

Laparoscopically Assisted Vaginal Colpohisterosacropexy

Elvira Brătilă¹,
P. Brătilă²

¹ „Carol Davila” University
of Medicine and Pharmacy,
Bucharest, „Sf. Pantelimon”
Clinical Hospital
² Euroclinic Hospital,
Bucharest

Correspondence:
Petre Brătilă
Spitalul Euroclinic,
fax: +40.21.231.35.25

Synopsis:
Histerocolposacropexy usually
performed abdominally or
laparoscopic can be done
by combined vaginal and
laparoscopic route.

Motto:

“The apex is the
keystone of pelvic
organ support...
the best surgical
correction of
the anterior and
posterior walls is
doomed to failure
unless the apex
is adequately
supported.”

**Brubaker L.,
Bump R.C.**

“3rd International Consul-
tation on Incontinence,
Paris 2005”

Abstract

Objective: To present the achievement of the a classical procedure - coplopsacropexy by means of minimally invasive technique involving combined laproscopic and vaginal approach.

Study Design: Between 2007-2009, Colpo-histerosacropexy by totally laparoscopic or vaginal-laparoscopic method was performed on 14 patients with advanced uterovaginal prolapse and recurrent IInd grade prolapse. The therapeutic principle was the recovery of the pericervical ring and suspension of the vaginal vault/uterus to the promontory.

Results: The operating time was significantly reduced when a combined vaginal-laparoscopic procedure was performed, versus the totally laparoscopic technique. Preoperative symptoms specific to the flaws of the anterior, medium and posterior compartment totally remitted postoperatively.

Conclusion: The suspension of the vaginal vault or pericervical area to the promontory remains a gold technique in the treatment of the advanced uterine prolapse. Performing this procedure laparoscopically or combined makes it the microinvasive technique with the highest success rate.

Keywords: pelvic organ prolapse, colposacropexy, laparoscopic prolapse repair

Introduction

Regarding the uterovaginal prolapse, although a condition therapeutically known for a long time, progress was made only since the beginning of the nineteenth century. Even today the prolapse is a condition that arises difficulty of correct diagnosis and treatment, because of the limited knowledge regarding the anatomy and physiology of the pelvic organs.

The surgical treatment of pelvic floor disorders should follow certain principles derived from the anatomy and experience gained in this area over time by using different surgical techniques. The surgeon's skills with the procedures are revealed by the possibility of choosing the procedures with the highest efficiency rate and the lowest morbidity and recurrence.

Since 2008, we have introduced the transvaginal approach as a concept to perform sacropexy simultaneously with laparoscopic assistance. The advantage is the reduction of invasivity and operative time by combining the two methods. Through this method the suture of the mesh at the level of the vaginal vault or pericervical ring is performed by vaginal route, for the laparoscopic procedure remaining only the step for fixing the mesh to the promontory. Colpohisterosacropexy is a method to be chosen in advanced vault prolapse for women who want to preserve the uterus and coital function.

Material and method

Between 2007-2009, we performed 14 sacropexies for uterovaginal vaginal or vault prolapse, 4 totally laparoscopic and 10 by vaginal route laparoscopically assisted. The mean age of the patients was 55 years. The obstetric history revealed two or more vaginal normal deliveries. The preoperative evaluation of the cases was performed by questionnaire, short form, for pelvic floor disorders and by clinical exam. The analysis revealed as main symptoms the bulging of the uterus through the vagina, in all the cases, difficulties in emptying the bladder in 4 cases, difficulty to empty rectum in 2 cases, stress urinary incontinence in 5 cases, nocturia in 3 cases.

The clinical quantification was made according to the clinical POP-Q staging criteria of the International Society of Continence and Badden Walker half-way system.

There were 6 patients with vaginal vault prolapse grade III, 2 patients with recurrent grade II prolapse. The uterovaginal prolapse gr II in 2 cases, gr. III - in 3 cases and total prolapse in one case

The total laparoscopic surgeries were: 2 colposacropexies and 2 histerocolposacropexies. In all these cases it was necessary to place a complementary suburethral mesh, transobturatory anchored, for clinical manifested or occult incontinence.

Of the ten cases of vaginal laparoscopically assisted sacropexies, 4 cases were hysterocolposacropexies, 2 cases cervicosacrocolpopexies (simultaneous subtotal hysterectomy was performed) and 4 cases of colposacropexy. As complementary surgeries were performed, 2 bridge-type posterior colpoplasties for lower rectocele and 4 perineal plasties for grade I perineal tears.

The occult urinary incontinence represents a common condition associated with advanced uterovaginal prolapse. In order to evidence occult urinary incontinence, the Credè maneuver was performed intraoperatively on the full bladder after the prolapse reduction.

All the cases were operated under general anesthesia.

Technique

The objectives of the performed procedures were to use synthetic meshes to strengthen the central apical support structures - the pericervical ring or vaginal vault - and to maintain the anatomical length and orientation of the vagina, by anchoring them to the promontory. As a principle, the laparoscopic assisted sacropexy involves two operative steps, one vaginal and one laparoscopic. The vaginal time is different, depending on the method for the suspension of the vaginal vault:

- **Hysterocolposacropexy**, when the uterus is totally preserved;
- **Cervicocolposacropexy** when only the cervical stump is preserved;
- **Colposacropexy** when the uterus is surgically absent as a result of previous surgery.

During laparoscopic assisted procedures, the vaginal time allows additional interventions required to correct the stress urinary incontinence or fascial defects both in the anterior and posterior compartment.

Hysterocolposacropexy

Hysterocolpopexy consists in anchoring the uterus at cervical level and uterosacral ligaments by suspension of a polypropylene monofilament mesh cut in Y to the longitudinal ligament of the promontory. (the short arms of the Y are 6-7cm long and 1cm wide and the long arm is 10-12cm long and 1 cm wide.

An archiform incision in the anterior vaginal wall is made 1.5-2cm from the external cervical os. After sectioning the cervicovesical septum, the bladder is separated from the cervix, thus revealing the anterior peritoneal fold, which is open. The uterus is pushed anteriorly and an opening is made on each side, in the broad ligaments, avoiding the vascular branch of the uterine artery. The short arms of the Y are inserted from posterior to anterior side, through the two incisions and are stitched, posterior at the level of the insertion of the two uterosacral ligaments on the uterus (fig 3), then at the level of the anterior side of the cervix (Fig 4). The Y's arm is dropped into the pelvis, and the colpotomy is closed with a resorbable suture thread. The surgery may be continued laparoscopically.

Cervicocolposacropexy

Cervicocolpopexy consists in anchoring the cervical stump with a polypropylene monofilament mesh to the promontory. The cervix can be residual after a previous intervention, or after a subtotal vaginal hysterectomy performed during the same operative session for benign uterine pathology.

The mesh to be used is Y-shaped, with the two short arms of about 3-4cm long and the long arm of 10cm long and both 1cm wide. Anterior colpotomy is performed the bladder is pushed up from the level of the cervical stump and the pelvic cavity is opened.

The cervical stump is pushed anteriorly and one of the Y arms is sutured with some unresorbable points of suture at the level of the posterior side. The other arm is fixed at the level of the anterior side of the stump. The colpotomy incision is sutured with a resorbable thread and the Y long arm is dropped into the pelvis.

Colposacropexy

Colposacropexy achieves the fixation of the vaginal vault to the promontory, after hysterectomy.

The colpotomy scar is spotted at the two sides end and it is infiltrated with saline solution throughout its length. A transverse incision is made between the two parts.

Each border of the vaginal incision is dissected from the underline tissue. One of the arms of the Y is anchored with several unresorbable monofilament threads to the posterior border of the vaginal incision. The threads must be passed submucosally, but to catch enough tissue for a solid anchoring. The same maneuver is performed for the anterior part. The long sheet of the mesh is dropped into the pelvic cavity. The vaginal incision is closed with running suture.

The laparoscopic step is common for all the sacropexies types and consists in anchoring the mesh to the promontory. According to the trajectory of the mesh, this can pass intra- or retroperitoneal. The intraperitoneal mesh does not increase the risk of intestinal complications.

The laparoscopic approach will be done with one transumbilical port for vision (Hasson), two secondary ports laterally near to the anterosuperior iliac spine and the last one, median, on the middle distance from the umbilic to the pubis bone. The patient is placed in Trendelenburg position (more than 15°), and then, the sigmoid is pushed up. For the obese patients, the sigmoid can be anchored to the abdominal wall to the left, by temporary suture. The pelvic cavity is reviewed, in order to identify the mesh. A long peritoneal incision is performed on the right of the sigmoid, between promontory and the punch of Douglas, for the future trajectory of the mesh. The promontory is dissected up to the periosteum, to make visible the sacral medial artery. The mesh is drawn to the level of the promontory, where it is fixed by 2 or 3 monofilament threads or by a titanium tacks. The mesh must be fixed without tension, loose enough

Figure 1.
Getting the arms
of the mesh
through the
base of the
broad ligament



Figure 2.
Mesh bilaterally
passed through
the base of the
broad ligament



Figure 3.
Fixing the
mesh on the
posterior side
of the uterus
and to poste-
rior uterosacral
ligaments

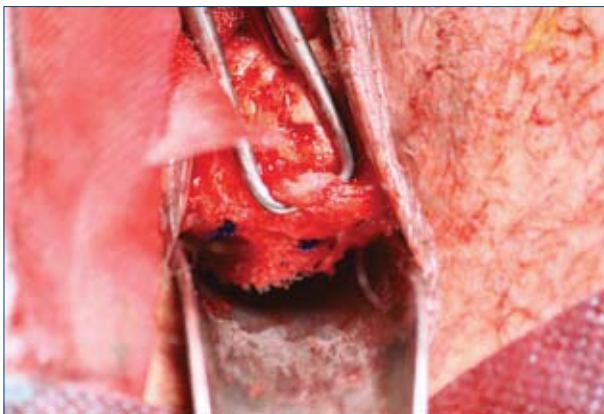
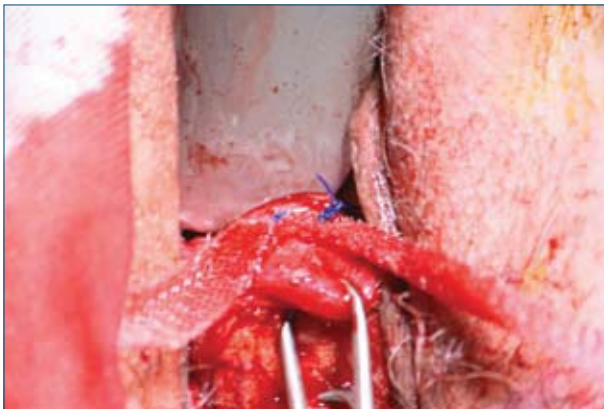


Figure 4.
Fixing the
mesh on the
anterior side
of the cervix



to fix the vagina in normal position. The peritoneal incision must be closed with running suture or clips.

Results

The mean operating time varied according to the chosen procedure and the complexity of the cases. The mean time for totally laparoscopic interventions was of 100 minutes for hysterocolposacropexy and 115 minutes for colposacropexy. As opposed to total laparoscopic intervention, for vaginal procedures the mean operating time is almost three times shorter. This is reflected in the costs of the interventions, that are significantly lower when the vaginal procedures are applied. No incidents or injuries happened intra or immediately postoperative. Hospital stay was of 24 hours for all the cases. Patients were followed up between 6-36 months by clinical examination and questionnaires/short forms to evaluate the quality of life. In two cases with urinary and faecal incontinence before surgery, where no additional procedures besides sacropexy were performed, symptoms disappeared immediately after surgery. There have been no relapses in any pelvic compartment and no erosion of the vaginal walls, caused by the polypropylene meshes. Patients with preoperative symptoms specific to anatomic defects of the anterior compartment (bladder evacuation disorders, stress urinary incontinence, nocturia) became asymptomatic, in one case occurring urinary urge de novo incontinence, resolved after 4 months of treatment with selective M2 antimuscarinic.

Specific symptoms for the median compartment (bladder evacuation disorders and pelvic pressure, bulging of the organs through vagina, dyspareunia) were resolved after surgery. Pain in the lombo-sacral region occurred in one case with remission 3 months after the surgery. Rectal evacuation and faecal incontinence disorders caused by defects of the posterior compartment remitted completely postoperatively.

Comment

Until 10 years ago, the classical method of treatment of the uterovaginal prolapse was represented by vaginal hysterectomy followed by the treatment of the associated defects of the vaginal walls. The purpose of the vaginal hysterectomy was to allow easier access to supporting elements of the uterus, but that concept was wrong, since it removed the uterus - the most solid structure, around which you can rebuild the means of pelvic support¹. The uterus is supported by a ligamentar fibroconjunctive system that is inserted in the cervix: anterior - pubo-cervical fascia, lateral - the cardinal ligaments and posteriorly - the uterosacral ligaments. The ligament insertion area achieves the so-called pericervical ring at the level of the cervix. The pericervical ring will act as insertion area for any of the items that the surgeon may use for reconstruction (synthetic meshes, autologous and allograft). Regardless of the applied method, the pericervical ring should be anchored in balance, anterior-posteriorly or laterally, in order to restore the

normal position and the normal axis of the vagina. The treatment of the utero-vaginal prolapse can be achieved by vaginal, abdominal, laparoscopic or combined vaginal-laparoscopic method. Regardless of the approach, after the reconstruction of the pericervical ring, the vaginal vault or uterus must be suspended at solid structures, thus restoring the anatomy of the pelvic organs. Combined vaginal and laparoscopic approach significantly shortens the operating time, while retaining all the advantages of minimally invasive surgery - a minimum hospital stay and rapid recovery of the patients.

Prolapse reduction by direct anchoring of the uterus to the sacrum was described by Arthur and Savage in 1957². The idea to suspend the vagina to the promontory through a graft belonged to Huguier and Scali in 1958 and then to Lane in 1962³. The graft may be biological (autologous, allograft or xenograft) or synthetic. The colposacropexy is a surgical procedure that can be performed by laparoscopic or open abdominal method, whereby the vaginal apex is suspended at the anterior longitudinal ligament at the level of the first sacral vertebra. The procedure is often considered/cited as the golden standard technique in advanced prolapse surgery, the aim of this procedure is to preserve a functional vagina. Comparative studies of different surgical techniques for the suspension

of vaginal apex demonstrates the superiority of sacropexy to other procedures in terms of recurrence rate and incidence of mesh vaginal erosion⁴ (table 1). In III-IV degree uterovaginal prolapse, supporting and anchoring the vaginal vault in anatomical posterior direction is the best alternative for treatment. Until now, various methods of anchoring the vaginal vault directly or indirectly to structures as the sacrosacral ligaments or the periosteum of the sacral promontory are known. All the existing techniques for the suspension of the vaginal vault to the sacrum are performed exclusively by open abdominal or laparoscopic approach. Each technique has advantages and disadvantages.

The transabdominal technique:

- it is fast (it takes 60-90 minutes);
- it does not require special training;
- high risk of complications;
- it requires hospitalization (3-5 days);
- slow recovery (10-14 days).

The laparoscopic technique:

- operating time (100-120 minutes);
- short hospitalization (1-2 days);
- low risk of complications;
- fast recovery (3-5 days);
- it requires special training.

Reclamă G20(2)0201 ▼



Consolidarea continuă a pozițiilor obținute pe piața serviciilor de protecție a mediului și de gestionare a deșeurilor din România este o parte importantă a strategiei A.K.S.D. Kft. Pentru aceasta, am înființat firma AKSD ROMÂNIA S.R.L., a cărei principală activitate o constituie gestionarea complexă a deșeurilor periculoase, incluzând analizele prealabile, colectarea, transportul și sterilizarea. Pe parcursul activității noastre, cu respectarea consecventă a standardelor europene și a normelor internaționale, instalăm și asigurăm

funcționarea unor tehnologii, care au un nivel foarte ridicat atât din punct de vedere al protecției mediului, cât și din cel al productivității, oferind astfel partenerilor noștri de afaceri o alternativă sigură și competitivă.

Sediul central al AKSD ROMÂNIA se află în parcul industrial din județul Mureș, de unde este condusă toată activitatea din România. Tot în această locație funcționează un echipament de dezinfectare și neutralizare a deșeurilor sanitare infecțioase, cu care deșeurile provenite din instituțiile sanitare sunt gestionate cu costuri mult mai scăzute și cu un efect mult mai mic asupra mediului, comparativ cu incineratoarele general răspândite în momentul de față. Colectarea și transportul deșeurilor este efectuată cu vehiculele noastre moderne, amenajate conform reglementărilor aflate în vigoare și dotate cu cabine frigorifice speciale.



Disponem de containere frigorifice mobile cu care depozitarea temporară a deșeurilor din spitale se realizează în condiții igienico-sanitare de maximă securitate. Alternativa tehnologică,

oferită de AKSD ROMÂNIA pentru toți protagoniștii de pe piața deșeurilor medicale oferă nu numai siguranță ridicată pentru protecția mediului ci și posibilitatea încheierii unor parteneriate eficiente în costuri de logistică și eliminare finală.

Contact

Parcul Industrial Mureș, Platforma Vidrasău-Ungheni 1B

Telefon: 0733-356.563

www.aksd.ro

Published with
the support of:
2009

ITD
HUNGARY
INVESTMENT AND TRADE
DEVELOPMENT AGENCY
WWW.ITD.HU

Table 1 Comparative studies concerning treatment of the vaginal vault prolapse

	Study	No. pts	Follow-up	Vaginal erosion	Recurrence
Prolift (Ethicon)	Cosson 2005 Retrospective	687	3-6 months	6.7%	5.3%
Apogee (AMS)	Davila 2005 Retrospective	55	10 months	11%	3.17%
Abdominal colposacropexy	Nyaard 2005 Meta-analysis 1966-2004	2178	6 L-3 years	3.4%	4.4% (prolaps) 4.9% (IUE)
Laparoscopic colposacropexy	Cosson 2000	83	6 months	-	2.5%

Sacropexy, first of all resolves defects of the median compartment and may reduce some symptoms such as bladder or rectal evacuation disorders, or pelvic pain⁵. As far as the anterior compartment are concerned - stress urinary incontinence and cistocele caused by high degree paravaginal defects-, the simple vaginal vault suspension is not enough. For unrelapsed medium stress urinary incontinence, sacropexy may have the Burch operation effect by stabilizing the urethra in cases of urethral hypermobility.

For severe or recurrent forms of urinary incontinence, performing a urethral suspension procedure is a must. The transobturator version is the most convenient, since it does not require a significant opening of the vaginal wall. The large cistocele (grade II-III) produced by a paravaginal defect cannot be completely treated by colposacropexy achieved by vaginal laparoscopic assisted procedure. In case of total laparoscopic sacropexy, these defects can be solved by extensive vesicovaginal dissection, up to 2 cm above the bladder neck (depending on the size of the anterior vaginal defect), and the anterior part of the mesh must be fixed laterally by suture points on either side of vaginal wall and on median line. The posterior compartment defects, such as upper rectocele or elitrocele disappear as a result of colpo-

sacropexy, but inferior rectocele or old perineal tears of various degrees, require vaginal interventions. The bridge type posterior colporaphy is the surgical choice for inferior rectocele and perineoplasty for perineal tears I-II degree. These complementary procedures regarding the posterior wall are not compulsory because they do not raise any functional problems, but only in terms of esthetics⁶. If the posterior vaginal wall defects, inferior rectocele and perineum tears - the inferior level of vaginal support -, associated with faecal incontinence, it should be considered that the posterior angulation of the vagina by sacropexy can lead to the disappearance of these symptoms⁷.

Conclusion

Colposacropexy or hysterocolposacropexy allow the treatment of pelvic floor disorders according to the pelvic-perineal anatomy, with good long-term results. Performing these procedures laparoscopically combined with vaginal approach increase the advantages of minimally invasive surgery, and significantly shortens the learning curve. Combining the vaginal approach with laparoscopic assistance shortens significantly the operating time and allow to the surgeon a good alternative to the open abdominal method. ■

References

1. Arthure H.G., Savage D.: Uterine prolapse and prolapse of the vaginal vault treated by sacral hysteropexy. *J Obstet Gynaecol Br Emp* 64. (3): 355-360.1957.
2. Huguier J., Scali P.: [Posterior suspension of the genital axis on the lumbosacral disk in the treatment of uterine prolapse]. *Presse Med* 66. (35): 781-784.1958.
3. Must colposuspension be associated with sacropexy to prevent post-operative urinary incontinence? Costantini E - *Eur Urol* - 01-MAR-2007; 51(3): 788-94.
4. Sexual function before and after sacrocolpopexy for pelvic organ prolapse Victoria L. Handa, MD *American Journal of Obstetrics and Gynecology* - Volume 197, Issue 6 (December 2007).
5. Is hysterectomy or the use of graft necessary for the reconstructive surgery for uterine prolapse? - Jeon MJ - *Int Urogynecol J Pelvic Floor Dysfunct* - 01-MAR-2008; 19(3): 351-5.
6. Laparoscopic sacrocolpopexy for uterine and post-hysterectomy prolapse: anatomical results, quality of life and perioperative outcome-a prospective study with 101 cases. - Sarlos D - *Int Urogynecol J Pelvic Floor Dysfunct* - 01-OCT-2008; 19(10): 1415-22.
7. New pelvic symptoms are common after reconstructive pelvic surgery Thythy Pham, MD *American Journal of Obstetrics and Gynecology* - Volume 200, Issue 1 (January 2009).