

LAPAROSCOPIC PECTOPEXY IN THE TREATMENT OF GENITAL PROLAPSE – CASE REPORT AND REVIEW OF LITERATURE

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Abstract

Pelvic organ prolapse is a frequent condition encountered in clinical practice. There are various techniques available for the correction of pelvic floor defects, and the urogynecologist is often faced with a difficult task when selecting the most appropriate technique for an individual patient. Laparoscopic pectopexy is a new technique developed especially for obese patients as an alternative for sacrocolpopexy. The objective of this article is to report a case of successful outcome after laparoscopic pectopexy in an obese patient with pelvic organ prolapse and to update the medical literature.

Rezumat: Pectopexia laparoscopică în tratamentul prolapsului genital feminin – prezentare de caz

Prolapsul genital este o patologie frecvent întâlnită în practica medicală. Există numeroase tehnici disponibile pentru corectarea defectelor de statică pelvină, iar uroginecologul este adesea pus în faa unei decizii dificile atunci când vine vorba de alegerea celei mai potrivite tehnici pentru o pacientă anume. Pectopexia laparoscopică este o nouă tehnică, dezvoltată cu predilecție pentru pacientele obeze, ca și alternativă la sacrocolpopexie. Obiectivul acestui articol este de a prezenta un caz de prolaps genital la o pacientă obeză rezolvat cu succes prin pectopexie laparoscopică, și de a trece în revistă noutățile din literatura de specialitate.

Cuvinte cheie: prolaps genital, laparoscopie, pectopexie, sacrocolpopexie, obezitate

Introduction

Pelvic organ prolapse (POP), the symptomatic descent of one or more of components of the vaginal wall, is a frequent condition encountered in current practice, with a prevalence that varies between studies. It has been reported to be as high as 31-41.1% in menopausal women according to larger observational studies and up to 50% in parous women. [1-6]. According to Olsen et al and Smith et al, the lifetime risk of undergoing an operation for pelvic organ prolapse is reported range between 11 to 19% [7, 8].

The degree of prolapse can be assessed by using a quantification system, such as the Pelvic Organ Prolapse Quantification (POPQ) or the Baden-Walker system [9-11]. DeLancey previously characterized all of these types of prolapse according to defects in three different anatomic levels of support [12]. The distribution of pelvic organ prolapse relating to the use of the POPQ assessment is very variable in reported studies: 2.3- 24% for stage 0, 25-33% for stage I, 2% for stage III stage IV – 0% [13, 14].

The pathophysiology of prolapse is believed

to be multifactorial [6]. Various risk factors have been incriminated in the etiology of pelvic organ prolapse. It tends to increase with parity, number of vaginal deliveries, and delivery of macrosomic infants, menopause, increased body mass index and race [13-15]. Some authors also reported that chronic obstructive pulmonary disease, constipation, and a history of strenuous exercise or manual labor can be associated with an increased risk of developing POP [4, 7, 16].

Treatment of POP

There are various techniques available for the correction of pelvic floor defects, and the urogynecologist is often faced with a difficult task when selecting the most appropriate technique for an individual patient. Most times the decision is influenced by the surgeon's own skill and expertise. For the treatment of an apical defect (level I) there are different available alternatives. The vaginal surgeon can perform sacrospinous fixation or the McCall culdoplasty. The "golden standard" is considered to be sacrocolpopexy, especially for the correction of apical defects [5, 17-19]. The endoscopist can perform this laparoscopically with excellent results. The laparoscopic approach appears to be the least utilized, because of the great degree of technical difficulty associated with laparoscopic suturing.

Laparoscopic pectopexy

Obesity is one of the major risks for vault prolapse and is always a challenge for the surgeon. Since the number of obese patients is rising [20] and the effectiveness of laparoscopic procedures such as sacrocolpopexy is sometimes restricted due to the difficulty of performing the surgery, treatment options need to be available for this type of patients [21].

Banerjee and Noe et al described in 2007 a new endoscopic technique for prolapse surgery. The lateral parts of the ilio-pectineal ligament are used for a bilateral mesh fixation of the descended structures. A 15/ 2 cm mesh is used. This achieves the fixation of the uterus at the level of S 2. The technique is described in detail in the case report [21].

The pectopexy procedure has been developed as an alternative technique to sacropexy, indicated particularly for obese patients or in patients in which difficult presacral preparation can be encountered (in cases of diverticulitis, previous surgeries, and multiple adhesions) [22, 23]. In a randomized trial on 85 patients, Noe et al 2015 intended to demonstrate that the pectopexy is at least equivalent to the sacral colpopexy in respect to the relapse rate of apical descensus [24]. The mean duration of the procedure was 50 minutes. They advocated that the method provides a stable and durable repair and that the laparoscopic access reduces morbidity. Also, the relatively short duration of the procedure is an obvious advantage in obese patients [23, 24]. Noe et al reported that all patients can be operated by pectopexy and that the anatomic and functional results are comparable with those after sacropexy [24].

The ilio-pectineal ligament has long been used as an anchoring structure in incontinence surgery, as described by Burch-Cohen [25], Marshall-Marchetti [26], and other researchers. Noe et al also found no *de novo* lateral defects in the pectopexy group and 12.5% in the sacropexy group. They also advocate that the mesh placement, that does not interfere with any pelvic structures, does not cause obstruction in the pelvis, reduces the risk of bowel infection or defecation disorders to zero [24].

In comparison with the sacropexy, the technique is easy to learn by an experienced surgeon and has a shorter operative time with the same positive results. No preoperative bowel preparation is necessary, and the technique can be combined with all other laparoscopic procedures [22, 23].

The pectopexy widens the portfolio of surgical possibilities, particularly in difficult surgical conditions. The technique guarantees a stable fixation of the pelvic floor and allows the surgeon good control of tension [22].

Case report

We present the case of 59 years old woman, with stage 3 POPQ genital prolapse (figure 1a). Patient had as risk factors for POP a BMI of 41 kg/

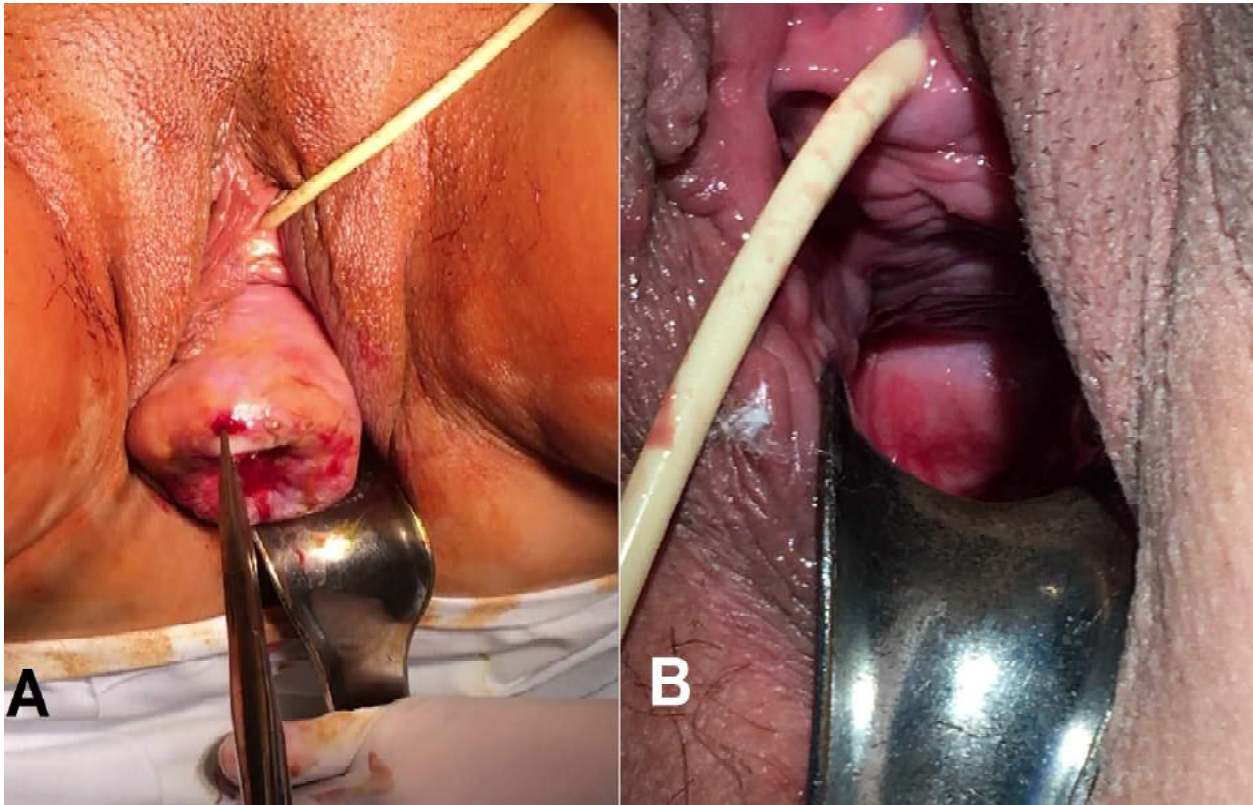


Figure 1: Clinical aspect: **a** – before surgery; **b** – after surgery

m² and 2 vaginal deliveries. The cervix was investigated by means of cytological exam (PAP smear) prior to surgery.

We preferred to conduct a laparoscopic supracervical hysterectomy in combination with the prolapse correction to achieve a more stable fixation of the apical region.

We performed this procedure as described previously by Noe et al [23].

Technique description

The peritoneal layer is incised along the right round ligament toward the pelvic wall. The incision spot is represented by the V formed by the round ligament and the obliterated umbilical artery. The preparation starts at the right external iliac vein and was carried out in the medial and caudal direction under intermittent bipolar coagulation. Approximately 4-cm segment of the right ilio-pectineal ligament (Cooper ligament), under the external iliac vein, is dissected and exposed (figure 2a). This segment of the ligament is situated at the S2 level. Special care is taken not to damage the external iliac vein, and the “corona mortis”. This is a communicating vein

between external iliac vein and the obturator vein, situated at about 2cm caudally from the action field. The same preparation is repeated on the other side of the patient. The incisions on both sides are connected by opening the peritoneal layer toward the cervical stump/vaginal apex. The mesh is fixated on cervical stump, then bilaterally to both ilio-pectineal ligaments (figure 2b-d). The mesh is then covered completely with the peritoneum (figure 2e).

The clinical aspect after surgery is illustrated in figure 1b.

Discussion

Pectopexy versus sacropexy

Sacropexy is a well known technique and currently the „golden standard” in the repair of apical defects. It is considered to be the most adequate approach for the reconstitution of a physiologic axis of the vagina regarding size, depth, and slant [5, 17, 17]. Although this technique allows restoring the physiological axis of the vagina, it also poses some potential risks, such as injury to the presacral venous plexus and difficult surgical conditions, especially in obese patients [24].

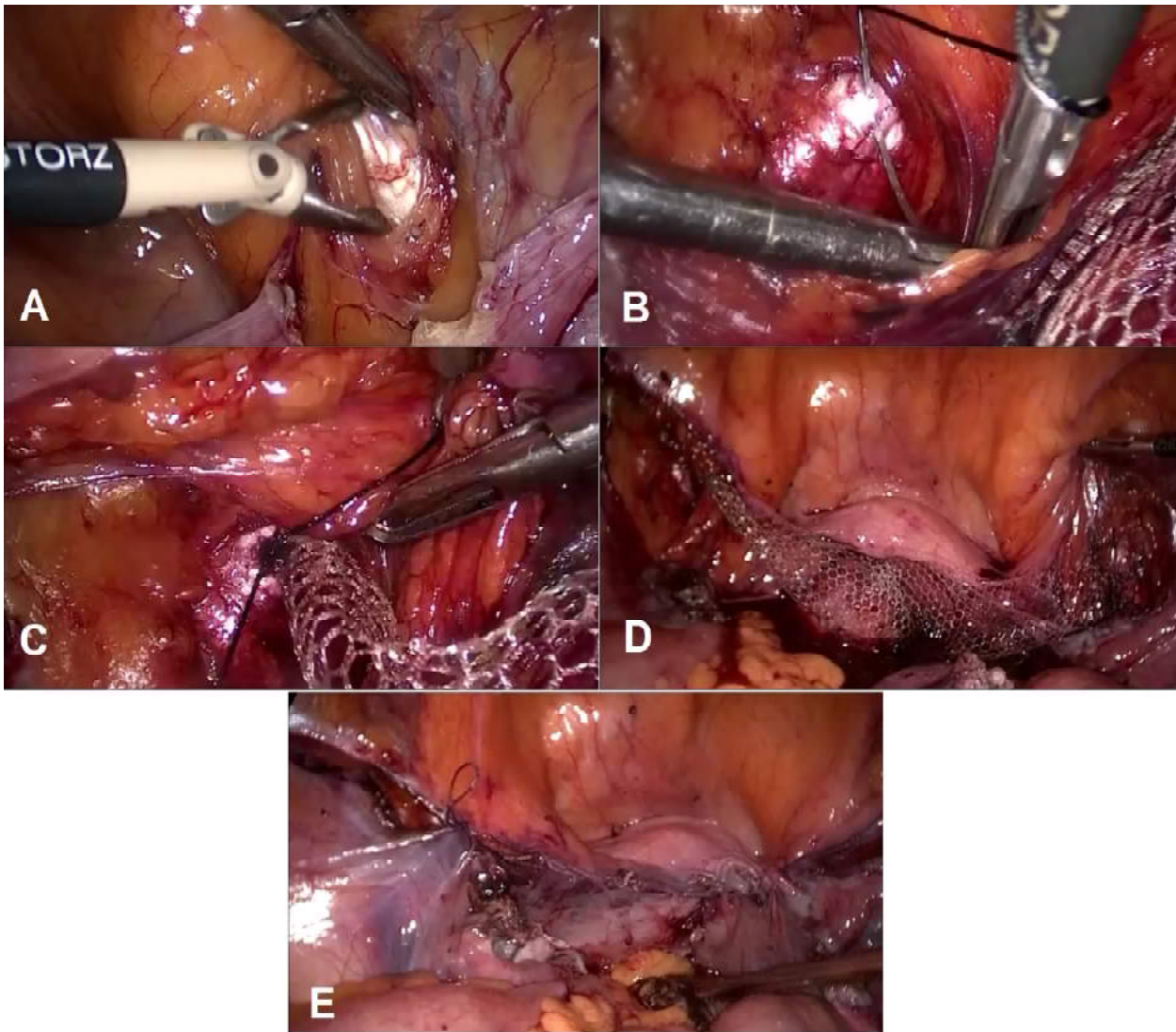


Figure 2: Surgical procedure: **a** - dissection of ilio-pectineal ligament; **b** – passing the suture through the ilio-pectineal ligament; **c** – fixation of the mesh on the ilio-pectineal ligament; **d** – aspect of mesh in place before peritonization and after peritonization – **e**

In recent years, complications of the procedure have been described, such as *de novo* stress urinary incontinence (SUI) with rates ranging from 5% to as high as 25%-50% [28-31]. Noe et al 2015 found a low rate of *de novo* SUI after sacrocolpopexy (4.9%) that is similar to that found after pectopexy (4.8%) [24]. Another complication of sacrocolpopexy performed by abdominal of laparoscopic route, are defecation disorders such as flatulence, constipation, and chronic pain. They are often neglected or underestimated, but *de novo* defecation problems have been reported to be as high as 17% to 37% after sacrocolpopexy [32-35]. Defecation disorders can be caused by less space in the pelvis (outlet obstruction), adhesions, or trauma of the hypogastric nerves [24]. Jo et al 2014 on a study of 258 women who underwent sacrocolpopexy

found that particularly, women with older age and prior laparotomy have a higher risk for significant gastrointestinal morbidity [36].

Some authors report other complications following sacrocolpopexy, such as neurologic complications (muscle weakness, extremity pain, back pain) in 4.4% in women under the age of 65 [37], or even mesh erosion [38].

Strength of the ligament

Cosson and Boukerrou et al. performed a study on 29 human female pelvis cadavers in order to measure the strength at tearing of pelvic ligaments used in the cure of prolapse and urinary incontinence. Individually measured, ligament strength varied between individuals, and for the same patient between the type of ligaments and the side. The pre-vertebral

ligament was on average the strongest. For bilateral ligaments, there was no difference between the left and right side. The ilio-pectineal ligament was statistically significantly stronger than the sacrospinous and arcus tendineus of pelvic fascia [39, 40].

Conclusions

Laparoscopic pectopexy showed promising results in recent literature [24, 41].

Promontopexy is a very effective technique for the treatment of apical prolapse. But this technique can be quite challenging especially in the case of obese patients or when the access to the promontory is difficult.

Pectopexy seems to be a reasonable alternative to the already well known promontopexy, without the complications of later (bowel disfunction, chronic pain etc). It can also be used in obese patients or in patient with difficult presacral preparation. Performing the former one achieves the fixation of the uterus at the level of S 2 that is lower than the promontory, but it proved to be sufficient for the suspension of the vaginal apex. Also this orientates the vagina in a more physiological axis, exposing less the anterior vaginal wall to the abdominal pressure than promontofixation. Considering this the formation of *de novo* cystocele should be less frequent than in the case of promontopexy. Both techniques can be performed laparoscopically but they require a certain level of skill and training in laparoscopic suturing.

In our opinion this technique represents a good alternative in the case of obese patients where the bowel loops are difficult to be cleared from the operative field, or when the landmarks one encounters when approaching the promontory are limiting the access in the area.

Hence, laparoscopic pectopexy extends the portfolio of surgical options and enables the surgeon to react more adequately in complex surgical conditions [22].

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