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Platinum Priority – Review – Reconstructive Urology

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A Review of the Current Status of Laparoscopic and Robot-assisted Sacrocolpopexy for Pelvic Organ Prolapse

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Abstract

Context: Abdominal sacrocolpopexy (ASC) represents the superior treatment for apical pelvic organ prolapse (POP) but is associated with increased length of stay, analgesic requirement, and cost compared with transvaginal procedures. Laparoscopic sacrocolpopexy (LSC) and robot-assisted sacrocolpopexy (RSC) may offer shorter postoperative recovery while maintaining equivalent rates of cure.
Objective: This review evaluates the literature on LSC and RSC for clinical outcomes and complications.
Evidence acquisition: A PubMed search of the available literature from 1966 to 2013 on LSC and RSC with a follow-up of at least 12 mo was performed. A total of 256 articles were screened, 69 articles selected, and outcomes from 26 presented. A review, not meta-analysis, was conducted due to the quality of the articles.
Evidence synthesis: LSC has become a mature technique with results from 11 patient series encompassing 1221 patients with a mean follow-up of 26 mo. Mean operative time was 124 min (range: 55–185) with a 3% (range: 0–11%) conversion rate. Objective cure was achieved in 91% of patients, with similar satisfaction rates (92%). Six patient series encompassing 363 patients treated with RSC with a mean follow-up of 28 mo have been reported. Mean operative time was 202 min (range: 161–288) with a 1% (range: 0–4%) conversion rate. Objective cure rate was 94%, with a 95% subjective success rate. Overall, early outcomes and complication rates for both LSC and RSC appeared comparable with open ASC.
Conclusions: LSC and RSC provide excellent short- to medium-term reconstructive outcomes for patients with POP. RSC is more expensive than LSC. Further studies are required to better understand the clinical performance of RSC versus LSC and confirm long-term efficacy.
Patient summary: Laparoscopic and robot-assisted sacrocolpopexy represent attractive minimally invasive alternatives to abdominal sacrocolpopexy. They may offer reduced patient morbidity but are associated with higher costs.

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1. Introduction

Abdominal sacrocolpopexy (ASC) represents the most effective treatment for apical vaginal prolapse. Although modifications of the technique have occurred over time, the procedure continues to be associated with increased length of stay (LOS), analgesic requirements, and costs compared with transvaginal procedures [1]. A Cochrane review comparing different surgical techniques to treat pelvic organ prolapse (POP) concluded that ASC led to a lower rate of recurrent vault prolapse (relative risk [RR]: 0.23; 95% confidence interval [CI], 0.07–0.77) and postoperative dyspareunia (RR: 0.39; 95% CI, 0.18–0.86) compared with sacrospinous ligament fixation, albeit with a longer operative time, recovery period, and greater cost [2].

Laparoscopic sacrocolpopexy (LSC) avoids the need for a large abdominal incision and minimizes bowel manipulation, potentially leading to less postoperative pain and shorter recovery time. However, the decreased degrees of freedom, two-dimensional vision, and learning curve associated with the laparoscopic approach have increased operative times and limited its widespread use among surgeons [3].

More recently, the use of the da Vinci Surgical System (Intuitive Surgical Inc., Sunnyvale, CA, USA) has modified and potentially simplified LSC, adding increased magnification, three-dimensional vision, physiologic tremor filtering, and 7 degrees of freedom. These factors are believed to provide the surgeon with an enhanced ergonomic environment, simplifying complex laparoscopic tasks such as suturing and knot tying. Yet LSC, as opposed to robot-assisted sacrocolpopexy (RSC), confers tactile feedback that may be of interest, particularly with dissection or suturing.

A review of the literature was undertaken, and specific aspects of LSC and RSC were detailed, in particular technical variations, operative parameters, costs, and clinical outcomes.

2. Evidence acquisition

A PubMed search was performed using the search terms *laparoscopic sacrocolpopexy*, *laparoscopic sacral colpopexy*, *robot(ic)(-assisted) sacral colpopexy*, *robot(ic)(-assisted) sacrocolpopexy*, *laparoscopic hysteropexy*, and *robot(ic)(-assisted) hysteropexy* for English-language articles from 1966 to November 1, 2013. A total of 168, 72, 15, 88, 31, and 4 articles were initially identified, respectively (Fig. 1). The reference lists of these articles were also queried to identify additional relevant articles. Only those patient series with a duration of follow-up of at least 12 mo were included in the analysis. Articles directly comparing LSC and/or RSC to ASC were also culled. Due to the relatively small number of such studies, the duration of follow-up requirement was not applied to series comparing one technique with another.

3. Evidence synthesis

A number of methodological difficulties arise when considering the outcomes of the different patient series regarding LSC and RSC. Many of the series, particularly for RSC, are retrospective and relatively immature, with short durations of follow-up. This renders analysis and comparison of safety and efficacy outcomes problematic, particularly when long-term outcomes of prolapse repair are known to deteriorate over time [4]. Recurrence rates by compartment are not systematically reported; nor are transfusion requirements. The definitions of mesh erosion and exposure were not consistently reported across the studies. Objective and subjective success were not defined consistently across the studies. For example, a number of studies considered success as Pelvic Organ Prolapse-Quantification (POP-Q) stage 0 [5,6] versus POP-Q stage ≤1 [7–10] versus Baden-Walker stage ≤1 [11] or ≤2 [12].

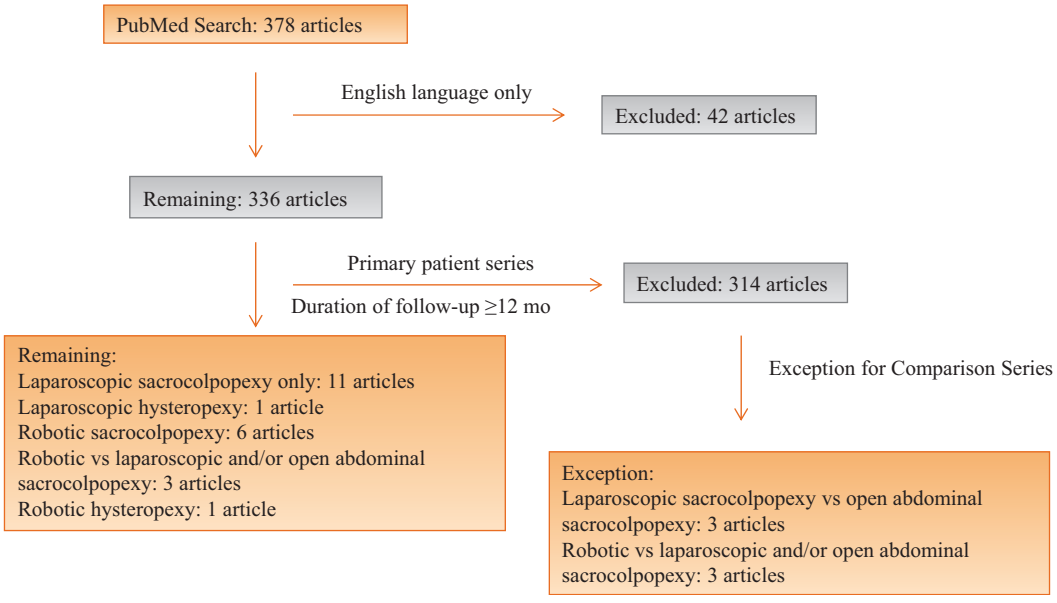

Fig. 1 – Flowchart of studies included and excluded in the review.