Robotic/Laparoscopic Prolapse Repair and the Role of Hysteropexy: A Urology Perspective

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KEYWORDS

• Pelvic organ prolapse • Uterine prolapse • Robotics • Surgical procedures • Operative

KEY POINTS

- The abdominal sacrocolpopexy offers high long term success for the management of apical prolapse and can be performed using an open, laparoscopic, or robotic approach.
- The laparoscopic and robotic approaches offer decreased blood loss and decreased length of hospital stay with similar complication rates compared to the open procedure.
- Hysteropexy may be used to treat uterine prolapse in select patients with decreased morbidity compared to pelvic organ prolapse repair performed with concomitant hysterectomy.

INTRODUCTION

Approximately 11% of women will undergo a surgical procedure for the treatment of pelvic organ prolapse (POP) or urinary incontinence by age 80 years.[1] There are varying reports of the incidence of vaginal vault prolapse following hysterectomy, with Marchionni and colleagues[2] reporting the incidence of vaginal vault prolapse at 4.4% following hysterectomy based on examination. When hysterectomy was performed for prolapse, the subsequent incidence of vaginal vault prolapse was 11.6%.[2] It is estimated that 1 in 9 women will undergo a hysterectomy in their lifetime.[3] Following hysterectomy, the median time to vault prolapse is reported at around 15.8 years (range 0.4–48.4 years).[4] There are multiple surgical approaches available to manage apical prolapse, with many studies evaluating for the repair that offers the most effective, safe, and durable treatment, as the reoperation rate for POP may be as high as 30%.[1] Goals of surgical repair for POP include relief of symptoms, restoration of support to pelvic structures, prevention of new defects in pelvic support, prevention of new symptoms, and improvement or maintenance of urinary, bowel, and sexual function.[5] Surgical treatment options include both vaginal and abdominal approaches along with the option of laparoscopic and robotic procedures. Abdominal sacrocolpopexy (ASC) has been found in multiple studies to have high long-term success rates for repair of severe vault prolapse,[6] and the focus of this article is describing laparoscopic sacrocolpopexy (LSC) and robotic sacrocolpopexy (RSC). The role of hysteropexy for the treatment of POP is also discussed.

RELEVANT ANATOMY AND EVALUATION

POP is defined as the descent of one or more of the pelvic organs. It is estimated that 50% of parous women lose pelvic floor support.[1,7] Swift showed in an observational study that 50% of women presenting for an annual pelvic examination had stage II to III POP. The study consisted of 497 women with a mean age of 44 years, and the incidence increased to 74% with age older

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than 70 years.[8] Parity, increased age, constipation, and obesity are some of the reported risk factors for developing POP,[3,5] with obesity being the primary risk factor for developing post-hysterectomy vaginal vault prolapse in one study.[2] In this report, the incidence of obesity was 45% among those who developed prolapse following hysterectomy, compared with 10.5% in those who did not develop vaginal vault prolapse.[2]

There are multiple structures providing support for the female pelvic organs including bone, muscle, and endopelvic fascia. The pelvic floor consists of the pelvic diaphragm, made up of the levator ani group, coccygeus muscles, and surrounding fascia.[9,10] From these structures, a shelf of muscle is formed that attaches to the pelvic side wall by the arcus tendineus fasciae pelvis that runs between the pubic symphysis and the ischial spine. The upper vagina rests on this shelf, creating its natural axis, which is horizontal. Vaginal prolapse may occur when this axis is altered.[5,9] DeLancey[11] described 3 levels of vaginal support within the pelvis: level I or apical support, level II or lateral support, and level III or distal support. Suspension of the vaginal apex is the result of level I support, and apical or vaginal vault prolapse is the consequence when this level of support is lost.[11] There are ligamentous supports to the female pelvic organs also, with the upper vagina and the uterus having support from the cardinal and uterosacral ligaments.[12] The cardinal ligaments extend between the cervix and pelvic side wall while the uterosacral ligaments run from the sacrum to the cervix and vaginal fornices, and these structures can be damaged by a hysterectomy.[5,10,12] **Fig. 1** illustrates vaginal vault prolapse.

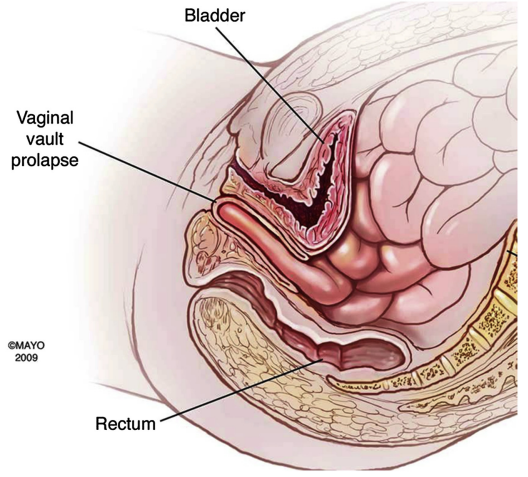

Fig. 1. Vaginal vault prolapse. (*Courtesy of* Mayo Clinic, Rochester, Minnesota.)

Symptoms of POP include pelvic bulge, pelvic pressure, pelvic pain, back pain, voiding complaints, bowel symptoms, dyspareunia, or difficulty walking or sitting.[3,7,13] The most common presenting symptom is pelvic bulge, which is reportedly present in 94% to 100% of patients.[4,14] Obtaining a thorough history and proper counseling of the patient can help reduce postoperative patient dissatisfaction, especially in cases where patients falsely attribute symptoms to their prolapse that, in actuality, are caused by unrelated medical conditions. In such cases patients may have false expectations, compromising the success of the procedure performed. A thorough pelvic examination is vital in the evaluation for POP, and one should distinguish between anterior, apical, and posterior prolapse, which is important in determining the appropriate treatment. Care should also be taken to evaluate for voiding dysfunction such as urinary incontinence, as Mayne and Assassa[15] reported that up to 45% of women older than 40 years have symptoms of voiding dysfunction, and up to 26% of these women will have clinically significant symptoms. Identifying the presence of voiding dysfunction is important, as concomitant procedures may need to be considered at the time of prolapse repair and these coexisting conditions may affect the patient's expectations. Having the patient stand, if they are physically able, during the physical examination is preferred, and the patient should be asked to strain during the examination to assess the maximum degree of prolapse along with the function of the pelvic muscles.[1] If the patient has any evidence of anterior prolapse, the examiner should reduce the prolapse and instruct the patient to Valsalva to evaluate for the presence of urinary incontinence, as there are reports of stress urinary incontinence (SUI) being present concomitantly in up to 38% and urge incontinence in 26% of those with POP.[4,16,17] One should also consider checking a postvoid residual, as there is a risk of preoperative urinary retention, particularly in older women. It is reported that 89% of these women will have resolution of their urinary retention following treatment of their POP.[18] The staging used to grade POP is:

Stage 0: No prolapse present
Stage I: Distal portion of prolapse greater than 1 cm above hymen
Stage II: Distal portion of prolapse within 1 cm of hymen, either above or below
Stage III: Distal portion of prolapse greater than 1 cm below hymen but not complete eversion
Stage IV: Complete vaginal eversion.