. A urinary bladder catheter was inserted and the uterus instrumented. Pneumoperitoneum was established using the Veress needle in the base of the umbilicus. A 0-degree laparoscope was then, introduced through a 10-millimetre trocar in the base of the umbilicus and three further ports were placed under direct vision, two 5 mm lateral and one suprapubic 10 mm, under vision. The procedure was completed by performing the following 10 consecutive steps, using 1 Metzenbaum scissor, a universal grasping forceps, 1 bipolar forceps and 1 needle holder.

Results

Step 1: Division of the round ligaments and extension of dissection towards the pelvic sidewall bilaterally. Step 2: Identification of the iliopectineal ligament as the anchoring point of the mesh. Step 3: Division of the uterovesical peritoneum and development of the vesicovaginal space. Step 4: Routine subtotal hysterectomy. Step 5: Opening of the rectovaginal space. Step 6: Closure of the cervical canal. Step 7: Insert the mesh (polypropylene) and fix it with sutures on the

cervix, anterior and posterior vagina. Step 8: Anchor the lateral arms of the mesh on the iliopectineal ligaments bilaterally. A non-absorbable suture is placed through the iliopectineal ligament while pushing carefully the external iliac vein laterally. The same suture is then passed through the lateral arm of the mesh, and the knot is tied. It is important to ensure that excessive tension is avoided. Step 9: Closure of the overlying peritoneum with a continuous absorbable suture. Step 10: In-bag Morcellation of the uterine corpus according to the National Institute for Health and Care Excellence and American College of Obstetricians and Gynecologists guidelines.^{8,9}

The operation was performed with minimal blood loss and no intra- or post-operative complications. The patient was discharged on the first postoperative day, after fully voiding her bladder and made an uneventful recovery. The patient was examined in our outpatient department 6 weeks following the procedure by the operating surgeon, confirming excellent anatomic reconstruction (POP-Q 0) and symptom resolution.

Discussion

There are many different surgical procedures for the treatment of apical prolapse, which can be divided into obliterative ones (such as Colpocleisis,^{10,11} for non-sexually active patients) and restorative ones. The gold standard method for apical suspension is LS.^{4,12-14} LP is an alternative method for the reconstruction of apical defects.

There have been many studies and trials which have investigated and compared the complications and outcomes of LP and LS. In LS the mesh is placed between the cervix/vagina and the sacrum, restricting the pelvis and, possibly, leading to defecation problems and post-inflammatory changes of the sigmoid.^{12,13,15-18} Moreover, there is a risk of injuring the hypogastric nerves because of the preparation of the anterior sacral bone, which is needed during LS.¹⁹ On the other hand, in LP the mesh follows the natural structures in an organ free area, minimising the risk of such complications and preserving a natural vaginal axis.^{7,20} Pectineal ligament has been also proved to be statistically significantly stronger than the sacrospinous ligament and the arcus tendinous of the pelvic fascia.²¹ Though the two methods do not seem to differ regarding the relapse rates of apical prolapse, *de novo* central- or lateral-defect and *de novo* rectocele as well as anatomic outcomes, intraoperative blood loss and

hospitalisation duration,²⁰ LP is associated with reduced procedural time.²² Noé et al.²⁰ have shown that the two methods have similar *de novo* stress urinary incontinence and urgency rates postoperatively. Some studies have also demonstrated that patients undergoing LP have a greater improvement in quality of life and sexual function.^{23,24} Furthermore, Chuang et al.²³ evaluated and compared the learning curve of LP with LS in a cumulative analysis and showed that LP seems to have a shorter learning curve, possibly explained by the complexity of the surgical field in LS, especially in obese patients.^{25,26} On the other hand, LP may offer an easier approach to the surgeon, with the obturator area, corona mortis and external iliac vein being the most important anatomical structures that need to be preserved during preparation of iliopectineal ligament according to Pulatoğlu et al.²⁷

In our 10-step approach of LP, we have included a concomitant supracervical hysterectomy. However, nowadays there is an increasing desire of women for uterus-preserving prolapse treatment. LP can also be used to perform a hysteropexy after an effective and appropriate counselling and selection of the patients. In this case, the round ligament should remain intact, and the preparation begins with a superficial incision of the peritoneum adjacent to the ligament and the central part of the mesh can be fixated to the anterior or the posterior part of the uterus.²⁸

LP is a safe and effective alternative to LS in the clinical routine. However, it is important to that future multicentre, randomised trials should be conducted with an adequate sample size and follow-up to evaluate efficacy and long-term outcomes of this technique.

Conclusion

We report a simple, effective and reproducible approach for LP, using 10 consecutive steps. The standardised procedure can be adopted and safely performed by surgeons with advanced minimal access skills and with, potentially, a shorter learning curve compared to LS.

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Video 1. <https://youtu.be/0s3kxKyRow>
