

# Pelvic organ Prolaps

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# Definition

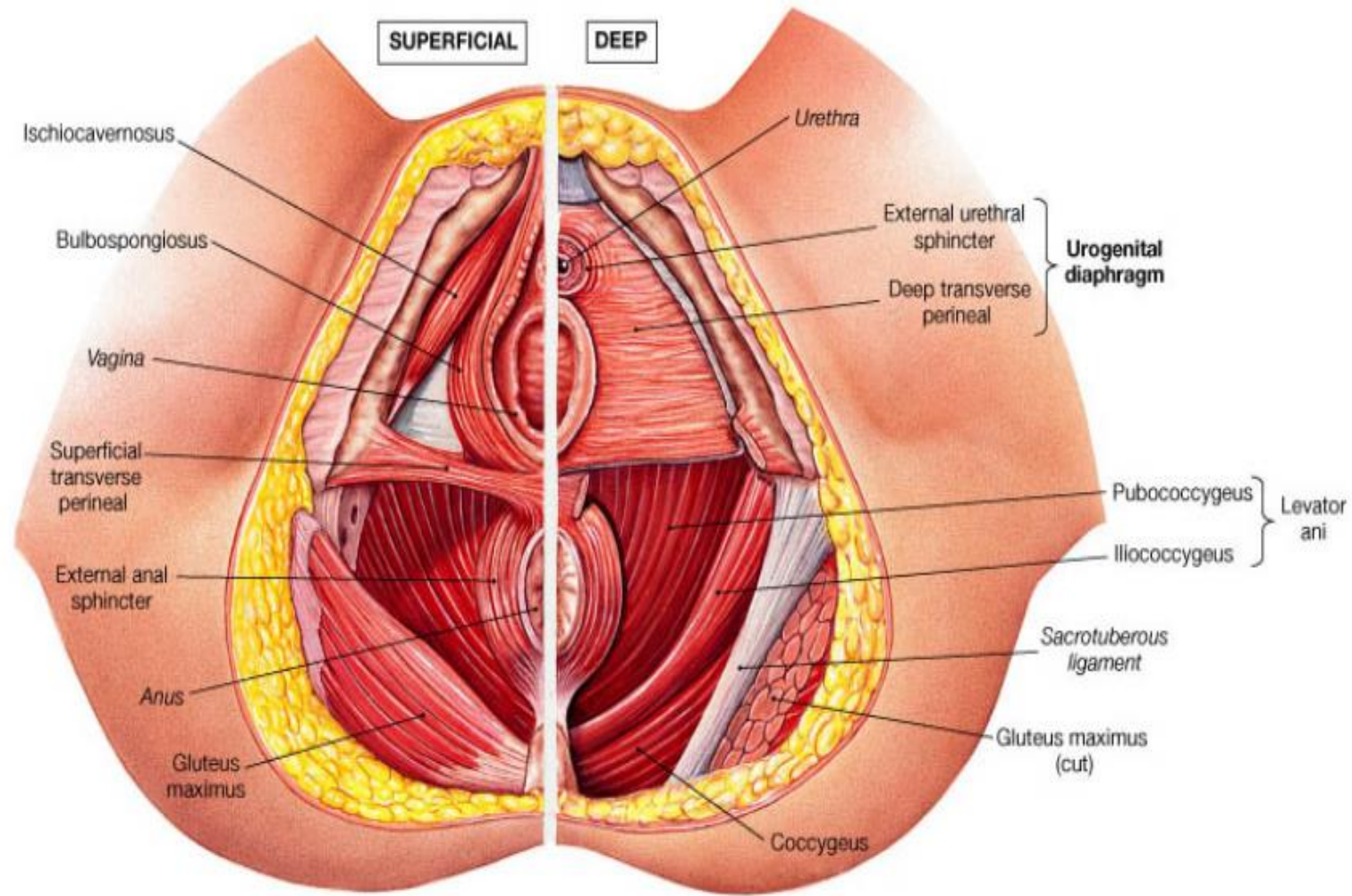
- The clinical definition according to International Urogynecological Consultation is: “anatomical prolapse with descent of at least one of the vaginal walls to or beyond the vaginal hymen with maximal Valsalva effort WITH the presence either of bothersome characteristic symptoms, most commonly the sensation of vaginal bulge, or of functional or medical compromise due to prolapse without symptom bother.

# The female pelvic floor- relevant functional anatomy

- The female pelvic floor has a crucial role in maintaining urinary and fecal continence and childbirth.
- The pelvic floor consists of several components, the peritoneum, pelvic organs, endopelvic fascia, the levator ani muscles, the perineal body and membranes, and superficial genital muscles .
- The endopelvic fascia is an enveloping connective tissue network that connects the pelvic organs to the pelvic wall. Part of the fascia, the parametrium, attaches to the uterus and the paracolpium to the vagina. The endopelvic fascia provides support at three levels, described by DeLancey in 1992 .
- Level I: The cardinal-uterosacral ligament complex stabilizes the upper third of the vagina.
- Level II: The arcus tendinous fascia pelvis, the middle third of the vagina.
- Level III: The perineal membrane and perineal body the lower third of the vagina.

- The levator ani muscle is functionally the main component of the pelvic floor and, together with the coccygeus muscle, forms the pelvic diaphragm. It is in a constant state of contraction and thus provides an active pelvic floor to balance intra-abdominal pressure and mechanical pressures during body movement and maintains continence . The levator ani temporarily relaxes during voiding (bladder emptying and defecation) and during childbirth.
- The urethra, vagina, and rectum pass through openings in the levator ani muscles to form what is known as the urogenital hiatus and the rectal hiatus

- The anal sphincter complex consists of the internal anal sphincter (IAS), the external anal sphincter (EAS), and the levator plate. The levator plate is the point where the pubococcygeus, iliococcygeus, and puborectalis, parts of the levator ani muscle, converge to form the anorectal muscle sling.
- The sacral plexus is a nerve plexus formed by the lumbosacral trunk (L4, L5) and the sacral spinal nerves (S1 - S4). Through its various divisions, it is responsible for the innervation of the pelvic floor. The pudendal nerve belongs to the anterior division, originates from S2-S4, and supplies the urethral and anal sphincters and the perineal muscles. The anterior levator nerve arises from S3-S5 and supplies the main muscles of the pelvic floor



(a) Female

# Risk factors and Pathophysiology of POP

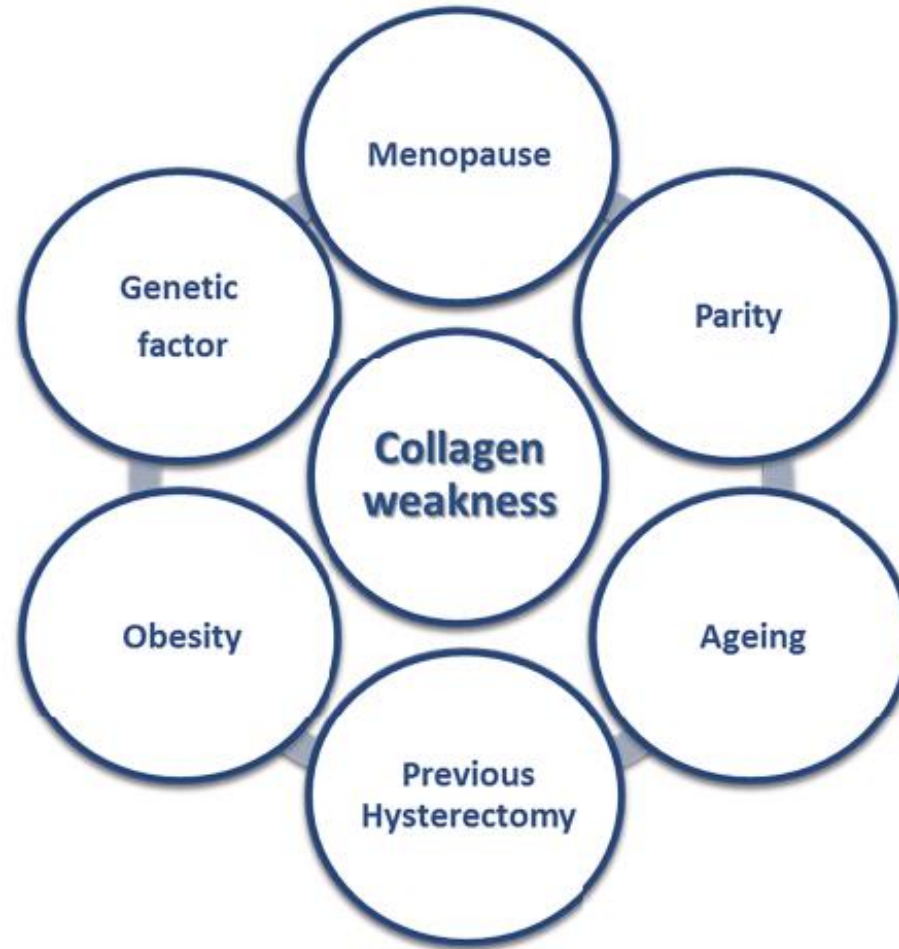


Figure 2. Risk factors for pelvic organ prolapse, causing collagen weakness.

# A- BMI/Obesity

- Obesity directly affects symptoms of pelvic organ prolapse.
- A chronic increase in intraabdominal pressure,
- nerve damage and comorbidities of obese individuals
- all contribute to pelvic floor dysfunction Intra-abdominal pressure causes excessive strain on pelvic structures, including the pudendal nerve.
- Co-morbidities such as diabetes contribute to poor tissue features through neuropathy and genetic background and joint hypermobility.



# B- Genetic

- A women with a F.H of prolapse there is a 2.5-fold increased incidence of POP compared with the general population.
- Many women with POP report having relatives with POP, urinary incontinence and/or an abdominal or inguinal hernia.
- In addition, younger women with POP have a higher incidence of POP among first-degree relatives than those who develop POP at an older age
- The incidence of collagen diseases such as varicose veins and joint hypermobility was increased in women with POP .
- in a recent meta-analysis of 39 studies, joint hypermobility was set as an indicator for POP and was found to be clinically relevant

# C- Obstetrical and gynecological history

- **Parity**: Multi-parity may be the strongest predisposing factor to POP.
- Women with one child show a fourfold increased likelihood to experience POP requiring hospital attention and those with two children an 8.4 times greater likelihood, compared with nulliparous women. parity is risk factor for primary POP, ut not a risk factor for recurrence .
- **Mode of delivery and obstetrical trauma**: most of the damage to the pelvic floor occurs during first and second vaginal deliveries. Instrumental deliveries increase the risk for POP, forceps delivery in particular .
- As an added obstetrical risk factor, **cervical elongation** is reported to affect 40% of women with uterine prolapse. The cervical length in women with uterine prolapse was about 36% longer than in women without uterine prolapse.
- **Hysterectomy**: An increased risk for central compartment prolapse found in women with hysterectomy. May be due to: **intraoperative damage** to the **pelvic connective tissue**, injury to the **pelvic blood supply and innervation**, and not enough emphasis placed on the **secure fixation or suspension of the vaginal apex**.

# D- Menopause

- there is a straight association between menopause and an increased risk for POP that is independent of age or parity.
- The hormonal changes in menopause cause a **drop in the systemic estrogen concentrations**, and a hypo-estrogenic environment in the pelvic organs contributes to **alterations in the composition and strength of collagen.**
- selective estrogen receptor modulators (SERM) according to some studies, Raloxifene and Tamoxifen have worsened the severity of POP

# Management of POP

- **Clinical manifestations**

- bearing-down sensation,
- heaviness with urination/defecation,
- discomfort in the lower abdomen
- in severe cases, the uterus or bladder may even protrude out of the vagina grossly visible
- Pelvic organ prolapse may even influence bladder or urethral function, as a result of weakening of support of the anterior vaginal wall or vaginal apex.
- Most patients complain of stress incontinence, and those with advanced POP beyond the hymen complain of voiding dysfunction, as a result of direct pressure on the urethra.
- Patients may also experience discomfort after a bowel movement, and their major complaints are constipation or tenesmus.
- coital function may be affected, because POP patients are more likely to avoid sexual intercourse due to fear of fecal and/or urinary incontinence during sexual activity.

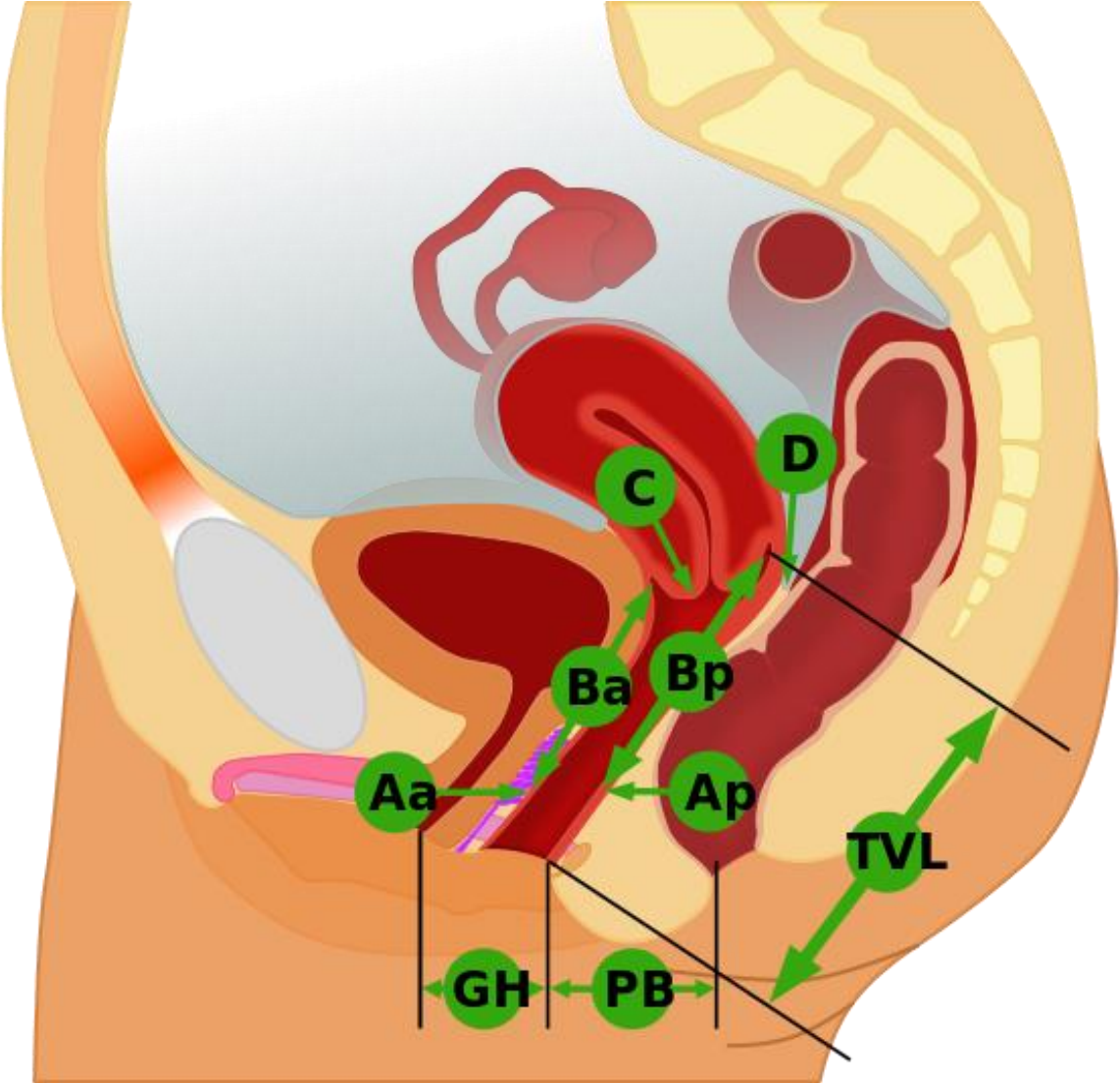
# Assessment (Diagnosis and Classification)

- **pelvic examination**. Assessment is done after increasing patient's abdominal pressure while relaxing with subjects in the supine position. The degree of prolapse is also evaluated while the patient is standing and the vagina is examined to determine which parts of the vagina (anterior, posterior, or apical) is prolapsing.
- **The Pelvic Organ Prolapse Quantification system (POP-Q)**
- **Imaging**
  - a) **Ultrasound**
  - b) **MRI**
  - c) **Fluoroscopy**

# The Pelvic Organ Prolapse Quantification system (POP-Q)

- was developed from a 1993 multidisciplinary committee of the ICS, American Urogynecologic Society (AUGS), and the Society of Gynecologic Surgeons (SGS) and has demonstrated good inter- and intra-observer reliability.
- The system provides a framework to describe **site-specific vaginal topography using six anatomical points** on the **anterior**, **posterior**, and **apical vagina** relative to the hymen and **three length measurements: genital hiatus** (Gh), **perineal body** (Pb), and **total vaginal length (TVL)**.
- Stages of prolapse, from 0 to IV, are assigned based on the leading (most severely prolapsed) edge of vaginal descent relative to the hymen.

Figure 2.3. Pictorial representation of normal pelvic support assessed by POP-Q



- Aa: is at the midline of anterior vaginal wall. Where no prolapse is present this location is 3cm up from the hymen (merely interior to the vaginal opening). Parameters from the hymen can be -3cm indicating no anterior vaginal prolapse or +3cm, which is a full prolapse.
- Ba: most superior location of the front vaginal wall . This location coexists with Aa (-3cm) in a woman with no anterior prolapse. However, in a woman with full prolapse this location coexists with point C.
- C: is the lowest edge of the cervix or the vaginal cuff (i.e. hysterectomy scar). This location identifies if the cervix is descending.
- D: is the topmost point of the posterior vaginal wall. This location can be contrasted with Point C to assess if the entry to the cervix has been extended.
- Ap: located midline of posterior vaginal wall 3cm proximal to hymen. The parameters for this point can range from -3cm to +3cm relative to hymen.
- Bp: the uppermost point of the posterior vaginal wall.
- GH :the 'Genital hiatus' that records the length from the urethral opening to the posterior vaginal opening/hymen. The hiatus refers to the opening in puborectalis muscle, a component of the levator ani muscle group. A larger distance here may indicate laxity in this area.
- PB: the 'perineal body' and is recorded from the posterior aspect of hymen to the mid-anal opening. This will give an insight to the tonicity of superficial pelvic floor. Through vaginal birth the perineal body can be injured via tears or by an episiotomy.
- TVL refers to 'total vaginal length' measured from hymen to the most distal point. Knowing this allows the depth of prolapse to be assessed and reassessed post surgical repair.



# Table 2 Pelvic organ prolapse quantification staging system

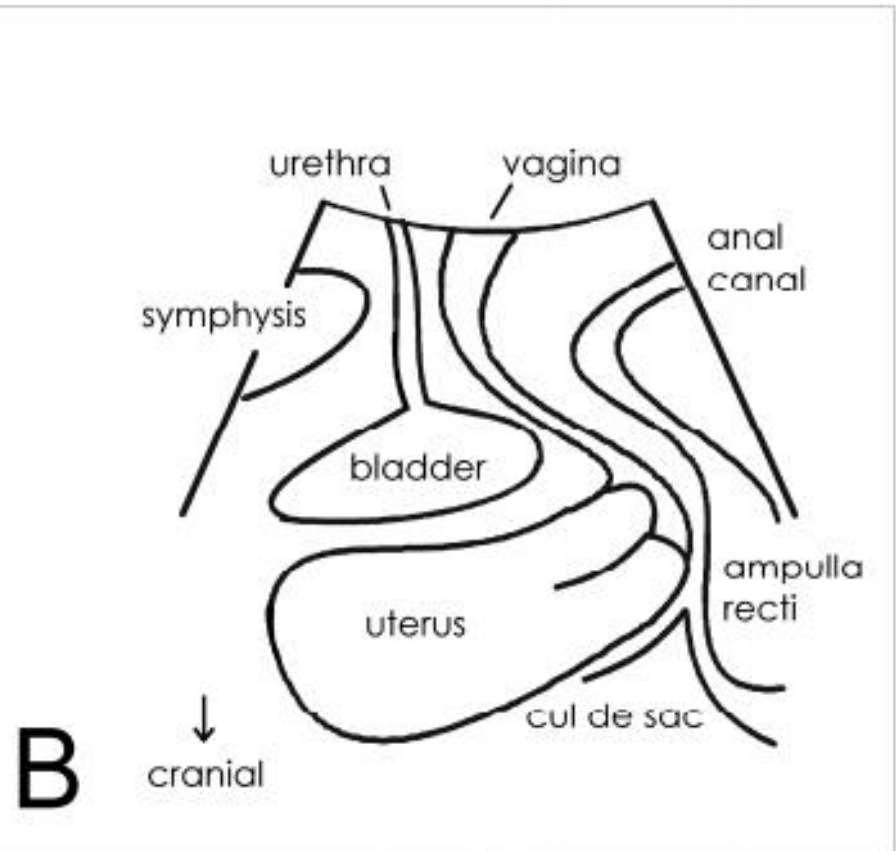
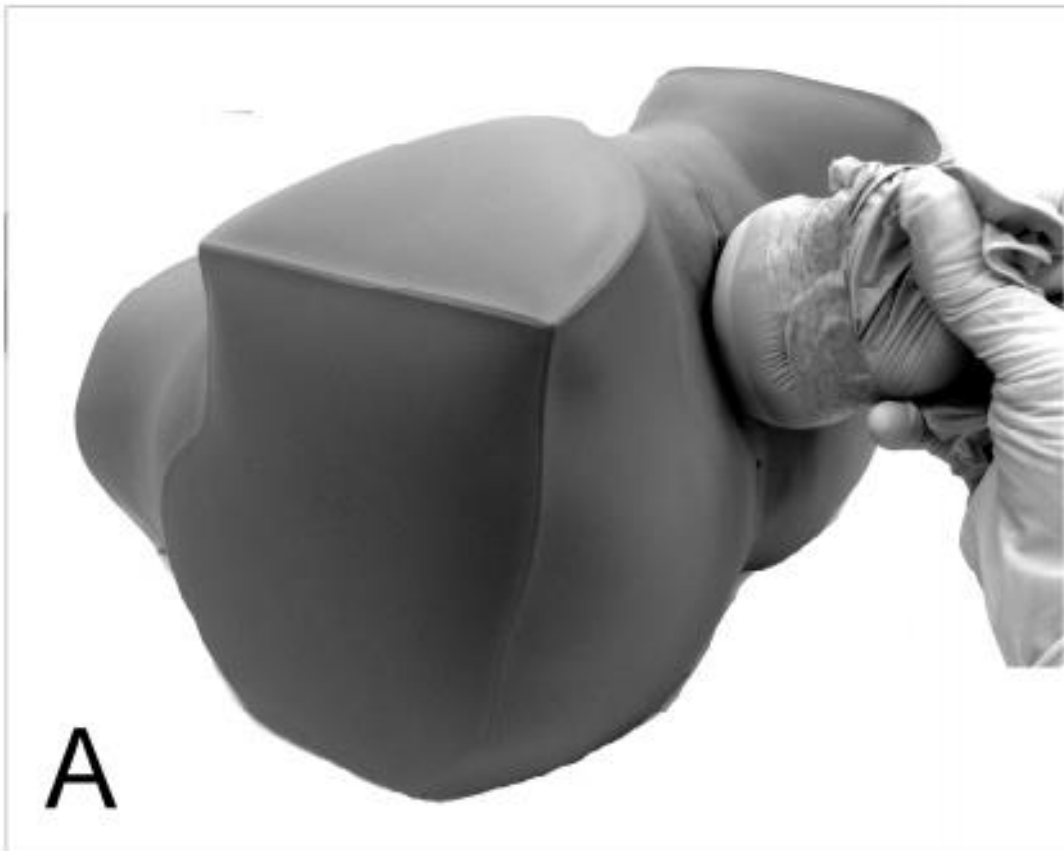
Stage	Description
0	No prolapse; points Aa, Ap, Ba, and Bp all equal $-3$ cm, and points C and D are at least TVL-1 cm
I	The criteria for stage 0 are not met, but the most distal portion of the prolapse is $>1$ cm proximal to the hymen
II	The most distal portion of the prolapse is between 1 cm proximal and 1 cm distal to the hymen
III	The most distal portion of the prolapse is $>1$ cm distal to the hymen AND does not meet criteria for stage IV
IV	The most distal portion of the prolapse protrudes beyond the hymen to a distance of at least TVL-2 cm

# Imaging

- Physical examination cannot delineate the position of the relevant underlying visceral organs.
- Imaging techniques, including ultrasound, X-ray, CT, and MRI, can complement the physical examination by providing this information.
- Although imaging is not required in the evaluation of women with POP, it can be a valuable adjunct in addressing specific anatomical or functional questions to optimize treatment planning.

# Ultrasound

- is a low-cost, radiation-free imaging modality that can provide real-time assessment of pelvic floor functional anatomy. It also can identify synthetic implants.
- Translabial/transperineal, introital, endovaginal, and endoanal ultrasound techniques have all been used in pelvic floor imaging.
- Endovaginal and endoanal ultrasound have limited value in prolapse assessment as the physical presence of an inserted endovaginal probe provides support and impedes pelvic organ descent [43].
- Introital ultrasound, in which a transvaginal probe placed at the introitus, and transperineal/translabial ultrasound, which utilizes a transabdominal probe placed on the perineum, are better suited to imaging the pelvic viscera in women with POP.
- Translabial ultrasound for the assessment of POP is performed during the patient's maximal Valsalva maneuver (Fig. 3), with findings recorded in relation to a horizontal line through the postero-inferior margin of the pubic symphysis as a reference. These measurements have been found to be associated almost linearly with POP-Q coordinates on clinical examination .
- Ultrasound can be particularly useful for evaluation of posterior vaginal wall prolapse, which can be caused by protrusion of the rectum, rectosigmoid, or small bowel through support defects in the posterior vagina. Perineal hypermobility, rectal intussusception, or a combination of the above, can also be visualized in women with posterior vaginal wall prolapse . Ultrasound can identify the involved viscera in women with these defects.



# MRI

- Magnetic resonance imaging (MRI) is a non-invasive, dynamic modality that provides detailed images of all pelvic structures in multiple planes without the use of ionizing radiation or iodinated contrast agent.
- MRI provides information about the nature and integrity of soft tissues, including muscles and ligaments.
- Its primary disadvantages are high cost, requirement for supine positioning, and lack of standardized protocols for pelvic floor imaging

# Fluoroscopy

- Defecography is the dynamic study of rectal evacuation and can be an adjunct in the evaluation of women with constipation, incomplete evacuation, and fecal incontinence. It is an invasive technique requiring the use of a contrast agent and ionizing radiation and can lead to significant patient embarrassment. used to evaluate posterior vaginal wall prolapse as well as rectal prolapse .
- Dynamic cystoproctography, in which the bladder, small bowel, vagina, and/or rectum are opacified with contrast agent before fluoroscopic imaging of the pelvis, was utilized more commonly before MRI was readily available.
- Disadvantages of this technique include its use of contrast agent and ionizing radiation, the lack of standardized optimal imaging techniques, and unreliable correlation with physical examination findings

# Pathway Guide – Pelvic Organ Prolapse

Patient presents with Pelvic Organ Prolapse. Initial assessment to include:

## History:

- Prolapse history (mechanical symptoms, lump, bulge, obstruction, pressure, back ache)
- Urinary history (frequency, nocturia, urgency, stress incontinence, urge incontinence, voiding symptoms)
- Bowel symptoms (constipation, digitation/splinting, faecal incontinence, tenesmus)
- Sexual Function (sexual activity, dyspareunia, obstruction, incontinence)

- Obstetric / Gynaecological / Surgical history
- Past medical history, co-morbidities and BMI

## Examination:

- Abdominal, speculum and bimanual examination of pelvis – to exclude pelvic masses.
- Assessment of prolapse (**NB: an incidental finding of prolapse in an asymptomatic patient does not require treatment**)
- Consider rectal examination.

## Investigations:

- Urinalysis (+/- MSU if indicated) ONLY IF HAS URINARY SX
- 3 Day Bladder Diary (IN:OUT) If urinary SX
- Consider – USS for post void residual if urinary SX
- Consider – FBC, U&Es if severe prolapse with risk of ureteric obstruction

## Conservative management in Primary Care:

- Weight loss, address co-morbidities and precipitants
- Manage constipation
- Prescribe vaginal oestrogen if atrophy, recurrent UTI's or pessary used
- Reassurance and watchful waiting if mild symptoms (advise pelvic floor muscle exercises)
- Consider ring pessary
- Bladder retraining and fluid modification
- Anticholinergics and/or Mirabegron

## Follow up assessment after 3 months

- Continue management if effective
- Consider referral for physiotherapy or continence advisor if ineffective

## Referral to Urogynaecologist if:

Patient is willing to consider surgery **with**

- Persistent symptomatic prolapse with reduced quality of life despite conservative management **and/or**
- Prolapse beyond introitus or worsening prolapse despite conservative measures

**NB:** Give patient NHS/BSUG Patient information on "Surgery for Prolapse" (see below). Where appropriate the patient should be made aware that they may need to engage in a weight loss and exercise programme.

*It is essential also that patients complete an ePAQ questionnaire prior to a consultation in order for a full assessment to be made. Saint Mary's will send patients the questionnaire to complete up acceptance of referral. However, patients will not receive an appointment until this has been completed*

Patient Information  
[NHS Website](#)

National Guidance  
[NICE Pelvic Organ Prolapse](#)

Template  
[Bladder Diary](#)

# Treatment

- **Indications**

- Management of POP is carried out when protrusion, urinary, bowel, or sexual dysfunction and other symptoms are associated with POP.
- Patients with asymptomatic POP usually do not require treatment. Conservative or surgical management is performed in symptomatic patients, and treatment choices depend on patient's preferences



# 1- Conservative management

- is appropriate for patients who are at high risk of complications and recurrence after surgical management
- or who refuse to undergo surgical interventions.

## **Treatment options include:**

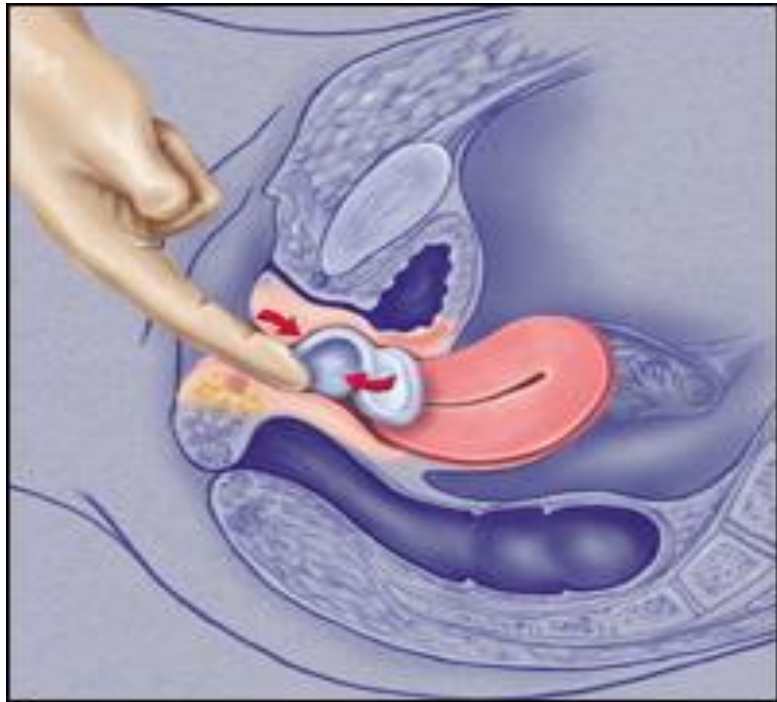
- insertion of pessaries,
- pelvic floor muscle exercises,
- hormone therapy

# Vaginal pessaries

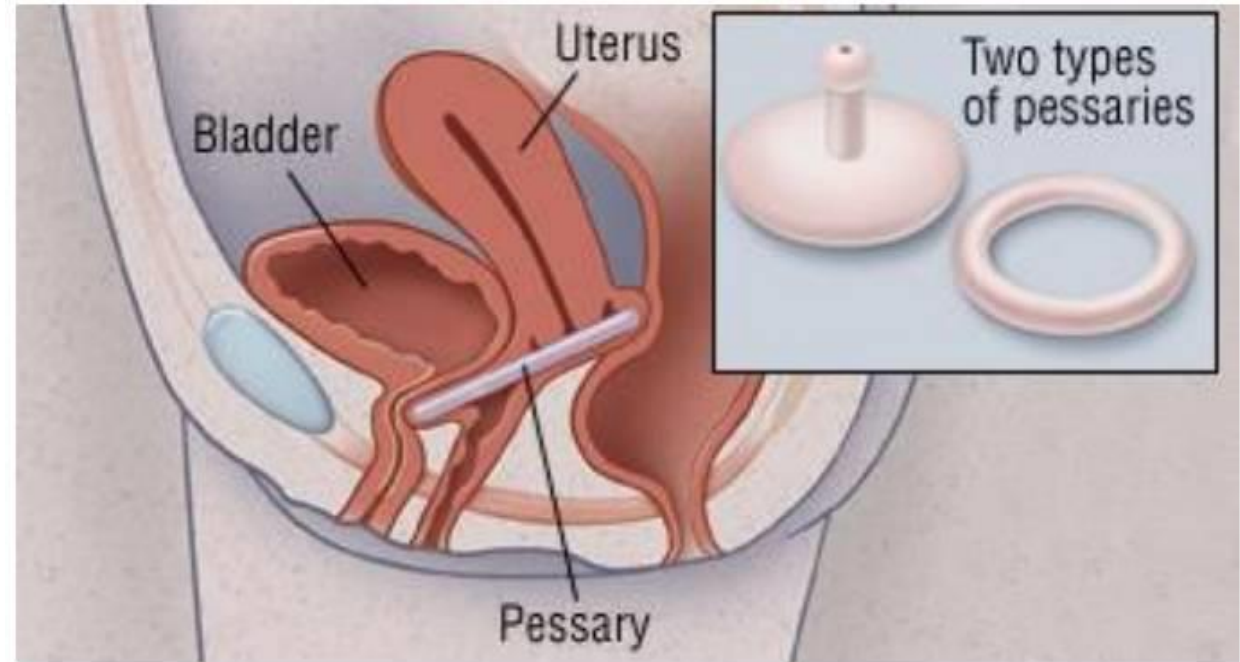
- A pessary is an intra-vaginal device to support vaginal wall prolapse or to treat urinary incontinence. Pessaries may be used in women wishing to treat SUI and POP conservatively, or in women awaiting surgical correction of SUI and/or POP.
- Approximately 71–90% women can be successfully fitted with a pessary for either SUI or POP, with symptomatic relief in 70–90% of the women who undergo a successful pessary fitting.
- Vaginal devices for SUI treatment often provide additional support to the anterior vaginal wall to slightly elevate and constrict the urethra.
- These include the ring and dish pessaries with a knob, the anti-incontinence pessary<sup>18</sup>, and intra-vaginal inserts.

# Types of Pessaries

- Most are made out of silicone -- a harmless, soft, and nonabsorbent material. Types of pessaries include:
- **Ring.** This circle-shaped device is often the first type of pessary doctors recommend. You can easily insert and remove it without a doctor's help.
- **Gehrung.** A U-shaped pessary that's used for more advanced uterine prolapse, it is molded to fit its user.
- **Gellhorn.** This disk-shaped device with a small knob in the middle is used for more severe prolapse.
- **Cube.** This pessary is used for advanced-stage prolapse. It's compacted down and inserted into the vagina where it uses suction to support the areas affected by prolapse.

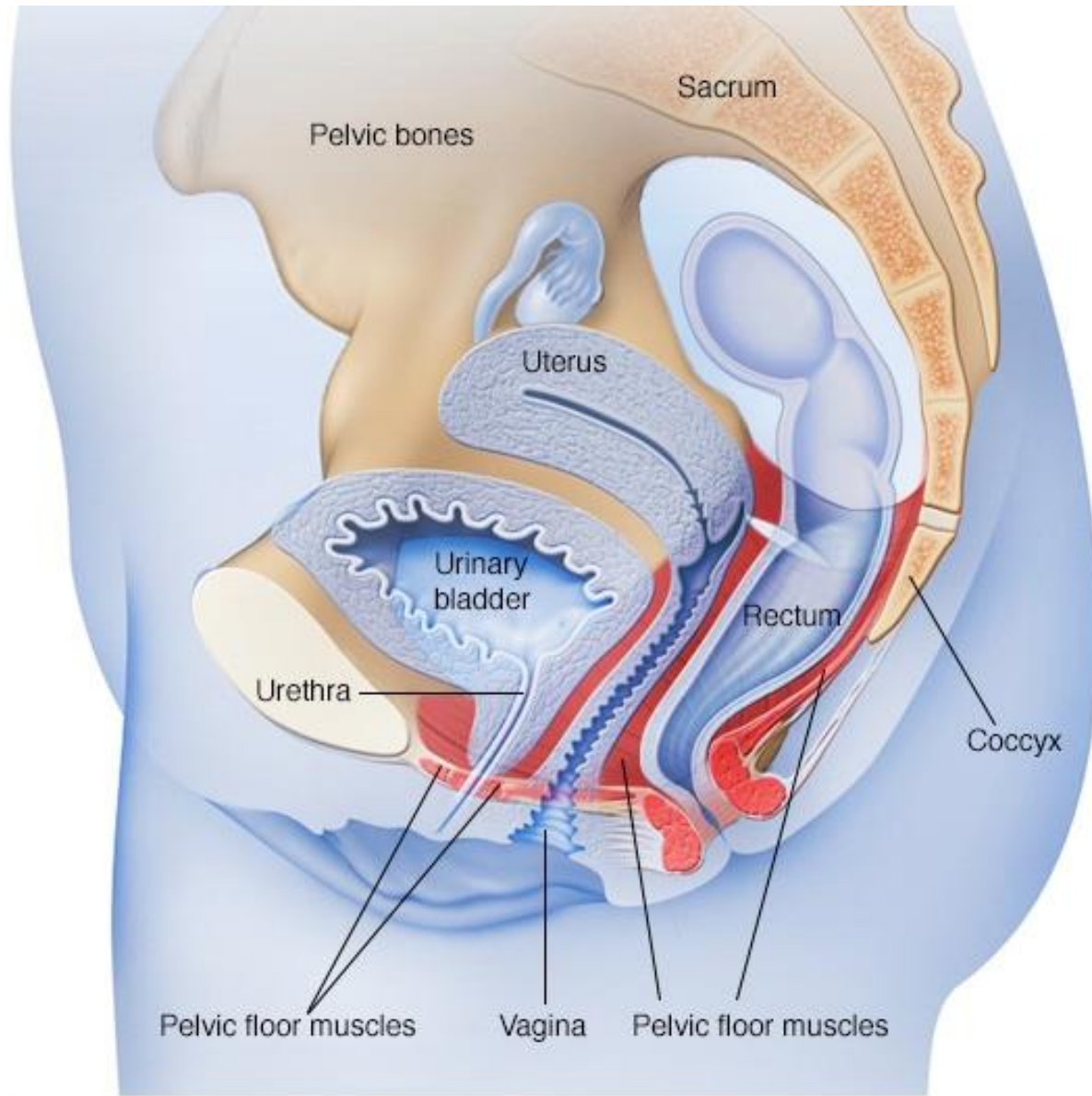


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# Kegel exercises

- **How to do Kegel exercises**
- **Find the right muscles.** stop urination in midstream. Once you've identified your pelvic floor muscles you can do the exercises in any position, although you might find it easiest to do them lying down at first.
- **Perfect your technique.** To do Kegels, imagine you are sitting on a marble and tighten your pelvic muscles as if you're lifting the marble. Try it for three seconds at a time, then relax for a count of three.
- **Maintain your focus.** For best results, focus on tightening only your pelvic floor muscles. Be careful not to flex the muscles in your abdomen, thighs or buttocks. Avoid holding your breath. Instead, breathe freely during the exercises.
- **Repeat three times a day.** Aim for at least three sets of 10 to 15 repetitions a day.



# Surgical treatments for SUI

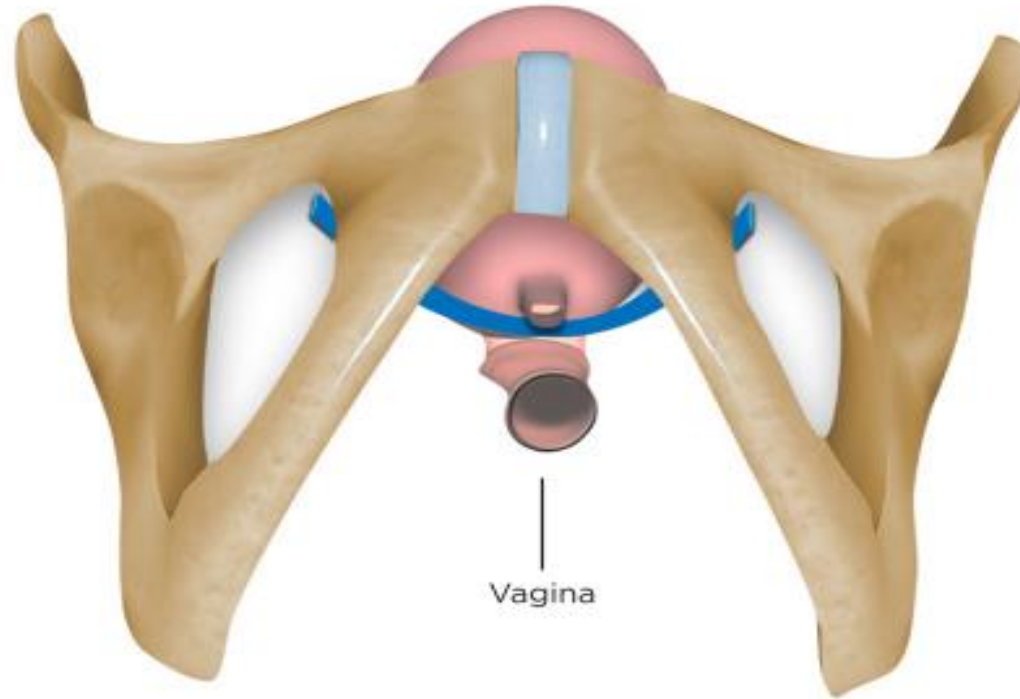
- Surgical management of SUI is often indicated when conservative therapies fail, or if patients are desirous of definitive management while accepting the risks of surgery. Surgery offers a high rate of cure in general, although the short- and long-term success rates for each method varies.
- the three most common surgical methods to treat SUI include:
  - midurethral sling (MUS),
  - Burch retropubic urethropexy,
  - autologous pubovaginal sling (PVS).

# Midurethral sling

- The MUS is a minimally invasive surgical technique for SUI treatment, with symptom cure rates of 75–94% and objective cure rates of 57–92%.
- Compared to pelvic floor muscle training (PFMT), women receiving a primary MUS for SUI report a higher subjective and objective cure at 1 year.
- MUS most commonly involves the passage of a small strip of synthetic mesh through either the retropubic space (tension-free vaginal tape, TVT) or obturator foramen (trans-obturator tape, TOT or TVT-O, via the “inside-out” route).
- The TVT sites exit at the lower abdomen while TOT sites exit in the groin.



## MINISLING



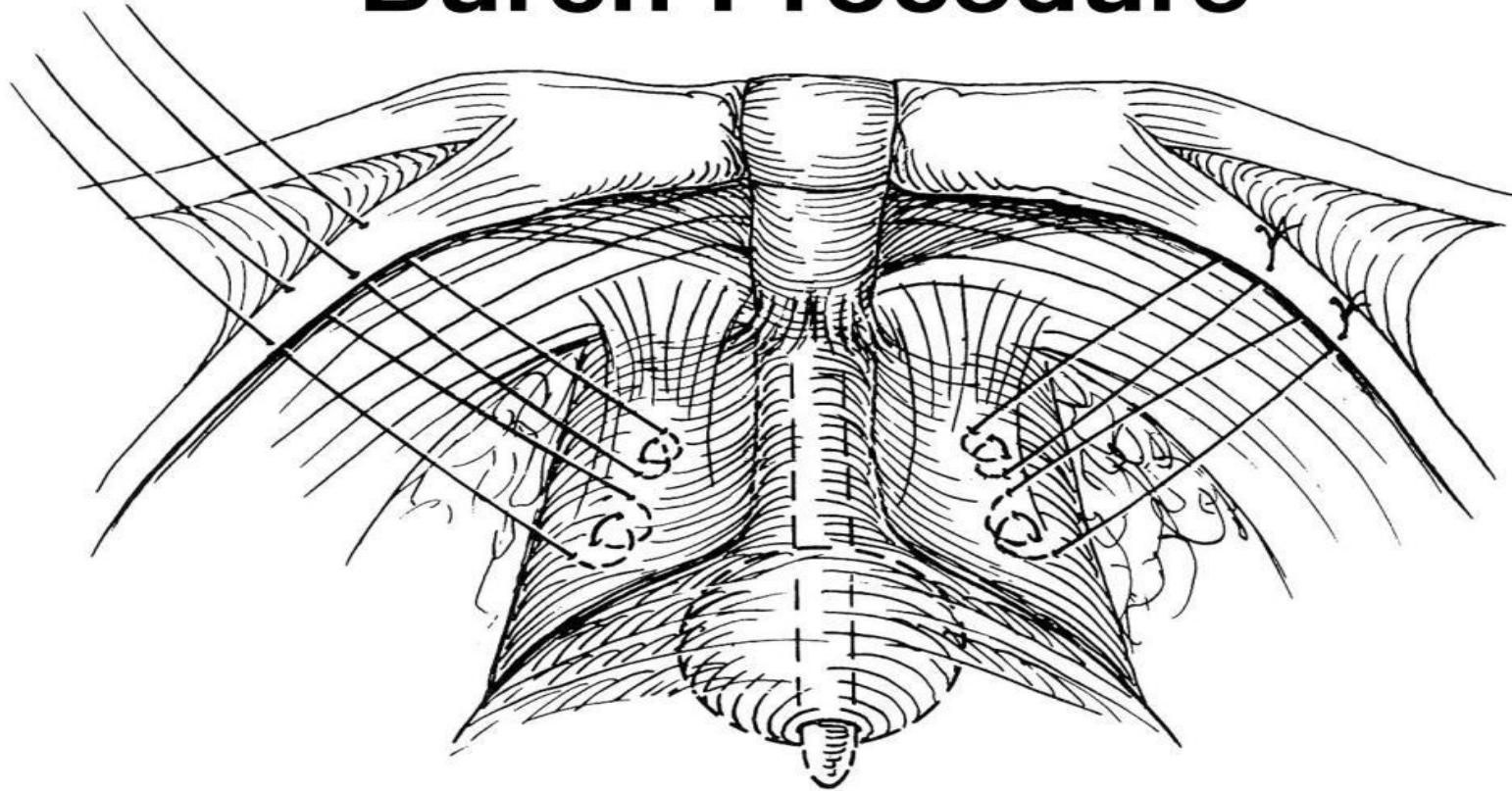
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The difference between the full-length slings and minislings is the length. The minisling doesn't perforate the skin, so there are no incisions anywhere but in the vagina.

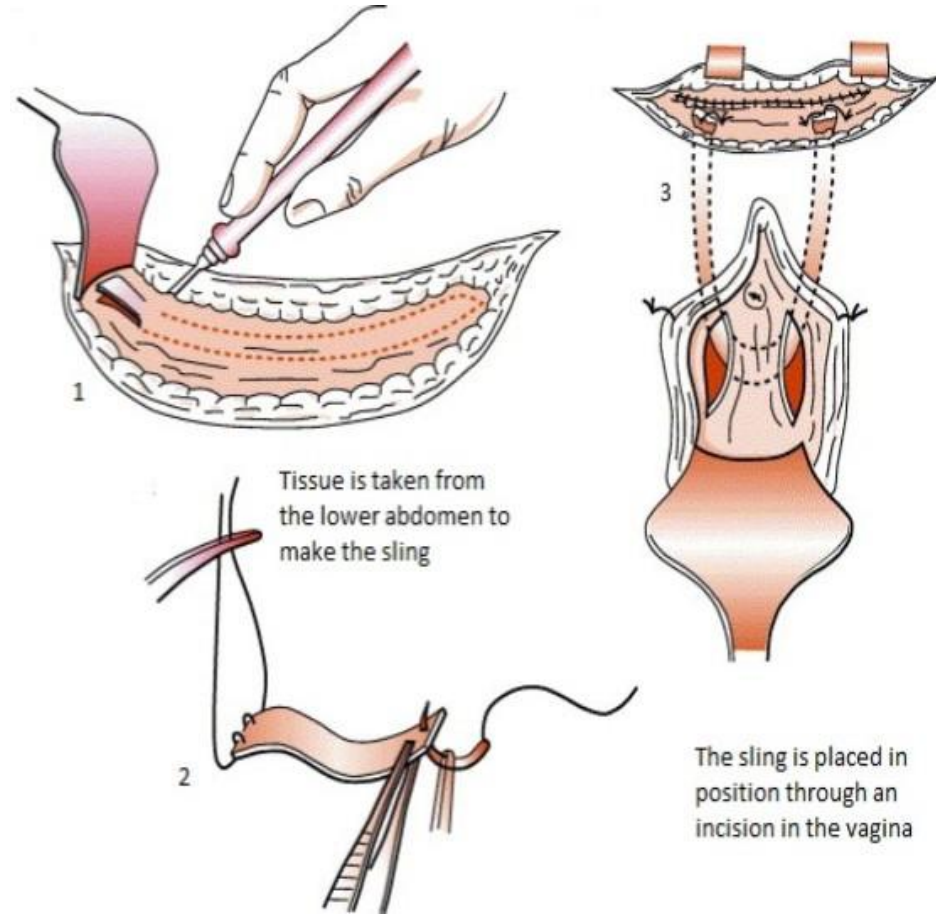
- Efficacy between the TVT and TOT is similar
- women, with a slightly lower risk of major visceral and vascular injuries, blood loss and urinary retention in TOTs but a higher risk of groin pain.
- Among all surgical approaches to treat SUI, the efficacy and safety profile of MUS have been the most extensively studied to date.
- TOT appears to be slightly more cost effective than TVT at 5 years post-op, although some evidence suggests a higher re-operation risk with TOT.
- Overall, MUS has excellent safety data, and provides satisfactory results for most women in the hands of experienced surgeons.
- A 2018 multicenter study comparing the TVT and Burch retropubic urethropexy showed a 19% higher rate of overall continence in the TVT arm at 2 years.<sup>31</sup> The slight superiority of TVT against retropubic urethropexy and autologous fascia sling was also confirmed in a 2017 updated systematic review on all surgical methods to treat female SUI.<sup>32</sup> A 2013 Nordic, multicenter cohort study of 90 women demonstrated an objective cure over 90% at 17 years post TVT placement, with only one case of asymptomatic mesh extrusion.
- Concurrent MUS placement may be performed at the time of POP surgeries to treat occult SUI, or as a stepwise treatment after POP repairs such as anterior colporrhaphy, when anterior colporrhaphy alone fails to achieve continence.
- MUS at the time of vaginal prolapse surgery results in a lower rate of de novo SUI, although the incidence of concurrent MUS procedures with POP surgery in the US has decreased by 16% since the 2011 FDA notification regarding TVM.
- While previous questions regarding polypropylene's carcinogenic properties were raised, a nationwide Swedish cohort study including over 5 million women clearly demonstrated no association with cancer.

**Burch urethropexy: consisting of bilateral urethrovaginal fixation to Cooper's ligament via the abdominal approach,**

## **Burch Procedure**



# autologous pubovaginal sling (PVS).



# Surgical treatments for POP

- It is estimated that by age 80, 30% of the women with POP will have undergone at least one reconstructive surgery.
- The choice of a primary POP repair is affected by many patient and surgical factors, including
  - age,
  - POP stage,
  - medical comorbidities such as obesity,
  - and desire for future sexual activity

# Common procedures

## **1- Native tissue POP repairs**

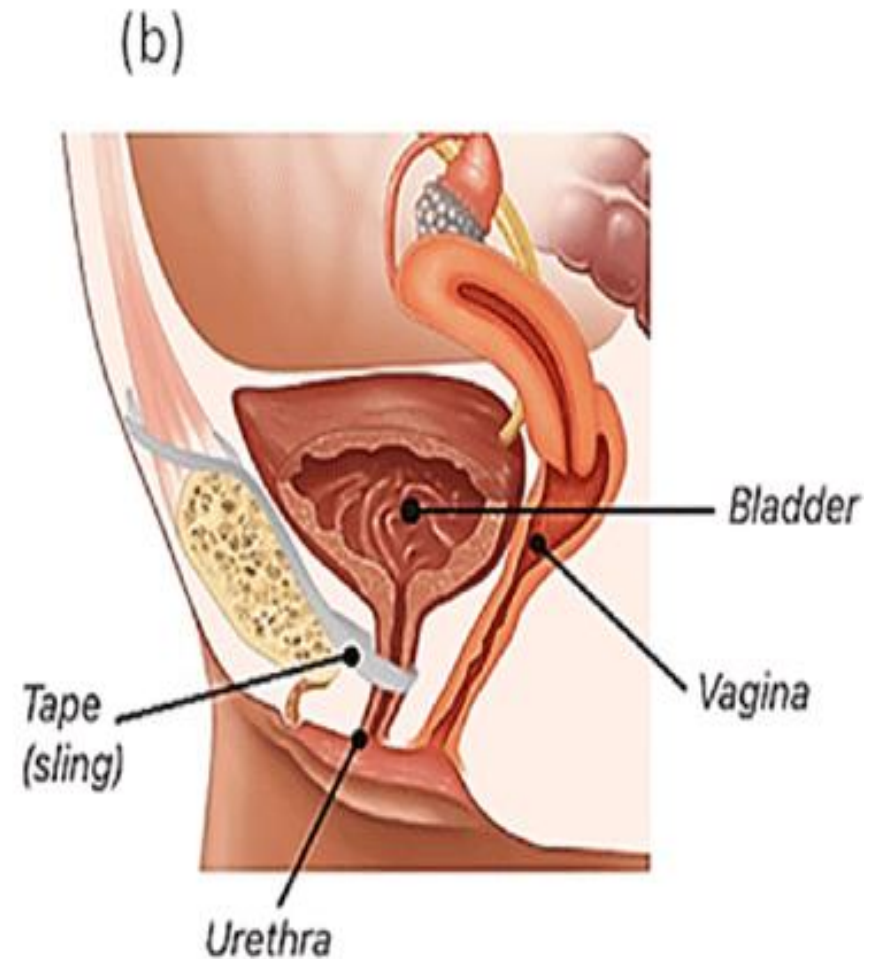
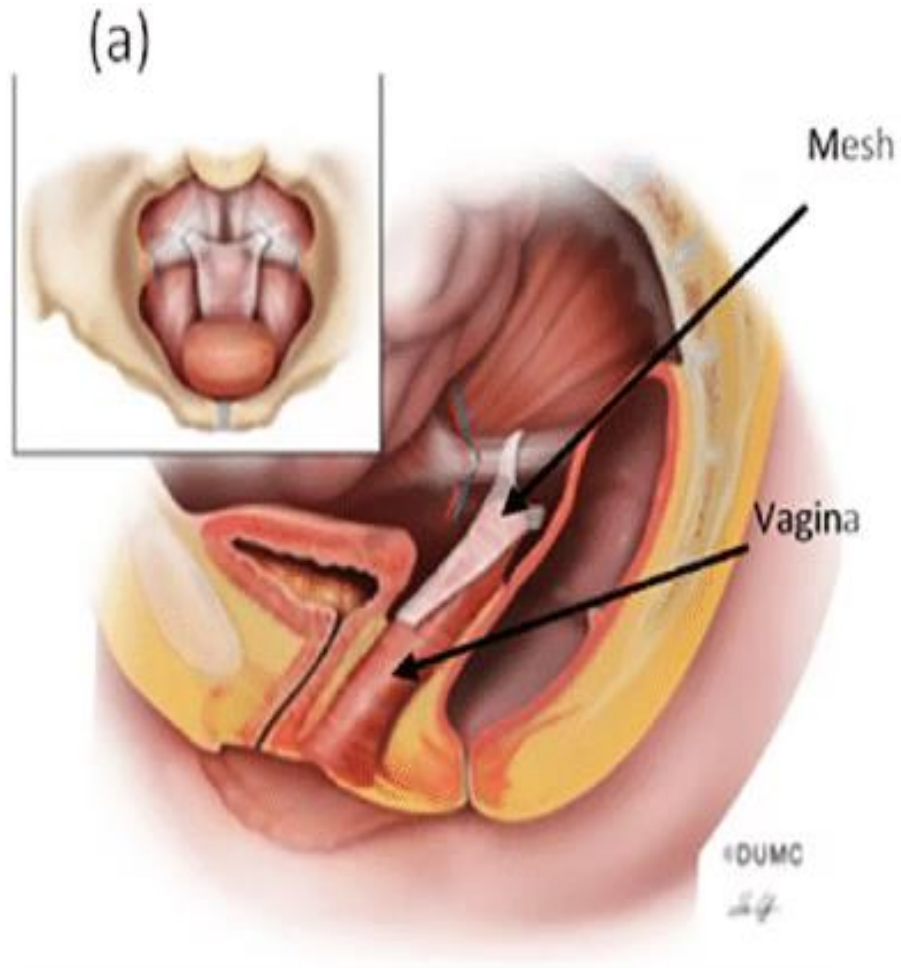
- Methods of native-tissue vaginal apical POP repairs include the sacrospinous ligament suspension (SSLS), uterosacral ligament plication (USLP), iliococcygeus vaginal vault suspension and McCall culdoplasty. These procedures most commonly involve a hysterectomy, although the correction of uterine prolapse through cardinal ligament suspension, also referred to as the Manchester-Fothergill operation, offers excellent anatomical and subjective cure as described in recent cohort studies

- **2- Mesh-based POP repairs**

Compared to native tissue sitespecific repairs, there is no benefit in augmenting cystocele or rectocele repairs with mesh or biologic graft for improvement in POP symptoms, quality of life or reduction of adverse events,

12% of women allocated to receive TVM experienced mesh extrusion within 2 years of initialoperation.

Examples of: (a) a mesh product used for POP (Siddiqui and Edenfield, 2014) and; (b) a sling used for SUI

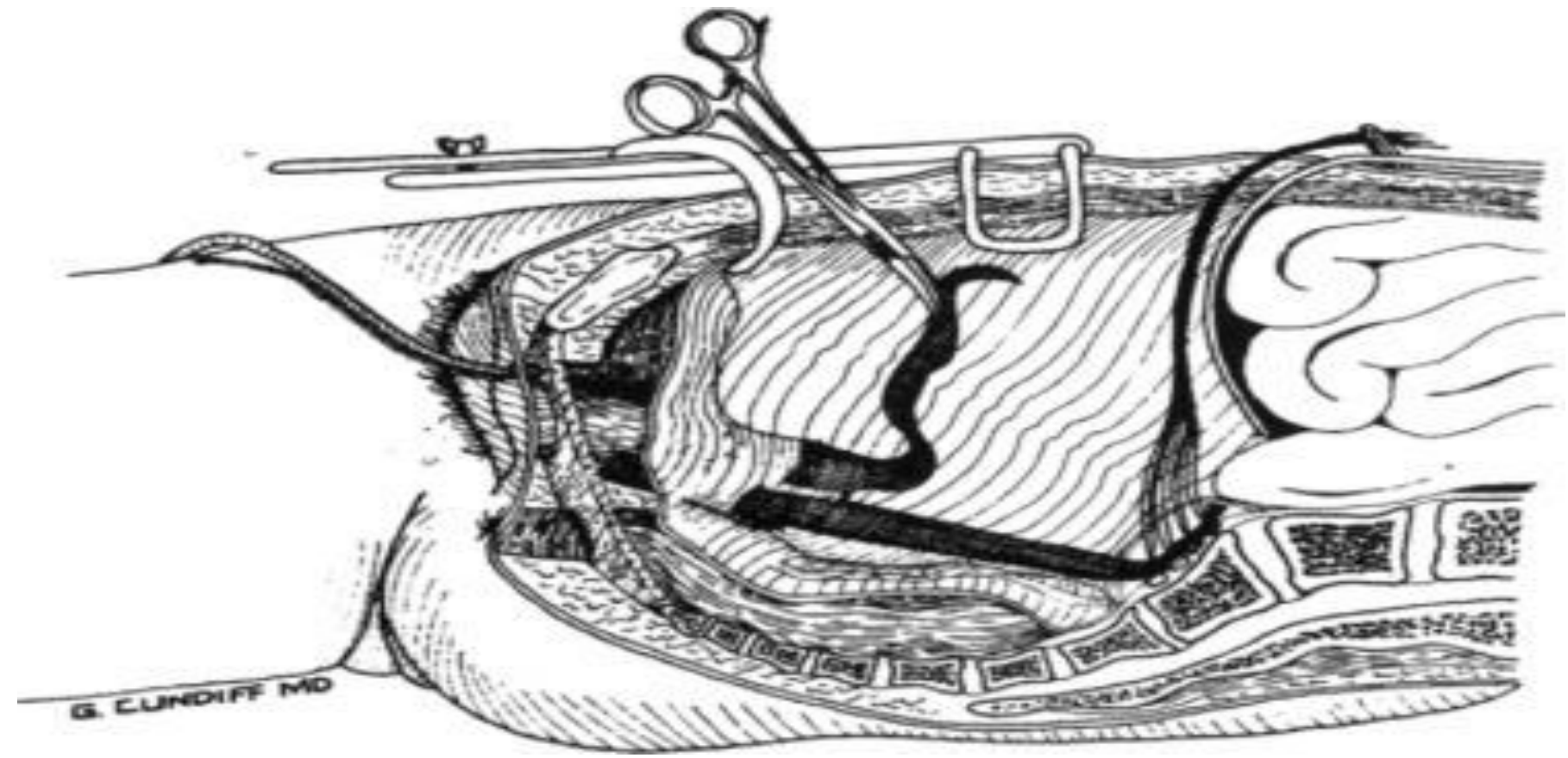




- patients who require surgical treatment for TVM related complications, at least 20% of the women require one or more additional operations.
- Due to the potential risk of significant adverse events related to TVM POP repairs, the Society of Obstetricians and Gynecologists Canada has recommended TVM POP repairs be limited to tertiary centers with high volumes, and specifically considered for women with levator avulsion, severe, or recurrent prolapse, or risk factors for chronic abdominal straining such as chronic constipation

- post sacrocolpopexy (SCP) has long been regarded as the gold standard for treatment of POP.
- SCP corrects apical prolapse by anchoring the vaginal wall via polypropylene mesh to the anterior longitudinal sacral ligament at the S2-4 level, thus re-establishing a horizontal vaginal axis.
- SCP can be performed via an open abdominal approach (ASCP), laparoscopically (LSCP) or robotically (RSCP). Success rate of ASCP at 3 years is 78–100%, with an overall mesh extrusion rate of 3.4%.
- LSCP and RSCP confer a similar short-term cure rate as the ASCP, and their efficacy against vaginal native tissue vault repairs is currently under investigation.
- Secondary analysis of the Prosthetic Pelvic Floor Repair trial in 2018 shows that laparoscopic SCP is also an effective option for primary anterior compartment prolapse repair, and offers a better preservation of sexual function and lower risk of mesh complication compared to TVM

FIGURE . Sacral colpopexy procedure. Grafts are attached to the posterior and anterior vaginal vault and then anchored to the sacral periosteum. In this figure the anterior and posterior grafts are anchored separately to avoid over-elevating the anterior wall, which may predispose to urinary incontinence.



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*Thank  
You*