

Laparoscopic Management of Pelvic Organ Prolapse: A Case Series

Irina Nițu^{1,2}, Vasile Sârbu², Silvia Savin^{1,2}, Neacșu Sabina^{1,2}, Silvia Șerban¹, Stere Popescu^{1,2}, Teodor Ștefan Nițu^{1,2}

¹Department of General Surgery, Emergency Hospital of Constanta, Romania

²Ovidius University, Faculty of Medicine and Pharmacy Constanta, Romania

*Corresponding author:

Nitu Teodor Ștefan, M.D. Ph.D.

Ovidius University, Faculty of Medicine

and Pharmacy Constanta

General Surgery Department

Emergency Hospital of Constanta

No 145 Tomis Boulevard, 900591

Constanta, Romania

E-mail: nituteodorstefan@yahoo.com

Rezumat

Managementul laparoscopic al prolapsului de organe pelvine: o serie de cazuri

Introducere: Tulburările de statică pelvină au impact important asupra calității vieții pacientelor, constituind o reală problemă de sănătate publică, în ciuda faptului că nu sunt amenințătoare de viață. Managementul minim invaziv al prolapsului organelor pelvine prezintă numeroase avantaje, histeropexia și colpopexia laparoscopică fiind un standard cu beneficii reale: incizii minime, complicații postoperatorii reduse, timp de spitalizare mai scurt și o rată scăzută de recurență. Managementul laparoscopic a astfel de cazuri este recomandat, însă necesită echipe bine antrenate în chirurgia minim invazivă.

Prezentare de caz: Am prezentat o serie de cazuri de succes a două paciente cu histerocel de gradul III, respectiv prolaps de boltă vaginală care au fost tratate minim invaziv cu o histeropexie laparoscopică laterală, respectiv colpopexie laparoscopică laterală. Având în vedere beneficiile binecunoscute ale chirurgiei minim invazive, am ales o intervenție chirurgicală efectuată laparoscopic datorită impactului chirurgical mai mic și revenirii mai rapide la viața normală. Procedurile chirurgicale au fost efectuate cu succes, fără complicații, cu recuperare rapidă, fără recidivă.

Concluzii: histeropexia și colpopexia laparoscopică reprezintă procedurile chirurgicale sigure și eficiente la cazurile selecționate.

Cuvinte cheie: laparoscopie, histeropexie, colpopexie

Abstract

Background: Pelvic static disorders have an important impact on

Received: 27.05.2024

Accepted: 03.07.2024

patients' quality of life, constituting a real public health problem, despite the fact that they are not life-threatening. Minimally invasive procedures of pelvic organ prolapse has many advantages, laparoscopic hysteropexy and colpexy being a standard with real benefits: minimal incisions, reduced postoperative complications, shorter hospital stay and a low recurrence rate. Laparoscopic management of such cases is recommended, but requires teams well trained in minimally invasive surgery.

Case presentation: We presented a series of successful cases of two patients with grade III hysterocele, respectively vaginal vault prolapse, who were treated minimally invasively with a lateral laparoscopic hysteropexy, respectively lateral laparoscopic colpexy. Given the well-known benefits of minimally invasive surgery, we chose laparoscopic surgery because of the smaller surgical impact and faster return to normal life. The surgical procedures were performed successfully, without complications, with rapid recovery, without recurrence.

Conclusion: Hysteropexy and laparoscopic colpexy are safe and effective surgical procedures in selected cases.

Key words: laparoscopy, hysteropexy, colpexy

Introduction

Pelvic static disorders have an important impact on patients' quality of life, constituting a real public health problem, even if they are not life-threatening (1). This pathology, located at the intersection of three surgical disciplines, requires a complex approach to apply an effective treatment (2). Pelvic static disorders are characterized by varying degrees of damage to the structures of the pelvic floor, which leads to the appearance of some anatomical-clinical entities, the most common of which are urinary incontinence and pelvic organ prolapse (3). In the literature is no consensus regarding the optimal treatment of pelvic static disorders, the reconstruction techniques being extremely numerous: from classic techniques, which use the patients' own tissues to laparoscopic techniques and those that use alloplastic materials (4).

Lateral suspension was first described technique, as an open procedure, by Kapandji in 1967 as colpo-isthmo-cystopexy with transverse bands (5). Many years later, in 1998, Jean-Bernard Dubuisson introduced a modified technique - a minimally invasive laparoscopic approach (6).

In our personal approach, Dubuisson's

technique was modified, maintaining the principles of minimally invasive surgery, but introducing the lateral suspension at a different level: 4 cm above the iliac spine. Our technique involves a laparoscopic approach using a polypropylene mesh repair that is fixed with absorbable fixing devices on the anterior part of the uterine isthmus, respectively at the level of the vaginal stump, and laterally it is pulled bilaterally with forceps inserted through the inguinal canal, following the path of the round ligaments and fixed to the aponeurosis of the anterolateral muscles of the abdomen.

Case Report

Case 1: Laparoscopic hysteropexy

Caucasian woman of 65 years old with personal history of blood hypertension and a 29.4 kg/m² BMI. Her obstetrical history reported three uncomplicated pregnancy, vaginally delivered at term with a neonatal weight at delivery less than 3.5 kg. Some years after pregnancy, she presented a IIIrd degree uterine prolapse with associated cystocele which we tried to treat with pessary and pelvic rehabilitation, unsuccessfully. Therefore, she underwent a laparoscopic hysteropexy with

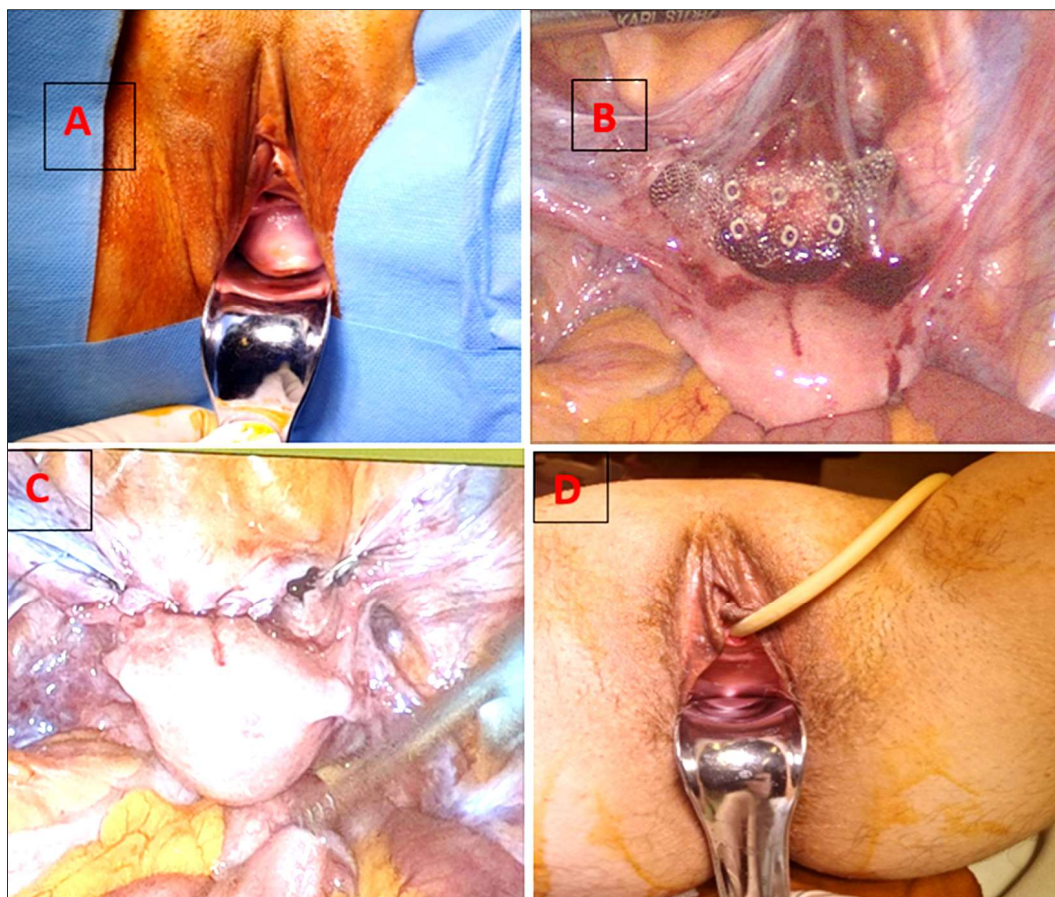


Figure 1. Case 1: Laparoscopic hysteropecty. A) IIIrd degree prolapse, clinical aspect; B) Fixation of the band on the uterine isthmus, intraoperative aspect; C) Peritonization and final intraoperative aspect; D) Postoperative final aspect.

lateral fixation (*Fig. 1*). Intraoperatively there were no complications, the blood loss was 80 ml. The post-surgical course was uncomplicated and after one year, the follow up was regular.

Case 2: Laparoscopic colpopexy

A Caucasian woman aged 62. Her mother was diagnosed with breast cancer. Her personal history was: total hysterectomy with bilateral adnexectomy 2 years ago for uterine fibromatosis. She has a normal weight and a BMI of 24.1 kg/m². Her obstetrical history revealed four uncomplicated vaginally delivered at term pregnancies, less than 4.1 kg. She developed a vaginal vault prolapse a few months after previous surgery, so she had a laparoscopic colpopexy

(*Fig. 2*). The amount of blood lost was 50 ml. Her recovery from surgery was uneventful. The follow-up was regular after 18 months.

Discussions

The incidence of pelvic organ prolapse increases annually, so their prevention and treatment occupy a central place in the concerns of pelvic floor surgery and urogynecology. Based on existing research, laparoscopic lateral hysterectomy/colpopexy demonstrates advantages in the treatment of pelvic organ prolapse, particularly in cases of mid-compartment pelvic defects (7). However, based on current clinical trials alone, it is premature to establish superiority or inferiority compared

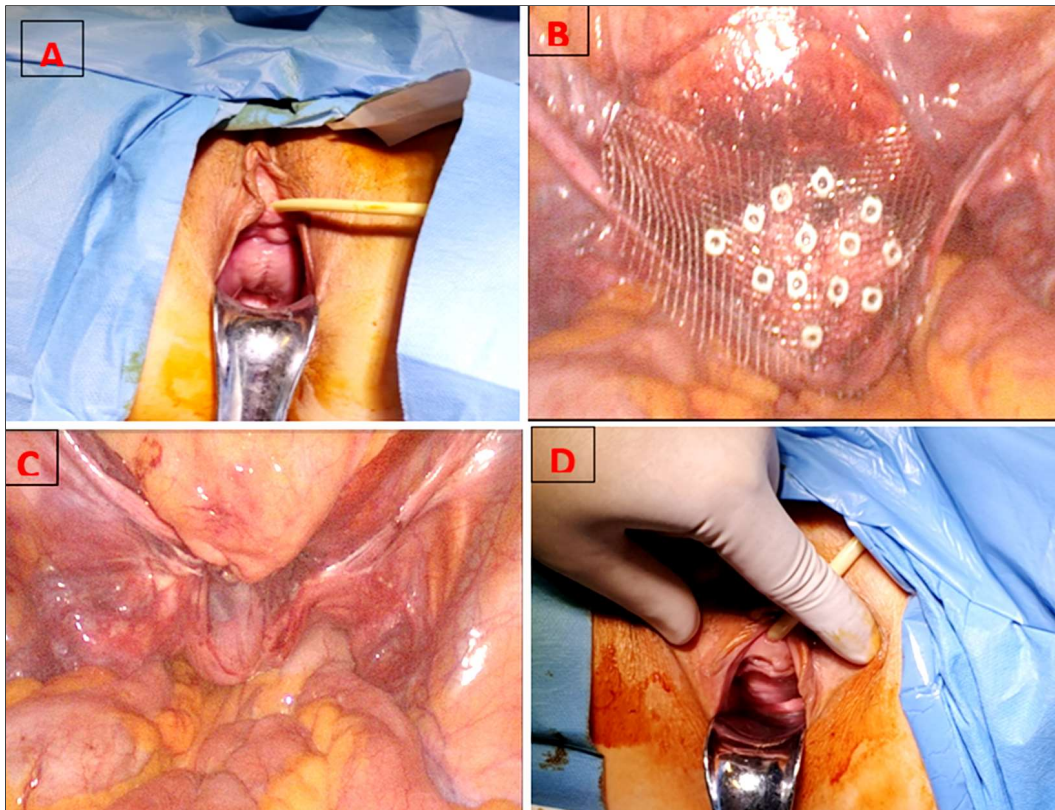


Figure 2. Case 2: Laparoscopic colpopexy. A) Vaginal vault prolapse, clinical aspect; B) Bandage fixation, intraoperative aspect; C) Peritonization and final intraoperative aspect; D) Postoperative final aspect.

to laparoscopic sacrocolpopexy. Laparoscopic lateral suspension is not yet a substitute for laparoscopic sacrocolpopexy; rather, it represents an alternative surgical option (8).

Laparoscopic sacrocolpopexy is a challenging procedure associated with potentially severe complications. Dissection at the sacral level may expose the presacral arteries and veins, right hypogastric nerve, ureter, and hypogastric artery to accidental injury (9). An injury to the left common iliac vein is a life-threatening complication that requires special surgical skills to manage. Another postoperative complication is a spondylodiscitis related to transfixation of the S1-S2 intervertebral disc during fixation to the overlying longitudinal ligament. In addition, laparoscopic sacrocolpopexy requires deep dissection skills and suture placement in hard-to-reach anatomical areas (10).

New abdominal surgical approaches have

been developed to correct advanced apical and multicompartamental prolapse, including pectopexy (11), and laparoscopic lateral suspension (12). These procedures do not involve sacral dissection and are characterized by shorter learning curves, lower intraoperative risks, and apparently comparable efficacy in correcting apical prolapse. These techniques change the positions of the apex and the vaginal walls, which leads us to the fact that these procedures are useful for correcting certain types and combinations of pelvic floor defects, alone or in combination with other surgical techniques, for example posterior compartment colporrhaphy (13).

By providing joint expert opinions and recommendations based on shared experience, the Delphi study committee aimed to provide other surgeons with valuable information about the role, safety, and strengths and weaknesses of laparoscopic lateral hysterolpopexy.

colpopexy compared with the current gold standard, laparoscopic sacrocolpopexy (14, 15). Based on this consensus, laparoscopic lateral hysterocolpopexy appears as an appropriate, safe, and effective procedure for treating advanced apical prolapse that requires further clinical attention and development to fully understand its surgical place in the treatment of pelvic floor defects (16).

I will exemplify three observations that I consider important and that have contributed to the development of the laparoscopic hysterocolpopexy technique - procedure with lateral fixation.

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

The second observation was that non-absorbable prosthetic materials provide increased resistance over time through the persistence of the implant which constitutes a skeleton on which the connective structures are reorganized.

The third observation was that when an implant is used to improve pelvic static it must be anchored to tissues with increased resistance (periosteum, sacrospinous ligament, anterior sacral ligament), which is not influenced by the decrease in estrogen levels.

The technique we developed takes into account these observations, approaching the pelvis laparoscopically and using a polypropylene strip that is fixed with absorbable fixing devices on the anterior face of the uterine isthmus, and laterally is pulled bilaterally with forceps inserted through the inguinal canal, following the path of the round ligaments and fixed to the aponeurosis of the anterolateral muscles of the abdomen, a tissue with increased resistance and not influenced by

hormones, which can also be used in elderly patients, in whom the level of estrogens is low.

The advantages of the technique are: the short duration of the operation, with low risk of intrapelvic organ damage and intraoperative bleeding; immediate postoperative complications are almost nonexistent, and the anatomical success rate one year postoperatively is impressive (in our study – 97.96%); the length of hospitalization is short (2 days), the postoperative recovery is fast, as is the socio-professional reintegration.

The novelty of the study comes from the fact that it is a well-known minimally invasive technique, but on which we made small changes that can improve the results of the patients. The limitations of the study come from the fact that the number of cases is small, in this sense we mention the need for a larger study to strengthen the results of the study and the benefits of the technique.

Conclusions

The surgical technique for resolving uterine and vaginal vault prolapse: hysterocolposuspension – procedure with lateral fixation fulfills the four major goals of the surgical cure of prolapse: 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 postoperative recovery with a high degree of satisfaction in terms of quality of life.

Conflict of Interests

The authors declared no potential conflicts of interest.

Ethical Statement

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

References

1. Evangelopoulos N, Delacroix C, Abdirahman S, de Tayrac R. Safety of an anchor-based device for sacrospinous ligament fixation: a pilot case-control study. *Eur J Obstet Gynecol Reprod Biol.* 2024;299:105-109.
2. Nitu I, Sârbu V, Savin S, Serban S, Popescu S, Nitu TS, et al. Advantages of laparoscopic treatment in pelvic static disorders by lateral hysterocolpopexy - a single center experience. *Chirurgia (Bucur).* 2024;119(2):211-217.
3. Arcieri M, Morlacco A, Montebelli F, Mancini M, Soligo M, Restaino S, et al. Sacrocolpopexy after sub-total hysterectomy vs. sacral hysteropexy for advanced urogenital prolapse: A propensity-matched study. *Int J Gynaecol Obstet.* 2023;163(3):847-853.
4. Pecorella G, Morciano A, Sparic R, Tinelli A. Literature review, surgical decision making algorithm, and AGREE II-S comparison of national and international recommendations and guidelines in pelvic organ prolapse surgery. *Int J Gynaecol Obstet.* 2024 May 17. Online ahead of print.
5. Kapandji M. Treatment of urogenital prolapse by colpo-isthmo-cystopexy with transverse strip and crossed, multiple layer, ligamento-peritoneal douglasorrhaphy. *Ann Chir.* 1967;21(5):321-8. French
6. Dubuisson JB, Yaron M, Wenger JM, Jacob S. Treatment of genital prolapse by laparoscopic lateral suspension using mesh: a series of 73 patients. *J Minim Invasive Gynecol.* 2008;15(1):49-55.
7. Seca M, Algeri P, Colonna L, Mastrocola N, Von Wunster S. A laparoscopic conservative surgery approach to puerperium complicated by uterine prolapse after vaginal delivery: a case series. *J Family Reprod Health.* 2023;17(1):58-61.
8. Luo C, Wei D, Chen Y, et al. Laparoscopic lateral suspension (Dubuisson) in the treatment of pelvic organ prolapse. *Gynecol Obstet Clin Med* 2024; 4:e000010.
9. Barbato G, Rollo S, Borri A, Staderini F, Cianchi F, Coratti F. Laparoscopic vaginal lateral suspension: technical aspects and initial experience. *Minerva Surg.* 2021;76(3):245-251.
10. Rice NT, Hu Y, Slaughter JC, Ward RM. Pelvic mesh complications in women before and after the 2011 FDA public health notification. *Female Pelvic Med Reconstr Surg.* 2013;19(6):333-338.
11. Bolovis D, Hitzl W, Brucker C. Robotic mesh-supported pectopexy for pelvic organ prolapse: expanding the options of pelvic floor repair. *J Robot Surg.* 2022;16(4):815-823.
12. Dubuisson JB, Veit-Rubin N, Wenger JM, Dubuisson J. Laparoscopic lateral suspension, another way to treat genital prolapse. *Gynecol Obstet Fertil Senol.* 2017;45(1):32-36. French
13. Pulatoglu Ç, Yassa M, Turan G, Türkyılmaz D, Dogan O. Vaginal axis on MRI after laparoscopic lateral mesh suspension surgery: a controlled study. *Int Urogynecol J.* 2021;32(4):851-858.
14. Isenlik BS, Aksoy O, Erol O, Mulayim B. Comparison of laparoscopic lateral suspension and laparoscopic sacrocolpopexy with concurrent total laparoscopic hysterectomy for the treatment of pelvic organ prolapse: a randomized controlled clinical trial. *Int Urogynecol J.* 2023;34(1):231-238.
15. Malanowska-Jarema E, Starczewski A, Melnyk M, Oliveira D, Balzarro M, Rubillota E. A randomized clinical trial comparing dubuisson laparoscopic lateral suspension with laparoscopic sacropexy for pelvic organ prolapse: short-term results. *J Clin Med.* 2024;13(5):1348.
16. Simoncini T, Panattoni A, Aktas M, Ampe J, Betschart C, Bloemendaal ALA, et al. Robot-assisted pelvic floor reconstructive surgery: an international Delphi study of expert users. *Surg Endosc.* 2023;37(7):5215-5225.