Pelvic Floor Pathology

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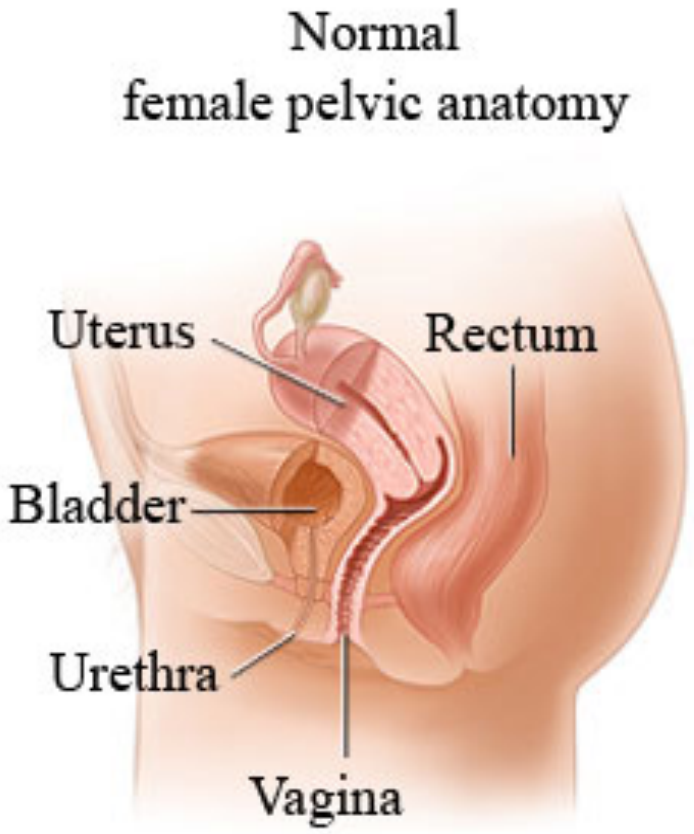
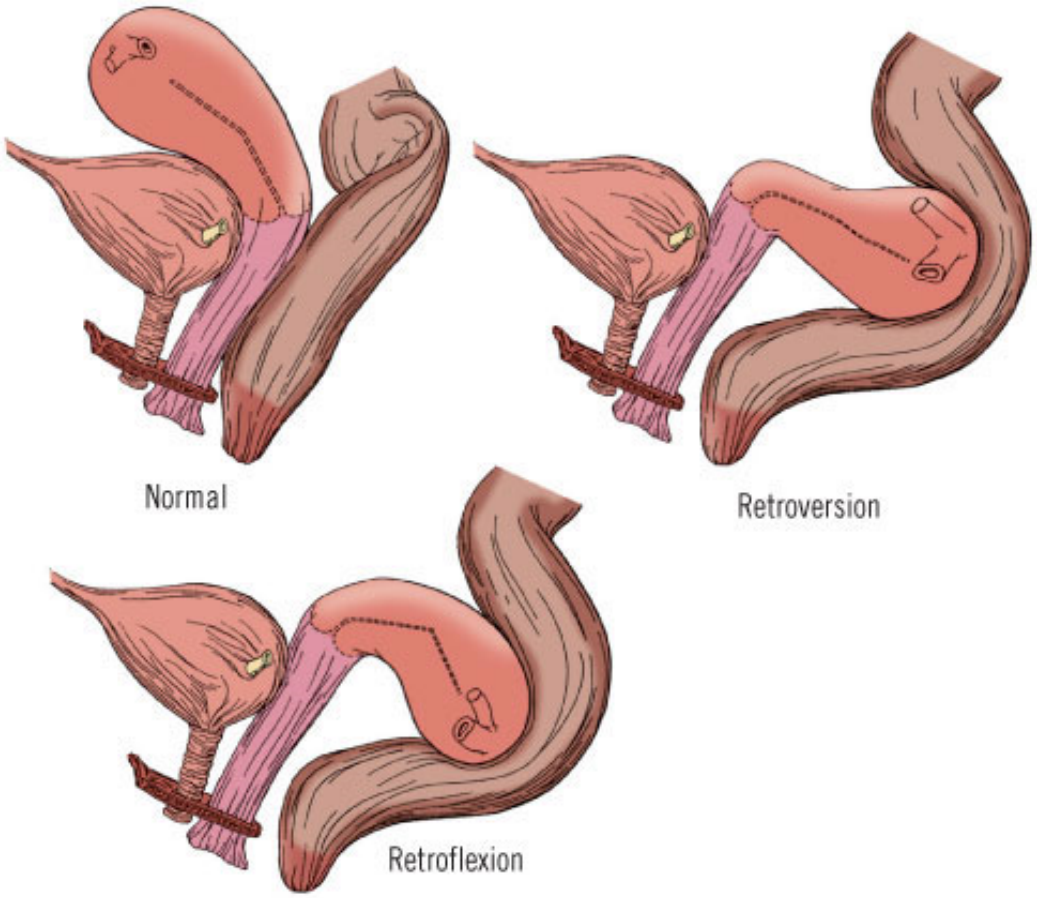
GENITAL PROLAPSE

- Common complaint of elderly woman
- Mostly in post menopausal and multiparous women
- In prolapse straining causes protrusion of vaginal walls at vaginal orifices
- Extreme cases uterus may be protrude
- Is not a life-threating condition but affects the quality of life, the every-day activities and the social behaviour
- Social costs, i.e. (for example) incontinence pads

Normal position of uterus and vagina

- *The uterus and vagina lies in middle of pelvis.*
- *Anteriorly: urinary bladder and urethra.*
- *Posteriorly: colon, rectum and anal canal.*
- *The perineal body is interposed b/w lower part of the posterior vaginal wall and the anal canal.*





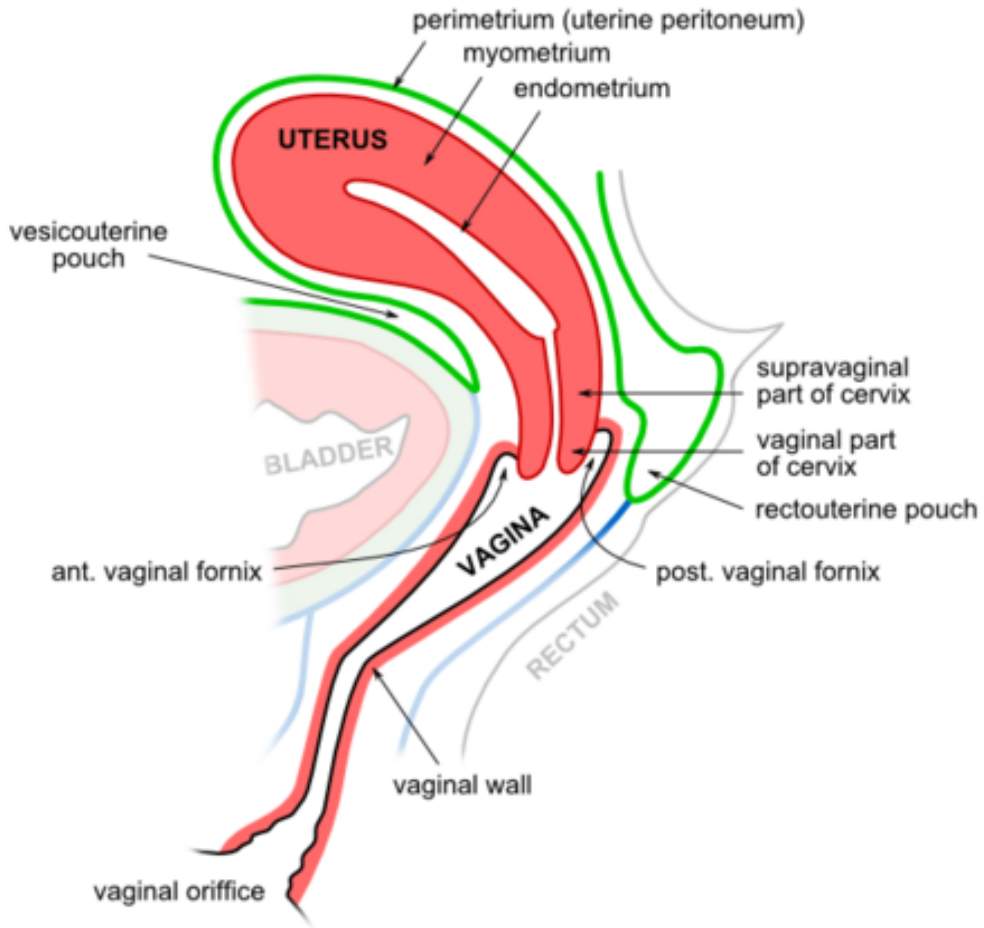
The uterus is normally anteverted,anteflexed

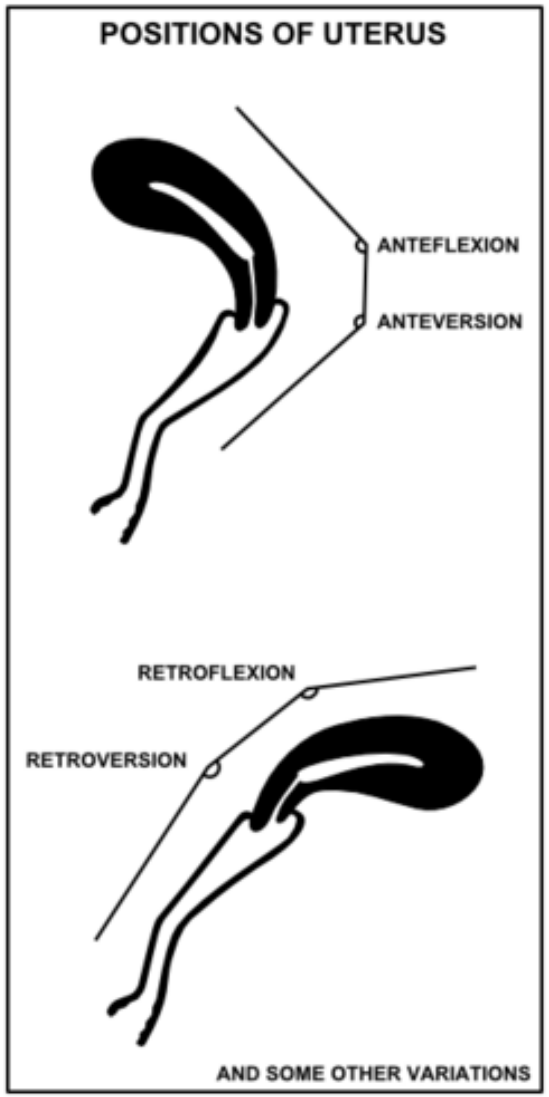
Version: is the angle between the longitudinal axis of cervix, and that of the vagina.

Flexion: is the angle between the longitudinal axis of the uterus, and that of the cervix.

- *In 80 % of women the uterus is anteverted and anteflexed*
- *In 20% of women it may be retroverted*

VAGINA AND UTERUS

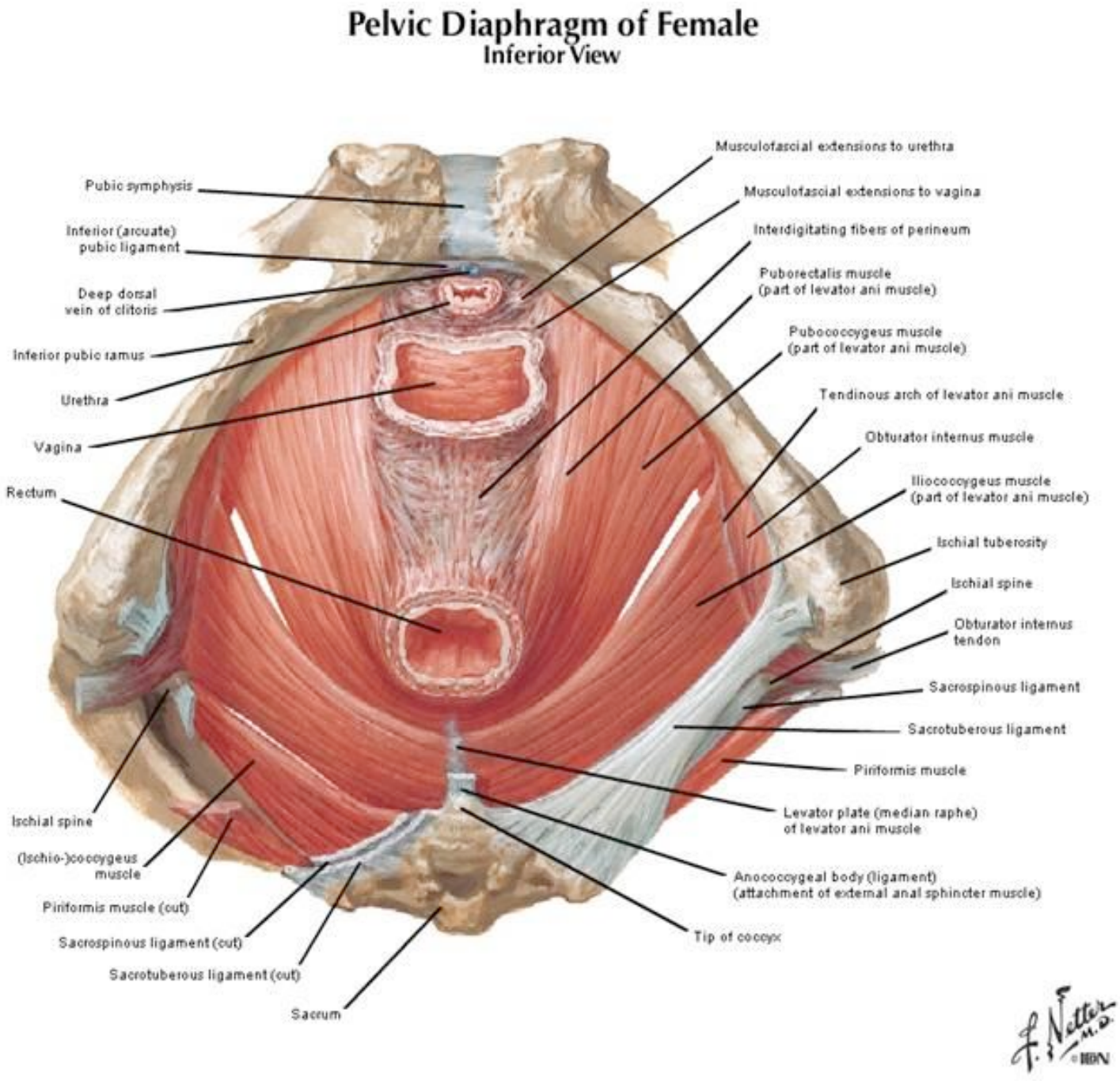




- ***PELVIC FLOOR***
  - ***Comprises***
    - *Pelvic diaphragm*
    - *Endopelvic fascia*
    - *Perineal membrane*
    - *Perineal body*

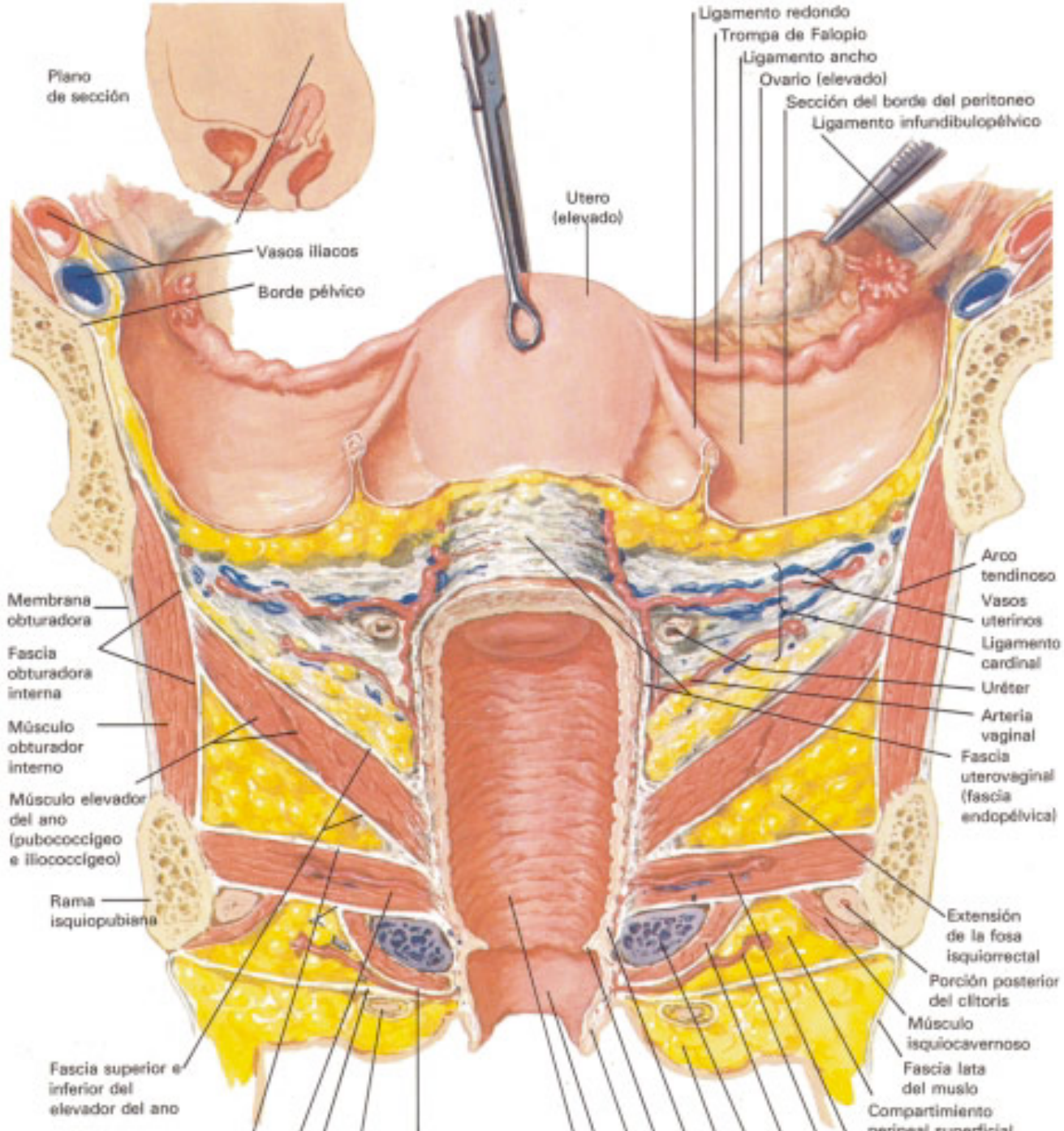
➢ *Pelvic diaphragm*

the deepest muscle layer i.e. the levator ani (puborectalis, pubococcygeus and ileococcygeus) and coccygeus muscles that are attached to the inner surface of the minor pelvis form the muscular floor of the pelvis.



➢ *Endopelvic fascia*

structure that lies immediately beneath the peritoneum and is one continuous unit with various thickenings or condensations in specific areas. The endopelvic fascia is continuous with the visceral fascia, which provides a capsule containing the organs and allows displacements and changes in volume.



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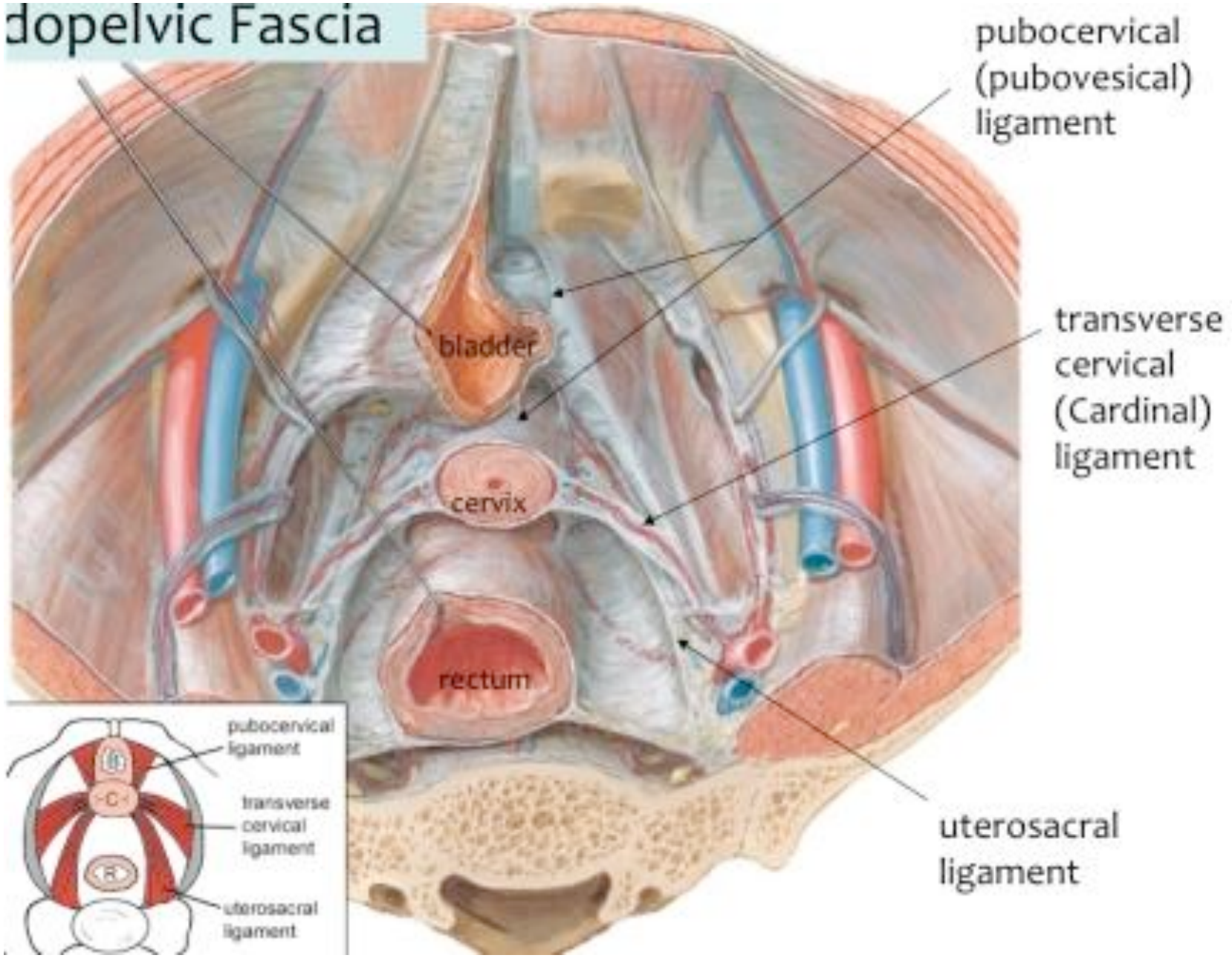
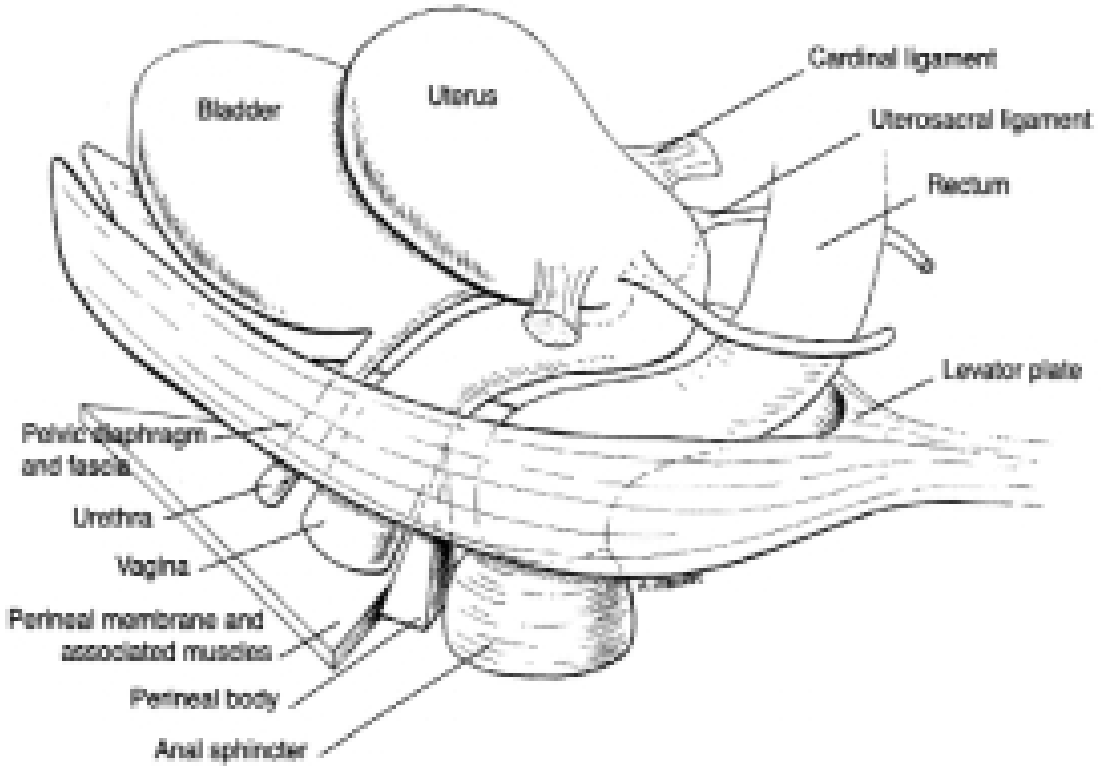
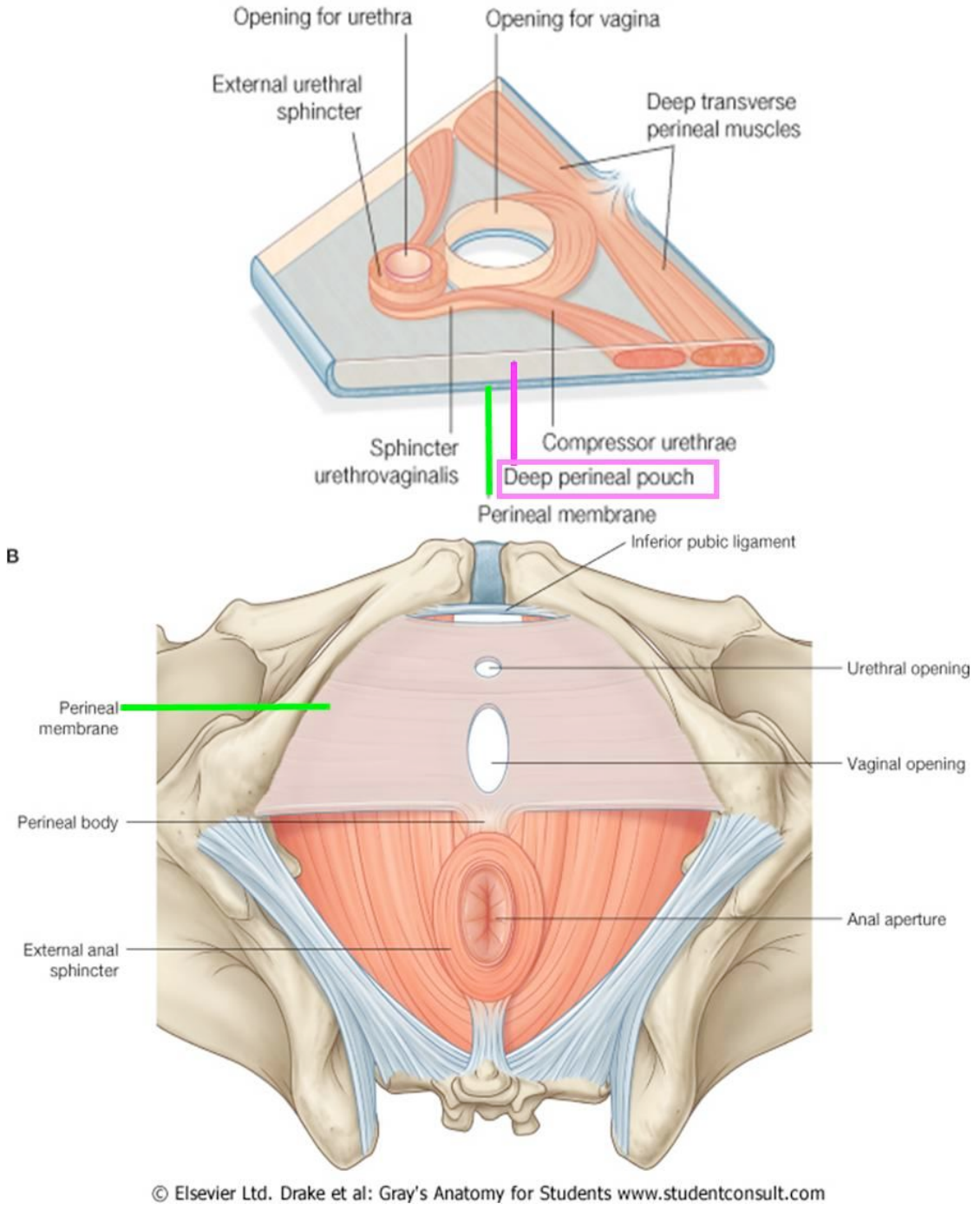


➢ *Perineal membrane*

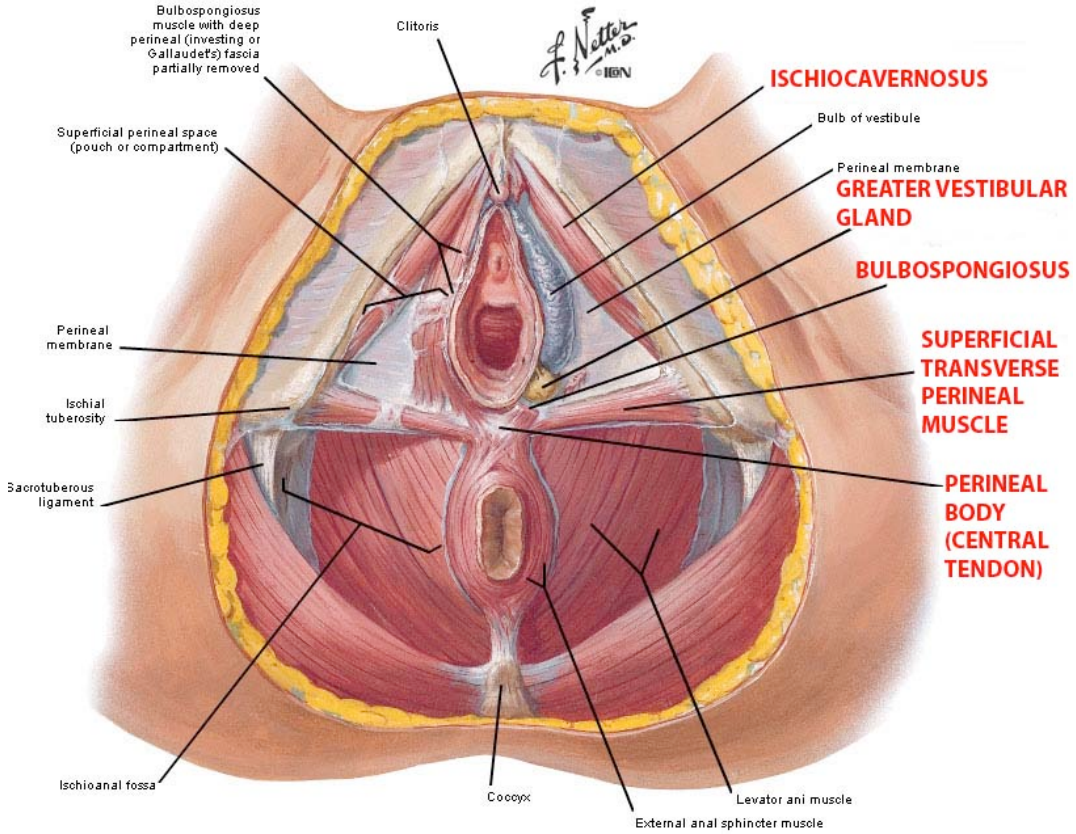
musculofascial structure which is present over the anterior pelvic outlet below the pelvic diaphragm

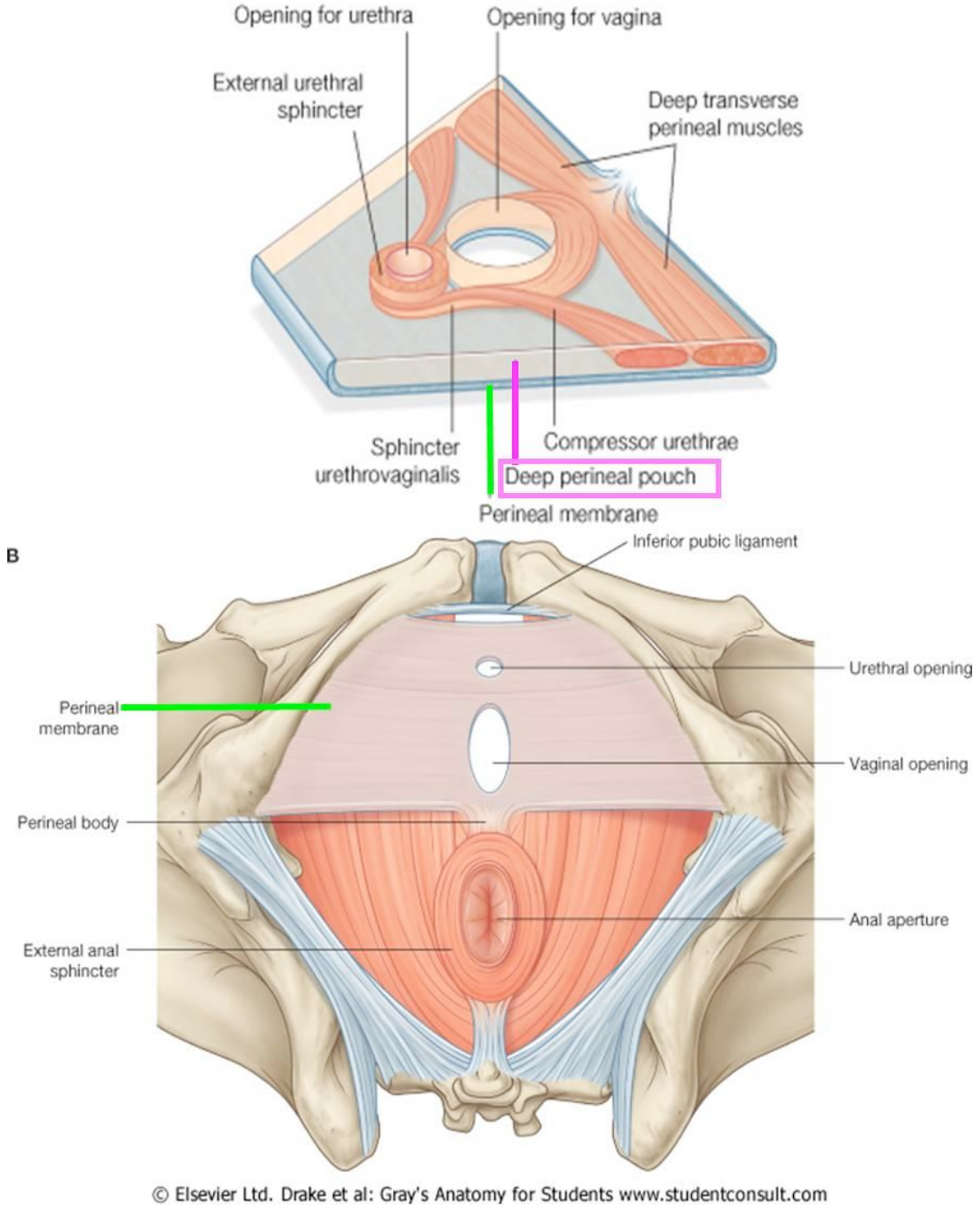




➢*Perineal body*

The perineal body is a pyramidal fibromuscular structure in the midline between the anus and vagina with the rectovaginal septum at its cephalad apex

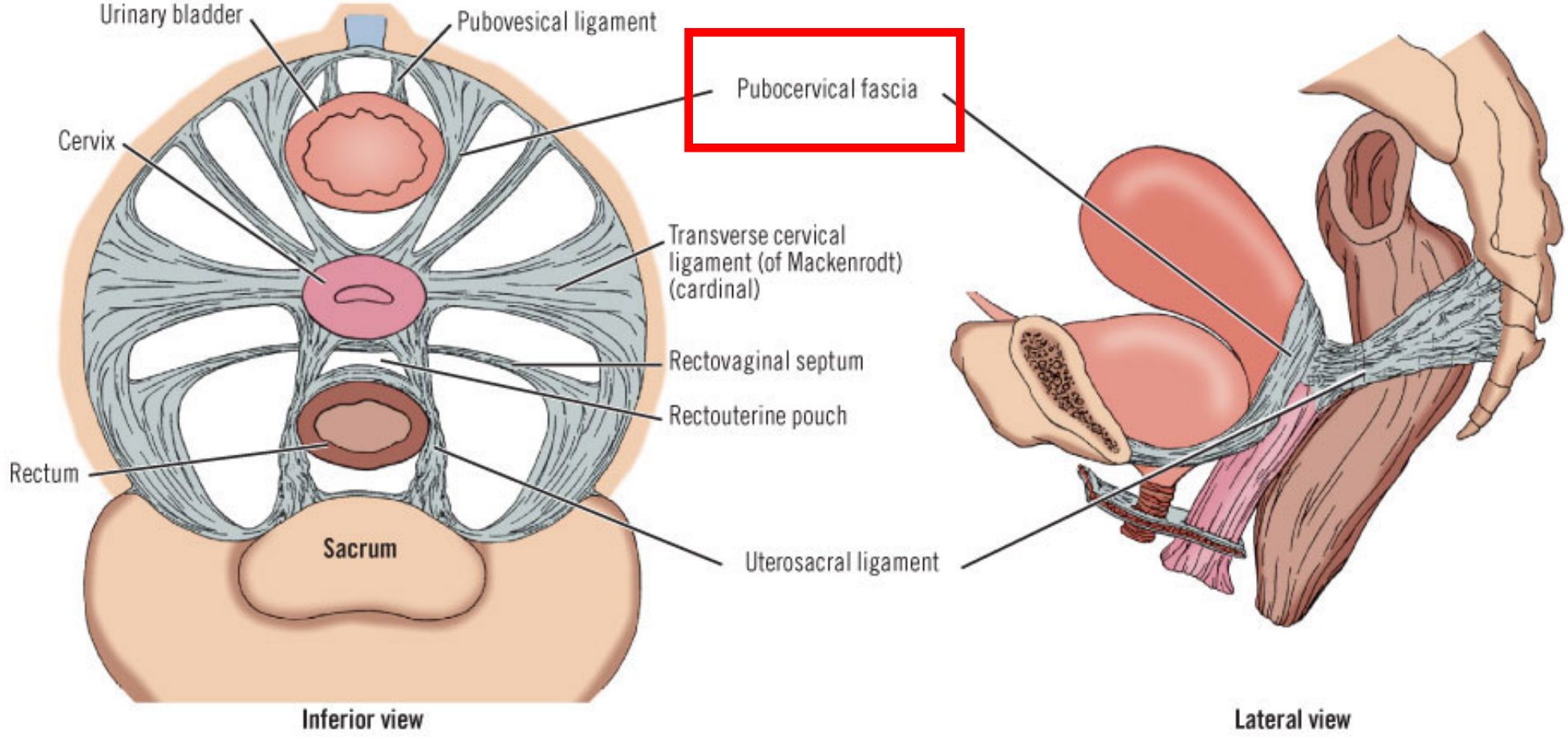




Supports of uterus and vagina

uterine supports

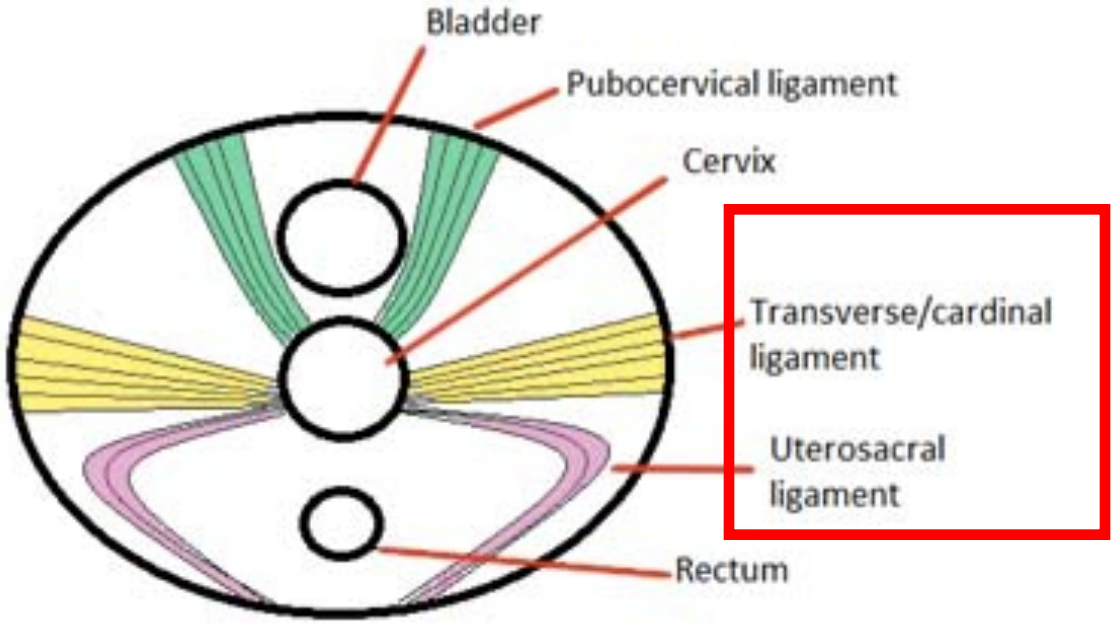
- *Cardinal ligaments: major support of uterus and vault of vagina.*
- *Uterosacral ligament: responsible for keeping uterus in anteverted postion*
- *Pubocervical fascia: extension of cardinal ligaments*

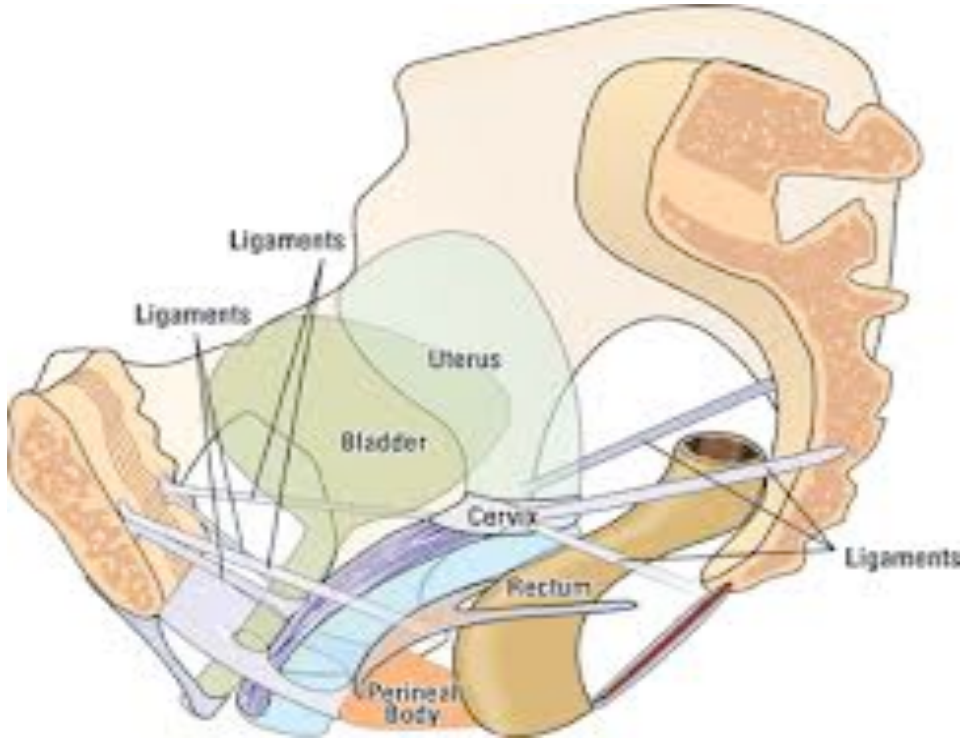


- *Pubocervical fascia: extension of cardinal ligaments*

This fascia is attached to supravaginal part of cervix ,runs forward below the base of bladder ,splits into two to allow for the passage of urethra and is attached to the body of pubic bones

Uterine ligaments





- *Cardinal ligaments: major support of uterus and vault of vagina.*

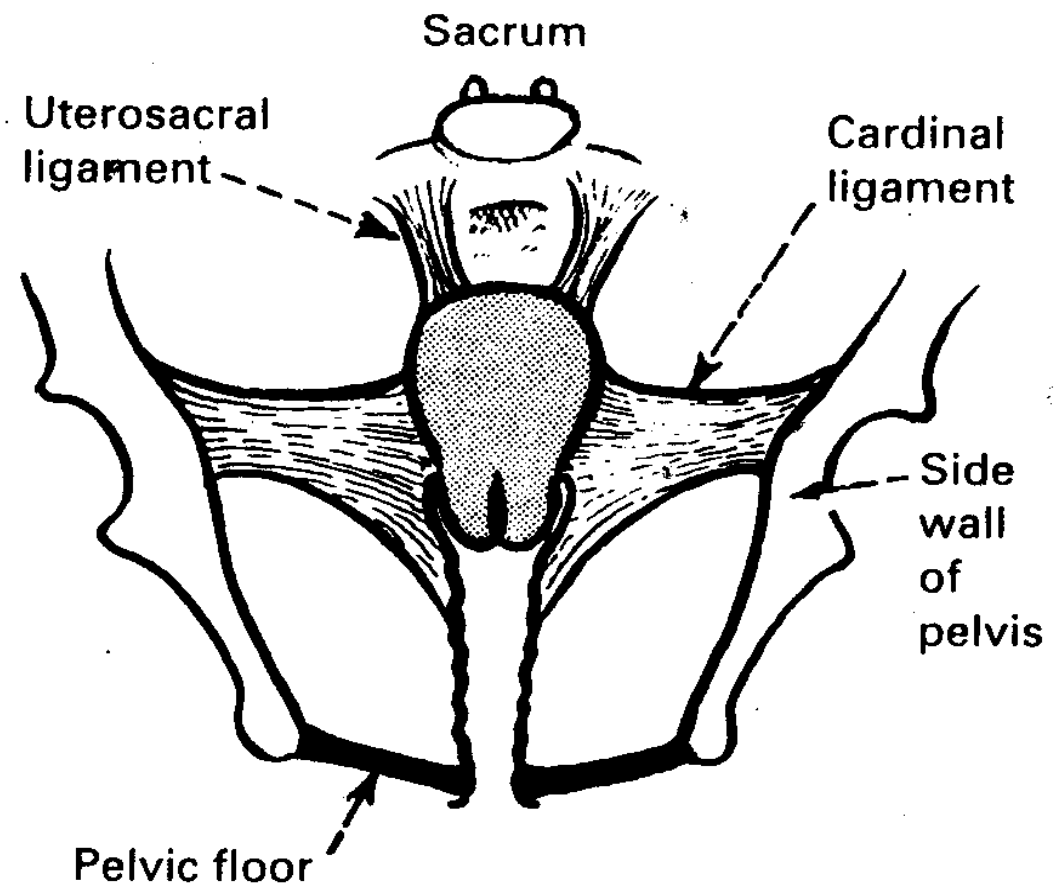
Attached medially to supravaginal part of the cervix and vault of vagina and laterally to lateral pelvic wall.

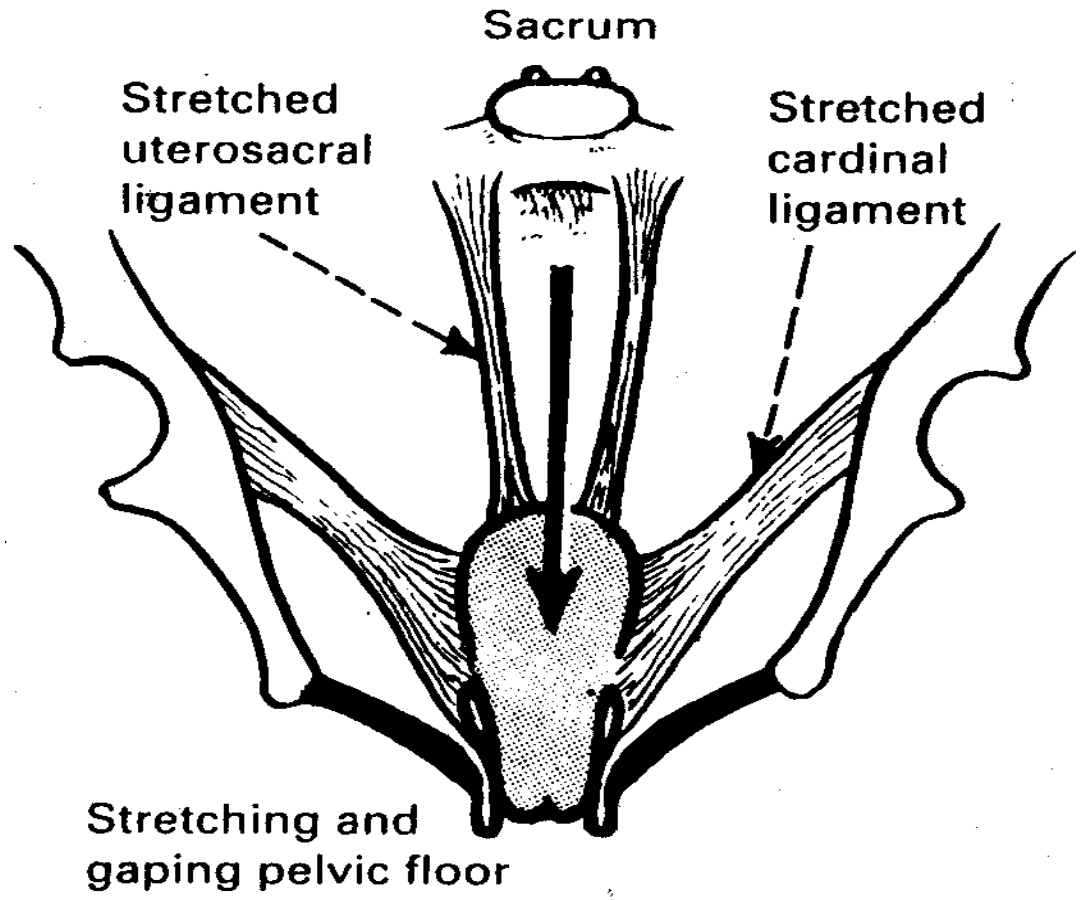
- *Uterosacral ligament: responsible for keeping uterus in anteverted postion*

Attached anteriorly to supra vaginal party of cervix and vault of vagina and posteriorly to fascia in front of sacral vertebrae

Uterine support →

Pelvic ligaments under stretch during prolapse





Supports of uterus and vagina

vagina supports

- *Cardinal ligments: on each side attached to vault of vagina and supravaginal part of cervix.*
- *Levator ani muscles: provide support to lower part of vagina*
- *Urogenital diaphgram and perianal muscles: hold vagina in its position*
- *Pubocervical fascia: provide support to anterior vaginal wall*
- *Perineal body and rectovaginal fascia: support the posterior vaginal wall*

- *NB: Posterior vaginal wall: provide support to anterior vaginal wall in erect position*

Utero-vaginal prolapse

- **Uterine prolapse :**is the condition of the uterus collapsing, falling down, or downward displacement of the uterus with relation to the vagina. It is also defined as the bulging of the uterus into the vagina
- **Vaginal prolapse** :is characterized by a portion of the vaginal canal protruding from the opening of the vagina.

Frequently, there may be prolapse of both uterus and vagina

- **Genital prolapse** is the descent of one or more of the genital organ through the fasciomuscular pelvic floor below their normal level.

Terminology

The pelvic structures are divided into 3 compartments :

- Anterior : urethra/bladder
- Middle : uterus/vault
- Posterior : rectum/anus

And we can identify:

1. anterior vaginal wall prolapse
2. posterior vaginal wall prolapse
3. uterine prolapse
4. vaginal vault prolapse (after hysterectomy)

1. ANTERIOR VAGINAL WALL PROLAPSE

- Cystocele :

Descent of upper 2/3 of the anterior vaginal wall all along with base of the bladder

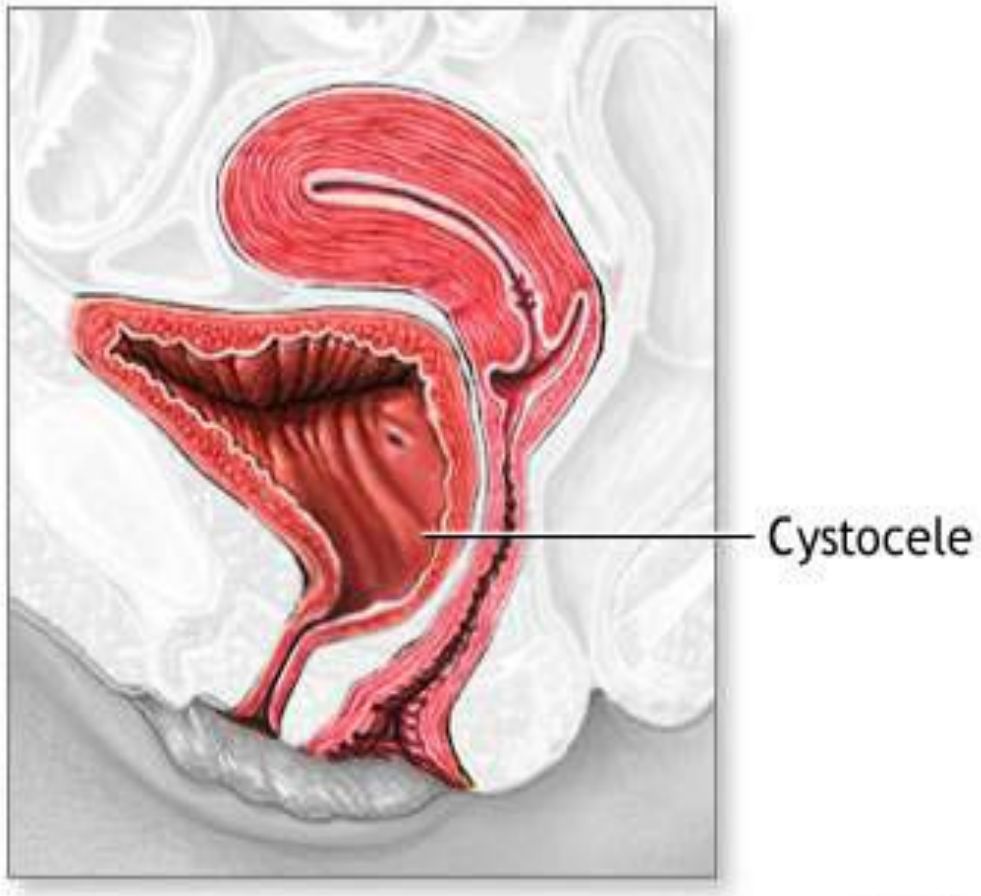
- Urethrocele:

Descent of lower 1/3 of the anterior vaginal wall along with the uretheral displacement

- Cysto-urethrocele:

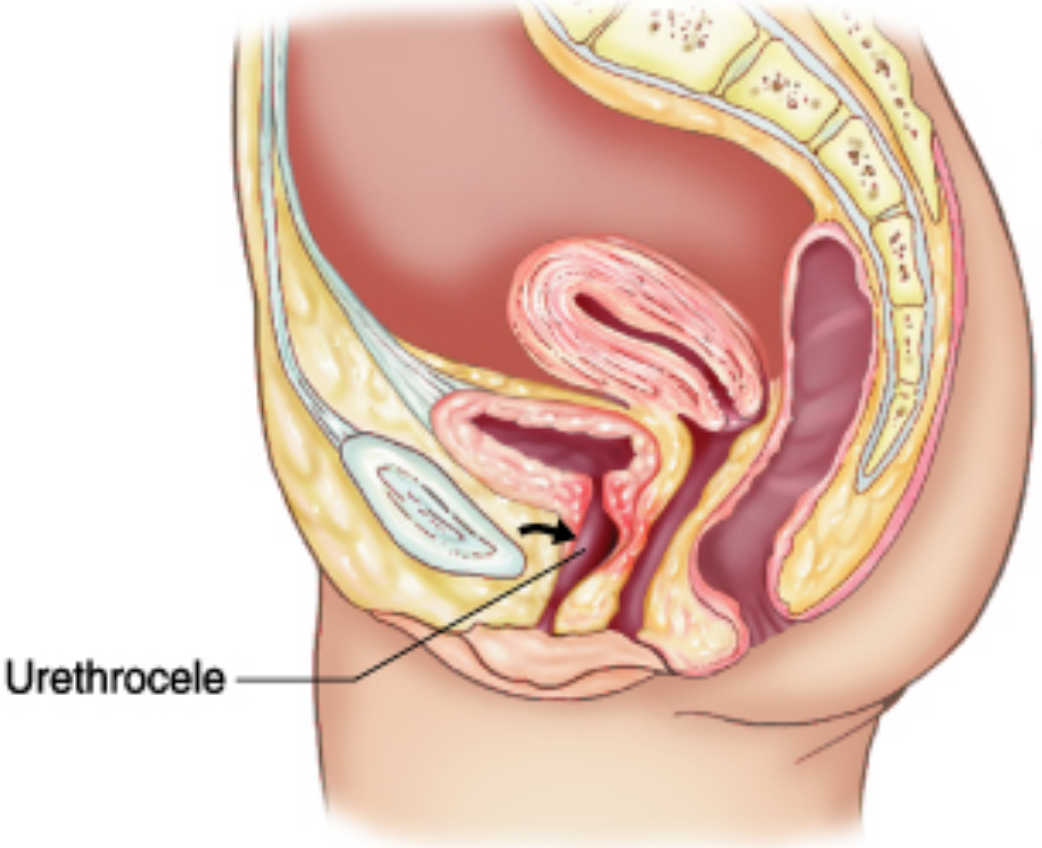
Prolapse of entire anterior vaginal wall

1. ANTERIOR VAGINAL WALL PROLAPSE



cystocele

Descent of upper 2/3 of the anterior vaginal wall all along with base of the bladder



urethrocele

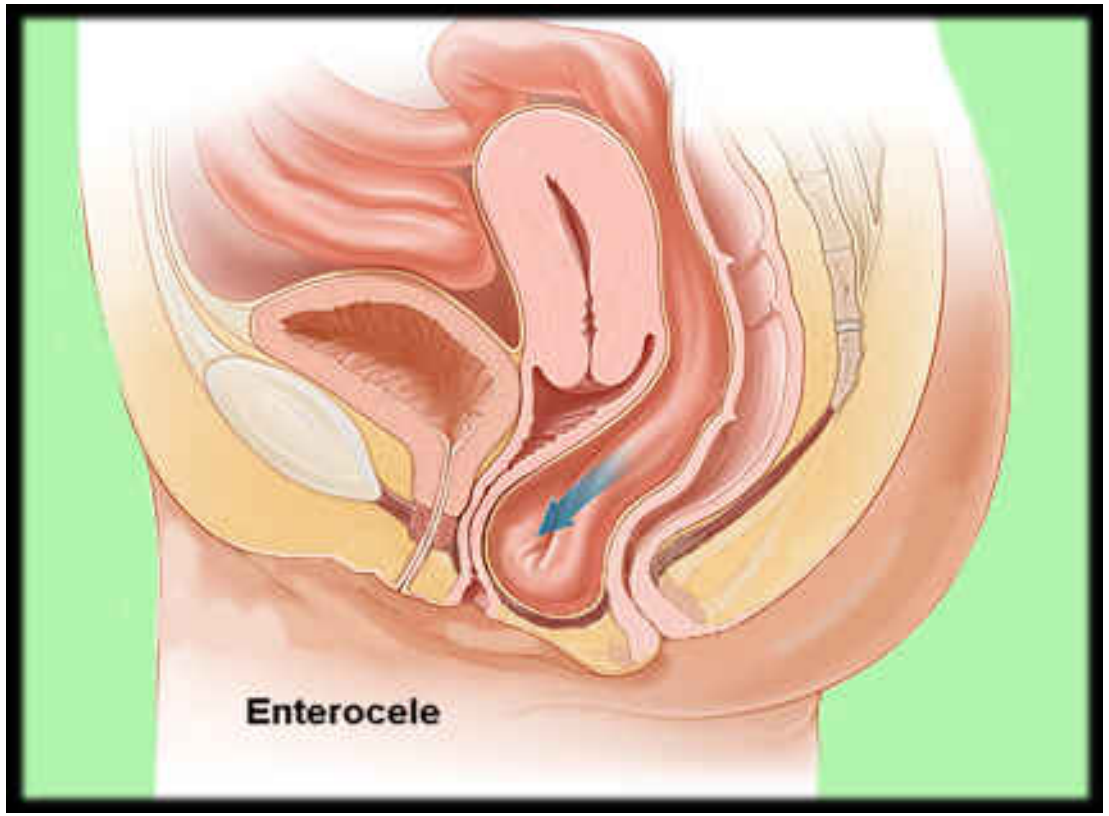
Descent of lower 1/3 of the anterior vaginal wall along with the uretheral displacement

2. POSTERIOR VAGINAL WALL PROLAPSE

Enterocele : (or hernia of the pouch of Douglas) is the prolapse of the upper 1/3 of the posterior vaginal wall (it may contain loops of the intestine)

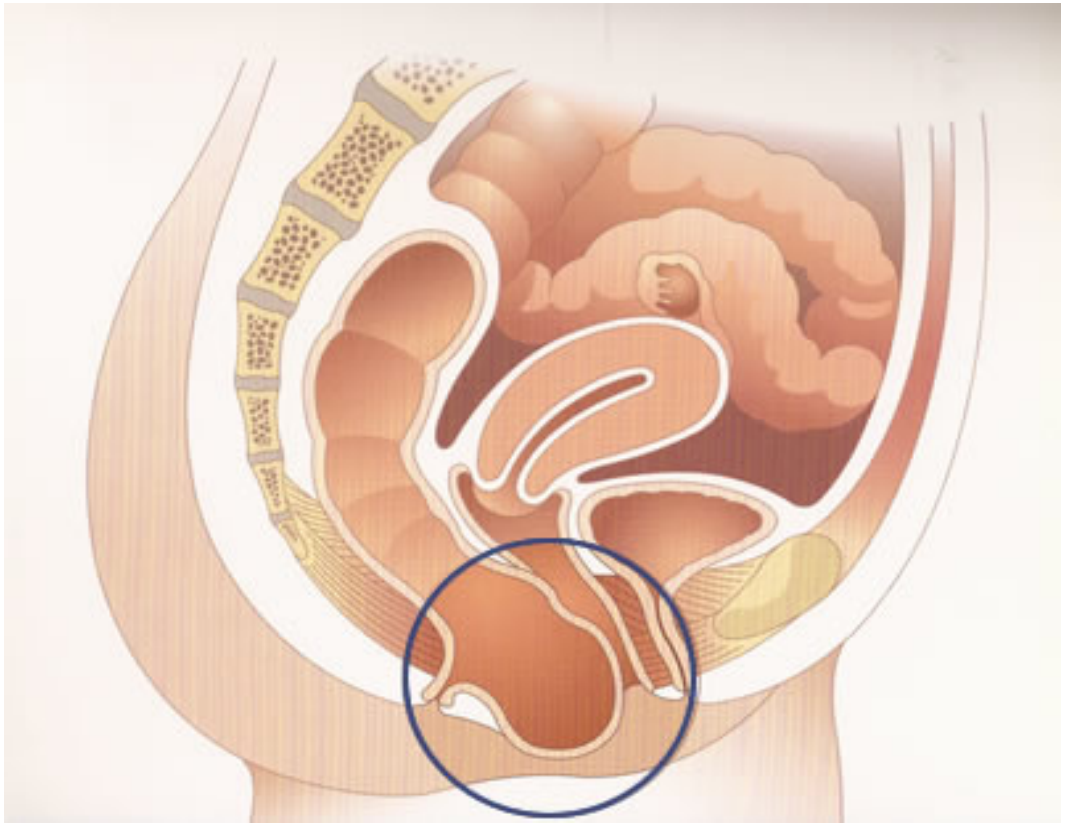
- Rectocele: prolapse of lower 2/3 of the posterior vaginal wall along with lower part of the rectum

2. POSTERIOR VAGINAL WALL PROLAPSE



enterocele

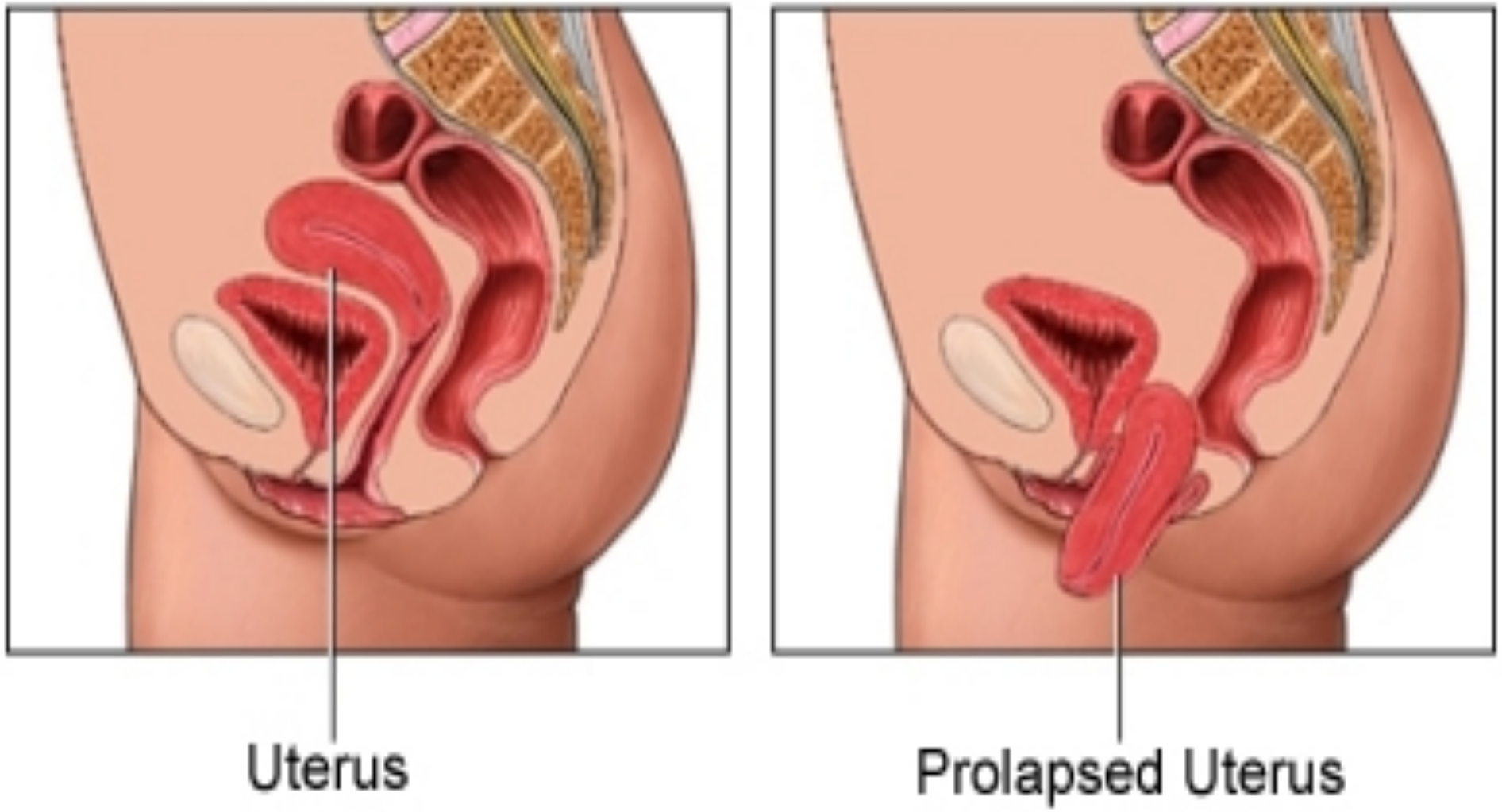
(or hernia of the pouch of Douglas) is the prolapse of the upper 1/3 of the posterior vaginal wall (it may contain loops of the intestine)



rectocele

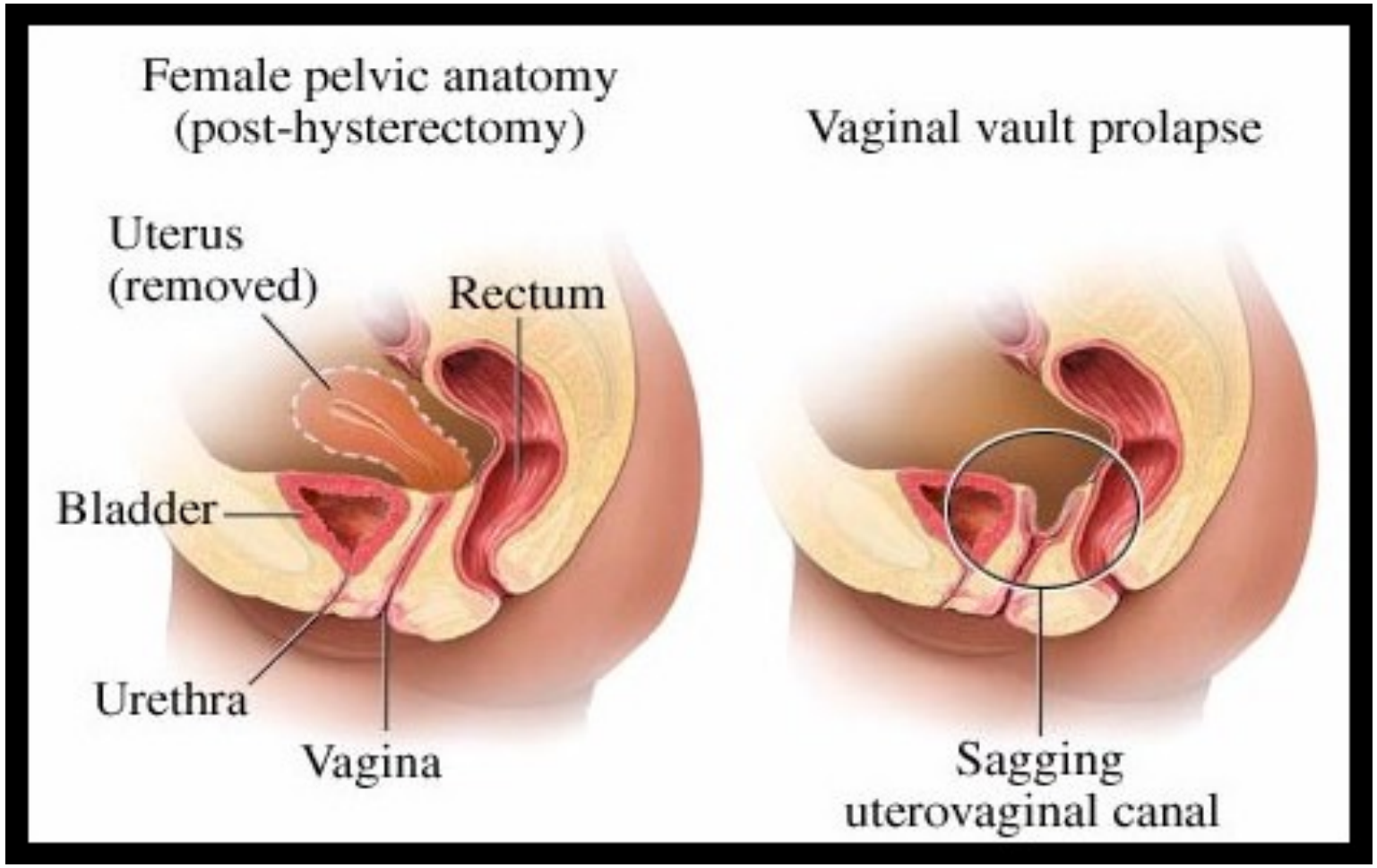
prolapse of lower 2/3 of the posterior vaginal wall along with lower part of the rectum

3. Uterine prolapse



Hysterocele: prolapse of the uterus

4. VAGINAL VAULT PROLAPSE



Vault prolapse: descent of the vaginal vault or inversion of the vagina after hysterectomy

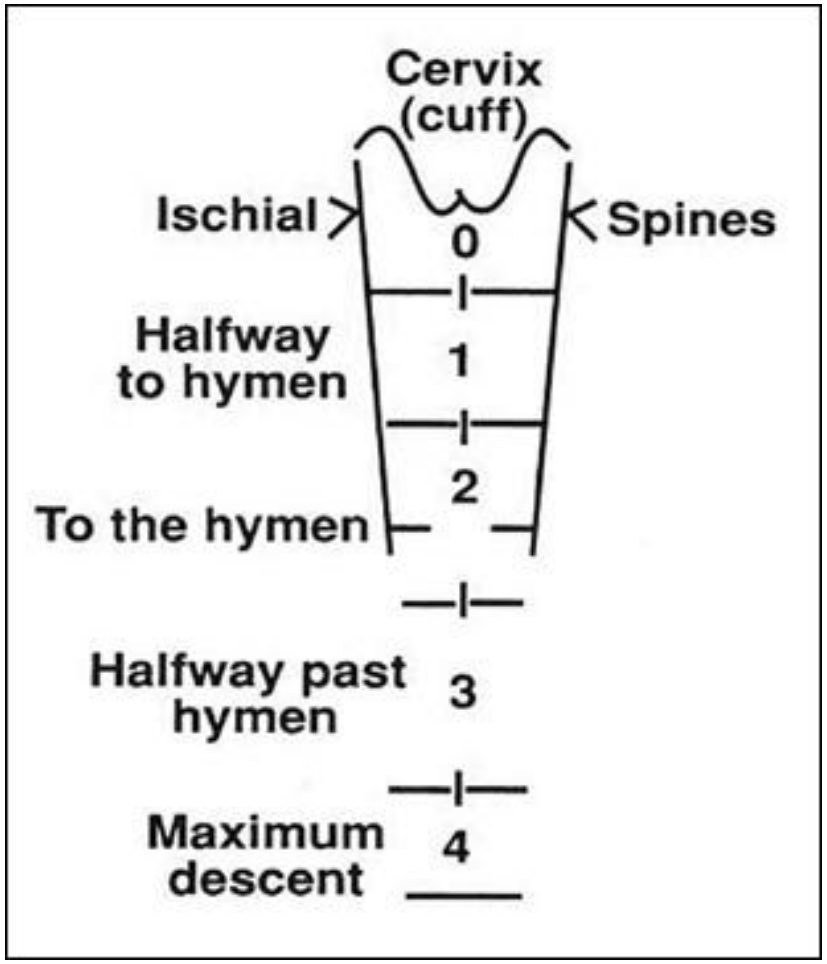
Classification of severity of prolapse

- The most easy to use and widespread classification of 1968

Table 22.1: Baden-Walker Halfway system for evaluation of pelvic organ prolapse

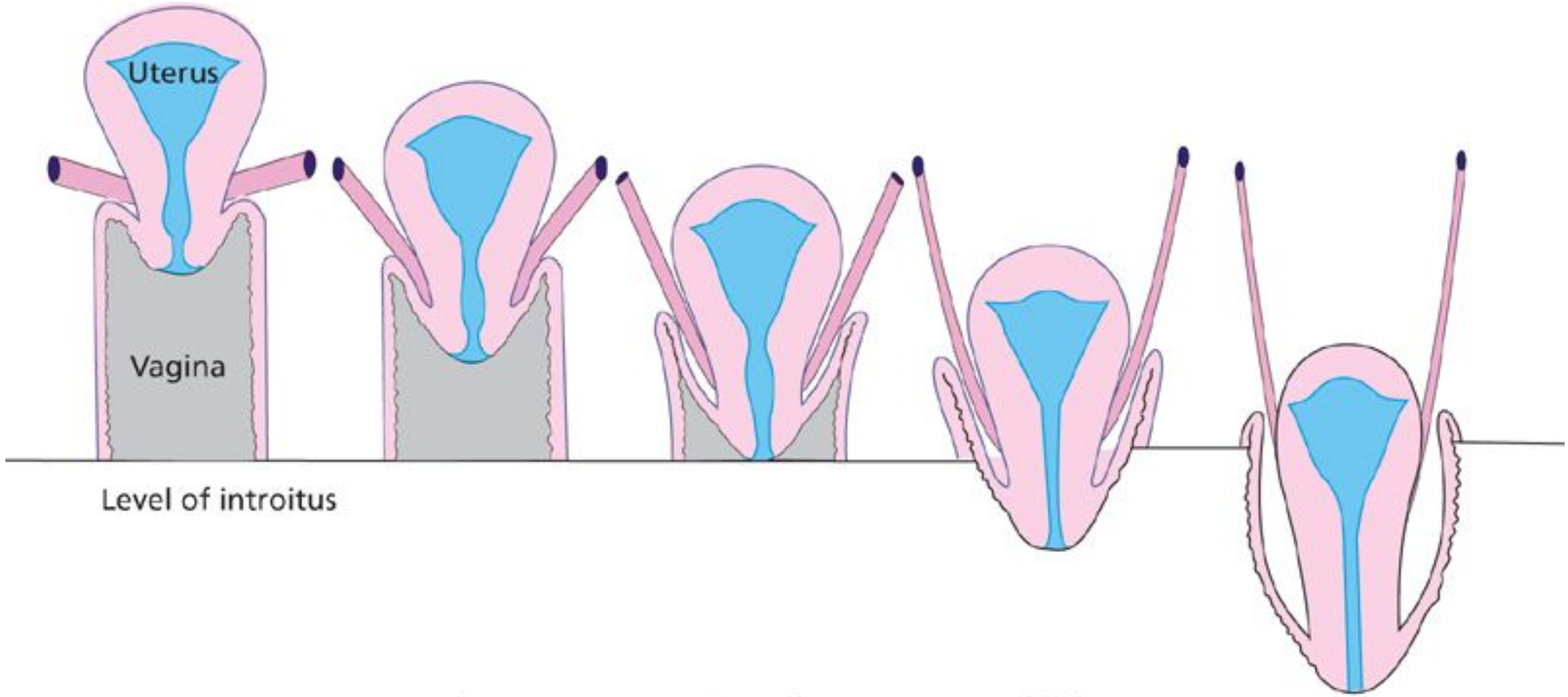
Stage	*Definition*
Stage 0	Normal position for each respective site
Stage I	Descent of the uterus to any point in the vagina above the hymen
Stage II	Descent of the uterus uptil the hymen
Stage III	Descent of the uterus halfway past the hymen
Stage IV	Total eversion or procidentia

The Halfway System (Baden-Walker Method)



Classifications of Prolapse Grades I-IV
Grade I: prolapsed tissue descends halfway to the hymen
Grade II: prolapsed tissue extends to the level of the hymen
Grade III: prolapsed tissue extends outside the hymen with straining
Grade IV: prolapsed tissue extends outside the hymen without straining

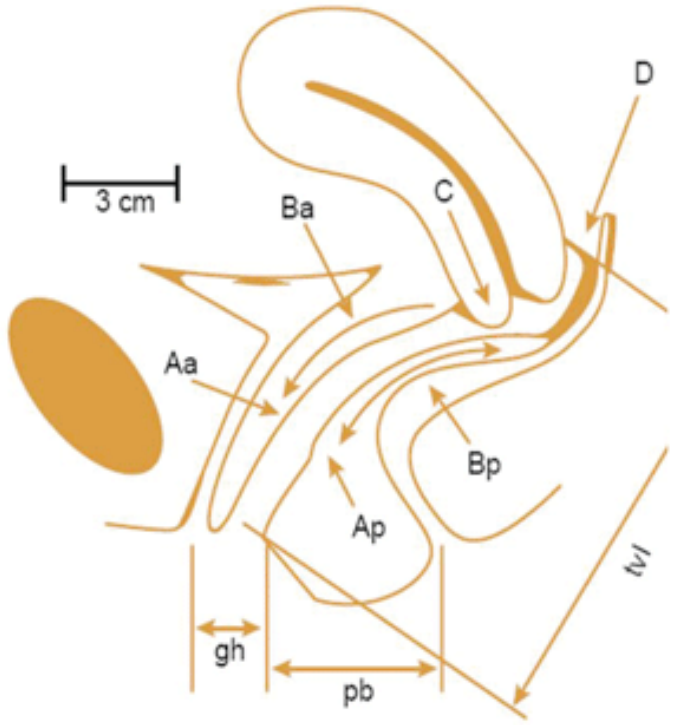
Table 1



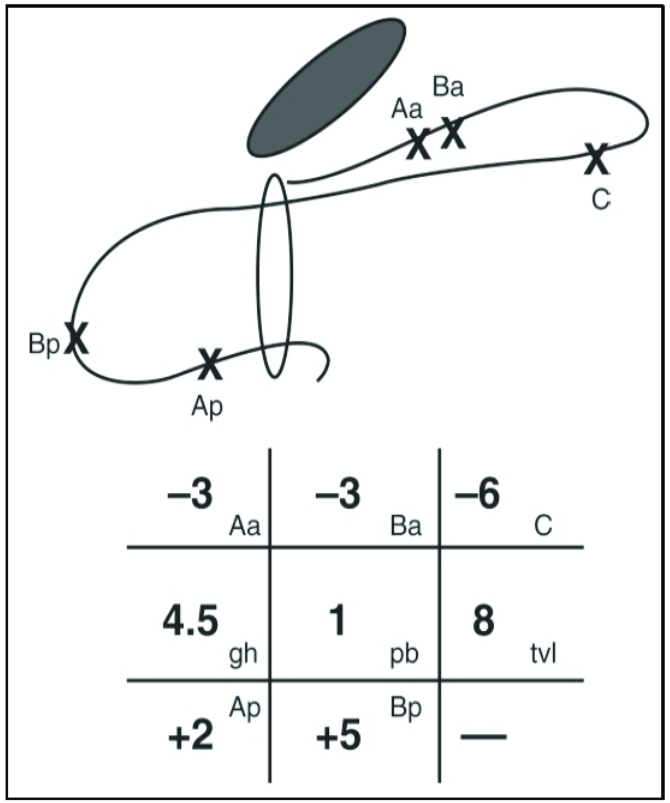
The New POP-Q classification

To create an encoding tool useful to both the clinician and researcher, the Standardization Subcomitee of the International Continence Society created the Pelvic Organ Prolapse Quantification (POP–Q) system in 2002

POP–Q (pelvic organ prolapse quantification)



anterior wall Aa	anterior wall Ba	cervix or cuff C
genital hiatus gh	perineal body pb	total vaginal length tvl
posterior wall Ap	posterior wall Bp	posterior fornix D



−3 Aa	−3 Ba	−6 C
4.5 gh	1 pb	8 tvl
+2 Ap	+5 Bp	—

POP-Q Staging

Stage 0 No prolapse; anterior and posterior points are all -3 and C (cervix) or D (posterior fornix) is between - TVL (total Vaginal length) and - (TVL - 2) cm.

Stage I The criteria for stage 0 are not met, and the most distal prolapse is >1 cm above the level of the hymen (< -1 cm).

Stage II The most distal prolapse is between 1 cm above and 1 cm below the hymeneal ring (at least one point is - 1, 0, or +1).

Stage III The most distal prolapse is between >1 cm below the hymeneal ring, but no further than 2 cm less than TVL.

Stage IV Represents complete vault eversion; the most distal prolapse protrudes to at least (TVL - 2) cm.

International Continence Society Stages of Pelvic Organ Prolapse Determined by Pelvic Organ Prolapse Quantification System Measurements

Causes of uterovaginal prolapse

UV prolapse is primarily due to the weakness of the support , it may be because of the following causes:

1. congenital weakness
2. acquired defect
3. menopause atrophy
4. Raising intra-abdominal pressure

Congenital weakness

- Most important cause of utero-vaginal prolapse in nulliparous women
- Inherent weakness of support in members of same family
- Racial and genetic factor (most common in white races)
- Patients with spina bifida are prone to have have prolapse
- Collagen vascular diseases

Acquired defect

- *Causes related to birth injury during child birth:*

➢Multiparous are more frequently affected

➢Due to overstretching of the muscles and ligaments of the pelvic floor or injury to nerves (pudendal) → overstretching cause atonicity

➢Vaginal birth not only weakens the uterine support but it also predisposes to high risk of urinary and faecal incontinence

Acquired defect

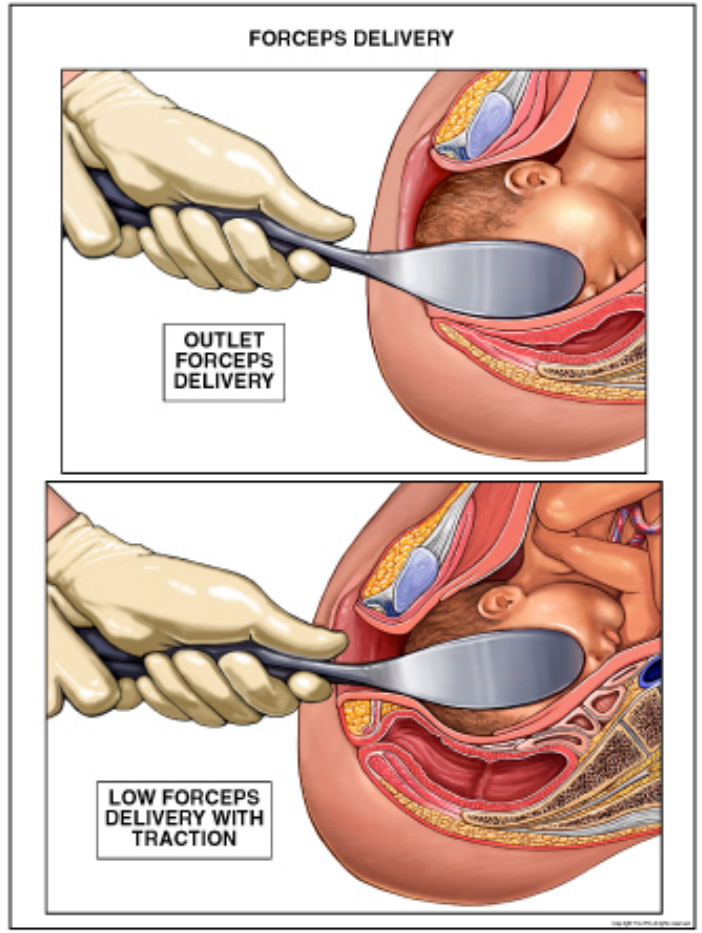
- *Causes related to birth injury during child birth:*

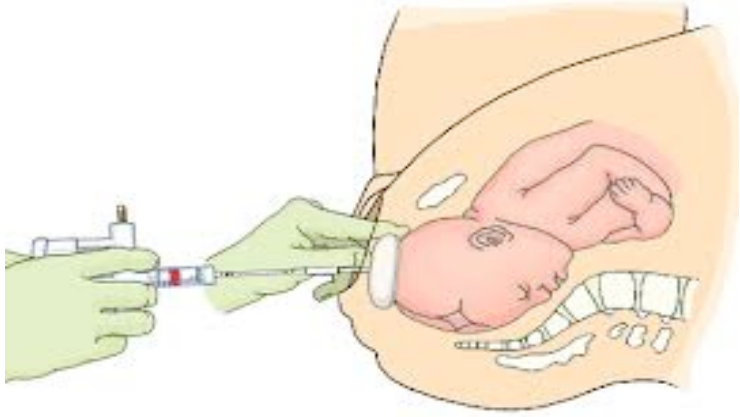
➢**Prolonged 2nd stage of labour**

➢**Big baby**

➢**Operative delivery**: Forcep and vacuum extractor (less) and Kristeller manouvre

➢**Lacerations of the perineal body** during childbirth, unless sutured immediately, will widen the hiatus urogenitalis





Acquired defect

- *Surgery*

➢*Abdominoperineal excision of the rectum* and

➢*radical vulvectomy*

➢Hysterectomy

➢Operations for stress incontinence such as Stamey and Pereyra operations

Menopausal atrophy

- Atrophy of the genital tract and its supports due to withdrawal of estrogen, oestrogen deficiency decreased collagen content in fascias→ atonicity
- The prolapse is seen usually within 1-2 years of menopause
- Nulliparous UV prolapse also get worsen after the menopause

Raising intra-abdominal pressure

- chronic bronchitis (BPCO), cronic cought, smoking
- large abdominal tumours or ascites
- obesity
- constipation

Pathology

In the case of UV prolapse, in addition to descent of uterus and prolapse of the vaginal wall, following changes may take place

- Elongation and hypertropy of the cervix
- Keritinization of the vaginal epithelium
- Decubitus ulceration
- Incarcenation of of the prolpase part
- Complication of urinary tract

  - residual urine increase (due to bladder downward displacement → Manual reduction of the cystocele into the vagina with their fingers)
  - urinary tract infection (due to stagnation of urine)

Symptoms

Common complaints for prolapse of every compartment are:

- Something coming out of vagina (commonest symptom)
  - aggravated by straining and coughing, and by heavy work
  - reduces itself when she lies down
  - large prolapse→ difficulty in walking, sitting or carrying out her everyday duties
- Lower abdominal pain (dull &dragging)
- Backache (relieved by lying in the bed)
- Vaginal discharge (leucorrhea)
- Coital difficulties

Symptoms

- *Urinary symptoms (cystocele)*
  - frequency of micturition
  - difficulty in micturition and emptying of bladder
  - stress incontinence
  - acute retention of urine

- *Bowel symptoms (rectocele)*
  - Difficulty in emptying of bowels
  - Obstructed defecation
  - Feeling of incomplete emptying
  - Need to pressure on vagina or perineum to start or complete defaecation

Signs

- Usually visible during inspection of vulva, Three compartments evaluated separately
- Patient is asked to strain / perform Valsalva manoeuvre
- Decubitus ulcer (see figure)
- Patients having stress incontinence should be observed with full bladder (stress test for stress incontinence), uretral ipermobility
- Ureteric obstruction and hydronephrosis in severe massive prolapse
- Rectal examination will also differentiate between rectocele and enterocele.
- Vulva examined for **perineal laceration**

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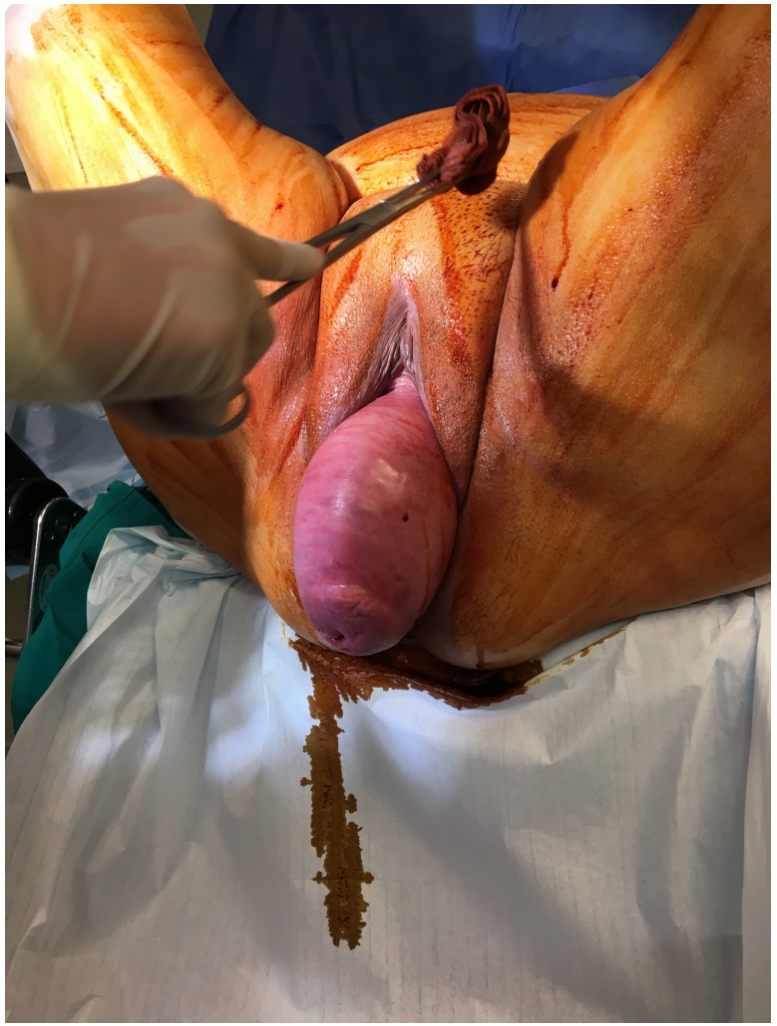
Lab investigations

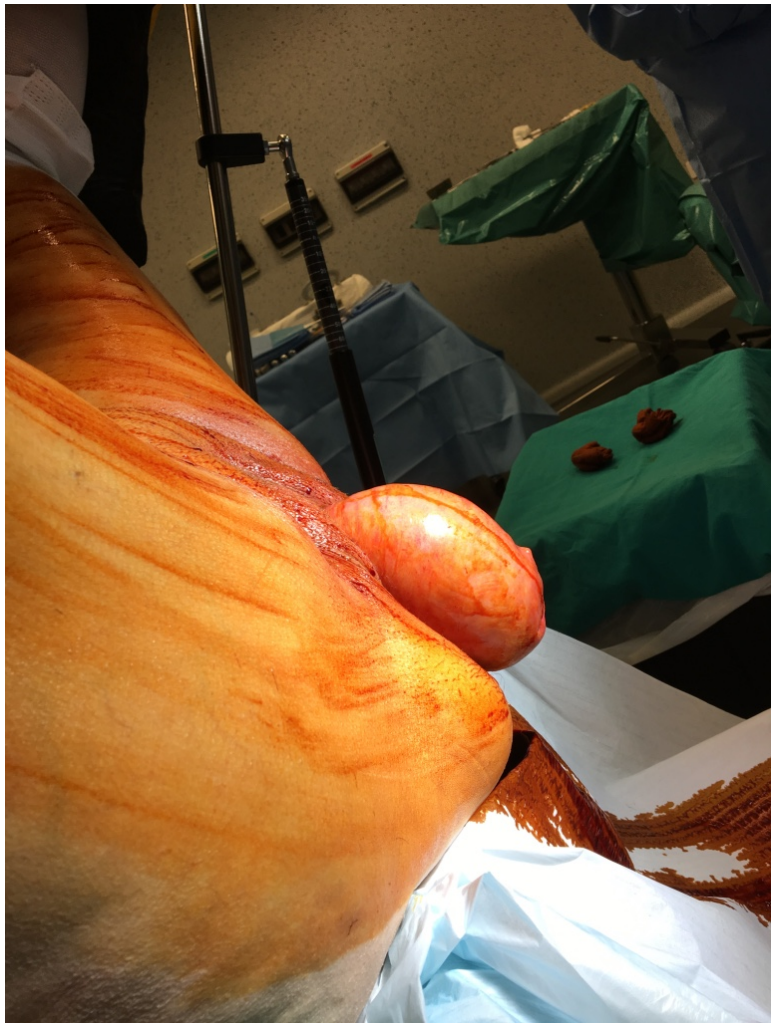
- Hb
- Urine examination, Urine culture (to exclude influence of transient urinary infection)
- High vaginal swab in cases of vaginitis
- **Urodynamic investigations** in case of incontinence
- Sonography to exclude pelvic mass and hydronephrosis

COMPLICATIONS OF PROLAPSE

- **Kinking of ureter with resulting renal damage**
- **Surgical injury to ureter**
- **Urinary tract infection (chronic)** in large cystocele with residual urine
- **Decubitus ulcer** and keratinisation pigmentation
- if ring pessary is left in over a long period **malignancy**

Extreme cases





treatment

The treatment of UV prolapse is described under the following headings.

1. prevention
2. physiotherapy
3. pessary
4. surgical treatment

prevention

Repeated childbirth with short intervals cause UV prolapse -- >Women should be advised to avoid pregnancies in quick succession

Labour

- 1st stage
  - Avoid bearing down
  - Breech or forceps delivery before full dilatation of cervix shouldn't be attempted
- 2nd stage
  - Avoid prolongation of this stage
  - Perform episiotomy if tears or overstretching of perineum is feared
- 3rd stage
  - Avoid Crede's method
  - Episiotomy or tears should be carefully sutured

Puerperium

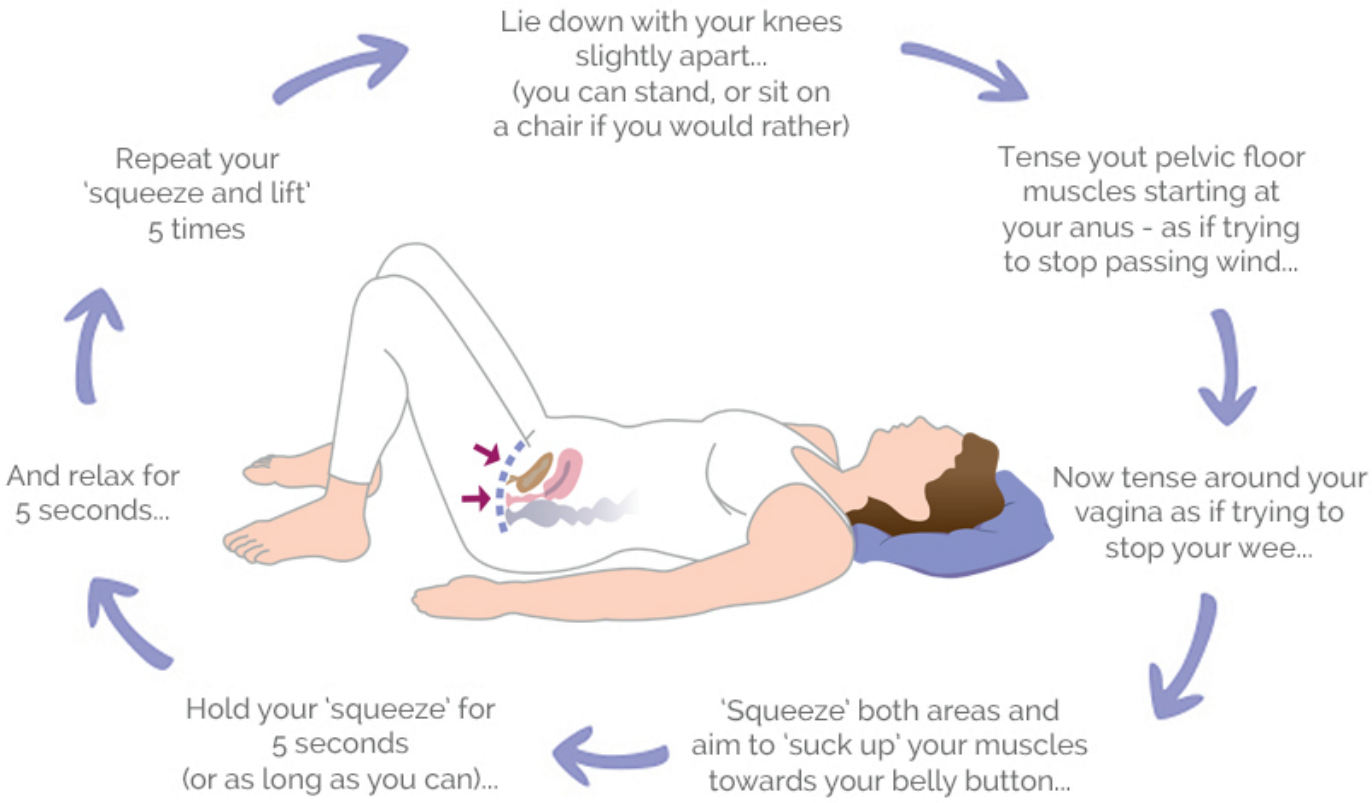
- Treat chronic cough and constipation
- Avoid strenuous exercises and standing for prolonged time

physiotherapy

- Early cases of UV prolapse are helped by pelvic floor exercises Particularly during puerperium and while waiting to undergo surgical treatment.

- **Kegel exercises** are used to tone up pelvic musculature

  These exercises are done 3 times a day for 20 min each



pessary treatment

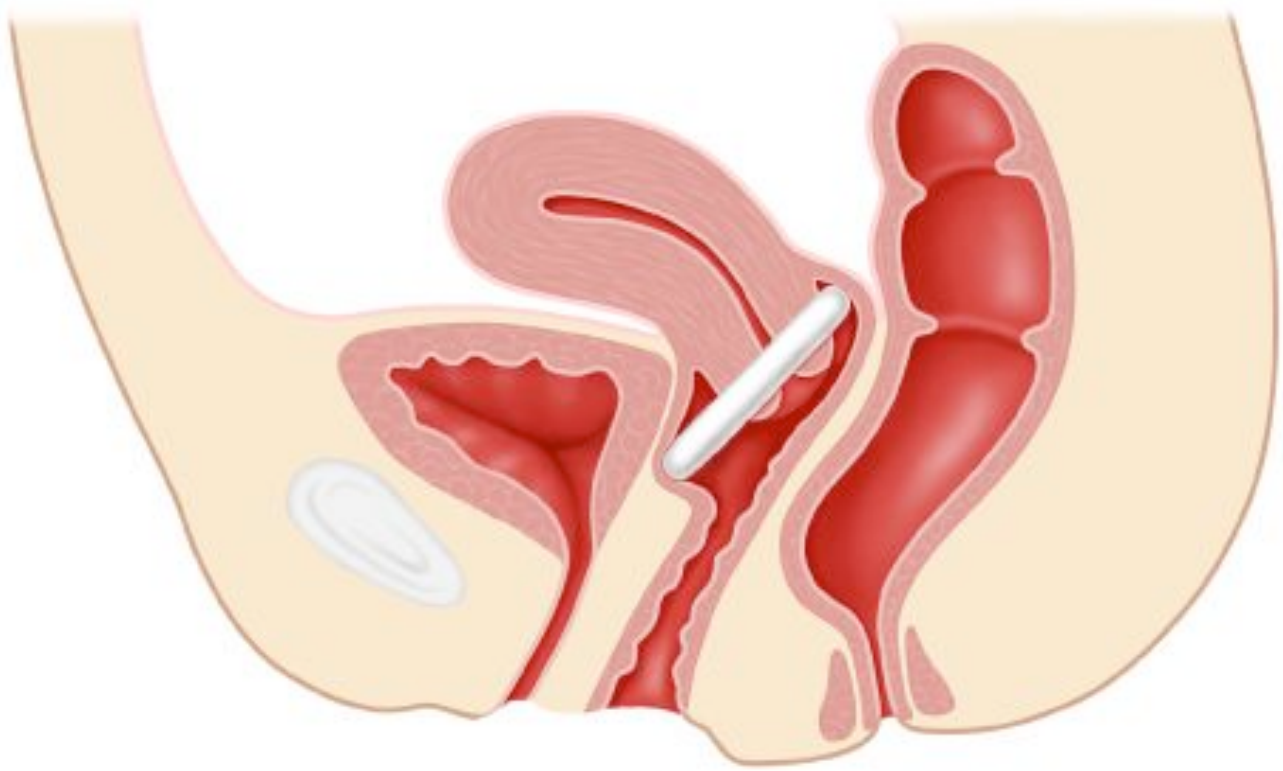
- A mechanical device for correcting and controlling UV prolapse
- A pessary does not cure UV prolapse
- It only holds the genital tract in position
- Advised for patients who cannot undergo surgery

Types

1. Ring pessary
2. Hodge pessary

Indications

- During pregnancy (1st trimester)
- During puerperium
- Unfit for surgical treatment
- Patient's choice



pessary treatment

Management

- Choice of pessary (ring pessaries commonly used)
- Size (depends upon size of vagina)
- Sterilization
- Insertion

before insertion the pessary is kept in hot water for few minutes so that pessary become soft and easy to insert

- Follow up

pessary should be removed ,cleaned and reinserted at regular intervals of 6-12 months.

different types of pessaries

Surgical treatment

- Only curative treatment
- Unless there is any contraindication for surgical treatment, all cases of UV prolapse should be treated surgically

- It can be:

➢ **Obliterative surgery**: narrows or closes off the vagina to provide support for prolapsed organs (es Le Fort's intervention). Sexual intercourse is not possible after this procedure (very very few cases in selected patient)

➢ **Reconstructive surgery**: reconstructs the pelvic floor with the goal of restoring the organs to their original position. Some types of reconstructive surgery are done through an incision in the vagina. Others are done through an incision in the abdomen or with ***laparoscopy***.

Surgical treatment

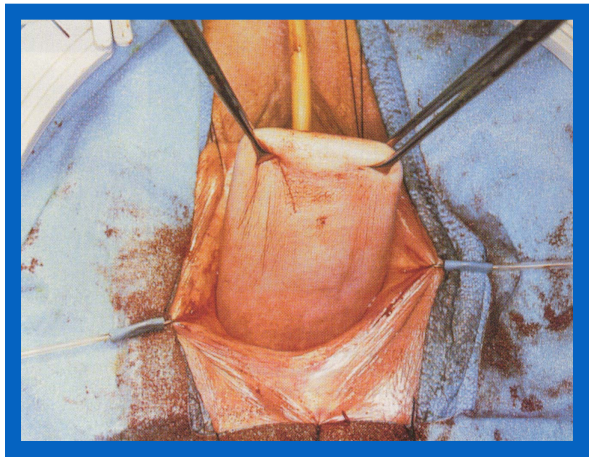
- It can be:

➢ **Demolitive**: the uterus is taken out and then reconstructive surgery is performed

➢ **Conservative**: the uterus is mainteined in place and reconstructive surgery, generally using meshes, is performed. This is also the unique possible apporach when the patient does not exclude future pregnancy and is advised only if there is no other uterine pathology.

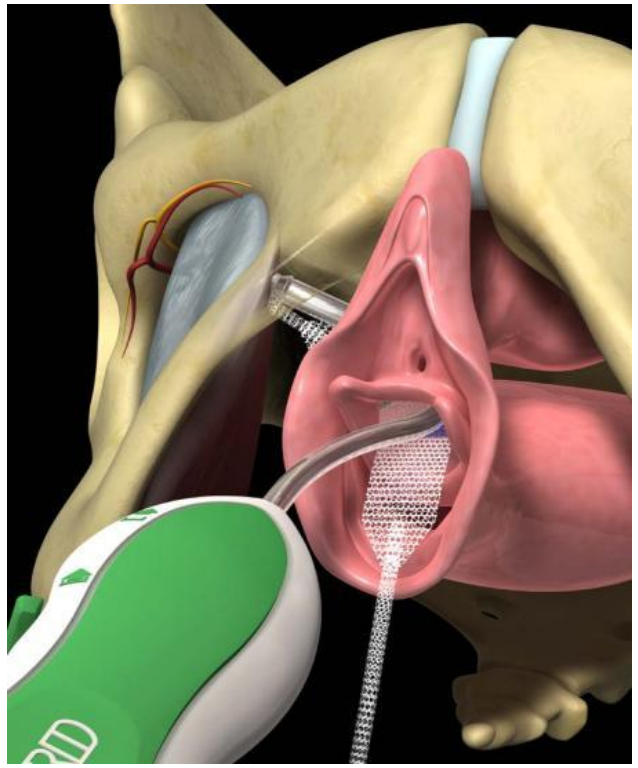
Surgical treatment

- Reconstructive surgery can be:
- **Fascial:** made with native tissues (ligaments, fasciae, muscles), usually with fixation or suspension to uterosacral and sacrospinous ***ligaments***)



- ***Anterior Colporrhaphy*** – for anterior vaginal wall prolapse.
- ***Posterior Colporrhaphy*** – for repair of the posterior vaginal wall and perineum.
- ***Vaginal Hysterectomy*** – most common operation and its indications are:
  - *Post-menopausal prolapse*
    - *Uterine pathology like small fibroids or adenomyosis*
    - *Menstrual disorders such as dysfunctional uterine bleeding*
    - *Prolapse during childbearing age , after completion of family*
- ***Burch Operation*** – for relief of symptoms of cystocele.

Surgical treatment



- Reconstructive surgery can be:
- **Fascial:** made with native tissues (ligaments, fasciae, muscles), usually with fixation or suspension to uterosacral and sacrospinous ***ligaments***)

- ***Burch Operation*** – for relief of symptoms of cystocele.
- ***Sling Operations*** – for cervical descent of young and nulliparous patients. It has following types:
    - Shirodkar's sling operation
    - Purandare's cervicopexy
    - Sling operation for vaginal vault prolapse

- ***Laproscopic Repair*** – sacrocolpopexy, a simple procedure to cure enterocele and vault prolapse.

- ***Le Forte's Operation*** – for treatment of UV prolapse in very old patients. Perfectly devised to reduce operating time.

Surgical treatment

- **Prosthetic**: made with meshes that are fixed to ligaments or bones. Meshes may be placed using an:

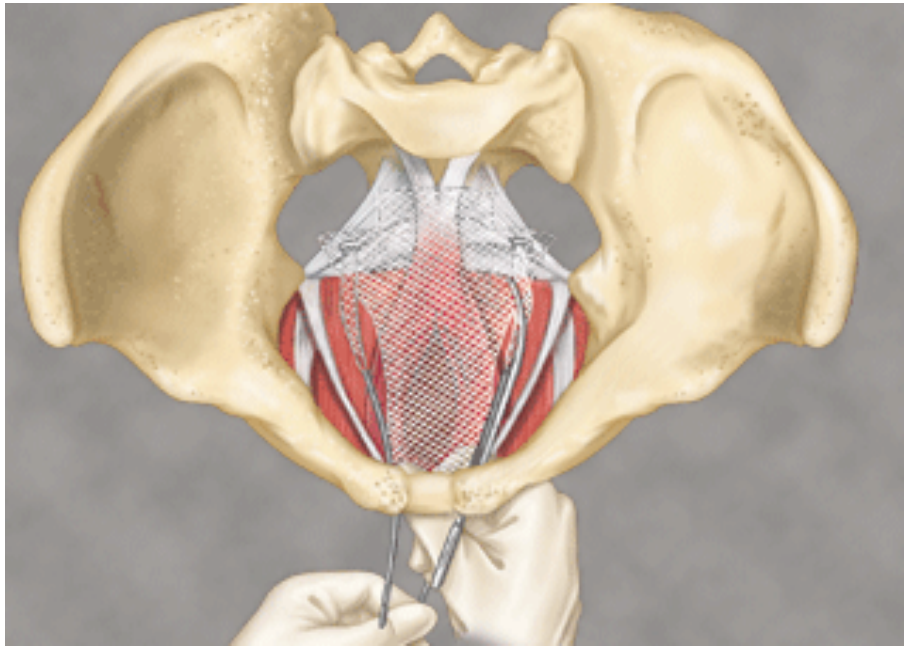
➢abdominal approach (open or laparoscopic surgery)

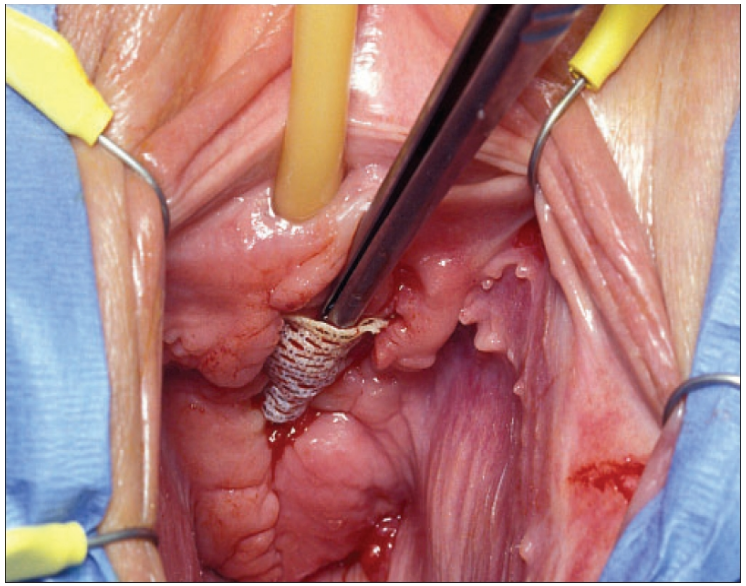
➢vaginal approach

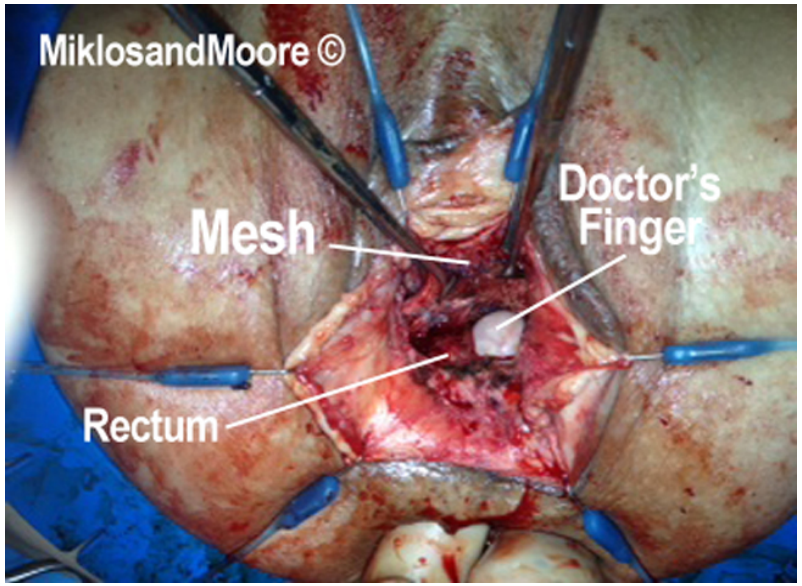
- The Mesh use is indicated in case of:
- failure of previous fascial surgery
- ***Sacrocolpopexy*** and ***sacrohysteropexy***

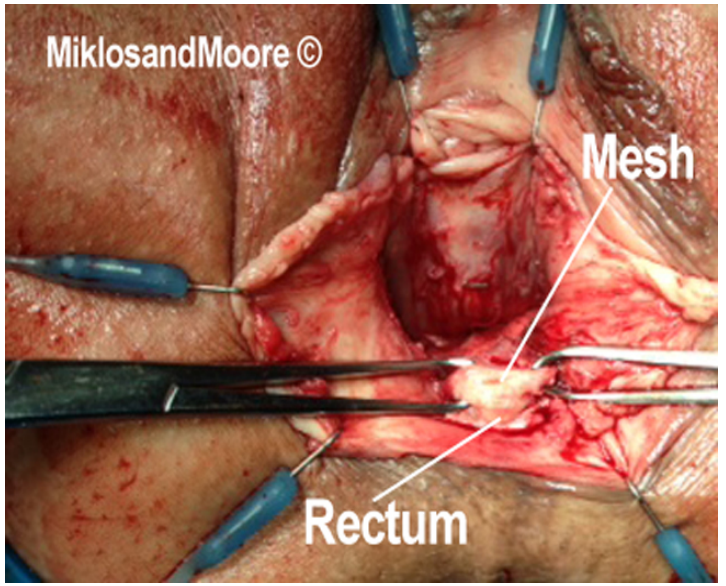
Risk of vaginal placed mesh!

FDA advise that surgery using vaginally placed mesh has a significant risk of complications, including mesh erosion, pain, and infection. Because of these risks, is to reserve for women in whom previous fascial surgery has failed, who have a medical condition that makes abdominal surgery risky.









Thanks for your attention