# STATION 1: UROGYNECOLOGY

## Pelvic organ prolapse

### BACKGROUND

**Definition**

- Descent of one or more aspects of the vagina and uterus
- It is a problem if it is symptomatic. Most women feel symptoms of POP when the leading edge reaches 0.5 cm distal to the hymenal ring.

**Types**

- Anterior vaginal wall
- Posterior vaginal wall
- Uterine
- Apical (vaginal vault or cuff scar after hysterectomy)

**Risk factors**

1. Parity
2. Vaginal delivery
3. Age
4. Obesity (modifiable)
5. Connective tissue disorders
6. Menopausal status
7. Chronic constipation (modifiable).
8. Previous surgery for POP

- Reoperation rate is 6–30%; most estimates consistent with the lower end of this range.
- Pelvic organ prolapse surgery that includes suspension of the vaginal apex is associated with a decreased reoperation rate.
- Risk factors for recurrent prolapse: (1) age < 60 years for patients. (2) obesity. (3) Preoperative stage III or stage IV prolapse.

Hysterectomy for non-POP conditions does not seem to be a risk factor.

## EVALUATION

### History

- **History of Present Illness :**
  - The nature of vaginal bulge symptoms: and the degree of bother.
  - Assessment of urinary tract dysfunction: incontinence, incomplete emptying
    Recognize the relation to POP:
    1. symptoms are aggravated after e.g. prolonged standing),
    2. Need for splinting to initiate or complete voiding.
  - Assessment of defecatory dysfunction: if there is a history of straining with bowel movements, laxative use, fecal incontinence, and incomplete rectal emptying.
    Recognize the relation to POP: The need for splinting
  - Assessment of sexual function: dyspareunia, coital incontinence (of urine or stool), and sexual dysfunction related to the prolapse.
- **Gynecologic and obstetric history.**
- **Menstrual History, Sexual History.**

Treatment is indicated if prolapse is causing:

1. Bothersome bulge and pressure symptoms
2. Sexual dysfunction
3. Lower urinary tract dysfunction
4. Defecatory dysfunction

### Examination

- **Inspection:**
  - Inspect the external genitalia and vaginal epithelium for vaginal atrophy, skin irritation, or ulceration.
  - Spreading the labia in a supine position can be helpful to assess the maximum descent of the prolapse.
  - If a patient's prolapse symptoms are not confirmed by the extent of prolapse in supine examination, repeating examination in the standing position may reveal the greatest descent of POP.
- **Palpation:** Assessment of pelvic floor muscle tone "contraction and relaxation". The strength of the contraction should be described as "absent," "weak," "normal," or "strong".
- **Bimanual exam:** abdominal/pelvic exam to rule out pelvic masses.
- **Speculum exam:** (slit speculum)
  - Examination is done while the patient performs the Valsalva maneuver, repetitive coughing, or both.
  - Performance of a pelvic organ prolapse quantification (POP-Q) examination is recommended before treatment for the objective evaluation and documentation of the extent of prolapse.

## EVALUATION

### Examination

- **POP-Q system:**
  - A POP-Q examination is recommended before treatment for documentation of the extent of the prolapse to measure postoperative anatomic success.
  - The POP-Q system is the only validated method for objective measurement of prolapse in the 3 pelvic compartments.
  - The POP-Q system does not use the terms "cystocele" and "rectocele" but instead uses terms for each prolapsed segment because the exact organ that lies behind the prolapsed vaginal epithelium may not be clear from the clinical examination.
  - A validated examination allows for consistency in reporting and facilitates communication between gynecologic care providers.
  - For patients desiring expectant management, documentation of the prolapse with the POP-Q allows an objective, validated, baseline measurement that can be referred to if symptoms change over time.

- **Stages of POP**

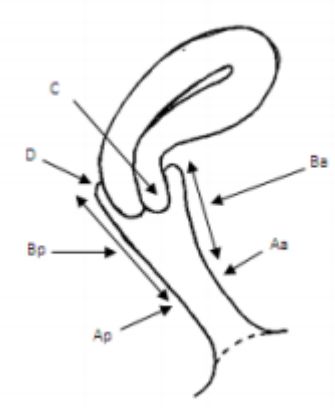
  This depends on the maximum extent of prolapse for one or more components relative to the hymen:
  - Stage 0: No prolapse; ant and post points are -3, C or D are between - TVL and – (TVL – 2) cm
  - Stage I: not meeting stage 0, the most distal prolapse is < - 1 cm (1 cm from the hymen).
  - Stage II: the most distal prolapse is between -1 and + 1 cm
  - Stage III: the most distal prolapse is > + 1 cm but less than TVT – 2 cm
  - Stage IV: complete procedentia "vault avulsion" – The most distal prolapse is at least TVL – 2 cm.

### Work-up

Generally, no additional testing is required prior to treatment. Additional work-up may be added for particular indications:

- Postvoid residual urine volume (catheter or US):
  1. If the prolapse is beyond the hymen
  2. If the patient has voiding symptoms
- Urinalysis, culture and microscopy:
  If there is urinary urgency or other lower urinary tract symptoms.
- Urodynamic testing:
  1. If there is bothersome incontinence with stage II or greater POP
  2. If there is voiding dysfunction.

Consider referral to urogynecology if assessment does not concur with symptoms.



## MANAGEMENT

### Conservative

- **Reassurance and education**: if the patient has not symptoms. However, education is important as women may not notice that voiding or defecatory dysfunction may be related to prolapse.
- **Life style modification**: this may improve some symptoms:
  1. **Defecatory dysfunction**: fiber supplementation and osmotic laxatives.
  2. **Bulge symptoms**: sitting with feet elevated. Pelvic muscle exercises, performed either independently or under professional supervision may improve symptoms or slow POP progression.
  3. **Local or systemic estrogen**: limited evidence. Local estrogen may help with the vaginal irritation associated with POP.
- **Vaginal pessary**:
  - Indications:
    1. Women with symptomatic POP who wishes to become pregnant in the future.
    2. Women not willing or not candidate for surgery
  - Effectiveness: up to 92% of women can be fitted successfully.
  - Pessary selection: a ring pessary can be tried first, a Gellhorn pessary can be used if the ring did not stay in place:
  - Stage II: Ring pessaries are 100% successful
  - Stage III: ring pessaries are 71% successful
  - Stage IV: more frequently required Gellhorn pessaries (64%).
- **Pessary care and follow-up:**
  - Women should be taught to change their pessary independently. If a woman is unable to remove and replace her pessary, regular follow-up (e.g, every 3–4 months) is necessary.
  - Annual follow-up is recommended for patients who are able to maintain pessary hygiene on their own.
- Adverse effects:
  - Pressure on the vaginal wall → local devascularization or erosion (2–9%)

**Management:**

1. Removing the pessary for 2–4 weeks
2. Local estrogen therapy (resolution may occur without local estrogen therapy).
3. If the problems persist, more frequent pessary changes or a different pessary may be required.

   Caregivers to patients with dementia should be made aware of the regular pessary changes needed to avoid complications.

- Rare complications such as fistula can occur.

## MANAGEMENT

### Surgical

- **Surgical management (cont.):**
- **Factors affecting surgical option selection:**

1. Presence of urinary, bowel, or sexual dysfunction
2. The patient's general health
3. Patient preference
4. Surgeon's expertise.

### Vaginal approach

- **Uterine prolapse:**
  - **Approach:** vaginal hysterectomy with vaginal apex suspension at the time of hysterectomy to reduce the risk of recurrent POP.
  - **Effectiveness:**
    1. uterosacral and sacrospinous ligament suspension are equally effective (comparable anatomic, functional & adverse outcomes).
    2. 2-year follow-up success rate was 64.5% for uterosacral ligament suspension compared with 63.1% for sacrospinous ligament fixation.
  - **Adverse events:**
    The serious adverse event rate at 2-year follow-up was 16.5% for uterosacral ligament suspension compared with 16.7% for sacrospinous ligament fixation.
  - **Technique:**
    - ***Uterosacral ligament suspension:*** can be performed by attaching the vaginal apex bilaterally to the ipsilateral uterosacral ligament or by attaching the vaginal apex to uterosacral ligament complex that is plicated in the midline. It is important that an adequate segment of uterosacral ligament is secured to the vagina. This often requires attachment to the midportion of the uterosacral ligament close to the ischial spine.
    - ***Sacrospinous fixation:*** sacrospinous ligament can be used to support the vaginal apex. A unilateral right sacrospinous ligament fixation usually is used for the attachment point to avoid dissection around the colon.

- **Anterior vaginal wall prolapse:**
  - **Approach:** Anterior colporrhaphy. If associated with an apical prolapse → Additional resupport of the vaginal apex reduces the risk of recurrent POP surgery.

  Paravaginal defects (defects in lateral detachments of the vaginal wall from the fascial condensations over the levator ani muscles): clinical diagnosis is unreliable. If a paravaginal defect is suspected, there usually is apical loss of support. Apical support procedures may address most anterior vaginal wall defects, including paravaginal defects.

## MANAGEMENT

### Surgical

#### Vaginal approach

- **Posterior vaginal wall prolapse:**
  - **Posterior colporrhaphy** via a midline plication of the posterior vaginal wall fibromuscular connective tissue.
    - The repair should be performed without placing tension on the levator ani muscles because this may lead to dyspareunia.
    - Perineorrhaphy that results in reattachment of the perineal muscles to the rectovaginal septum can be performed as needed if a perineal defect is present.
  - **Site-specific repair (alternative technique)** → dissection of the vaginal epithelium off the underlying fibromuscular connective tissue and repair of localized tissue defects with sutures.

  A finger often is placed in the rectum and directed anteriorly to identify various tissue defects of the posterior vaginal wall.

  Transvaginal is more effective than transanal approach

#### Abdominal approach

- **Abdominal sacrocolpopexy:**
  - **Technique**: This procedure involves placement of a synthetic mesh or biologic graft from the apex of the vagina to the anterior longitudinal ligament of the sacrum.
  - **Indication:**
    1. Shortened vaginal length
    2. Intra-abdominal pathology
    3. Risk factors for recurrent POP:
       - Age younger than 60 years
       - Stage 3 or 4 prolapse
       - BMI > 26.
  - **Methods:**
    - This procedure involves placement of a synthetic mesh or biologic graft from the apex of the vagina to the anterior longitudinal ligament of the sacrum.
    - In women who are at increased risk of synthetic mesh-related complications (eg, chronic steroid use, current smoker), sacrocolpopexy with a biologic graft or alternatives to a sacrocolpopexy could be considered.
    - The 5-year surgical outcomes of abdominal sacrocolpopexy with polypropylene mesh versus cadaveric fascia lata showed better anatomic cure with the mesh (93% versus 62%).
  - **Complications:**
    1. Ileus or small-bowel obstruction (2.7% versus 0.2% with vaginal)
    2. Thromboembolic phenomena (0.6% versus 0.1% with vaginal)
    3. Mesh or suture complications (4.2% versus 0.04% with vaginal).
    4. significant reoperation rate due to mesh-related complications – 10.5% (erosion into vagina, visceral erosions, and sacral osteitis)

## MANAGEMENT

### Surgical

**Abdominal vs. Vaginal Approach**

- Abdominal sacrocolpopexy with synthetic mesh has a lower risk of recurrent POP but is associated with more complications than vaginal apex repair with native tissue (see before).
- Because of complications attributed to multifilament and small-pore-size synthetic mesh, type 1 synthetic meshes (monofilament with large pore size) currently are used in the United States.

**Minimally invasive approach**

- **Sacrocolpopexy:** with or without supracervical hysterectomy or total hysterectomy can be performed laparoscopically with or without robotic assistance.
- **Open abdominal sacrocolpopexy** is associated with shorter operative times.
- **Minimally invasive sacrocolpopexy** is associated with less blood loss and shorter hospitalization.
- **Robotic assistance** has not been shown to improve short-term outcomes for patients.
- Overall, the current literature is too scant to adequately indicate which minimally invasive approach should be recommended.

**Obliterative surgeries**

- **Indication:** They are the effective first line for those with co-morbidities and who do not desire further sexual function (can be done under local or regional).
- **Effectiveness:** high reported rates of objective and subjective improvement of POP (98% and 90%, respectively) + low risk of recurrent POP + low rate of complications, intensive care unit admissions, and mortality.
- **Adverse outcomes**: 9% regret rate (low)

## MANAGEMENT

### Surgical

#### Obliterative surgeries

1. **Le Fort partial colpocleisis**:
   - It is performed when the uterus is preserved at the time of prolapse repair.
   - This procedure involves denuding a strip of epithelium from the anterior and posterior vaginal walls and then suturing them together.
   - This leaves lateral canals to drain secretions from the cervix.
   - Because the uterus is difficult to access postoperatively, normal results from cervical cytology and human papillomavirus testing and an endometrial evaluation usually are documented before surgery.
   - For posthysterectomy vaginal prolapse, a colpectomy or tight anterior and posterior colporrhaphy creating a constricted vagina is a surgical option if a patient is amenable to an obliterative procedure.
2. **Total colpectomy procedures:**
   - The entire vaginal epithelium is denuded and sutures are used to invert the vagina.

With any obliterative procedure, a suburethral plication or midurethral sling and a perineorrhaphy often are recommended to decrease the risk of postoperative stress urinary incontinence and recurrent posterior vaginal wall prolapse.

#### Uterus preserving surgeries

- **Indication:** women who want to preserve fertility, preservation of body image or beliefs on sexual function.
- **Approaches:**

**1. Hysteropexy for uterine prolapse**:

- Vaginal incision → attaching cervix to the sacrospinous ligament with sutures or mesh; less available evidence on safety and efficacy compared with hysterectomy.
- Abdominally or laparoscopically → placing a mesh or biologic graft from the cervix to the anterior longitudinal ligament ± shortening uterosacral ligaments laparoscopically with or without robotic assistance or by abdominal incision.
- **Comparing laparoscopic sacral hysteropexy with vaginal mesh hysteropexy after 1 year:** no differences in the rate of complications, blood loss, or length of hospitalization.
- **Benefits of hysteropexy compared with total hysterectomy**: shorter operative time and fewer mesh erosions if mesh is used.
- **Benefits of total hysterectomy over hysteropexy**: lower risk of uterine and cervical cancer or any procedures that involve abnormalities of the cervix or uterus (eg, biopsy). No pregnancy, AUB or dysmenorrhea.
- Outcome data comparing hysterectomy with hysteropexy are not clear. There is little information regarding pregnancy after uterine suspension.

## MANAGEMENT

### Surgical

#### Uterus preserving surgeries

**2. Le Fort Colpocleisis:**
In women with POP who want to avoid hysterectomy or who have significant comorbidities and no longer desire vaginal coital function (see before).

#### Mesh and grafts

- In January 2016, the FDA issued two final orders regarding surgical mesh that is used to repair POP transvaginally:
  1. The FDA reclassified this surgical mesh—from class II, which generally includes moderate-risk devices, to class III, which generally includes high-risk devices.
  2. The FDA required manufacturers to submit a premarket approval application to support the safety and effectiveness of surgical mesh for the transvaginal repair of POP.
- Subsequently, in January 2017, the FDA reclassified all urogynecologic surgical mesh instrumentation (whether used for transvaginal POP repair or other urogynecologic surgical mesh procedures) from class I (low risk) exempt from premarket notification to class II (moderate risk) and subject to premarket notification.

- **Posterior vaginal wall repair:**
  - The use of synthetic mesh or biologic grafts in transvaginal repair of posterior vaginal wall prolapse does not improve outcomes.
  - There are increased complications (eg, mesh exposure) associated with placement of mesh through a posterior vaginal wall incision.

- **Anterior vaginal wall repair:**
  - Polypropylene mesh augmentation of anterior vaginal wall prolapse repair improves anatomic and some subjective outcomes
  - However, the mesh:
    1. Does not affect reoperation rates for recurrent prolapse. It may lead to surgeries to correct mesh-related complications
    2. It is associated with a higher rate of complications.
    3. It is also longer operating times and greater blood loss.
  - Pelvic organ prolapse vaginal mesh repair should be limited to high-risk individuals in whom the benefit of mesh placement may justify the risk (after extensive counseling):
    1. Recurrent prolapse (particularly of the anterior or apical compartments)
    2. Medical comorbidities that preclude more invasive and lengthier open and endoscopic procedures.

## MANAGEMENT

### Surgical

#### Cystoscopy

- **Indication:** Routine intraoperative cystoscopy during POP surgery is recommended when surgical procedure performed is associated with a significant risk of injury to bladder or ureter (morbidity increases with delayed diagnosis).
- **These procedures include:**
  1. Suspension of the vaginal apex to the uterosacral ligaments
  2. Sacrocolpopexy
  3. Anterior colporrhaphy and the placement of mesh in the anterior and apical compartments.
- **Assessment:** Intraoperative cystoscopy is performed after completion of POP repair while the patient is still under anesthesia and should include:
- 1. complete survey of the bladder
- 2. Assessment of efflux of urine from the ureteral orifices.

#### Complications

- **Native tissue POP surgery:**
  **More common:**
  1. Bleeding
  2. Infection (typically urinary tract)
  3. Voiding dysfunction (which usually is transient).

  **Less common:**
  1. Rectovaginal or vesicovaginal fistula
  2. Ureteral injury

  Fistula and ureteral injury require prompt referral to specialists with expertise in managing these conditions.
  3. Foreshortened vagina and restriction of the vaginal caliber. Dyspareunia was noted in 16% of women after 2 years. Changes in vaginal anatomy may lead to pelvic pain and pain with intercourse.

  A short vagina or vaginal constriction after POP surgery often can be managed with vaginal estrogen and progressive dilators. If not responsive → refer to specialist for surgical correction.

- **POP surgery with synthetic mesh:**
  1. Mesh contracture and erosion into the vagina, urethra, bladder, and rectum (mesh erosion is 12%).
  2. When mesh is used for anterior vaginal wall prolapse repair → 10% risk of mesh extrusion (6% of these cases requiring surgical correction).
  3. The rate of dyspareunia is 9%.

## MANAGEMENT

### Management of recurrence

- Recurrence rates between 6% and 30% have been reported (counsel the patient).
- Women who present with recurrent POP: counsel the patient for treatment options the same way you do for a primary case.
- If a patient chooses to undergo surgery for recurrent vaginal apex prolapse:
  1. abdominal sacrocolpopexy
  2. Vaginal colpopexy with possible mesh or graft augmentation
  3. colpocleisis.
- If not comfortable with these surgeries → refer.