Published in final edited form as:

J Minim Invasive Gynecol. 2012 ; 19(6): 749–755. doi:10.1016/j.jmig.2012.06.009.

Laparoscopic Supracervical Hysterectomy With Transcervical Morcellation and Sacrocervicopexy: Initial Experience With a Novel Surgical Approach to Uterovaginal Prolapse

Dr. Peter L. Rosenblatt, MD, Dr. Costas A. Apostolis, MD*, Dr. Michele R. Hacker, ScD, MSPH, and Dr. Anthony DiSciullo, MD

Departments of Obstetrics and Gynecology, Mount Auburn Hospital, Cambridge (Drs. Rosenblatt, Apostolis, and DiSciullo), Beth Israel Deaconess Medical Center, Boston (Dr. Hacker), and Department of Obstetrics, Gynecology, and Reproductive Biology, Harvard Medical School, Boston (all authors), Massachusetts

Abstract

The objective of this retrospective study was to evaluate the feasibility, safety, and efficacy of a new laparoscopic technique for the treatment of uterovaginal prolapse using a transcervical access port to minimize the laparoscopic incision. From February 2008 through August 2010, symptomatic pelvic organ prolapse in 43 patients was evaluated and surgically treated using this novel procedure. Preoperative assessment included pelvic examination, the pelvic organ prolapse quantification scoring system (POP-Q), and complex urodynamic testing with prolapse reduction to evaluate for symptomatic or occult stress urinary incontinence. The surgical procedure consisted of laparoscopic supracervical hysterectomy with transcervical morcellation and laparoscopic sacrocervicopexy with anterior and posterior mesh extension. Concomitant procedures were performed as indicated. All procedures were completed laparoscopically using only 5-mm abdominal port sites, with no intraoperative complications. Patients were followed up postoperatively for pelvic examination and POP-Q at 6 weeks, 6 months, and 12 months. The median (interquartile range) preoperative POP-Q values for point Aa was 0 (–1.0 to 1.0), and for point C was –1.0 (–3.0 to 2.0). Postoperatively, median points Aa and C were significantly improved at 6 weeks, 6 months, and 12 months (all $p < .001$). One patient was found to have a mesh/suture exposure from the sacrocervicopexy, which was managed conservatively without surgery. We conclude that laparoscopic supracervical hysterectomy with transcervical morcellation and laparoscopic sacrocervicopexy is a safe and feasible surgical approach to treatment of uterovaginal prolapse, with excellent anatomic results at 6 weeks, 6 months, and 12 months. Potential advantages of the procedure include minimizing laparoscopic port site size, decreasing the rate of mesh exposure compared with other published data, and reducing the rate of postoperative cyclic bleeding in premenopausal women by removing the cervical core. Longer follow-up is needed to determine the durability and potential long-term sequelae of the procedure.

Keywords

Laparoscopic sacrocervicopexy; Laparoscopic supracervical hysterectomy; Pelvic organ prolapse; POP-Q; Transcervical morcellation

© 2012 AAGL. All rights reserved.

Corresponding author: Costas A. Apostolis, MD, Department of Obstetrics and Gynecology, Mount Auburn Hospital, 725 Concord Ave, Ste 1200, Cambridge, MA 02138. capostolis@gmail.com.

Dr. Rosenblatt is a consultant for Gynecare (a division of Ethicon), Cooper Surgical, Boston Scientific, and Gyrus ACMI.

The other authors have no commercial, proprietary, or financial interest in the products or companies described in this article.

Despite recent interest in vaginally placed mesh, abdominal sacrocolpopexy is still considered by many pelvic reconstructive surgeons to be the criterion standard for treatment of vaginal vault prolapse after hysterectomy. In a comprehensive review of the literature, Nygaard et al [1] reported that the success rates for apical prolapse after sacrocolpopexy ranged from 78% to 100%, and for the anterior and posterior compartments from 58% to 100%. The mean incidence of vaginal exposure was 3.4%, and the incidence of repeat operation was 4.4% [1].

Treatment of uterine prolapse poses another clinical question: Must total hysterectomy be an integral part of reconstructive pelvic support surgery to achieve successful outcomes? Although hysterectomy has become a traditional part of prolapse surgery, many authorities have questioned the rationale for total hysterectomy at the time of prolapse surgery when there are no other indications for surgery such as refractory abnormal uterine bleeding or symptomatic myomas. There is growing opinion that the uterus has a passive role in the pathogenesis of pelvic organ prolapse; therefore, total hysterectomy may not improve the outcome of prolapse surgery [2]. In fact, hysterectomy, and more specifically, removal of the cervix, may be associated with an increase in intraoperative and postoperative complications such as vaginal cuff cellulitis and ureteral injury [3]. In addition, several investigators have demonstrated that total hysterectomy performed during sacrocolpopexy is associated with an increased risk of mesh exposure at the site of the vaginal cuff [4]. In a recent study by Rosenblatt et al [5], 40 women with advanced uterine prolapse were treated via laparoscopic sacrocervicopexy with uterine preservation. The success rate, as defined by an improvement in point C from the preoperative position and above the hymen postoperatively, was 100% at 6 months. In addition, concomitant cystocele was treated via laparoscopic paravaginal repair. In contrast, in women with substantial anterior wall and apical prolapse, repair of the anterior compartment with sacrocervicopexy and laparoscopic paravaginal repair may not be satisfactory [6]. An alternative in these women is laparoscopic supracervical hysterectomy (LSH) with sacrocervicopexy, which enables use of a Y-shaped mesh piece, as is common in sacrocolpopexy. Compared with sacrocolpopexy performed after total hysterectomy, this technique provides for mesh support to both the anterior and posterior vaginal walls while preserving the cervix, which not only provides a robust attachment site for the mesh but also may reduce the risk of mesh exposure at the apex of the vagina. Herein is described a novel procedure that we developed that involves transcervical morcellation (TCM) of the uterine fundus after LSH and use of the morcellator sleeve as an access trocar for mesh and suture introduction and for needle retrieval.

Methods and Materials

The present retrospective study included the first 43 patients who underwent laparoscopic supracervical hysterectomy with transcervical morcellation (LSH–TCM) followed by laparoscopic sacrocervicopexy for treatment of pelvic organ prolapse. All procedures were performed from February 2008 through August 2010 in a urogynecology practice at a community teaching hospital affiliated with a university medical school. All procedures were performed by a single surgeon (P.L.R.) along with fellows in urogynecology or gynecologic laparoscopy and/or residents in obstetrics and gynecology (C.A.). The study was approved by the Institutional Review Board at Mount Auburn Hospital (Cambridge, MA).

All patients had symptoms of pelvic organ prolapse with or without urinary incontinence. Evaluation included a pelvic examination, pelvic organ prolapse quantification scoring system (POP-Q), and complex urodynamic testing, with prolapse reduction when the leading

edge of the prolapse extended to or beyond the hymen. All patients were offered nonsurgical management of the prolapse, including pessary support.

Operative Procedure

Patients who elected to undergo reconstructive surgery were given a preoperative bowel preparation consisting of magnesium citrate or Half-Litely (Braintree Laboratories, Inc., Braintree, MA) the day before surgery. All patients received a single preoperative dose of intravenous antibiotic (1–2 mg cefazolin or 600–900 mg clindamycin), which was repeated if the procedure exceeded 4 hours. The procedure begins with insertion of a uterine manipulator (ZUMI; Cooper Surgical, Inc., Trumbull, CT) and a transurethral catheter, with the patient in the low lithotomy position in Yellofin Elite Stirrups (Allen Medical Systems, Inc., Acton, MA). After insufflation is performed in standard fashion using a Veress needle, a 5-mm trocar is placed through the umbilicus, and a 0- or 30-degree 5-mm laparoscope is placed through this port site. Two additional 5-mm trocars are placed into the right and left lower quadrants, just inferior to the level of the umbilicus and lateral to the inferior epigastric vessels after laparoscopic visualization of these vessels. A suprapubic 5-mm trocar is also placed.

With the patient in a Trendelenberg position, the procedure begins with identification of the structures of the presacral space including the common iliac arteries and the middle sacral vessels, which often can be observed through the intact peritoneum over the sacral promontory. Special attention is paid to identifying the location of the left common iliac vein, which lies medial to the left common iliac artery and can be more difficult to visualize during laparoscopy because of the effects of pneumoperitoneum. In addition, the course of the right ureter is positively identified via its peristalsis. Bipolar cutting forceps (PK Cutting Forceps; Gyrus ACMI, Minneapolis, MN) were used in all procedures. Laparoscopic supracervical hysterectomy is performed in standard fashion, with coagulation and transection of the round ligaments and development of the bladder flap. Either the infundibulopelvic or uterine-ovarian ligaments are coagulated and transected, and the posterior leaf of the broad ligament is incised to the level of the uterosacral ligaments. The uterine arteries are then skeletonized and coagulated, and transected only when the uterus becomes visually cyanotic, indicating successful bilateral occlusion of the uterine arteries. A bipolar spatula (Gyrus PlasmaSpatula; Gyrus ACMI) is then used to transect the uterine corpus from the cervix at the level of the internal os. Any bleeding from the cervix is controlled using bipolar electrocoagulation. The uterine manipulator is then removed, and one of the surgeons changes position and moves to between the patient's legs. A 15-mm classic intrafascial supracervical hysterectomy (CISH) instrument set (Wisap GmbH, Munich, Germany) is then used to core the cervix (Fig. 1). The blunt rod is used to sound the cervix, and then the serrated cylindrical blade is placed into the vagina and up against the cervix. Using clockwise and counterclockwise motions, the cervix is cored, and the specimen is removed along with the serrated CISH blade (Fig. 2). In addition, a solid cylinder with a central aperture that accommodates the blunt rod is placed within the outer serrated blade to maintain the proper axis for the cervical coring. All specimens are tagged using a single suture at the ectocervix for histologic orientation (Fig. 3). In later cases, we used an electromechanical handle with the same CISH instruments as described rather than manually coring the cervical canal.

Once coring of the endocervix is complete, the serrated blade is removed, and a 15.9-mm morcellator (Morcellex; Gynecare, Inc., division of Ethicon, Inc., Somerville, NJ) is advanced transvaginally through the cervix and into the pelvic cavity to remove the uterus. Morcellation is performed using a 10-mm laparoscopic tenaculum placed through the morcellator, with the laparoscopic assistant handing the specimen in such a manner as to maintain the morcellator blade on the outer surface of the uterine corpus. Using the core

guard lip on the morcellator in an anterior position facilitates this process. Morcellation can also be facilitated with the use of a reverse image unit (Karl Storz GmbH & Co. KG, Tuttlingen, Germany) that connects to an accessory monitor placed at the head of the bed. This monitor provides a mirror image of the pelvis, and is used by the vaginal surgeon to direct the morcellation. After removal of the uterine tissue, the morcellator handle is detached and placed away from the surgical field, in essence leaving a 15.9-mm sheath in the cervix, which is also used as a cervical and/or vaginal manipulator, along with a single-tooth tenaculum on the anterior or posterior lip of the cervix (Fig. 4). In some cases, we used a bipolar morcellator (PlasmaSORD; Gyrus ACMI) to remove the uterine fundus. In these cases, once morcellation was complete, the morcellator was removed, and a 12-mm laparoscopic sheath was introduced into the cervix (Fig. 4). At this point, a purse-string absorbable suture (polyglactin 910 [2-0 Vicryl; Ethicon]) is placed around the cervical defect transvaginally, and this suture is held and tied down only at the conclusion of the procedure, when the cervical trocar is removed.

The peritoneum is elevated over the sacral promontory, and is incised using monopolar scissors. This dissection is carried down to the anterior longitudinal ligament of the sacrum, with care to prevent injury to the middle sacral vessels. The peritoneal incision is then carried caudally into the pelvis, lateral to the rectosigmoid and medial to the right uterosacral ligament to prevent injury to the right ureter. A plastic probe (Apple Medical Corp., Bolton, MA) is then placed in the rectum to assist with dissection in the rectovaginal space. An incision is made in the peritoneum posterior to the cervix, and the rectovaginal space is developed, exposing the posterior rectovaginal fascia. A Y-shaped piece of polypropylene mesh (PelviTex; Bard Urological Division, C.R. Bard, Inc., Covington, GA; or Polyform; Boston Scientific Corp., Marlborough, MA) is then inserted through the cervical trocar and into the peritoneal cavity for the sacrocervicopexy. The shape of the mesh varied during the study. Initially, we used a Y-shaped mesh piece 3 cm wide and 15 cm long with a hole cut out of the proximal anterior mesh extension (Fig. 1) to accommodate the cervical sheath. Subsequently, a simple 15 × 3-cm mesh piece was used for the posterior vaginal wall and sacrum, with a second mesh piece approximately 8 × 3 cm used for the anterior vaginal wall and sutured to the first piece intracorporeally, thereby creating a Y-shaped mesh piece.

After introduction of the mesh, 6 to 10 CV-2 Gore-Tex sutures (W.L. Gore & Associates, Inc., Flagstaff, AZ) on THX-26 needles are used to secure the posterior extension of the mesh to the posterior vaginal wall and cervix, using an extra-corporeal knot tying technique. All sutures and needles are passed into the abdominal cavity through the cervical sheath, and the needles are removed after each suture through the same sheath. In procedures that involved the preformed Y-shaped mesh piece, the anterior extension is similarly sutured to the anterior vaginal wall using 5 to 8 sutures. The mesh is then sutured to the anterior longitudinal ligament of the sacral promontory using 2 stitches of the CV-0 Gore-Tex suture, without undue tension on the mesh. In the later cases in which a single piece is initially placed, this mesh is sutured to the posterior vaginal wall and then to the sacrum before introducing and suturing the second mesh piece to the anterior vaginal wall. The anterior extension is then sutured to the posterior mesh with interrupted 0-polyester sutures (Ethibond; Ethicon) after determining the desired tension on the anterior mesh segment. After the suspension, the mesh is covered by reapproximating the peritoneum over the mesh using a running stitch of 2-0 polydioxanone or polyglactin suture with absorbable clips (Lapra-Ty; Ethicon EndoSurgery, Inc., Cincinnati, OH). Because closure of the peritoneum precludes use of the Lapra-Ty instrument through the cervical sheath to secure the distal peritoneum stitch, several 5-mm vascular clips are placed on the end of this suture through one of the 5-mm lower-quadrant trocars. At this point, the cervical sheath is removed, and the purse-string suture in the cervix that was placed earlier is tied down. Concomitant

procedures were performed as indicated using the POP-Q and/or urodynamic testing. Cystoscopy is performed at the conclusion of each procedure, and ureteral function is confirmed with observation of brisk efflux of indigo carmine dye from each ureteral orifice. Patients are admitted to the hospital overnight, and sequential compression devices are used on their lower extremities until they are ambulatory. Voiding trials are performed on the first postoperative day, and patients who fail these trials are followed up on an outpatient basis within 1 to 3 days to repeat the trial. Patients are asked to refrain from heavy lifting (>10 lb) and to take stool softeners for 4 to 8 weeks. Postoperatively, patients are followed up at 2 weeks, 6 weeks, 6 months, 12 months, and then annually. POP-Q examinations with maximal straining are performed at each visit with the exception of the 2-week postoperative visit. Postoperative surgical success was defined as point C not descending more than half the total vaginal length and points Ba and Bp less than -1.

Statistical Analysis

Data were analyzed using statistical software (SAS version 9.2; SAS Institute, Inc., Cary, NC). Results are given as mean (SD) and 95% confidence interval (CI), median (interquartile range [IQR]), or percentage, depending on the data type and distribution. Normality was assessed using the Shapiro-Wilk test along with visual inspection of the data. Although some POP-Q measurements were normally distributed, all are given as median for consistency. Preoperative and postoperative results were compared using the Wilcoxon signed rank test. All tests were 2-sided, and $p < .05$ was considered statistically significant.

Results

From February 2008 through August 2010, 43 women underwent LSH/TCM and sacrocervicopexy to treat symptomatic uterine prolapse. Their mean (SD) age was 52.7 (9.8) years (95% CI, 49.7–55.7), and their median (range) parity was 2.0 (2.0–3.0); 53.5% of the women were postmenopausal. Body mass index was 26.5 (4.9) (95% CI, 25.0–28.0). Preoperative patient characteristics are given in Table 1.

There were no intraoperative complications related to the sacrocervicopexy portion of the procedure, and there were no conversions to laparotomy or vaginal surgery during the index procedure. In only 2 of 43 patients (4.6%) was intraoperative blood loss >100 mL. Total operative time, including concomitant procedures, was 211.6 (24.7) minutes (95% CI, 204.0–219.2). Most patients (72.1%) underwent a concomitant procedure to treat urodynamic stress incontinence, and 23 of 31 of these procedures (74.2%) involved placement of transobturator slings. Although not officially recorded in the medical record, the time required to perform the laparoscopic sacrocervicopexy portion of the procedure was consistently 90 to 120 minutes. Intraoperative outcomes are given in Table 2.

Forty-two patients (97.7%) were evaluated postoperatively at 6 weeks, 40 (93.0%) at 6 months, and 37 (86.0%) at 12 months. At the last follow-up, no patients reported symptoms of prolapse. Preoperative POP-Q evaluations demonstrated a median point C of -1.0 (IQR, -3.0; 2.0), and median point Aa of 0 (IQR, -1.0 to 1.0). The 6-month postoperative POP-Q evaluations demonstrated a median point C of -6.0 (IQR, -7.0 to -6.0), and median point Aa of -2.0 (IQR, -3.0 to -2.0). At 1 year, the median for point C was -6.0 (IQR, -6.0 to -5.0), and median Point Aa was -2.0 (IQR, -2.0 to -2.0).

At 6 weeks, 1 patient was found to have cervical elongation, with point C at 0. Preoperatively in this patient, point C was +5 and point D was -6. The patient was taken back to the operating room, and a partial trachelectomy was performed. At the 6-month evaluation, 1 patient had vaginal irritation. Cultures and conservative treatment provided no relief. At this visit, point C was -4, and Aa was -1. The patient returned for follow-up 2

months later, with similar symptoms. Examination revealed granulation tissue in the vagina. This tissue was biopsied, and was found to be a high-grade squamous intraepithelial lesion of the vagina. The patient was referred to a gynecologic oncologist, and a wide local excision was performed. Insofar as the prolapse, the patient reported no symptoms, and no intervention was planned.

At 6 weeks, statistically significant improvement was noted in all POP-Q measurements with the exception of total vaginal length and the perineal body. These improvements persisted at 1 year for all points except Ap and Bp. The POP-Q values for all patients evaluated preoperatively and postoperatively are given in Table 3. One patient failed using our definition of objective surgical success for apical suspension. The overall success rate at 1 year was 97.3% (36 of 37 patients).

Postoperatively, one patient was found to have mesh exposure from the sacrocervicopexy, which was managed conservatively and resolved with use of vaginal estrogen cream.

Discussion

Surgical options for uterine prolapse include abdominal, laparoscopic, and vaginal approaches, and although there has been much attention paid recently to vaginal mesh suspension procedures, sacrocolpopexy remains the criterion standard procedure to which other prolapse operations are often compared. We have previously found excellent success rates with laparoscopic sacrocervicopexy with uterine preservation [5]. In that series, some women with anterior wall descent in addition to uterine prolapse required concomitant laparoscopic paravaginal repair.

By developing an alternative approach to treat uterine prolapse with substantial anterior wall prolapse, we sought to accomplish several goals. First, we believe that a Y-shaped mesh piece sutured to the anterior pubocervical fascia provides excellent long-term support for substantial anterior wall descent. Performing LSH enables use of this anterior mesh extension that we were not able to provide with complete uterine preservation. Patients who request uterine preservation are not candidates for this new procedure. Price et al [7] have described a procedure in which tunnels are created in the broad ligaments that enable extension of mesh from the posteriorly secured graft to the anterior endopelvic fascia.

Second, we believe that we can reduce postoperative discomfort and risk of incisional hernias by reducing the size and number of abdominal trocar ports. However, inasmuch as this was a retrospective study, we do not have data that demonstrate reduced postoperative discomfort. Certainly this is information we would like to collect prospectively in the future. Similarly, our impression has been that patients undergoing this procedure have been pleased with the aesthetic advantage of reducing laparoscopic port size by not placing a morcellator through the abdomen, although we did not specifically solicit this question. We have previously described a novel technique, LSH-TCM, that enables the surgeon to perform LSH using only 5-mm trocars [8]. It also involves coring out the cervix, which, in theory, decreases the risk of postoperative cyclic bleeding in premenopausal women and lowers the risk of endocervical carcinoma, addressing 2 issues that critics of LSH have raised [9]. With the introduction of a transcervical trocar after LSH-TCM, we are now able to perform more advanced procedures such as the sacrocervicopexy described in the present study without enlarging any of the laparoscopic port sites. As shown in this study, introduction of mesh and sutures with needles is facilitated with the use of the transcervical sheath. Because the sheath of the morcellator extends out beyond the vaginal introitus, we are able to prevent contamination of the mesh and sutures as they are introduced into the peritoneal cavity. We have not had a single case of postoperative infection after any TCM

procedure, whether or not synthetic mesh was used during the surgery. The literature regarding the risk of mesh exposure during sacrocolpopexy is mixed insofar as concomitant hysterectomy [1]. We believe, however, that preservation of the cervix should, in theory, decrease the risk of mesh exposure because the cervix acts as a buffer between the vagina and the synthetic material. Larger and longer studies are needed to determine whether this theory is accurate.

Transcervical morcellation has several benefits. In addition to removal of potentially hormonally active cells left in the cervix after LSH that can cause postoperative cyclic bleeding, coring out the cervix, in theory, removes cells along the cervical canal that can cause endocervical carcinoma. We have experienced no instances of immediate, delayed, or postoperative cyclic bleeding reported by any patient. One may surmise that a combination of uterine artery occlusion during LSH along with temporary compression of the cervix by the morcellator cannula after removal of the core is responsible for this reliable hemostasis. As described earlier, TCM can be facilitated by use of a reverse-image monitor. While some surgeons have found this a useful technique, others have not, and certainly this procedure can be performed without this additional piece of equipment. We have found that TCM is an easily mastered and safe technique as long as the vaginal surgeon directs the morcellator in a midline and slightly anterior (ventral) direction.

In our experience, TCM decreases the amount of chips that are dispersed throughout the abdominal cavity. Any chips generated from morcellation tend to fall into the posterior cul-de-sac, from which they are easily retrieved. We have also noted that morcellation time is not prolonged using a transcervical approach compared with traditional morcellation through a laparoscopic port. In addition, TCM obviates the need to close the larger abdominal fascial incision, which may also be a cause for some of the discomfort associated with larger port site incisions. The tradeoff is that the cervical defect must be closed, although as we have demonstrated in the present study, a vaginal purse-string closure can be simply performed, especially if done before the cervix is resuspended.

Laparoscopic sacrocolpopexy or sacrocervicopexy requires advanced laparoscopic suturing skills, especially with laparoscopic suturing and knot tying. The procedure described herein is also applicable to robotic surgery as long as an assistant can gain access to the perineal area to perform morcellation and to introduce and remove mesh, and sutures into the abdomen. Although this was an issue with the earlier version of the da Vinci robot (Intuitive Surgical, Inc., Sunnyvale, CA), more recent versions of the robot enable easier access to the perineum for the assistant (i.e., “side-docking”). Although the standard robotic port sites range from 8 to 12 mm, TCM may have a role, for the reasons previously mentioned: avoidance of a 15.9-mm abdominal incision, reduction of postoperative cyclic bleeding, potential reduction in incidence of endocervical carcinoma, and improved management of morcellated chips.

The present study demonstrates the feasibility, safety, and efficacy of LSH-TCM with sacrocervicopexy, using only 5-mm laparoscopic port sites. It has previously been demonstrated that laparoscopic sacrocervicopexy with paravaginal repair results in comparable early success rates as LSH-TCM with sacrocervicopexy [6]. We believe that longer term success can be achieved with LSH-TCM because the anterior vaginal wall is a common site of recurrent prolapse. This novel procedure also enables the surgery to be completed using only 5-mm laparoscopic trocar ports, reducing pain and obviating the need for fascial closure sutures at the conclusion of surgery.

Acknowledgments

Supported by Harvard Catalyst, the Harvard Clinical and Translational Science Center (NIH Award No. UL1 RR 025758), and by financial contributions from Harvard University and its affiliated academic health care centers.

We thank Laura E. Dodge for assistance with the statistical analysis.

References

1. Nygaard IE, McCreery R, Brubaker L, et al. Pelvic Floor Disorders Network. Abdominal sacrocolpopexy: a comprehensive review. *Obstet Gynecol*. 2004; 104:805–823. [PubMed: 15458906]
2. Diwan A, Rardin CR, Kohli N. Uterine preservation during surgery for uterovaginal prolapse: a review. *Int Urogynecol J Pelvic Floor Dysfunct*. 2004; 15:286–292. [PubMed: 15517676]
3. Jenkins TR. Laparoscopic supracervical hysterectomy. *Am J Obstet Gynecol*. 2004; 191:1875–1884. [PubMed: 15592268]
4. Tan-Kim J, Menefee SA, Luber KM, et al. Prevalence and risk factors for mesh erosion after laparoscopic-assisted sacrocolpopexy. *Int Urogynecol J Pelvic Floor Dysfunct*. 2011; 22:205–212.
5. Rosenblatt PL, Chelmow D, Ferzandi T. Laparoscopic sacrocervicopexy for the treatment of uterine prolapse: a retrospective case series report. *J Minim Invasive Gynecol*. 2008; 15:268–272. [PubMed: 18439495]
6. Hanaway, K.; Rosenblatt, P.; Dramitinos, P., et al. A comparison of laparoscopic posterior sacrocervicopexy with paravaginal repair versus laparoscopic supracervical hysterectomy with anterior and posterior sacrocervicopexy for prolapse repair. Poster presented at the 30th Annual Scientific Meeting of the American Urogynecologic Society; Hollywood, Florida. September 24–28, 2009;
7. Price N, Slack A, Jackson SR. Laparoscopic hysteropexy: the initial results of a uterine suspension procedure for uterovaginal prolapse. *BJOG*. 2010; 117:62–68. [PubMed: 20002370]
8. Rosenblatt PL, Makai GE, DiSciullo AJ. Laparoscopic supracervical hysterectomy with transcervical morcellation: initial experience. *J Minim Invasive Gynecol*. 2010; 17:331–336. [PubMed: 20417424]
9. American College of Obstetricians and Gynecologists. ACOG Committee Opinion: supracervical hysterectomy. *Obstet Gynecol*. 2007; 110:1215–1217. [PubMed: 17978148]

Fig. 1.
A 15-mm classic intrafascial supracervical hysterectomy instrument set is used for coring the cervix.

Fig. 2.
The classic intrafascial supracervical hysterectomy serrated blade in the cervical canal is seen laparoscopically after transcervical coring is complete and the cervical core is obtained.

Fig. 3.
Cervical core specimen obtained after transcervical coring and tagged with a silk suture to mark the ectocervix.

Fig. 4.

The morcellator sleeve is placed through the cervix to enable passage of sutures and needles in and out of the abdominal cavity. A small incision is made in the posterior arm of the mesh to enable entry of the morcellator sleeve into the abdomen.

Table 1

Preoperative characteristics in 43 study patients

Characteristic	Value
Age, mean (SD), yr; 95% CI	52.7 (9.8); 49.7–55.7
BMI, mean (SD); 95% CI	26.5 (4.9); 25.0–28.0
Gravidity, median (IQR)	3.0 (2.0–3.0)
Parity, median (IQR)	2.0 (2.0–3.0)
Postmenopausal patients, No. (%)	23 (53.5)
Preoperative urodynamics, No. (%)	
Stress urinary incontinence	28 (65.1)
Detrusor overactivity	1 (2.3)
Mixed	3 (7.0)
No stress urinary incontinence or detrusor overactivity	11 (25.6)

BMI = body mass index; CI = confidence interval; IQR = interquartile range.

Table 2

Surgical characteristics and adverse events

Variable	Value
Operative time, mean (SD), min; 95% CI	211.6 (24.7); 204.0–219.2
Procedure time, median (IQR), min Laparoscopic supracervical hysterectomy	35.0 (27.0–40.0)
Coring	2.0 (1.0–3.0)
Morcellation	5.0 (3.0–8.0)
Estimated blood loss 100 mL, No. (%)	41 (95.4)
Concurrent surgery, No. (%) ^a	
Tension-free vaginal tape (Obturator)	23 (53.5)
Solyx	5 (11.6)
Burch	1 (2.3)
Perineorrhaphy	2 (4.7)
Tension-free vaginal tape (Secur)	1 (2.3)
Transobturator post-anal sling	1 (2.3)
Tension-free vaginal tape	1 (2.3)
Other	5 (11.6)
None	9 (20.9)
Uterine weight, median (IQR), g	70.0 (52.0–90.0)
Hospital stay, median (IQR), day	1.0 (1.0–1.0)
Complications, No. (%)	
Urinary tract or other infection	1 (2.3)
Urine retention	0
Pain on postoperative day 1	3.0 (2.0–4.0)
De novo detrusor overactivity	2 (4.3)
Resolved spontaneously at 10 weeks	1 (2.1)
Repeat operation at 12 weeks	1 (2.1)
Pelvic pain/dyspareunia	0
Postoperative cyclic bleeding	0
Defecatory dysfunction	0

CI = confidence interval; IQR = interquartile range.

^aPercentages sum to more than 100 because some patients underwent more than 1 concurrent surgery.

Table 3

Improvement in anatomic outcome

POP-Q score	Preoperative median (IQR) (N = 43)	POP-Q			
		Postoperative		p value ^a	p value ^c
		Week 6	Month 6		
		Median (IQR) (n = 42)	Median (IQR) (n = 40)		Month 12
Aa	0.0 (-1.0 to 1.0)	-3.0 (-3.0 to -2.0)	-2.0 (-3.0 to -2.0)	<.001	-2.0 (-2.0 to -2.0) <.001
Ba	0.0 (-1.0 to 1.0)	-3.0 (-3.0 to -2.0)	-2.0 (-3.0 to -2.0)	<.001	-2.0 (-2.0 to -2.0) <.001
C	-1.0 (-3.0 to 2.0)	-7.0 (-7.0 to -6.0)	-6.0 (-7.0 to -6.0)	<.001	-6.0 (-6.0 to -5.0) <.001
TVL	10.0 (9.0 to 11.0)	10.0 (9.0 to 10.0)	10.0 (9.0 to 10.0)	.43	10.0 (9.0 to 10.0) .65
GH	4.0 (3.0 to 5.0)	3.0 (3.0 to 3.0)	3.0 (3.0 to 3.0)	<.001	3.0 (3.0 to 3.0) <.001
PB	3.0 (3.0 to 4.0)	3.0 (3.0 to 4.0)	3.0 (3.0 to 4.0)	.97	3.0 (3.0 to 4.0) .20
Ap	-2.0 (-3.0 to -2.0)	-3.0 (-3.0 to -2.0)	-2.0 (-3.0 to -2.0)	.009	-2.0 (-3.0 to -2.0) .85
Bp	-2.0 (-3.0 to -1.0)	-3.0 (-3.0 to -2.0)	-2.0 (-3.0 to -2.0)	.003	-2.0 (-3.0 to -2.0) .64
D	-6.0 (-8.0 to -5.0)	-9.0 (-10.0 to -8.0)	-8.0 (-9.5 to -8.0)	<.001	-8.0 (-9.0 to -8.0) <.001

GH = genital hiatus; IQR = interquartile range; PB = perineal body; POP-Q = pelvic organ prolapse quantification scoring system; TVL = total vaginal length.

^aTests whether value at 6 weeks differs from preoperative visit.

^bTests whether value at 6 months differs from preoperative visit.

^cTests whether value at 1 year differs from preoperative visit.