Robotic-assisted Sacrocolpopexy for Pelvic Organ Prolapse

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KEYWORDS

• Laparoscopy • Robotics • Outcomes • Pelvic organ prolapse • Incontinence

KEY POINTS

- The demand for surgical correction of pelvic organ prolapse is expected to grow as the aging population remains active and focused on quality of life.
- Definitive correction of pelvic organ prolapse can be accomplished through both vaginal and abdominal approaches.
- The preponderance of data cite the superiority of abdominal sacrocolpopexy in the durable correction of apical prolapse.
- The application of robotics and the pervasive concern regarding the transvaginal placement of synthetic mesh has revitalized and emboldened sacrocolpopexy.

INTRODUCTION

Pelvic organ prolapse (POP) is expected to affect nearly 50% of all women during their lifetimes.[1] POP can be severely lifestyle limiting and is a particularly germane concern given the aging population, the frequency with which prolapse affects this subgroup, and their general emphasis on maintaining an active and robust quality of life.[2] Definitive correction of POP is surgical, and is chiefly accomplished through vaginal-based or abdominal-based reconstruction. The optimal choice of treatment is predicated not only on patient-derived factors including the degree and nature of pelvic relaxation, comorbidities, and the integrity of the individual patient's tissue but also on the experience and expertise of the operating surgeon, and is taken in the context of evidence-based outcomes.

Among those patients with severe apical relaxation and/or multicompartment prolapse with an apical component, the superiority of abdominal sacral colpopexy (ASC) is well established.[3] The principal tenet of surgical correction for pelvic prolapse is the durable restoration of the vaginal apex in a fashion that provides improved urinary, sexual, and bowel function.[4] Sufficient level I evidence exists to suggest that open ASC offers consistently higher objective success rates and lower rates of dyspareunia compared with sacrospinous-based vaginal repair.[3,5] However, these favorable results have traditionally come at the expense of increased short-term morbidity and prolonged convalescence.[3]

The application of laparoscopy and robotics during ASC has dramatically improved the morbidity associated with the procedure while

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continuing to offer durable and satisfactory outcomes.[6] Coupled with the current litigious climate surrounding mesh-augmented vaginal repair, laparoscopic and, more recently, robotic ASC has become the preferred corrective procedure for POP among many patients and providers.[7] This article focuses on the indications and patient evaluation for robotic ASC, describes its surgical nuances through intraoperative photographs, discusses the economic ramifications of robotic ASC, and addresses the controversy surrounding the application of synthetic mesh.

PATIENT EVALUATION AND PREPARATION

Candidates for robotic ASC include women with symptomatic stage II or greater POP including apical relaxation, those with recurrent prolapse following primary vaginal repair, and/or those with POP and the need for concomitant abdominal surgery. Women with an in situ uterus should be evaluated for postmenopausal or abnormal uterine bleeding, undergo transvaginal ultrasonography as indicated to rule out a suspicious mass, and should have a clearly documented Pap smear history. Based on the aforementioned evaluation, appropriate candidates may be considered for sacrohysteropexy or may elect to undergo concomitant supracervical hysterectomy at the time of sacrocolpopexy (our preferred practice). Prior abdominal surgery is common among this patient population but is not a contraindication. Although patients should be counseled on the risk of a hostile abdomen and the potential need for extensive adhesiolysis or enterotomy, we have encountered few women for whom a minimally invasive approach to ASC was untenable.

Surgical candidates should undergo a thorough but directed history and physical examination. Utmost effort should be made to reconcile the patient's symptoms with their examination findings. The most common presenting symptoms include vaginal pressure or heaviness, the presence of a vaginal bulge, as well as urinary, sexual, and bowel disorders. Women with severe prolapse may report the need for manual reduction and/or the ability to palpate or directly visualize the vaginal apex or uterus. Urinary incontinence is frequently encountered and is typically mixed in nature. Occult stress urinary incontinence should be considered and accounted for. A weeklong voiding log and postvoid residual measurement are recommended, and quality-of-life questionnaires are useful to establish a baseline for later reference. Multichannel urodynamics may be judiciously used, especially among women with high-grade prolapse. In our experience, many women with severe POP have an element of detrusor underactivity owing to prolonged relaxation. Patients should be counseled before surgery on the possibility of persistent and/or de novo postoperative voiding dysfunction or hesitancy, especially in the setting of concomitant midurethral sling. It is critically important to assess the patient's desire for sexual activity and whether the existing prolapse has been a factor in that decision. Dyspareunia should be discussed as a rare but possible adverse event. In addition, many women with multicompartment POP report chronic constipation, and particular attention must be paid to bowel function after surgery to avoid repetitive stress on the integrity of the reconstruction.

Physical examination should be systematic and thorough. A bimanual examination should be performed to assess for the presence and size of a uterus (if present) and the presence of adnexal disorder. We prefer to use a bivalve speculum to assess the vaginal apex and/or cervix. The speculum is then disarticulated to evaluate the anterior and posterior compartments separately. The presence and grade of prolapse in the anterior, apical, and posterior compartments should be quantified using the pelvic organ prolapse quantification (POP-Q) system.[8] Estrogen status and the integrity of the levator musculature and perineal body are likewise assessed.

A cough stress test and/or cotton swab test may be performed in the office to address potential urethral hypermobility and stress urinary incontinence. Likewise, in-office cystoscopy can be selectively performed at the time of vaginal examination to concomitantly assess the degree of POP, the anatomy of the bladder and urethra, and to perform the cough stress test. Although published studies suggest that women without existing complaints of stress incontinence may benefit from midurethral sling owing to the presence of occult leakage, our practice is to individualize our approach to sling placement including intraoperative Credé maneuver.[9]

Informed consent for robotic ASC should include a thorough explanation of the surgical steps of the procedure and well as its surgical risks including, but not limited to, injury to the bladder or ureters, mesh-related complications including erosion or extrusion (approximately 5%), inadvertent vaginal entry, vaginal foreshortening, dyspareunia, postoperative voiding dysfunction including retention, bowel injury, and other imponderables. Selective medical clearance should be performed. A type and screen is not needed. Venous thromboembolism prophylaxis is used with either sequential compression devices or subcutaneous heparin.[10]