Laparoscopic Sacrocolpopexy as Vaginal Vault Prolapse Treatment. Long-Term Outcomes

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Abstract

Context: Hysterectomies are one of the most common surgical procedures worldwide and post-hysterectomy vault prolapse ranges from 10 to 40%. Laparoscopic sacrocolpopexy has been considered the gold standard for the treatment of vaginal vault prolapse, with high success rates.

Aim: To evaluate the feasibility, safety and long-term outcomes of laparoscopic sacrocolpopexy as vaginal vault prolapse treatment.

Settings and Design: A prospective study.

Methods: Between August 2008 and August 2016, laparoscopic sacrocolpopexy was performed in 45 patients with vaginal vault prolapse at the Department of Laparoscopic and Endoscopic Surgery, at the National Center for Minimally Invasive Surgery in Havana, Cuba.

Results: The mean age of patients was 60 years (range 38–88). Previous surgical history included open hysterectomy in 23 (50%) patients, vaginal hysterectomy in 16 (34,8%) and laparoscopic hysterectomy in 7 (15,2%) patients. The success rate was 97,8% and one patient (2,2%) required conversion to vaginal surgery due to pelvic adhesions. Mean operative time was 129,2 min (range 90–240) and postoperative hospital stay was less than 1 day. One patient (2,2%) experienced an intraoperative complication (bladder injury) solved with laparoscopic treatment. There were five postoperative complications (11%): two stress urinary incontinence (4,4%), two osteomyelitis (4,4%) and one mesh erosion (2,2%). At a median follow-up of 32,3 months (range 3-96), recurrent vaginal vault prolapse was registered in five patients (11%).

Conclusion: Laparoscopic sacrocolpopexy is a feasible and safe procedure for the treatment of post-hysterectomy vaginal vault prolapse and allows a long-term anatomical restoration.

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Introduction

Hysterectomies are one of the most common surgical procedures worldwide. Following the Caesarean section, it is the second most performed surgery in women at reproductive age and the third most frequent intra-abdominal surgery together with appendectomy and cholecystectomy [1,2].

According to the 2002 terminology standardization of the International Continence Society, post-hysterectomy vaginal vault prolapse (PHVVP) is defined as any descent of the vaginal cuff scar after hysterectomy below a point which is at least 2 cm less than the total vaginal length above the plane of the hymen [3].

PHVVP ranges from 10 to 40% and appears to have an equal occurrence regardless of whether the abdominal or vaginal approach is used. The incidence is approximately 11.6% when associated with hysterectomy due to prolapse and 1.8% associated with other causes of hysterectomy. The reported prevalence rates ranged from 0.2% to 43%, however, up to 10% are usually considered to be more realistic [4-8].

Ameilen Hugier [9] presented a more detailed description of open sacrocolpopexy in 1957, and has been considered by most authors as the gold standard for the treatment of vaginal vault prolapse, with success rates reported between 70 and 100% [10-12].

Laparoscopic surgery has advantages over laparotomy such as: a better vision of the pelvic anatomy due to the magnification that provides the endoscopy video, decrease of postoperative pain, better cosmetic results, short hospital stay and rapid comeback to social life [1,2].

In the 1990s, Dorsey [13] and Nezhat [14] described a laparoscopic sacrocolpopexy (LSC). Many studies have demonstrated the feasibility and safety of laparoscopic approach for the treatment of vaginal vault prolapse allowing long-term anatomic and functional outcomes and a good level of satisfaction [15-17].

Abdominal sacrocolpopexy (ASC) is superior to vaginal approach with fewer recurrent prolapse, however the vaginal access is faster and offer patients better cosmetic results and short hospital stay. LSC aims to bridge this gap and to provide the outcomes of ASC with the advantages of vaginal approach [17-18].

The aim of this prospective study was to evaluate the feasibility, safety and long-term outcomes of LSC as vaginal vault prolapse treatment.

Methods

Settings and Design: This was a prospective study.

Between August 2008 and August 2016 LSC was performed in 45 patients with vaginal vault prolapse at the Department of Laparoscopic and Endoscopic Surgery, at the National Center for Minimally Invasive Surgery in Havana, Cuba. This is a tertiary referral university-affiliated center specializing in endoscopic and laparoscopic surgery (Multidisciplinary work group). All the procedures were performed by the same surgical team who are well experienced in advanced laparoscopic surgery. Inclusion criterion comprised the patients with a diagnosis of PHVVP who had been through our standard informed consent process and chosen to undergo LSC. The selection was restricted to appropriate patients based on the American Society of Anesthesiologists (ASA) classification I-II-III. Exclusion criteria were patients with ASA classification IV-V, desire to undergo sacrocolpopexy using a different approach and contraindications to laparoscopic surgery.

Informed consent was obtained from patients before they were included. The study was approved by our Institution Ethical Committee. The parameters studied were: age, body mass index (BMI), comorbidities, previous surgical history, operative time, estimated blood loss, conversion rate, intraoperative and postoperative complications, length of hospital stay and recurrence of the vaginal vault prolapse.

Surgical Technique

The protocol for anesthesia was the same for all patients.

A catheter was inserted into the bladder of every patient in the operating room, and vaginal pumping was performed. A single dose of a prophylactic antibiotic was given to every patient after induction of anesthesia. After general anesthesia, patients were placed in gynecological position.

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We used a very similar technique to the one already described by Wattiez [19] and Donnez [20]. We place four ports: a 10–11 mm port was placed through a vertical infraumbilical incision for the insertion of a 10 mm laparoscope, a 10 mm port in the suprapubic region and two 5 mm ports, one in the left paramedian region and the other in the right paramedian region. The surgeon stands on the patient's left side and completes all needle passing, suturing, needle retrieving and knot tying by him utilizing the left paramedian and suprapubic port. The assistant stands on the patient's right side and drives the camera and utilizes the right lower port for retraction, suction/irrigation.

Any bleeding can be controlled with bipolar electrocautery. After vaginal vault dissection a polypropylene Y-mesh was placed at the posterior and anterior vaginal wall with interrupted delayed absorbable sutures (2/0). The mesh was attached to the sacral promontory with absorbable suture (0) or with a 5 mm titanium tack (Protack, Covidien, Mansfield, USA). The peritoneum was closed so that the mesh is completely covered.

Postoperative Management

The bladder catheter was removed when the patient recovered from the anesthesia. The patients were initially placed on a clear liquid diet 6 hours after surgery and the diet was advanced to normal as tolerated. Most of our patients go home within 24 hours after surgery. Routine follow-ups with pelvic examinations are made at 15 days, 45 days and 3-6 months. After this period the patients are evaluated yearly.

Results

The mean age of patients was 60 years (range 38–88 years), the mean BMI was 24.2 (range 20–30.2) and 33 (71,7%) patients had comorbidities. Previous surgical history included open hysterectomy in 23 (50%) patients, vaginal hysterectomy in 16 (34,8%) patients and laparoscopic hysterectomy in 7 (15,2%) patients. Table 1 presents patient characteristics.

Variables	N = 46
Age (years) mean (range)	60 (38-88)
BMI mean (range)	24.2 (20-30.2)
Patients with comorbidities	33 (71,7%)
Previous surgical history	
Open hysterectomy	23 (50%)
Vaginal hysterectomy	16 (34,8%)
Laparoscopic hysterectomy	7 (15,2%)

Table 1: Patient demographics.

Table 2 presents the surgical outcomes of patients. Forty-six women underwent vaginal vault prolapse treatment from 2008 to 2016. We performed LSC in 45 patients (success rate of 97,8%) and one patient (2,2%) required conversion to vaginal surgery due to pelvic adhesions. No patients required transfusion during or after the laparoscopic procedure and the estimated blood loss was 30 ml (10-200 ml). Mean operative time was 129,2 min (90–240 min) and postoperative hospital stay was less than 1 day. Among these 45 patients, 9 (20%) had undergone other surgical procedures: 6 posterior colporraphy and 3 anterior colporraphy. One patient (2,2%) experienced an intraoperative complication (bladder injury) solved with laparoscopic treatment. There were five postoperative complications (11%): two stress urinary incontinence (4,4%), two osteomyelitis (4,4%) and one mesh erosion (2,2%). At a median follow-up of 32,3 months (3-96 months), recurrent vaginal vault prolapse was registered in five patients (11%).

Table 3 presents the correlation between recurrent vaginal vault prolapse and other variables as age, time of follow up, complications, constipation and physical activity.

The complications osteomyelitis and bladder injury were related with the recurrent vaginal vault prolapse during the first postoperative 4 months.

Variables	N = 46
Success rate	45 (97,8%)
Conversion to vaginal approach	1 (2,2%)
Total operative time (min) mean (range)	129,2 (90–240)
Estimated blood loss (ml) mean (range)	30 (10-200)
Other surgical procedures	9 (20%)
Intraoperative complications	1 (2,2%) bladder injury
Postoperative hospital stay less than 1 day	100%
Postoperative complications	5 (11%)
Stress urinary incontinence	2 (4,4%)
Osteomyelitis	2 (4,4%)
Mesh erosion	1 (2,2%)
Recurrent vaginal vault prolapse	5 (11%)

Table 2: Surgical outcomes.

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Patients	Age	Follow up	Osteomyelitis	Bladder injury	Constipation	Physical activity
Patient 1	38	22 months	-	-	-	YES
Patient 2	71	3 months	-	YES	-	-
Patient 3	48	36 months	-	-	YES	YES
Patient 4	75	4 months	YES	-	-	-
Patient 5	66	6 months	-	-	YES	-

Table 3: Patients with recurrent vaginal vault prolapse.

Discussion

The National Center for Minimally Invasive Surgery has the greatest experience in endoscopic approach in Cuba. The Department of Laparoscopic and Endoscopic Surgery has performed over 3496 laparoscopic gynecological procedures and 2065 laparoscopic hysterectomies.

ASC is considered an excellent procedure in the surgical management of apical prolapse, with long-term success rates up to 78–100% and with reported patient satisfaction rates of 85–100% [21]. Several systematic reviews have demonstrated the anatomic superiority of ASC to vaginal apical suspension procedures, although the morbidity associated with laparotomy limits its broad use in women with multiple medical co-morbidities or relative contraindications to the approach [6,22-24].

Several studies have described that traditional LSC should be considered a primary therapy for vaginal vault prolapse because they have cited improved visualization and magnification during the procedure as factors that may lead to better exposure of anatomy, more precise suture placement, and therefore reduced complications. Other advantages of LSC over ASC are: superior cosmetics, less pain, less probability of postoperative wound infection and incisional hernia formation [10,25].

With the introduction of robotic surgery, surgeons have been seeking to expand its applications within the field of female pelvic medicine and reconstructive surgery but Robotic-assisted sacrocolpopexy (RSC) presents increased cost (robot maintenance and purchase costs) compared with LSC, whereas short-term outcomes and complications are similar. According to a 2015 meta-analysis and systematic review of nine articles and a total of 1157 patients, RSC was associated with significantly increased postoperative pain and longer operative time when compared with LSC [26-29].

Farinhas Tome et al have described a patient with vaginal vault prolapse treated by laparoendoscopic single-site sacrocolpopexy using an Alexis retractor and a surgical glove attached to three trocars through a 3.5-cm umbilical incision with good results, although long-term data on anatomic and functional outcomes are needed to draw clear conclusions [30].

The incidence of stress urinary incontinence (SUI) following apical prolapse repair is 23.6% and in those who had previous hysterectomy, the risk was 11%. Subsequent continence procedures were performed in 5.0% of patients. The Colpopexy and Urinary Reduction Efforts (CARE) trial demonstrated that a prophylactic Burch procedure reduced occult SUI rates from 44.1% to 23.8%, therefore indicating that an anti-incontinence procedure (Burch or midurethral sling) should be performed in women undergoing LSC regardless of preoperative urodynamic testing results [31-34]. In our study there were only two SUI and it was considered unnecessary to perform a concomitant sling at the time of LSC in all the patients because there was a minimal risk of developing post-operative SUI after laparoscopic sacrocolpopexy because of the possible change in the vaginal axes.

Sacral osteomyelitis is a rare complication (5,6%) after sacrocolpopexy for pelvic organ prolapse repair. Recent oral surgery may increase the risk of bacteremia and subsequent infectious morbidity after sacrocolpopexy with the use of a synthetic mesh for prolapse repair. Concomitant rectopexy and mesh erosion (2,7%) also increase the risk of osteomyelitis [35,36]. There was an association between osteomyelitis and the use of a titanium tack to fix the mesh to the sacral promontory.

Overall reoperation rate one year after surgery was low in our study (6,6%). The relation between recurrent vaginal vault prolapse was with morbidity, constipation and physical activity. No relationship was found between recurrent vaginal prolapse and age, obesity, pathological antecedent or surgical antecedent. Sarlos et al [37], in their series of 68 patients, reported that during the 5 years after surgery: 83.8 % of patients had no prolapse,

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total reoperation rate was 3,5% and preoperative quality of life index improved from 5.6 to 9.1 (12 months) and 8.3 (60 months) postoperatively, resulting in a subjective cure rate of 95.3%. A number of observational studies have shown good anatomical cure rates (over 90%) in women undergoing LSC at 1–2 years' follow-up [38-40].

Our results may be generalizable, because we used the standardized techniques and a median 32,3 months follow-up. The majority of PHVVP recurrences after sacrocolpopexy happen during the first postoperative year. An important limitation of our study was the fact that we didn`t evaluate the subjective assessment by Questionnaire.

In conclusion, laparoscopic sacrocolpopexy is a feasible and safe procedure for the treatment of PHVVP with lower perioperative morbidity, shorter hospital stay and allows a long-term anatomical restoration. It provides excellent apical support with lower rate of recurrence but we need to evaluate the level of satisfaction (subjective improvements).

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Author Disclosure Statement

There are no financial conflicts of interest.

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