

Academic year 2019-2020

3<sup>rd</sup> year S 5/6

# REPRODUCTION SYSTEM MODULE

SESSION 4:

LECTURE: 2 clinical lecture

DURATION: 1hr

## Pelvic floor

presented by **Dr Nawal Mustafa**

### Module staff:

Dr.Raya Muslim Alhassan (module leader)

Dr. Nada Hashim Aljassim

**Dr. Nawal Mustafa Abdullah**

Dr.Nehaya Mnahi Al-Aubody

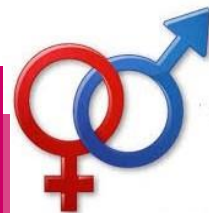
Dr. Ihsan Mardan Humod

Dr. Ansam Munadhel

Dr .Nessren Muhsin Jaralla

Dr.Hadeel S. Al Ali

(Hacker and Moore's essentials of obstetrics and gynecology, (5th edition 2010 ),  
Essential Obstetrics & Gynaecology (4th edition 2003), Symonds & Symonds, Churchill  
Obstetrics by Ten Teachers, (19th edition, 2011), Kenny, L.C & Baker P.N., Hodder Arnold.



# Objectives

At the end of this lecture the student should be able to :

1-Describe the structure and function of the **pelvic floor** and name the **main muscle groups**

2-Describe the function of the **perineal body**

:

3- List the causes of and risk factors for **pelvic floor dysfunction**

4- Describe in outline the **treatments** available for pelvic floor dysfunction



## The pelvic floor:

- is formed from **muscular layer(s)** which support the pelvic viscera.
- It exerts a **sphincter** action on rectum and vagina and
- can **resist** increases in intra-abdominal pressure associated with coughing, defecation, heavy lifting etc.
- **Damage** to pelvic floor (e.g. as a consequence to childbirth leads to
- stress urinary incontinence & fecal incontinence.

### The pelvic floor is composed of

#### **A.: Pelvic diaphragm**

funnel, shaped consisting of:

- *levator ani*
- *coccygeus, and*
- *related fascial coverings*

#### **B. Superficial muscles and structures (*perineum*)**

1. anterior (urogenital) perineum
2. posterior (anal) perineum



## The pelvic diaphragm

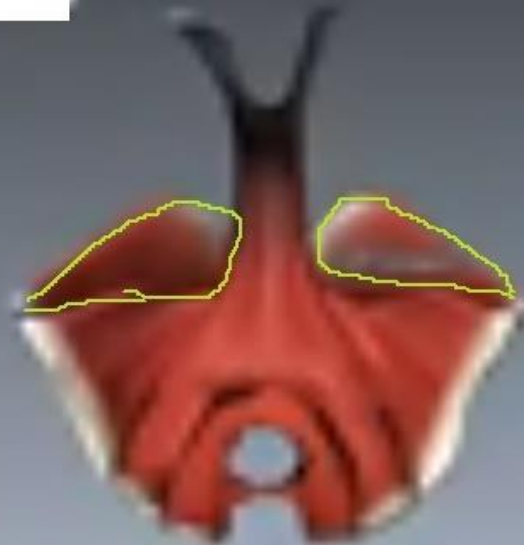
Lo1

lies within the lesser pelvis, separating the pelvic cavity from the perineum.

*pelvic diaphragm*

*levator ani*

*coccygeus*



## • **Levator ani :**

• are **paired** muscles forming **3 slings** of muscle extending from the posterior aspect of pubic bone, the fascia over obturator internus and the ischial spines

The 3 slings of levator ani are:

1. **anterior fibers** sling around prostate (***levator prostatae***) in male or vagina in female (**Pubovaginalis**)

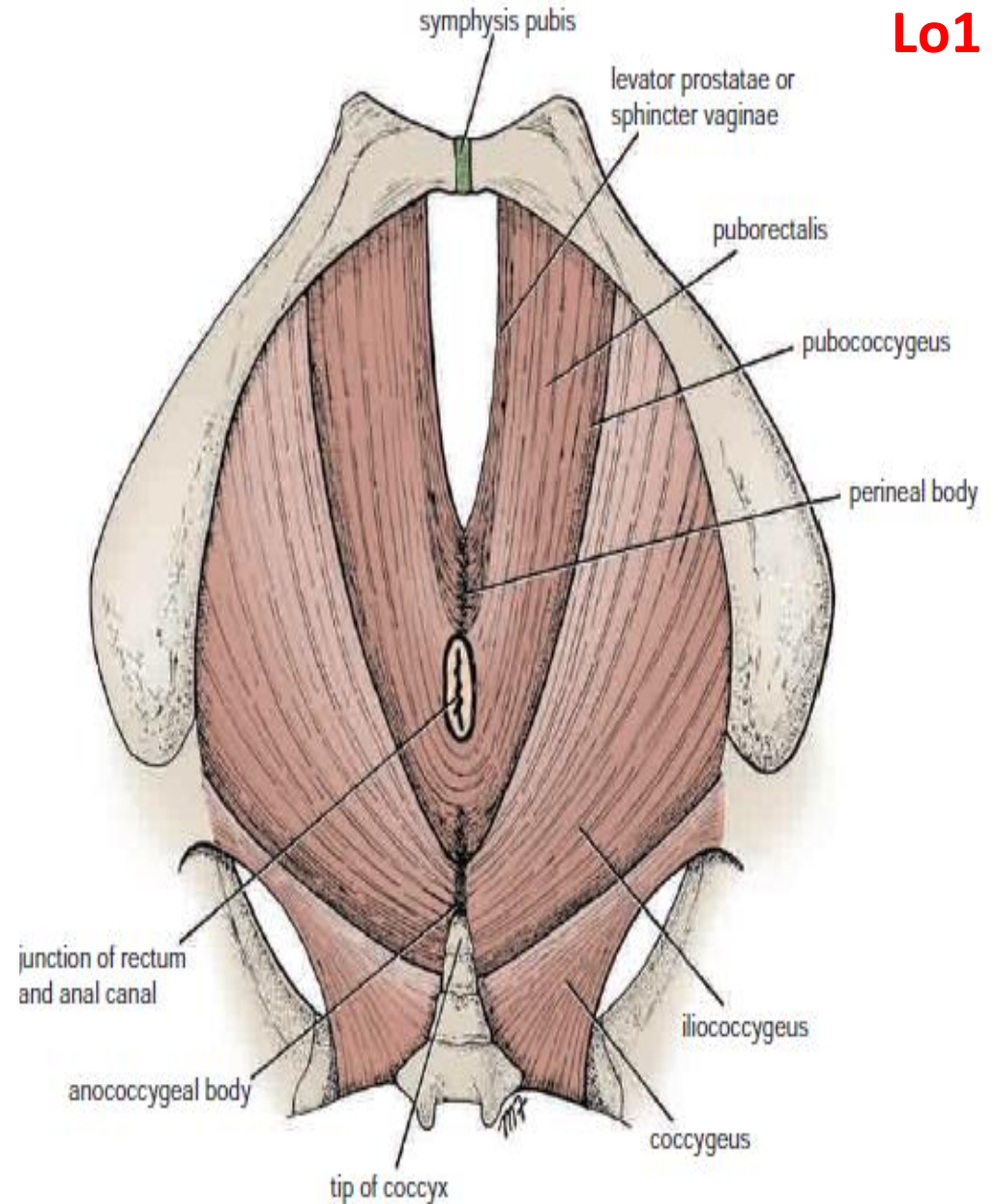
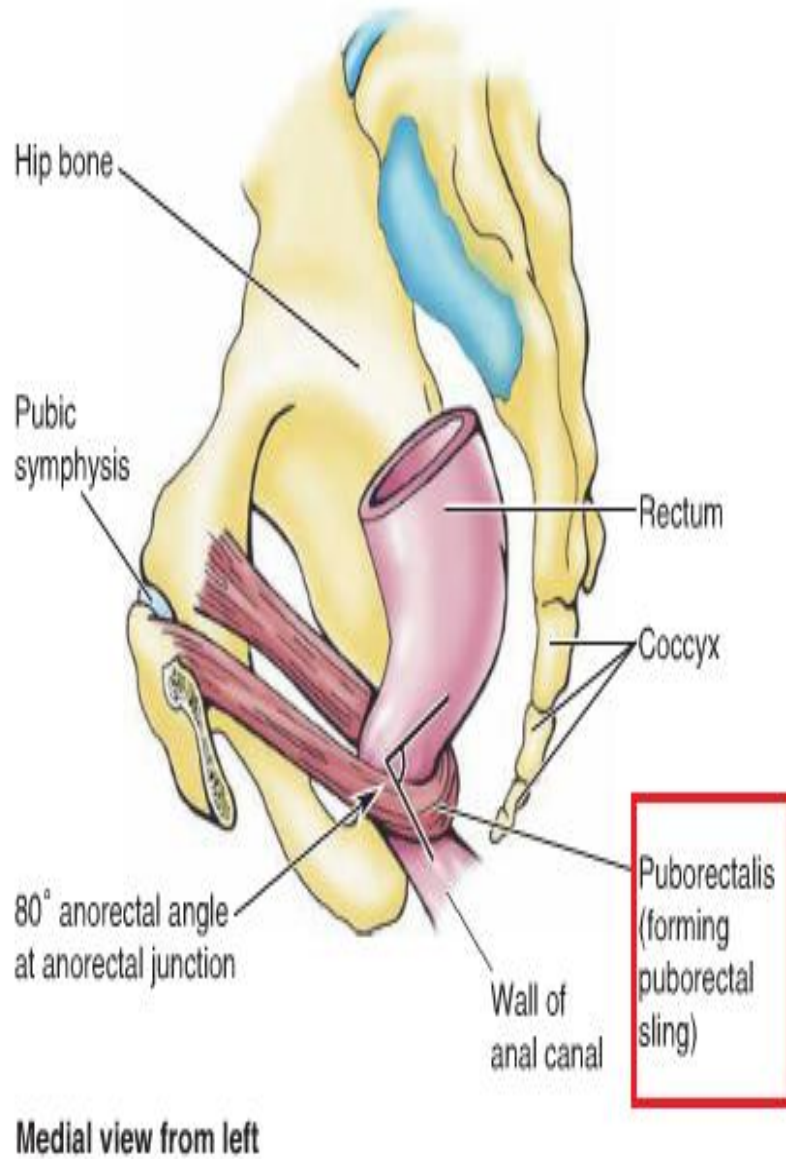
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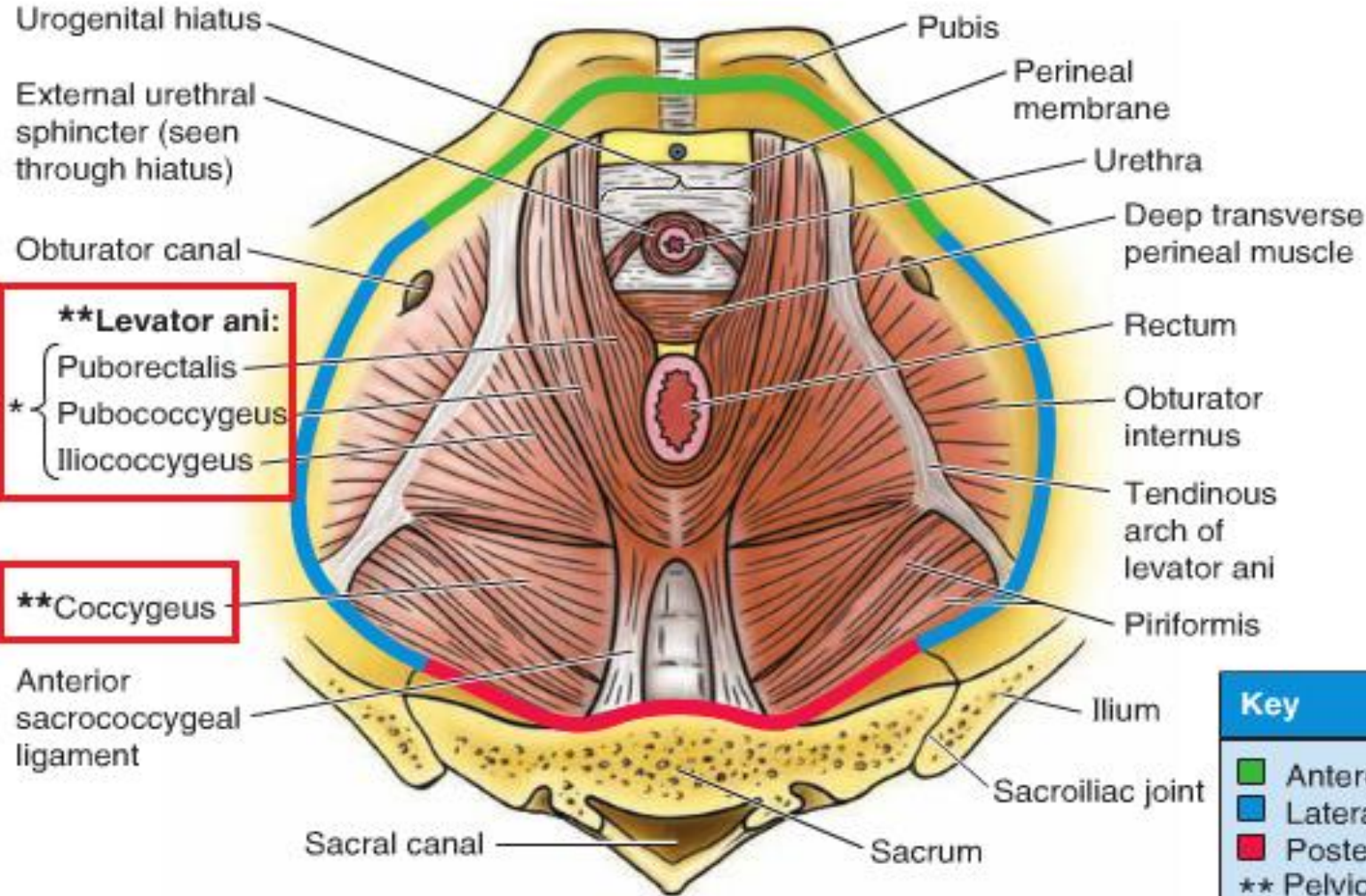
2. **intermediate fibres** around rectum (***puborectalis***) and into ***anococcygeal body*** (**pubococcygeus**)

3. **posterior fibres** to anococcygeal body and coccyx (**iliococcygeus**)

• **coccygeus** lies posteriorly over the sacrospinous ligament.



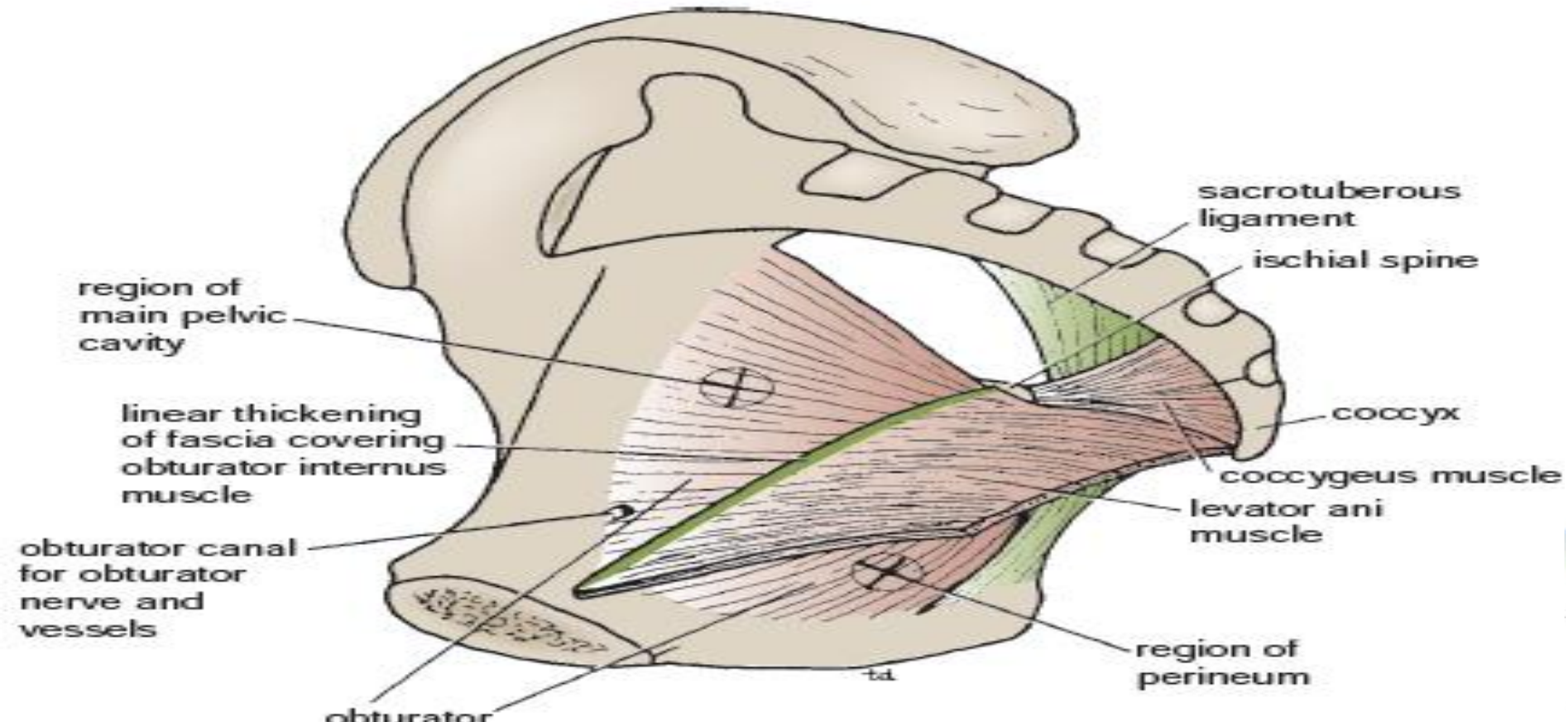




Key	
<span style="color: green;">■</span>	Anteroinferior wall
<span style="color: blue;">■</span>	Lateral wall
<span style="color: red;">■</span>	Posterosuperior wall
<b>**</b>	Pelvic diaphragm (floor)
<b>*</b>	Levator ani muscle

Superior view

The cavity of the pelvis is **divided** by the pelvic diaphragm into :  
the main pelvic cavity above  
and the perineum below

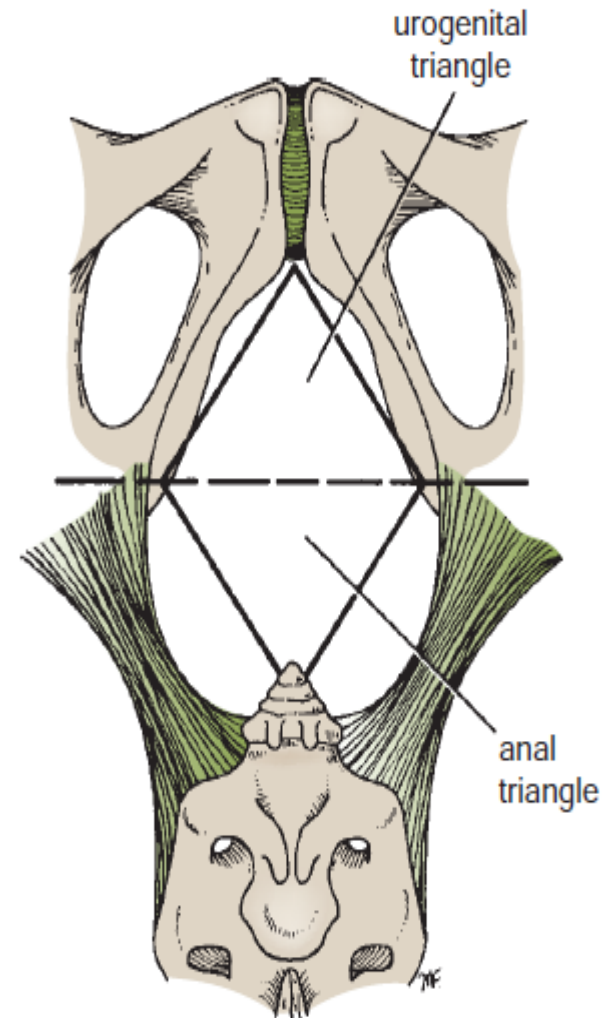




# Perineum

- When seen from below with the thighs abducted, the perineum is **diamond** shaped and is bounded

anteriorly by the **symphysis pubis**,  
posteriorly by the **tip of the coccyx**,  
and laterally by the **ischial tuberosities**



## Anterior (Urogenital) Perineum

Lo2

**Urogenital diaphragm** is a **triangular musculofascial** structure that fills the gap of the pubic arch stretching between the converging ischiopubic rami & lie beneath the levator ani.

It is a '**triangular sandwich**' with striated muscle fibres between two layers of fascia (this closed space between the 2 layers of fascia is also called **deep perineal pouch** )

**The two layers of fascia are**

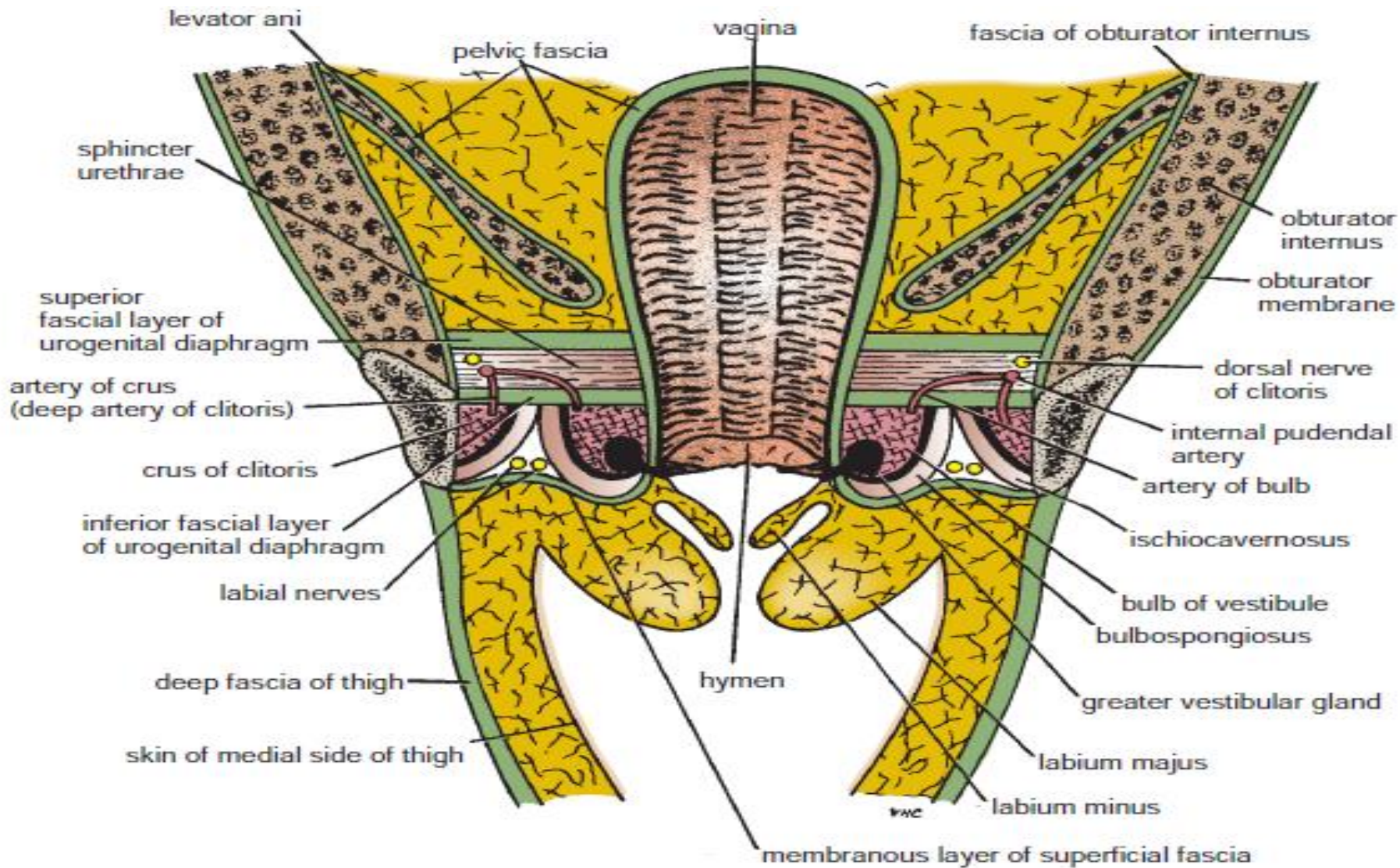
- **Superior fascia**
- **Inferior fascia**- thickened and known as **perineal membrane**

**Striated muscle fibres between two layers of fascia are**

- **Deep transvers perineal muscle (compressor urethrae)**
- **Sphincter urethrae**- (which is pierced by urethra and vagina (in females))

The urogenital diaphragm also contains the **bulbourethral glands**(in male)





5 Coronal section of the female pelvis showing the vagina, the urogenital diaphragm, and the contents of perineal pouch.

## Superficial perineal pouch

Below the perineal membrane:

### Superficial perineal pouch

(in both sexes) which is the site of **collection** of urine if the urethra is ruptured below perineal membrane

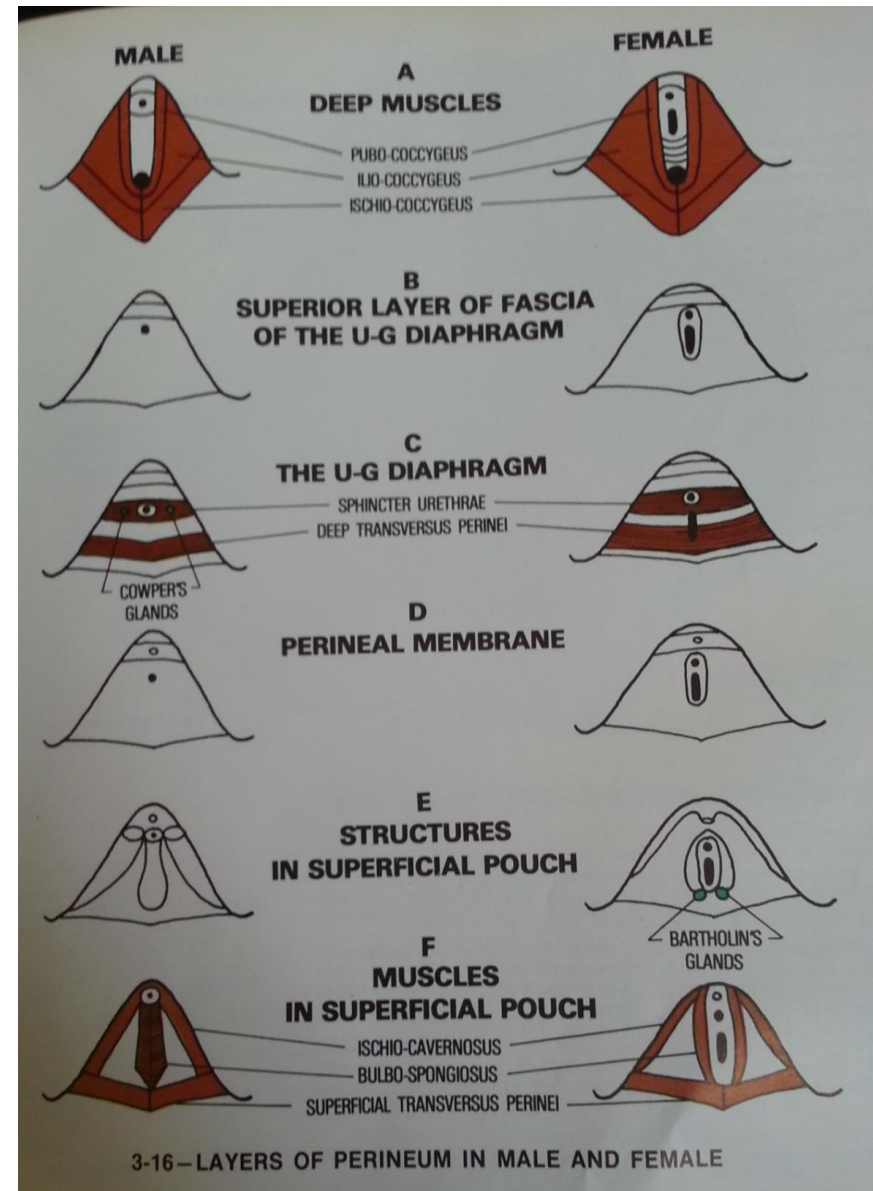
**Superficial perineal pouch** contains:  
structures forming the root of clitoris in females (penis in males)

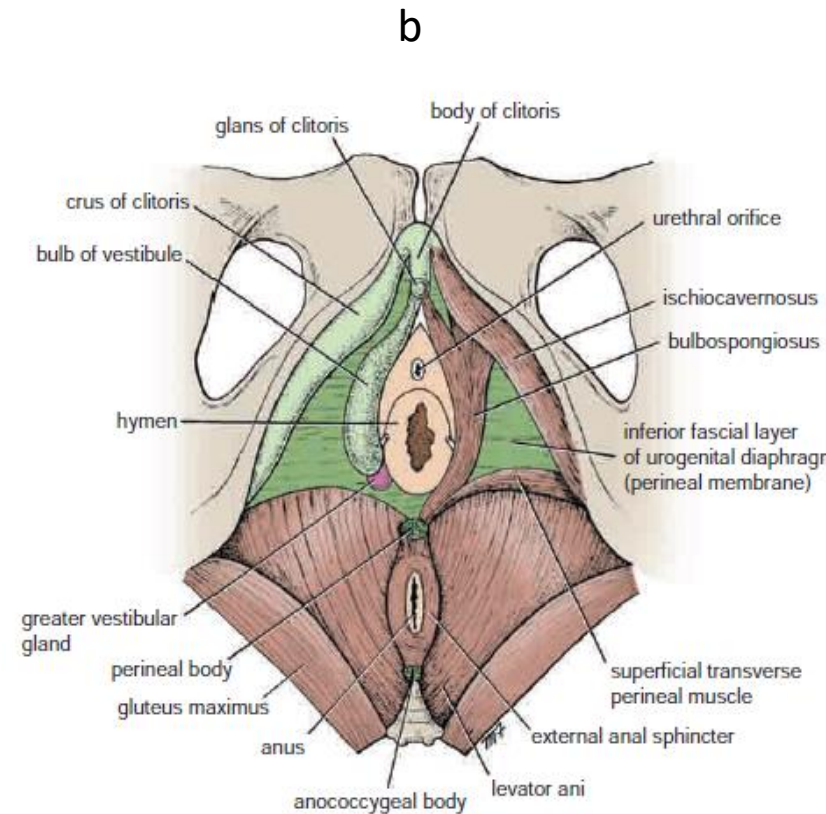
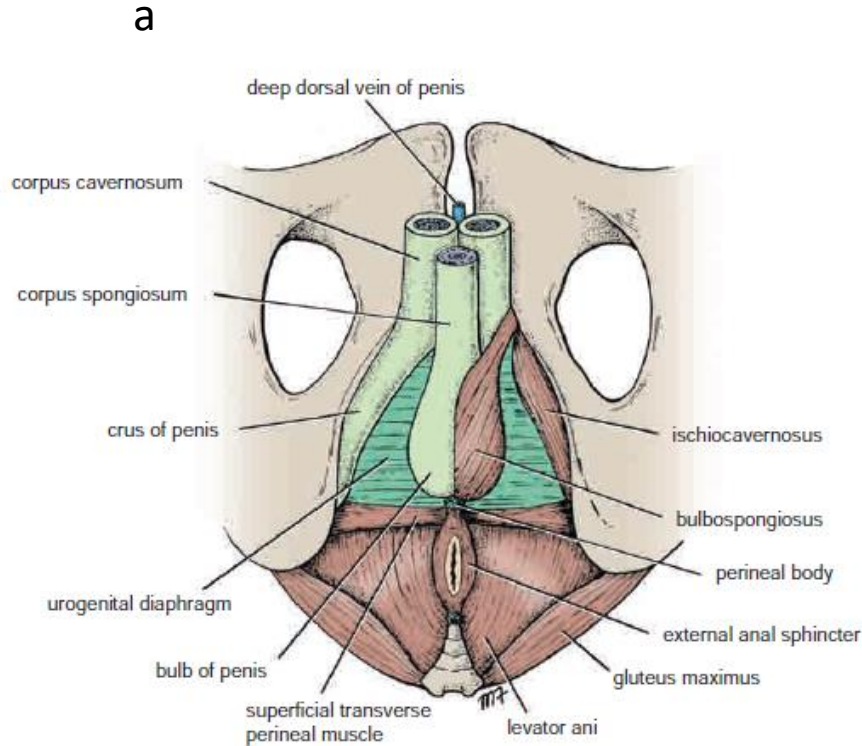
**Superficial transverse perineal muscle**

**bulbospongiosus muscle**

**ischiocavernosus muscle**

❖ *In female these muscles are less well developed than male while the perineal body is larger in females.*





Superficial perineal pouch in  
a) male  
(b) female



# The Perineal Body

pyramidal fibromuscular mass found at the junction between the urogenital and anal triangles (Anterior and Posterior Perineum).

In **males** it is found between the bulb of the penis and the anus.

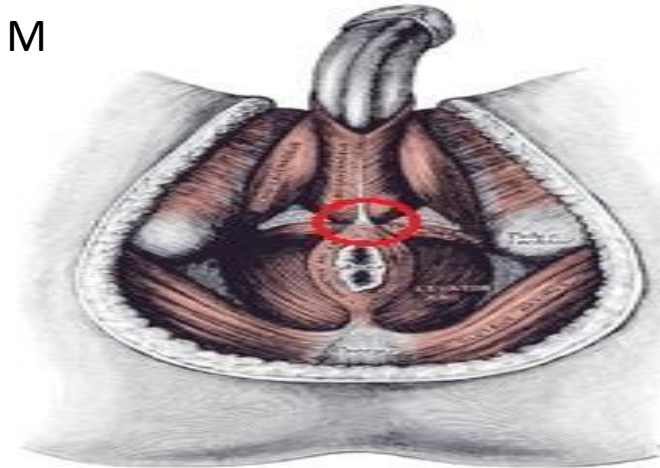
In **females** it is found between the vagina and anus (~1.25cm in front of the anus).

It is a point of attachment for:

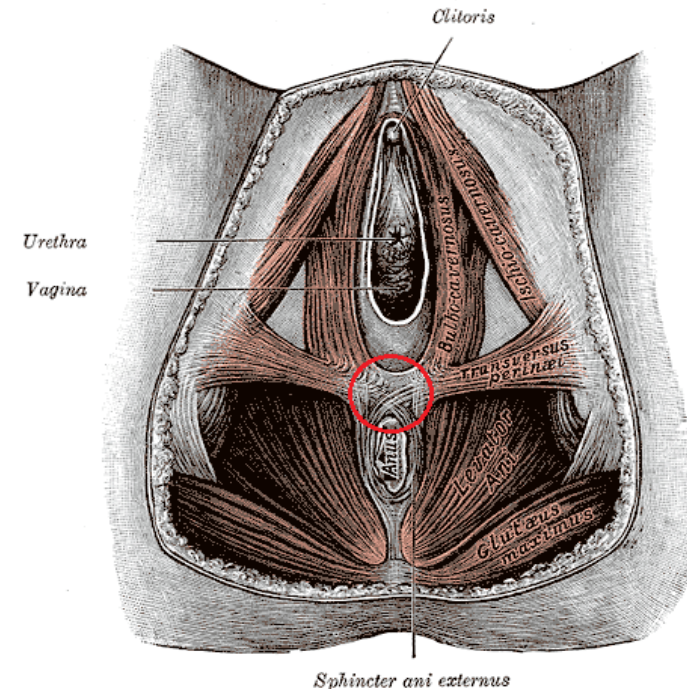
- Anal sphincters
- Bulbospongiosus
- Superficial transverse perineal muscles
- Fibres of levator ani

Lo2

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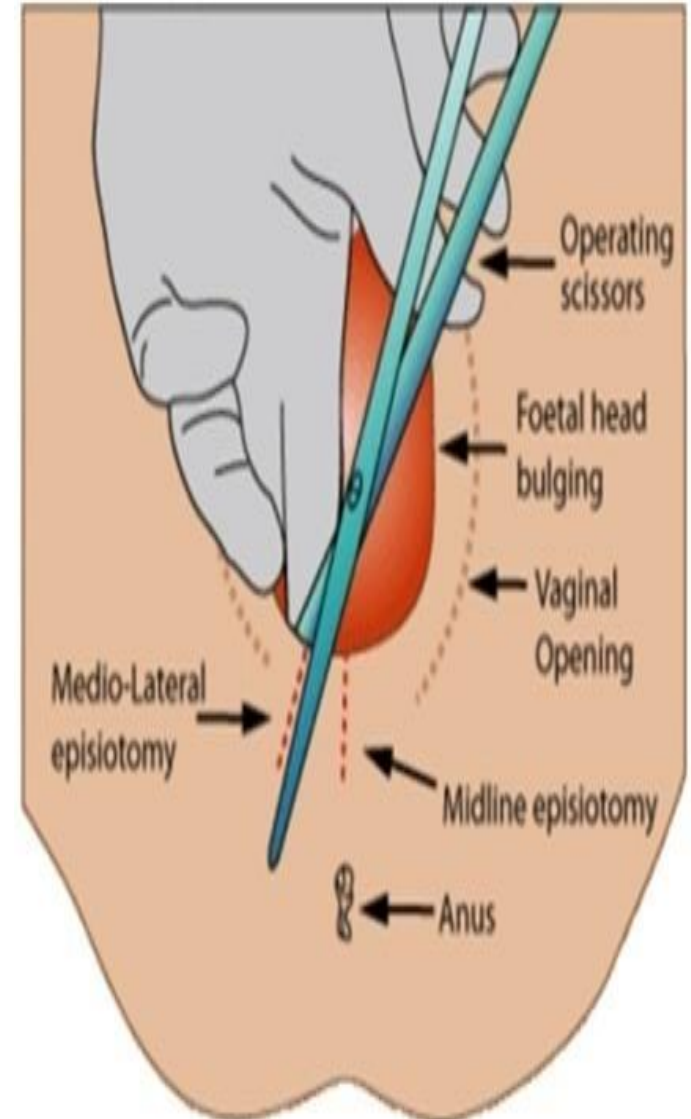
## Perineal body

### Clinical correlates:

The perineal body is essential for **the integrity of the pelvic floor**, especially in females, **anchoring the perineal muscles & rectum**.

If the perineal body ruptures during childbirth, it causes **weakness** in the pelvic floor, leading to **prolapse of structures** such as the vagina and uterus. This may be avoided by **Episiotomy** (either mediolateral or medline incision of perineum to enlarge introitus).

Lo2

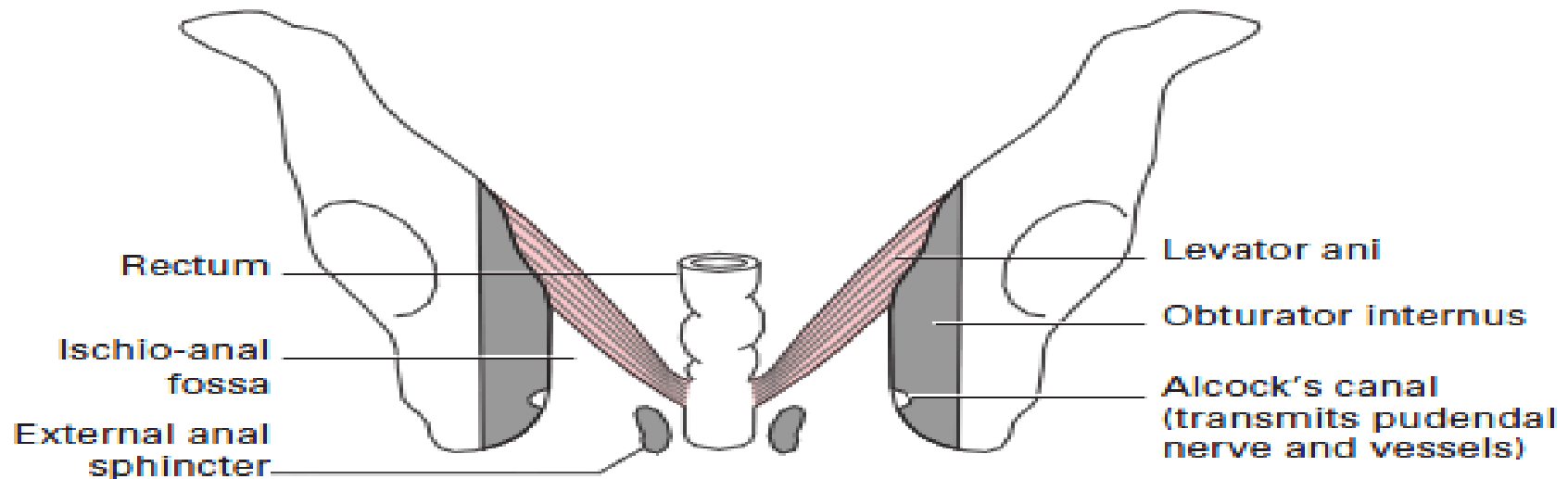


## Posterior (anal) Perineum

A **triangle** between **ischial tuberosities** on each side and **coccyx** comprises anus, levator ani and **ischiorectal fossae**.

### Ischiorectal fossa :

is a fatty fossa which may become **infected** (spreading behind anus). The **pudendal nerve** passes along the lateral wall of this fossa.



The ischio-rectal fossa (more accurately called the ischio-anal fossa).



## Common causes and risk factors for pelvic floor dysfunction Lo3

- ❑ **Damage to the pelvic floor** (e.g. as a consequence of **childbirth**) may lead to stretching of related nerves, muscles and ligaments:
- ❑ Stretch of the **Pudendal nerve**
  - **Neuropraxia** and **muscle weakness**
- ❑ Stretch and damage of the **pelvic floor and perineal muscles**
  - Muscle weakness
- ❑ Stretch / **Rupture of ligament** support of muscles
  - Ineffective muscle action

Pelvic floor damage may also result in

- ❑ **prolapse of organs** ( urethera, bladder, rectum, bowel or uterus)
- ❑ **stress incontinence** (involuntary passage of urine with straining or coughing).



## Other risk factors for pelvic floor dysfunction include

- Age
- Menopause-atrophy of tissues after oestrogen withdrawal
- Obesity
- Chronic cough
- Intrinsic connective tissue laxity
  - : ○Defined conditions
  - Constitutional ?



# Types of prolapse



(a) Cystourethrocele



(b) Rectocele



(c) Enterocele



(d) Uterine prolapse



(e) Procidentia

## Symptoms of prolapse

**Non-specific:** lump, local discomfort, backache

### Specific:

- **cystourethrocele** – urinary frequency and urgency, voiding difficulty, urinary tract infection, stress incontinence;

- **rectocele:** incomplete bowel emptying, anal incontinence

## Outline treatments for pelvic floor dysfunction

**Pelvic floor muscle exercises** are easy, safe, effective and will cure incontinence in 50-75% of patients along with preventing or delay worsening of prolapse.

### **Continence Surgeries**

- Increase support to sphincter mechanism and prevent descent of bladder neck
  - Colposuspension
  - Tension-free vaginal tape
- Effective (85-90% cure rate)
- Side effects
  - : ○ Voiding difficulty / Urinary retention
  - Overactive bladder disease (obstruction)

### **Prolapse Procedures**

- Replace prolapsed organs
- Restore connective tissue supports
- Maintain function
- Side effects
  - Recurrence
  - New incontinence
  - Dyspareunia (Painful sexual intercourse)

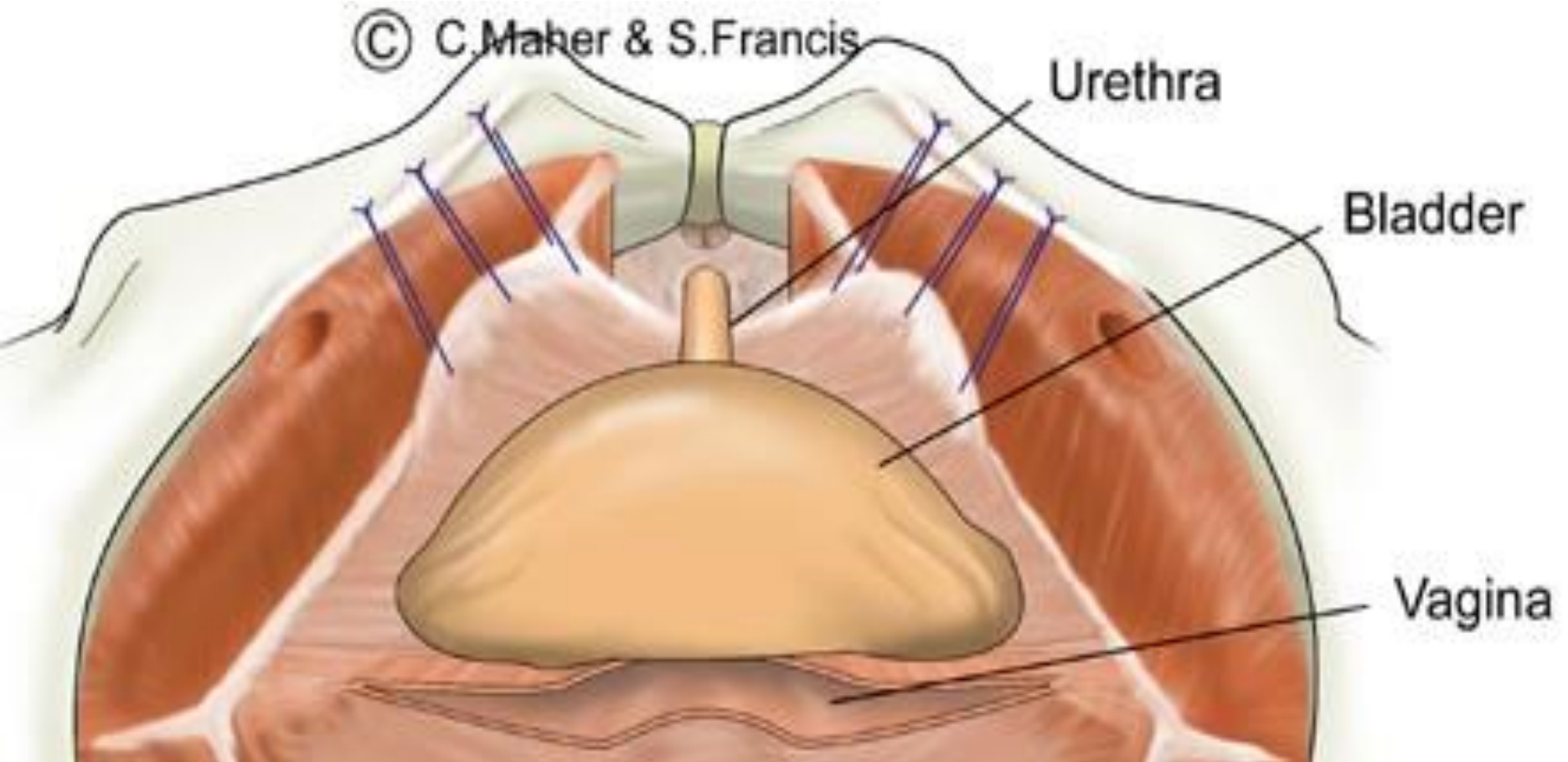
- **Types of prolapse surgery**
- Anterior &/or posterior repair (colporrhaphy)
- Hysteropexy.
- Vaginal hysterectomy.
- Total abdominal hysterectomy & sacrocolpopexy.
- If the patient unfit for surgery a ring pessary may be used



TVT



## Colposuspension



Ring pessary



## Sacrocolpopexy

