Letter to the Editor

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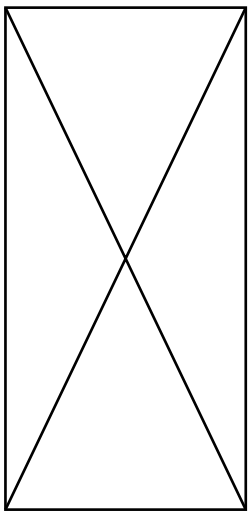
Robotic-Assisted Laparoscopic Sacrocolpopexy: Temporary Phenomenon or a New Consolidated Technique



Jesus Moreno Sierra Elena Ortiz Oshiro Cesar Chavez Roa Angel Silmi Moyano

Urology Department, Hospital Clínico San Carlos, Universidad Complutense, Madrid, Spain

The best approach to the restoration of the vagina remains controversial. Historically, vaginal and abdominal approaches have been used in the treatment of pelvic organ prolapse (POP). The vaginal vault support above the sacrum, using synthetic material is a durable technique and preserves the axis and depth of the vagina. This allows patients to maintain normal sexual activity [1–5]. What still seems uncertain is whether this method will be comparable to other minimally invasive transvaginal approaches, but the absence of published studies causes a lack in the knowledge.

Supporting the existing literature [2–5], we highlight the following considerations so they can be applied in clinical practice: (1) In vaginal vault prolapse, the abdominal colposacropexy (ACSP) provides a lower rate of recurrence and dyspareunia compared with sacrospinous colpopexy. (2) In apical prolapse, ACSP has a success rate ranging from 78 to 100%. This makes it a 'gold standard' technique. (3) Laparoscopic colposacropexy (LCSP) provides a shorter convalescence and less morbidity than ACSP, but at the expense of a longer learning curve.

Before proceeding, we must consider what goals we want to achieve with surgery for pelvic organ prolapse. In this sense, we believe that surgery should improve the symptoms of prolapse, appropriate restoration of normal anatomy, retain the axis and depth of the vagina thus preserving sexual function, and provide a lasting result in time. Unfortunately, these are difficult goals to achieve with one specific technique.

The first comparison series between ACSP and LCSP was published by Paraiso et al. [6] who described the advantages and disadvantages. The advantages of the LCSP include a shorter hospital stay, less postoperative pain and less bleeding. The disadvantages are a longer learning curve and increased operative time. In selected cases, the disadvantages become an investment to obtain good results by minimally invasive surgery.

We were struck by the meta-analysis of 1,000 patients published by Gamatra et al. [7] in *European Urology* in 2009. It describes quite comparable results between ACSP and LCSP, suggesting the need for minimally invasive techniques to undermine the ACSP.

The continuous development and advances in medicine and the application of new technologies have allowed the introduction of robotics as a tool for surgeons. In this sense, the first robotic urological procedure approved by the FDA was radical prostatectomy, and robotic colposacropexy was approved in April 2005. Robotic colposacropexy was used for the first time in the Hospital Clínico San Carlos (Madrid, Spain) in November 2006 [8], only a few months after approval by the FDA.

Laparoscopic colposacropexy is a technique that has replaced open surgery for the treatment of pelvic floor prolapse. Robotic-assisted surgery now represents a new step in the evolution of the technique [8]. Robotic surgery provides advantages such as the use of instruments with free 6 degrees of movement, the use of a 3D image and its magnification (×12), tremor filter, extension movements and a shorter learning curve in surgeons who are already knowledgeable about the anatomy of the pelvic floor [9]. The absence of a touch feeling and higher cost are the two drawbacks that make this technique not yet accepted universally.

The use of robotic technology has made laparoscopic sacrocolpopexy a viable procedure for many surgeons when used with a good knowledge of the anatomy of the pelvic floor. Worldwide, the leading experience in America is by Elliott Di Marco, Danesghari and Geller, that in Europe by Ayav and Moreno Sierra, and Asia is represented by the group of S. Chan.

Di Marco et al. [10] published the first series of robotic-assisted laparoscopic sacrocolpopexy (RLSCP) in 2004. His technique was a combination of laparoscopic and robotic approaches. Laparoscopy was

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Jesús Moreno Sierra
Urology Department, Hospital Clínico San Carlos
Universidad Complutense
ES–28040 Madrid (Spain)
Tel. +34 913 303 765, E-Mail dr_jmoreno@hotmail.com

used to prepare the anterior and posterior vagina and expose the sacral promontory. The robot was then docked and used to suture the mesh and suspend the vagina. This was done in 5 patients with a history of hysterectomy with a mean operating time of 3 h and 42 min. All patients were discharged on the first postoperative day. It is logical that no complications or recurrences were detected in the short-term follow-up described (4 months).

Later, the same group published their data on 30 patients [11]. The mean operative time was 3.1 h (range 2.15–4.75 h). All patients except one were discharged on the first postoperative day. Patients were followed for at least 12 months (mean 24, range 12–36) and therefore had enough time to develop 2 recurrences (1 dome and 1 posterior) and 2 mesh extrusions.

Daneshgari et al. [12] published the results of 12 patients with pelvic organ prolapse who successfully underwent robotic-assisted colposacropexy. The patients tolerated the procedure and blood loss was minimal. Their average hospital stay was 2.4 days and mean follow-up was 3.1 months (3–8 months).

Geller et al. [13] performed a retrospective study comparing the robotic technique with open abdominal sacrocolpopexy. The results of 178 women (73 robotic and 105 open procedures) were reviewed. There was less blood loss and shorter hospitalization in the robotic group; however, operating times were longer (328 ± 55 vs. 225 ± 61 min). In the short-term, the open and robotic procedures had similar results; however, as the authors suggest, it requires long-term monitoring. The initial mean operative time was 197.9 min, but decreased significantly after the first 10 cases. This suggests that there is a learning curve that needs to be overcome. In the 2 first cases (2.5%) complications like bladder opening and ureteral injury occurred. After surgery, 5 (6%) patients developed mesh erosion, 1 (1.2%) patient developed a pelvic abscess, and 1 (1.2%) had a postoperative ileus. Four cases (5%) were converted to laparotomy. Mean follow-up was 4.8 months. The study shows a similar short-term efficacy between open and robotic sacrocolpopexy, with a significant decrease in hospital stay in the robotic group (1.3 ± 0.8 vs. 2.7 ± 1.4 days, $p < 0.001$).

Our series [14] includes 31 cases with pelvic organ prolapse with a mean age of 65.2 years (50–81 years). The operative time was 186 min (150–230 min) and intraoperative bleeding was negligible. We want to emphasize complications such as reintervention for an excessive tension on the mesh, wound infection, and ileus. We did not detect recurrences during our 24.5 months (16–33) of follow-up, and conversion to laparoscopy was only required in 1 patient with morbid obesity.

The gynecology department at the University of Hong Kong [15] conducted a study that included 36 women (20 LCSP and 16 RLSCP). The mean operative time was 205 min with a blood loss of 144 ml. The average hospital stay was 4 days. Two women required early reoperation and 35 were followed for 29 months (SD 19); 3 of them (9%) had a recurrence of the prolapse, but there was no erosion of the mesh. The overall cure rate of 91% (32/35) was high, and 91% (32/35) were satisfied with the results of the operation. The results were similar to other series in terms of blood loss, stay, etc.

The available literature on robotic sacrocolpopexy shows it to be an operation that can be performed safely, with reduced patient morbidity and good short-term results. However, we do insist on the need of a common language and terminology that can allow appropriate benchmarking criteria to be established.

From the authors' perspective, this procedure is a reality and can be incorporated into the armamentarium of surgeons who are familiar with it and who will receive adequate training in robotic surgery.

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