Genitourinary Prolapse

**Genitourinary prolapse** occurs when there is descent of one or more of the pelvic organs including the uterus, bladder, rectum, small or large bowel, or vaginal vault. The anterior and/or posterior vaginal walls, the uterus and the vaginal vault can all be affected by this descent. There is resulting protrusion of the vaginal walls and/or the uterus. It is usually accompanied by urinary, bowel, sexual, or local pelvic symptoms.

**Pathophysiology**[1, 2]

The pelvic organs are mainly supported by the levator ani muscles and the endopelvic fascia (a connective tissue network connecting the organs to the pelvic muscles and bones).

Genitourinary prolapse occurs when this support structure is weakened through direct muscle trauma, neuropathic injury, disruption or stretching. A multifactorial cause for this damage is likely. The orientation and shape of the bones of the pelvis have also been implicated in the pathogenesis of genitourinary prolapse. Studies of risk factors have often been contradictory in their results and much is yet unclear.

**Confirmed risk factors**

- Increasing age
- Vaginal delivery
- Increasing parity
- Obesity
- Previous hysterectomy

**Possible risk factors**

- Obstetric factors:
  - Prolonged second stage of labour.
  - Increased birth weight.
  - Pregnancy itself (as opposed to delivery factors).
  - Use of forceps.
  - Age <25 years at first delivery.
  - Shape of pelvis.
- Family history of prolapse.
- Constipation.
- Connective tissue disorders - eg, Marfan’s syndrome, Ehlers-Danlos syndrome.
- Occupations involving heavy lifting.

**Epidemiology**

- Pelvic organ prolapse is common, occurring in 40-80% of parous women[3]. The exact incidence of genital prolapse may be difficult to determine, as many women do not seek medical advice.
- A woman’s lifetime risk of surgery for pelvic organ prolapse is 12-19%[1].
- 1 in 12 women in the community in the UK report symptoms of pelvic organ prolapse[4].
- Prolapse is the most common reason postmenopausal women have a hysterectomy and it accounts for 15-18% of hysterectomies overall[1].
- Prolapse of the anterior vaginal wall is the most common type.
Types of genitourinary prolapse

Prolapse can occur in the anterior, middle, or posterior compartment of the pelvis.

**Anterior compartment prolapse**
- **Urethrocele**: prolapse of the urethra into the vagina. Frequently associated with urinary stress incontinence; other symptoms are infrequent.
- **Cystocele**: prolapse of the bladder into the vagina. An isolated cystocele rarely causes incontinence and usually leads to few or no symptoms. However, a large cystocele may cause increased urinary frequency, frequent urinary infections and a pressure sensation or mass at the introitus.
- **Cystourethrocele**: prolapse of both urethra and bladder.

**Middle compartment prolapse**
- **Uterine prolapse**: descent of the uterus into the vagina.
- **Vaginal vault prolapse**: descent of the vaginal vault post-hysterectomy. Often associated with cystocele, rectocele and enterocele. With complete inversion, the urethra, bladder, and distal ureters may be included resulting in varying degrees of retention and distal ureteric obstruction.
- **Enterocele**: herniation of the pouch of Douglas (including small intestine/omentum) into the vagina. Small enteroceles are usually asymptomatic. Can occur following pelvic surgery. The neck of the hernial sac is usually sufficiently wide to make strangulation very rare. Can be difficult to differentiate clinically from rectocele but a cough impulse can be felt in enterocele on combined rectal and vaginal examination.

**Posterior compartment prolapse**
- **Rectocele**: prolapse of the rectum into the vagina.

Cystourethrocele is the most common type of prolapse, followed by uterine prolapse and then rectocele.

**Classification of genitourinary prolapse**[5]

There are a number of classifications or grading systems in use.

The Pelvic Organ Prolapse Quantification (POPQ) system was devised by the International Continence Society. It is based on the position of the most distal portion of the prolapse during straining:

- **Stage 0**: no prolapse.
- **Stage 1**: more than 1 cm above the hymen.
- **Stage 2**: within 1 cm proximal or distal to the plane of the hymen.
- **Stage 3**: more than 1 cm below the plane of the hymen but protrudes no further than 2 cm less than the total length of the vagina.
- **Stage 4**: there is complete eversion of the vagina.

The degree of uterine descent can also be graded by the Baden-Walker or Beecham classification systems:

- 1st degree: cervix visible when the perineum is depressed - prolapse is contained within the vagina.
- 2nd degree: cervix prolapsed through the introitus with the fundus remaining in the pelvis.
- 3rd degree: procidentia (complete prolapse) - entire uterus is outside the introitus.

**Presentation**

- Mid genital prolapse may be asymptomatic and an incidental finding. However, in other women, symptoms can severely affect their quality of life.
- Symptoms are related to the site and type of prolapse.
- Vaginal/general symptoms can be common to all types of prolapse.

**Vaginal/general symptoms**

- Sensation of pressure, fullness or heaviness.
- Sensation of a bulge/protrusion or 'something coming down'.
- Seeing or feeling a bulge/protrusion.
- Difficulty retaining tampons.
- Spotting (in the presence of ulceration of the prolapse).

**Urinary symptoms**

- Incontinence.
- Frequency.
- Urgency.
- Feeling of incomplete bladder emptying.
- Weak or prolonged urinary stream.
The need to reduce the prolapse manually before voiding.
The need to change position to start or complete voiding.

Coital difficulty
- Dyspareunia.
- Loss of vaginal sensation.
- Vaginal flatus.
- Loss of arousal.
- Change in body image.

Bowel symptoms
- Constipation/straining.
- Urgency of stool.
- Incontinence of flatus or stool.
- Incomplete evacuation.
- The need to apply digital pressure to the perineum or posterior vaginal wall to enable defecation (splinting).
- Digital evacuation necessary in order to pass a stool.

Examination
- Thorough history taking is needed to determine the patient's main symptoms and the effect of these on their daily life. Ask about coital difficulty.
- Examine the patient in both a standing and left lateral position if possible.
- Ask the woman to strain, and observe both whilst standing and supine.
- Use a Sims’ speculum inserted along the posterior vaginal wall to assess the anterior wall and vaginal vault and vice versa. Ask the patient to strain.
- A bivalve speculum can also be used to identify the cervix or vaginal vault. Ask the patient to strain, and slowly remove the speculum. Look for the degree of descent of the vaginal apex.
- Determine the parts of the vagina (anterior, posterior or apical) that the prolapse affects. Determine the degree of prolapse.
- Ulceration and hypertrophy of the cervix or vaginal mucosa with concomitant bleeding may be seen in women with prolapse that protrudes beyond the hymen.
- A rectal examination can be helpful if there are bowel symptoms.

Investigations
- Diagnosis is usually clinical and based on history and examination.
- If there are urinary symptoms consider the following:
  - Urinalysis ± a midstream specimen of urine (MSU).
  - Post-void residual urine volume testing using a catheter or bladder ultrasound scan.
  - Urodynamic investigations.
  - Urea and creatinine.
  - Renal ultrasound scan.
- If there are bowel symptoms consider the following:
  - Anal manometry.
  - Defecography.
  - Endo-anal ultrasound scan (to look for an anal sphincter defect if faecal incontinence is present).
- Occasionally ultrasound or MRI scans may be helpful.

Management
Treatment is not necessary if prolapse is mild and/or asymptomatic.

The current management options for women with symptomatic genitourinary prolapse are:

- Conservative. These measures are particularly helpful for women who:
  - Have mild prolapse.
  - Want to have further pregnancies.
  - Are frail or elderly.
  - Have a high anaesthetic risk.
  - Do not wish to have surgery.
- Vaginal pessary insertion.
- Surgery. (However, the risks of surgery for some, even for advanced prolapse, may not be warranted.)

Conservative
Watchful waiting. If a women reports little in the way of symptoms this is probably appropriate. Treatment may be needed if symptoms become troublesome or if complications such as obstructed defecation or urination, hydronephrosis or vaginal erosions develop.

Lifestyle modification: including treatment of cough, smoking cessation, constipation and overweight and obesity. However, even though the association of prolapse with these lifestyle factors has been demonstrated, the role of lifestyle modification as a prevention or treatment of prolapse is not supported by evidence.

Pelvic floor muscle exercises. The latest Cochrane review found some benefit for pelvic floor muscle training[6]. A Cochrane review of pelvic floor muscle training for urinary incontinence also found benefit and some evidence-based support for it being offered as first-line treatment[7]. Guidelines from the Royal College of Obstetricians and Gynaecologists (RCOG) support pelvic floor muscle training as an effective treatment option[8]. There is also evidence that regular individual supervised training is more effective[9, 10].

Vaginal oestrogen creams. Studies on the role of oestrogen in any form in improving symptoms of prolapse have had mixed results[11, 12, 13]. There is limited evidence that oestrogen creams before surgery may reduce the incidence of postoperative cystitis.

Vaginal pessary insertion
- May provide a good alternative to surgery.
- Inserted into the vagina to reduce the prolapse, provide support and relieve pressure on the bladder and bowel.
- Made of silicone or plastic. A ring pessary is usually the first choice.
- Pessaries are effective:
  - For short-term relief of prolapse prior to surgery.
  - In the long term if surgery is not wanted or is contra-indicated.

- A 2013 Cochrane review found some evidence that pessaries are effective in around 60% of women[14]. However, it notes there is no consensus on the best type of device to use, follow-up or pattern of replacement.
- Fitting a pessary:
  - Ensure the patient's bladder and bowel are empty.
  - Perform a bimanual examination and estimate the size of the vagina.
  - Getting the size right may involve a degree of trial and error, but one option is to start with a size just below the distance in cm between the urethral meatus and anus measured on Valsalva[2].
  - The aim is to fit the largest pessary that does not cause discomfort.
  - The pessary fits well if a finger can be swept between the pessary and the walls of the vagina.
  - Ask the patient to walk around, bend and micturate to ensure that the pessary is retained.

- How often to follow up: there is no clear consensus about how often to follow up women who have had a pessary fitted. If there are no symptoms, they are usually changed every 6-12 months.
- Sexually active women can use ring pessaries. They may either have intercourse with the pessary in place, or take it out and replace it afterwards.
- At each follow-up: ask about new symptoms. Examine the vagina for irritation and erosions. Change the pessary. If erosions are seen, remove the pessary and apply oestrogen cream. If the erosion does not heal, arrange biopsy.
- Complications: vaginal discharge and odour, vesicovaginal and rectovaginal fistulas, faecal impaction, hydronephrosis, urosepsis. These tend to occur in women who are not regularly followed up.

Surgery
Indications for referral[2];
- Failure of conservative treatment.
- Presence of voiding problems or obstructed defecation.
- Recurrence of prolapse after surgery.
- Ulceration.
- Irreducible prolapse.
- The woman prefers surgical treatment.

Goals of surgery are to restore anatomy, improve symptoms and return bowel, bladder and sexual function to normal. Surgery can be very effective but a combination of procedures may be required and the requirement for re-operation is common (29% in all, 13% within five years.) The choice of procedure will depend on whether the woman is sexually active, whether her family is complete, her general fitness, whether she has had a hysterectomy in the past, the nature of the prolapse, and the surgeon's preference. Surgery may be by the abdominal route, or vaginal. 80-90% of procedures are done by the vaginal route.

Mesh repair
Surgery may use a mesh or not. Use of mesh is currently the topic of much controversy, study and potentially litigation. There are many types of mesh used, including biological grafts, absorbable synthetic mesh and non-absorbable synthetic mesh.

There are concerns about the complications and long-term potential problems with mesh repairs. Vaginal mesh extrusion and erosion are the most common complications, presenting with vaginal bleeding, pelvic pain, dyspareunia, or bowel or bladder dysfunction.

- Current National Institute for Health and Care Excellence (NICE) guidance states that there is a risk of complications that can cause significant morbidity, and that therefore, this procedure should only be used with special arrangements for clinical governance, consent and audit or research. It must be explained to women considering the procedure that there is uncertainty about the long-term results and there is a risk of complications[15].
The latest Cochrane review concluded that current evidence does not support the use of mesh repair for anterior repairs, due to the risk of complication[3]. However, it notes that newer meshes have not yet been assessed by controlled trials. It advises caution by women and gynaecologists.

A Scottish Independent Review in 2015, highlighting concerns about significant complications, led to NHS Scotland advising vaginal mesh procedures be suspended pending further investigation[16].

A 2014 report by the Medicines and Healthcare products Regulatory Agency (MHRA) concluded that for most women mesh implants were safe and effective, and that the benefits outweighed the risk[17].

In the USA, the Federal and Drug Administration (FDA) has issued a number of warnings about rare but potentially severe complications.

Surgery for bladder/urethral prolapse

- **Anterior colporrhaphy**: involves central plication of the fibromuscular layer of the anterior vaginal wall. Mesh reinforcement may also be used. It is performed transvaginally. Intraoperative complications are uncommon but haemorrhage, haematoma and cystotomy may occur.

- **Colposuspension**: performed for urethral sphincter incontinence associated with a cystourethrocele. The paravaginal fascia on either side of the bladder neck and the base of the bladder are approximated to the pelvic side wall by sutures placed through the ipsilateral ilipectineal ligament.

Surgery for uterine prolapse

- **Hysterectomy**: a vaginal hysterectomy has the advantage that no abdominal incision is needed, thereby reducing pain and hospital stay. This can be combined with anterior or posterior colporrhaphy.

- **Open abdominal or laparoscopic sacrohysteropexy**: this can be performed if the woman wishes to retain her uterus. The uterus is attached to the anterior longitudinal ligament over the sacrum. Mesh is used to hold the uterus in place.

- **Sacrospinous fixation**: unilateral or bilateral fixation of the uterus to the sacrospinous ligament. Performed via vaginal route. This has a lower success rate than sacrohysteropexy. There is risk of injury to the pudendal nerve and vessels and the sciatic nerve.

Surgery for vault prolapse[8]

- **Sacrospinous fixation**: unilateral or bilateral fixation of the vault to the sacrospinous ligament. Performed via vaginal route. There is risk of injury to the pudendal nerve and vessels and the sciatic nerve. This has a higher failure rate but a lower perioperative and postoperative morbidity/mortality than sacrocolpopexy, and is associated with faster recovery and higher patient satisfaction.

- **Laparoscopic or open abdominal sacrocolpopexy**: this has been found to be the most effective procedure in terms of low recurrence rate. A mesh may be attached at one end to the longitudinal ligament of the sacrum and at the other to the top of the vagina and for a variable distance down the posterior and/or anterior vaginal walls[18].

- **Robotic sacrocolpopexy**: also used in some areas but evidence not yet available.

Surgery for rectocele/enterocele

- **Posterior colporrhaphy**: involves levator ani muscle plication or by repair of discrete fascial defects. A mesh can be used for additional support. Levator plication may lead to dyspareunia.

- Evidence confirms a transvaginal approach is more effective than transanal repairs[19].

Obliterative surgery (colpocleisis)[8]

- Corrects prolapse by moving the pelvic viscera back into the pelvis and closing off the vaginal canal.
- Vaginal intercourse is no longer possible.
- Advantages are that it is almost 100% effective in treating prolapse and has a reduced peri-operative morbidity.
- Safe and effective for those who are frail or do not wish to retain sexual function.
- Pre-operative counselling is essential.

Vaginal prolapse repairs using mesh

**Clinical Editor’s note (July 2017):**

Dr Hayley Willacy draws your attention to 4 recently released NICE guidance documents related to using mesh procedures[20, 21, 22, 23]. Within them it states: ‘There are serious and well-recognised complications. The procedure can be used provided that standard arrangements are in place for clinical governance, consent and audit.’ Evidence for efficacy varies between indication and procedure.

Complications

- Ulceration and infection of organs prolapsed outside the vaginal introitus may occur.
- Urinary tract complications include stress incontinence, chronic retention and overflow incontinence, and recurrent urinary tract infections.
• Bowel dysfunction may occur with a rectocele.
• There are many potential complications from surgery, some of which are discussed above.
Prognosis

- It has been traditionally assumed that left untreated, uterine prolapse will gradually worsen. There is evidence, however, that this may not be the case and that spontaneous remission may happen. Obesity is a risk factor for progression.
- Good prognosis is associated with young age, good physical health and a BMI within normal limits.
- Poorer prognosis is associated with older age, poor physical health, respiratory problems (eg, asthma or chronic obstructive pulmonary disease) and obesity.
- Recurrence after pelvic organ repair requiring further surgery is around 29%.

Prevention

Possible preventative measures include (trial evidence lacking for most):

- Good intrapartum care, including avoiding unnecessary instrumental trauma and prolonged labour.
- Hormone replacement therapy, although its role in preventing prolapse is uncertain.
- Pelvic floor exercises may prevent prolapse occurring secondary to pelvic floor laxity and are strongly advised before and after childbirth.
- Smoking cessation will reduce chronic cough (and therefore intra-abdominal pressure).
- Weight loss if overweight or obese.
- Treatment of constipation throughout life.

RCOG guidelines advise that the following at the time of hysterectomy may help to prevent subsequent post-hysterectomy vault prolapse (PHVP) prolapse:

- McCall culdoplasty at the time of vaginal hysterectomy.
- Suturing the cardinal and uterosacral ligaments to the vaginal cuff at the time of hysterectomy is effective in preventing PHVP following both abdominal and vaginal hysterectomies.
- Sacrospinous fixation at the time of vaginal hysterectomy should be considered when the vault descends to the introitus during closure.

Further reading & references

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20. Infracoccygeal sacrocolpopexy using mesh to repair vaginal vault prolapse; NICE Interventional procedure (June 2017)
21. Infracoccygeal sacrocolpopexy using mesh to repair uterine prolapse; NICE Interventional procedure guidance (June 2017)
22. Sacrocolpopexy using mesh to repair vaginal vault prolapse; NICE Interventional procedure guidance (June 2017)
23. Uterine suspension using mesh (including sacrohysteropexy) to repair uterine prolapse; NICE Interventional procedure guidance (June 2017)

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