Evaluation and Management of Pelvic Organ Prolapse

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Abstract

Pelvic organ prolapse (POP) is a common clinical entity that can have a significant impact on a patient's quality of life secondary to symptoms of pelvic pressure, vaginal bulge, urinary and bowel dysfunction, or sexual dysfunction. It is highly prevalent, with roughly 13% of women undergoing surgery for prolapse in their lifetime. Vaginal prolapse is diagnosed by history and physical examination. Additional testing may be indicated for evaluation of bowel and bladder symptoms. On examination, prolapse can represent descent of the anterior vaginal wall, vaginal apex (cervix/uterus or vaginal cuff scar after hysterectomy), or posterior vaginal wall, although it represents a combination of these in many cases. Treatment options for POP include observation, pelvic floor physical therapy, pessary use, and surgery. In patients with asymptomatic POP, observation is typically used. In those not desiring or medically unfit for surgery, pessaries are an effective nonsurgical option. When it is indicated, surgery can be performed through transvaginal, laparoscopic/robotic, or open approaches, using either the patient's own tissue or mesh augmentation. Deciding between these is based on the compartments involved, extent of prolapse, medical and surgical comorbidities, differences in...
Pelvic organ prolapse (POP) is a common clinical entity that can have a significant impact on a patient's quality of life. Pelvic organ prolapse is defined by the International Urogynecologic Association and International Continence Society joint report on the terminology as “the descent of one or more of the anterior vaginal wall, posterior vaginal wall, or apex of the vagina (uterus/cervix or vaginal cuff scar after hysterectomy).” Prolapse is a highly prevalent condition, although it may not always be symptomatic. For instance, in a study of 477 asymptomatic women undergoing annual examination, 51% had prolapse to the level of the hymenal remnant or beyond. For those with symptomatic prolapse, which is thought to affect 3% to 6% of community-dwelling women, nonsurgical and surgical treatments are available. In the United States, the lifetime risk of a woman’s undergoing surgery for prolapse is thought to be as high as 13%. With the aging population, it is anticipated that by 2050, the prevalence of women experiencing symptomatic POP will increase by approximately 50%. Despite its’ being a prevalent health issue, some patients may not volunteer to talk about it unless asked, leading to undertreatment or delayed access to care. It is important that primary providers be aware of this common clinical condition.

ETIOLOGY AND RISK FACTORS

The fibromuscular connective tissue in the vaginal wall, pelvic ligaments, and levator ani muscles play a significant role in supporting the pelvic organs. Tears in this fibromuscular connective tissue, weakness of the ligaments, and loss of volume of the levator ani muscle predispose to prolapse. Many risk factors are associated with POP; however, the presence of these risk factors does not necessarily predetermine that an individual will develop bothersome prolapse. Reported risk factors include vaginal deliveries, increasing parity, forceps delivery, advancing age, postmenopausal status, connective tissue disorders, obesity, and chronic constipation. Addressing modifiable risk factors, such as obesity and chronic constipation, may reduce the risk for development or worsening severity of prolapse over time.

DIAGNOSIS AND EVALUATION OF PROLAPSE

Pelvic organ prolapse is a clinical diagnosis that is suggested by a patient’s symptoms and confirmed on physical examination.

History

A detailed history should be obtained. This includes the duration of prolapse-related symptoms, patient-reported degree of a vaginal bulge, aggravating factors, amount of symptom bother, assessment of bladder and bowel function, and screening for concomitant sexual dysfunction. Pelvic organ prolapse is often asymptomatic and noted incidentally on physical examination. Women are typically not symptomatic until the prolapse reaches roughly the level of the hymenal remnant. Common vaginal symptoms of prolapse include pelvic pressure or heaviness, a sense of something coming out of the vagina, and seeing or feeling tissue protruding vaginally. Some patients will describe that these symptoms worsen toward the end of the day and with increasing activity and that symptoms improve when they lie down or with rest. It is important to document the degree of symptom bother associated with the POP, whether it is interfering with physical activity, voiding, or defecation or affecting sexual function.

Additional symptoms can vary by whether the prolapse involves the anterior, apical, or posterior vaginal compartments. Anterior vaginal wall prolapse, previously known as cystocele, results from prolapse of the bladder into the vaginal canal.
Advanced-stage anterior compartment prolapse may sometimes lead to changes in the urinary stream (such as hesitancy or intermittency), position-dependent voiding, sensation of incomplete bladder emptying, or elevated postvoid residual. Patients may report pressing on the prolapse vaginally to aid with bladder emptying; this is known as splinting.\textsuperscript{1}

Posterior compartment prolapse, previously known as rectocele, commonly results from prolapse of the rectum into the vaginal canal, although an enterocele may also be present.\textsuperscript{1} Chronic constipation can predispose to POP, but POP is generally not the cause of constipation.\textsuperscript{6} Potential prolapse-related anorectal symptoms include a sensation of incomplete bowel evacuation due to accumulation of stool into the prolapse, a sensation of anorectal blockage, and the need for vaginal or perineal splinting to help complete evacuation.

Sexual dysfunction (eg, dyspareunia, vaginal dryness, obstructed intercourse) should also be assessed. In addition, a complete medical, obstetric, and surgical history should be obtained, including assessment of potential risk factors for prolapse.\textsuperscript{7} Of note, some of these bladder, bowel, and sexual symptoms may not be related to prolapse, and attention to other potential diagnoses is pertinent. Conditions such as recurrent urinary tract infections, incomplete bladder emptying, urinary incontinence, overactive bladder, chronic constipation, and pelvic floor tension myalgia can coexist with POP. It is important to set appropriate expectations with patients as these conditions may or may not improve with prolapse treatment and may need separate management.

Similarly, 1 factor having an impact on care seeking for prolapse is the misconception that POP is a normal part of aging and does not warrant intervention despite bothersome symptoms.\textsuperscript{8} A low basic knowledge of POP may be encountered among patients presenting to primary care, making it important for providers to ask about prolapse symptoms and to educate patients on the condition to facilitate care when it is needed.\textsuperscript{8}

**Physical Examination**

Physical examination for patients with suspected POP includes an abdominal and pelvic examination.\textsuperscript{7} Abdominal examination allows evaluation for abdominal masses, hernias, and previous abdominal surgical scars. This is followed by a pelvic examination, which is typically performed in the dorsal lithotomy position.

The pelvic examination proceeds in a stepwise manner. Whereas there is no universal technique for the examination, it includes an assessment of the vulva, vaginal epithelium, pelvic floor muscles, POP, urinary incontinence, and other pelvic organs. The pelvic examination typically begins with evaluation of the vulva to assess for skin irritation, ulceration, or changes in architecture (eg, signs of lichen sclerosus). With separation of the labia and the patient performing a Valsalva maneuver or cough, one can assess for stress urinary incontinence and can demonstrate obvious prolapse. After this, an evaluation of the pelvic floor muscles for tenderness or weakness is carried out. Pelvic floor tension myalgia can be assessed with a single-digit examination palpating for tenderness along the levator ani and obturator muscles.\textsuperscript{9} Pelvic floor muscle recruitment strength is evaluated by assessing muscle response when the patient attempts to contract the pelvic floor.

A speculum examination is then performed to assess the extent of prolapse. Prolapse can be seen in an isolated compartment (anterior, apical, or posterior), although more commonly it involves multiple compartments (Figure 1). During inspection, attention should be paid to assessing all 3 compartments. For instance, in patients with significant anterior vaginal wall prolapse, there is typically a component of apical prolapse as well.\textsuperscript{10} The vaginal epithelium is assessed for evidence of hypoestrogenization as well as for any areas of keratinization or ulceration from chronic advanced prolapse.
The speculum examination begins with an assessment of the vaginal apex (this represents the cervix if it is present or the vaginal cuff if the patient had a hysterectomy). Once the apex has been visualized, the speculum is gradually partially withdrawn while the patient performs a Valsalva maneuver and the extent of prolapse is evaluated. With a bivalve speculum, a single blade can be used to assess the anterior and posterior vaginal walls separately during a Valsalva maneuver. If apical prolapse is identified, having the patient perform a Valsalva maneuver or cough with the prolapse reduced with a cotton swab allows an assessment of occult stress urinary incontinence.

The extent of prolapse is documented in a standardized fashion to facilitate communication between providers and for consistency in reporting of the prolapse over time or after an intervention. Two commonly used methods are Pelvic Organ Prolapse Quantification (POP-Q) staging and the Baden-Walker grading system. In the POP-Q system, the hymenal remnant is used as the reference point, and multiple areas are measured relative to it. In brief, stage 2 (of 4) prolapse represents prolapse within 1 cm of the hymen (proximal or distal), stage 1 being above this plane and stage 3 below it (yet not complete vaginal eversion, stage 4). By comparison, the Baden-Walker system also labels prolapse at the hymenal plane as grade 2 but does not use objective measurements to determine the grades. Rather, it relies on the most distal aspect of the prolapse and uses halfway to the hymen (grade 1) or halfway past the hymen (grade 3).

Laboratory Tests and Additional Testing
Beyond a proper history and physical examination, no additional testing is routinely required. However, additional testing can be considered if it is clinically indicated. In patients in whom the leading edge of the prolapse is beyond the hymen and in those reporting incomplete bladder emptying or voiding dysfunction, a postvoid residual or other urodynamic studies may be helpful. During urodynamic studies, if surgical intervention is planned, the prolapse is commonly reduced to assess for occult stress urinary incontinence. In patients with gross or microscopic hematuria, evaluation should proceed according to risk-stratified guidelines and may include cystoscopy. Similarly, cystoscopy can be useful if there is suspicion for intravesical mesh following prior pelvic mesh surgery. Dynamic magnetic resonance defecography or fluoroscopic defecography or anal manometry may be considered in women with bowel symptoms to assess for coexisting rectal intussusception/prolapse or pelvic floor dysfunction. One area of increasing research is the use of pelvic floor ultrasound, in select patients with pelvic floor dysfunction and recurrent POP, to assess for levator muscle avulsion and levator hiatus ballooning.

TREATMENT OF POP
Prolapse is a benign condition, and therefore treatment selection is based on the symptoms, degree of bother, and shared decision-making with the patient. Overall, treatment options for women with POP include observation and conservative management, pessary use, and surgery.

Observation and Conservative Measures
In women with asymptomatic POP noted incidentally on pelvic examination or not bothered by their prolapse, observation is commonly recommended. These patients' symptoms and degree of prolapse can be
observed during their annual visits. The progression rate of POP is understudied, but studies typically report that prolapse may remain stable or gradually worsen. As some patients are concerned about rapid progression of the prolapse, this is an important discussion point. In a study of 111 women choosing expectant management (all with prolapse at least to the hymenal remnant, stage 2), 66% remained on observation at 24 months, whereas 34% proceeded to pessary use or surgery. Asymptomatic or mildly symptomatic POP can be safely observed. After a vaginal or cesarean delivery, some POP may be present on examination, but this commonly improves within the first year of delivery.

Additional conservative measures, such as pelvic floor physical therapy, may help with some of the pelvic symptoms of prolapse and, to a lesser degree, have an impact on the anatomic extent of a vaginal bulge. In those with pelvic floor myofascial pain on examination, especially those with limited objective prolapse but experiencing pelvic pressure and heaviness, down-regulating pelvic floor physical therapy should be considered. Treatment of the pelvic floor muscle tenderness may include manual manipulations with trigger point release, biofeedback, and electrogalvanic stimulation therapies.

Women with constipation and defecatory dysfunction should be counseled about potential lifestyle modifications that may affect bowel function. This includes the potential use of fiber or an osmotic laxative. Those with persistent symptoms or concerning symptoms, such as hematochezia, should be referred for gastroenterology evaluation.

**Pessary Use**

A pessary is an intravaginal device placed in the vaginal canal to help support the prolapsed organs to return them to a more normal anatomic position. Pessaries are an effective nonsurgical management option for POP, and among those electing for this treatment, up to 92% can be successfully fitted with a pessary. A pessary is indicated in women with symptomatic prolapse who do not desire surgical management or are not medically fit for such an intervention.

For the initial placement, a pelvic examination is performed to assess vaginal diameter and length, and a pessary of appropriate size and shape is chosen. Ring pessaries are more effective in early-stage prolapse, and Gellhorn pessaries are usually used for more advanced degrees of prolapse. The fit is tested with the patient changing position, simulating physical activities, and voiding. These are done to confirm that the fit is comfortable, the device is not expelled, and the patient is able to void.

When feasible, patients are taught to remove and to reinsert the pessaries themselves. If patients are able to complete this, after a short-term follow-up visit, they are typically observed on a yearly basis for reevaluation or sooner if symptoms dictate. For patients who are unable to perform this (e.g., those with arthritis), more frequent interval visits for removal, cleaning of the pessary, and vaginal examination are needed. Whereas there is no universal timing that is used, studies have reported similar outcomes for 3- and 6-month evaluations for patients managed with continuous pessary wear.

In appropriate candidates, vaginal estrogen therapy may be helpful in preventing pessary-related erosions in women with atrophic vaginal tissues.

Complications from pessaries are typically minor, such as vaginal bleeding, erosion, or discharge, and can usually be treated with short-term pessary removal and topical estrogen. Persistent symptoms from these issues may lead to pessary discontinuation and the patient’s opting for surgical intervention. Neglected pessaries can lead to more serious complications, such as rectovaginal or vesicovaginal fistula formation. Secondary to this, dementia and other medical or social conditions that can result in pessary neglect should be considered in offering treatment with a pessary.

**Surgical Management**

Surgery is indicated in women with symptomatic POP who decline or have not had success with nonsurgical management.
Operations can be divided into reconstructive procedures (which maintain the vaginal canal) and obliterative procedures (which close the vaginal canal). Reconstructive procedures can be performed through vaginal, laparoscopic/robot-assisted, and open abdominal approaches, each with a unique risk and benefit profile. Ultimately, deciding between these is based on the compartments involved, extent of prolapse, medical and surgical comorbidities, differences in durability and risk between operations, and shared decision-making with the patient.

Vaginal Approach (Native-Tissue Transvaginal Surgery)

Reconstructive Surgery (Maintains the Vaginal Canal). The transvaginal approach to prolapse surgery can be used to address anterior, apical, or posterior prolapse of any stage (Figure 2A). The specific surgery is tailored to treat the appropriate compartments that are prolapsing.

If a patient has apical prolapse, fixing this is the cornerstone of the transvaginal repair and can be accomplished by supporting the vaginal apex to either the uterosacral ligament or the sacrospinous ligament. A randomized trial found that these procedures have comparable anatomic, functional, and adverse outcomes with 5 years of follow-up. For those with anterior prolapse, an anterior colporrhaphy can be performed. Here, the anterior vaginal wall epithelium is separated from the under connective tissue and reapproximated with absorbable sutures. If posterior prolapse is present, a posterior colpoperineorrhaphy is performed. This procedure proceeds in a similar fashion to an anterior repair in that the posterior wall vaginal epithelium is separated from the under connective tissue and reapproximated in the midline with absorbable sutures. Reconstruction of the perineal body is also performed at the time of the posterior repair.

In general, native-tissue vaginal prolapse operations are well tolerated, with good long-term efficacy and low risk of major complications. Our institutional experience with this approach found a 94% re-treatment—free survival at 5 years and 81% at 10 years. Similar re-treatment rates (6% with a mean 6.5-year follow-up) have been identified in a retrospective population-based study.

Obliterative Surgery (Colpocleisis). For patients interested in transvaginal surgery for advanced prolapse who do not desire to maintain the vaginal canal, an obliterative operation can be performed (ie, colpocleisis). These procedures are also performed without the use of synthetic graft materials. The procedure involves removing the vaginal epithelium and reapproximating the anterior and posterior vaginal walls with suture. Secondary to this, patients must be certain they will not desire vaginal intercourse in the future as the surgery should be considered irreversible. The benefit of this type of surgery is that is has a high success rate (91% to 100%), with fewer complications, and it is less invasive than other surgical options. These features make it a suitable choice in patients who are at higher surgical risk because of medical comorbidities and do not want to preserve the vaginal canal. Notably, this procedure can be performed in patients with a uterus in situ (ie, LeFort colpocleisis) or those with a prior hysterectomy (ie, total colpocleisis).

Laparoscopic/Robotic or Abdominal Approach (Sacrolcopexy). Sacrolcopexy is a transabdominal reconstructive operation that involves attaching a Y-shaped synthetic polypropylene mesh to the anterior, apical, and posterior aspect of the vagina and securing the tail of the mesh to the anterior longitudinal ligament overlying the sacrum (Figure 2B). In current practice, this is most commonly performed through a minimally invasive (laparoscopic or robotic) approach, although an open approach may also be used. Compared with a native-tissue transvaginal approach, sacrolcopexy offers an advantage in that it has lower prolapse recurrence rates than a native-tissue vaginal repair, but it adds risk with the use of synthetic mesh material. For instance, after sacrolcopexy, there is a risk of a vaginal mesh exposure, whereby the mesh protrudes.
through the vaginal epithelium, which can lead to vaginal spotting, discomfort, or dyspareunia.\textsuperscript{31}

Uterus-Sparing Surgery (Hysteropexy). Whereas hysterectomy was traditionally performed when uterine prolapse was encountered, uterine preservation (hysteropexy), although still a small proportion of procedures, has been increasingly studied and performed as a potential alternative approach. With both transvaginal procedures and sacrocolpopexy, uterine preservation is feasible in well-selected patients, although data on long-term success rates are limited.\textsuperscript{32} Some patients may prefer uterine preservation for a variety of reasons (eg, preservation of fertility, belief that hysterectomy will have an impact on sexual function or sense of identity, or concern about the risks of hysterectomy, among others).\textsuperscript{7} The decision on whether to perform a concomitant hysterectomy is multifaceted and made in discussion with the individual patient, taking into consideration medical comorbidities, pelvic floor symptoms, and preferences of the patient.

An Update on the Use of Mesh for POP. The use of polypropylene mesh for the treatment of pelvic floor disorders (eg, POP and urinary incontinence) has been subject to increasing scrutiny. Most recently, on April 16, 2019, the Food and Drug Administration ordered manufacturers of mesh for transvaginal repair of anterior compartment prolapse to stop selling their products secondary to the increased number of mesh-related complications reported.\textsuperscript{33} As such, this type of procedure was not reviewed here. It is important to understand that this recommendation was directed toward vaginal mesh kits, not mesh used for sacrocolpopexy or midurethral slings. The use of mesh for these procedures does still have some added risk in terms of mesh-related complications, but these are not as common as what was encountered with transvaginal prolapse mesh.\textsuperscript{7,31} The Food and Drug Administration statement advised that no intervention is needed for those who have already received transvaginal mesh and are not experiencing symptoms. These patients should continue routine care and should report any persistent vaginal bleeding, vaginal discharge, pelvic pain, or dyspareunia to their health care providers.\textsuperscript{33}

CONCLUSION
Pelvic organ prolapse is a common condition affecting women that may be encountered by primary care providers. It is increasingly common with advancing age and can have a significant adverse impact on one’s quality of life. Typically, patients with asymptomatic or mildly symptomatic POP can be safely observed with annual follow-up, although some will progress to active treatment. For those with bothersome symptoms, nonsurgical (pessary) and surgical options are available that are effective at improving
symptoms. Ultimately, the appropriate POP management strategy is based on the patient’s presentation and symptoms, with choice of treatment made in shared decision-making with the individual patient.

**Abbreviations and Acronyms:** POP, pelvic organ prolapse

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