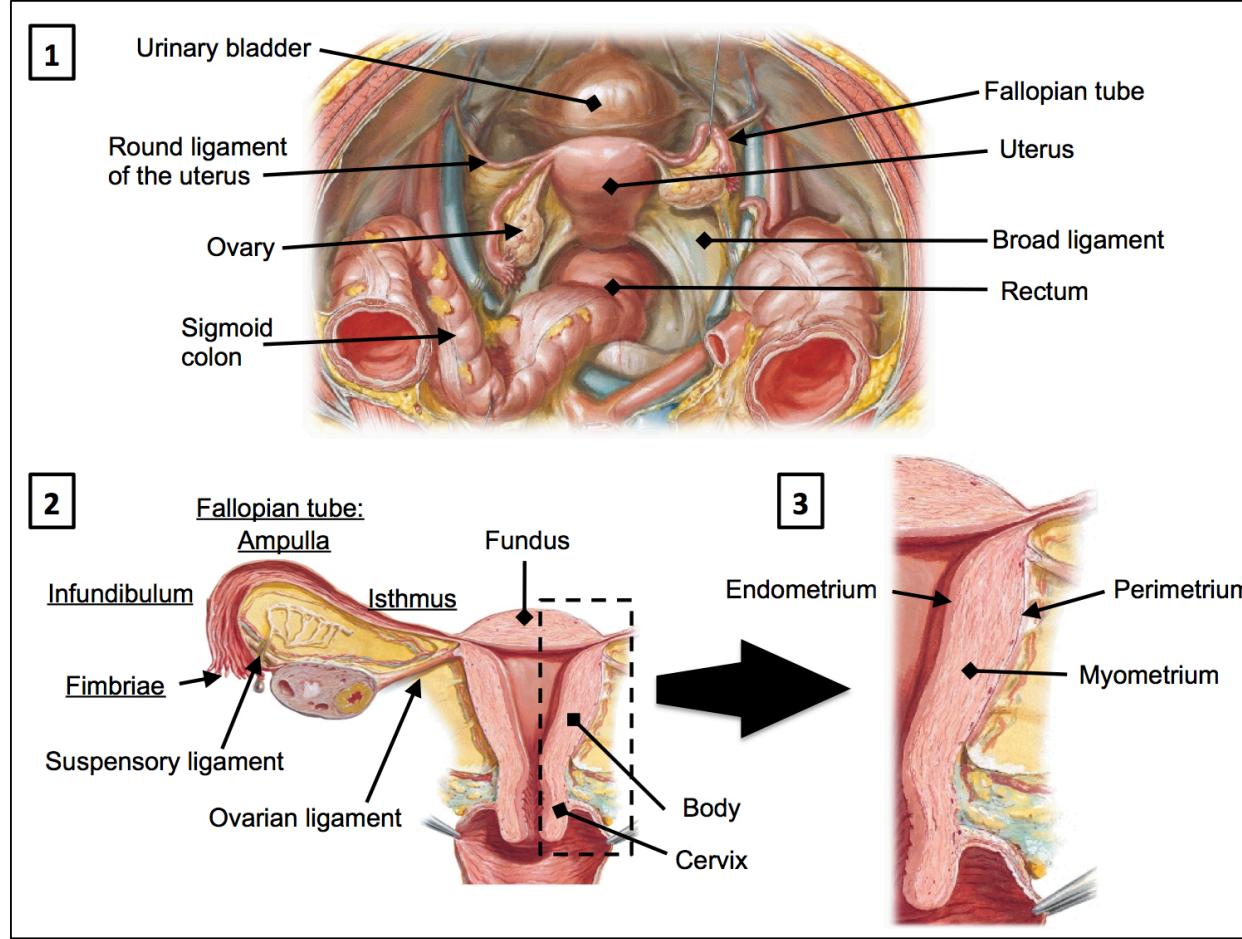


BSMS MODULE: 203, Reproduction and Endocrinology.

DR SESSION 1:

Inspection of the Female pelvic organs



PROSECTION:

◆ Dissected uterus

Using Figure 1 as a guide, or recalling the notes from other stations, briefly locate the uterus within the pelvic cavity. Note how the uterus is normally curved anteriorly – **anteverted** – over the bladder, which it partially obscures, if viewed from above.

Identify the two main parts of the uterus (Figure 2):

- the broader **body** in the upper 2/3, including what you believe is the **fundus**, the dome-shaped uppermost part of the body above the fallopian tubal openings
- the narrower **cervix**



Point out the predicted locations of the body and cervix on the prosection.

Note (in this or another prosection) that the walls of both the cervix and the uterus is quite thick. Compare it with other muscles, e.g. those of the abdominal wall. Finally, try to identify the three layers that form the wall of the uterus (Figure 3). While the **myometrium** is easy to discern the remaining two are less so: the outer covering, or **perimetrium**, and the inner lining, or **endometrium**.

◆ Ovaries (Figure 2)

Locate the **ovaries**, normally close to the lateral walls of the pelvis. It is very likely that these are considerably smaller to that described in the lecture, more the size of an almond than a large olive – after menopause the ovaries atrophy significantly.

The ovaries are regarded as suspended, by two main ligaments:

- Ovarian ligament** – medial border of the ovary to where the fallopian tube joins the uterus
- Suspensory ligament of ovary** – lateral border of the ovary, to the parietal peritoneum

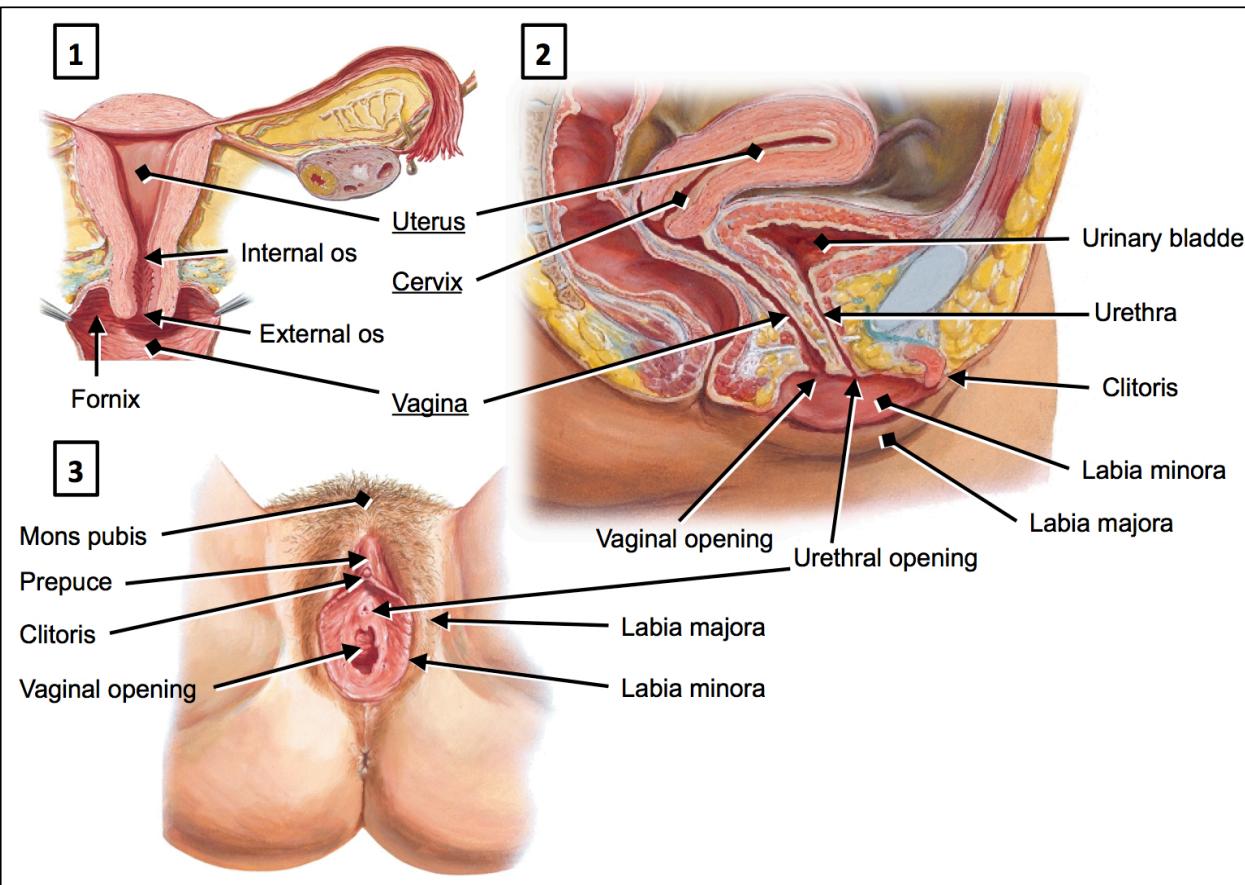


Point out these two ligaments on the prosection.

◆ Uterine, or fallopian tubes (Figure 2)

Identify the **uterine or fallopian tubes** in the free margin of the broad ligament (described below). First, locate the expanded distal end of the tube – **the infundibulum**, which forms the abdominal opening of the tube. The infundibulum is surrounded by a number of extensions – **the fimbriae**, one of which may be in contact with the ovary, although this is not always the case. Next, locate the more medial part of the fallopian tube, the broader **ampulla** and a medial, narrower **isthmus** that opens into the superolateral wall of the uterus by a very narrow opening.

Check with a demonstrator if unable to identify any of these features.



PROSECTION:

◆ Cervix and cervical canal (Figure 1)

Examine the hemisected prosection (image below left). Locate the **cervix**, comprising the lower portion of the uterus. Note that the cervical canal, the cavity within the cervix, is considerably narrower compared to the uterine cavity. This canal is bordered by two openings (Figure 1):

- the **internal os**, communicating superiorly with the uterine cavity
- the **external os**, communicating inferiorly with the vagina

In women who have not borne children – nulliparous = *null* for ‘none’ and *parous* meaning ‘to produce’ (recall ‘parturition’) – the external os is narrow and circular. After childbirth the external os remains enlarged thus forming a transverse slit.



Point out on the prosection, the exact location of the internal and external os.

◆ Vagina (figures 1 and 2)

Described in the lecture as a muscular duct, identify its two endpoints: the **cervix** above and the **vestibule** below. Next locate the **fornix**, the recess where the vagina attaches to the cervix (use Figure 1 as a guide).



Point out on the prosection the exact location of the fornix.

Palpate the wall of the vagina. Note its relative thin muscular layer compared to the uterus. Although contraction of this muscle may assist with childbirth it is clear that the two main factors responsible for delivery are contraction by the myometrium and increase in abdominal pressure. Note also that the anterior and posterior walls of the vagina are in contact (Figure 2) except at the cervical, upper end. The vaginal canal is therefore normally collapsed.

◆ Vulva

Using Figures 2 and 3 as a guide locate on the prosection the different structures and openings of the **vulva**, the external genitals of the female:

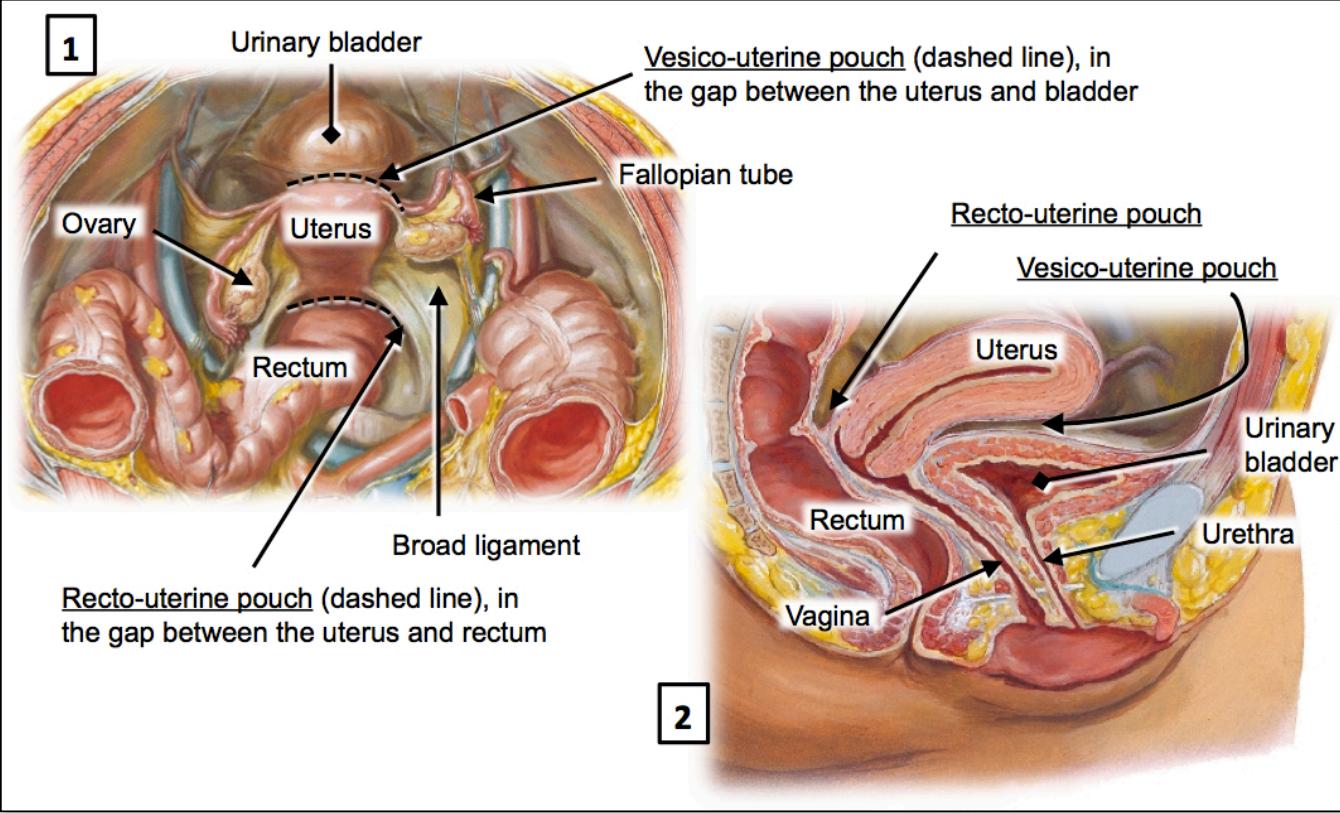
- **Mons pubis**, just anterior to the vulva
- **labia majora** and **minora**
- **glans of the clitoris**
- **prepuce**, that surrounds the glans of the clitoris
- **urethral plus vaginal openings**

Finally, locate the **anal opening**, which is not part of the vulva. Note however the close proximity between the anal and urethral/vaginal openings. Recall from the lecture notes the clinical implications of this.



Point out on the prosection, the relevant components of the vulva.

Check with a demonstrator if unable to identify any of these features.



PROSECTION:

This station concerns the location of pelvic viscera *in situ*, the peritoneal reflections over the pelvic organs and the urinary bladder in particular.

◆ Peritoneal pouches

From two thirds down the rectum, the peritoneum is reflected onto the posterior surface of the uterus, creating the **recto-uterine pouch or pouch of Douglas**. Between the uterus and the bladder the peritoneum arcs, forming the **utero-vesical pouch**. From the anterior of the bladder the peritoneum is reflected onto the anterior abdominal wall. Hold the prosection upright to check that the recto-uterine pouch does indeed form the lowest part of the peritoneal cavity in the female. The clinical relevance of this is that of a potential site for the accumulation of fluid.



Point out on the prosection the precise location of the two pouches named above.

◆ Urinary bladder

As with the male, the bladder in the female is supported inferiorly by the **pubic bones plus pelvic floor muscles**, and above/laterally by **peritoneal folds**. The bottom half of the bladder, the area called the **neck of the bladder** is held firmly in place over the pelvic floor by the **pubovesical ligament** (the equivalent in males being the **puboprostatic**) which restricts its movement. The reason for this is found in the male section of the DR notes. More detail on this ligament, as well as pelvic floor muscles are covered in the next DR session notes.



Point out on the prosection the urinary bladder and the predicted location of the pubovesical ligament.

Recall how the bladder is partly covered, superiorly, by the uterus. Also note its relative smaller size compared to the male prosections.

Pay particular attention to the position of the bladder apex, aiming roughly at the upper edge of pubic symphysis, the latter therefore serves as a bony landmark to estimate the location of (an empty) bladder apex.

◆ Spatial arrangement

Before leaving this station spend enough time to practice proper awareness of the location of the major female reproductive organs and peritoneal folds. This is of considerable value when performing surgery, where visibility is restricted. Practice pointing out and describing the relationship of the following:

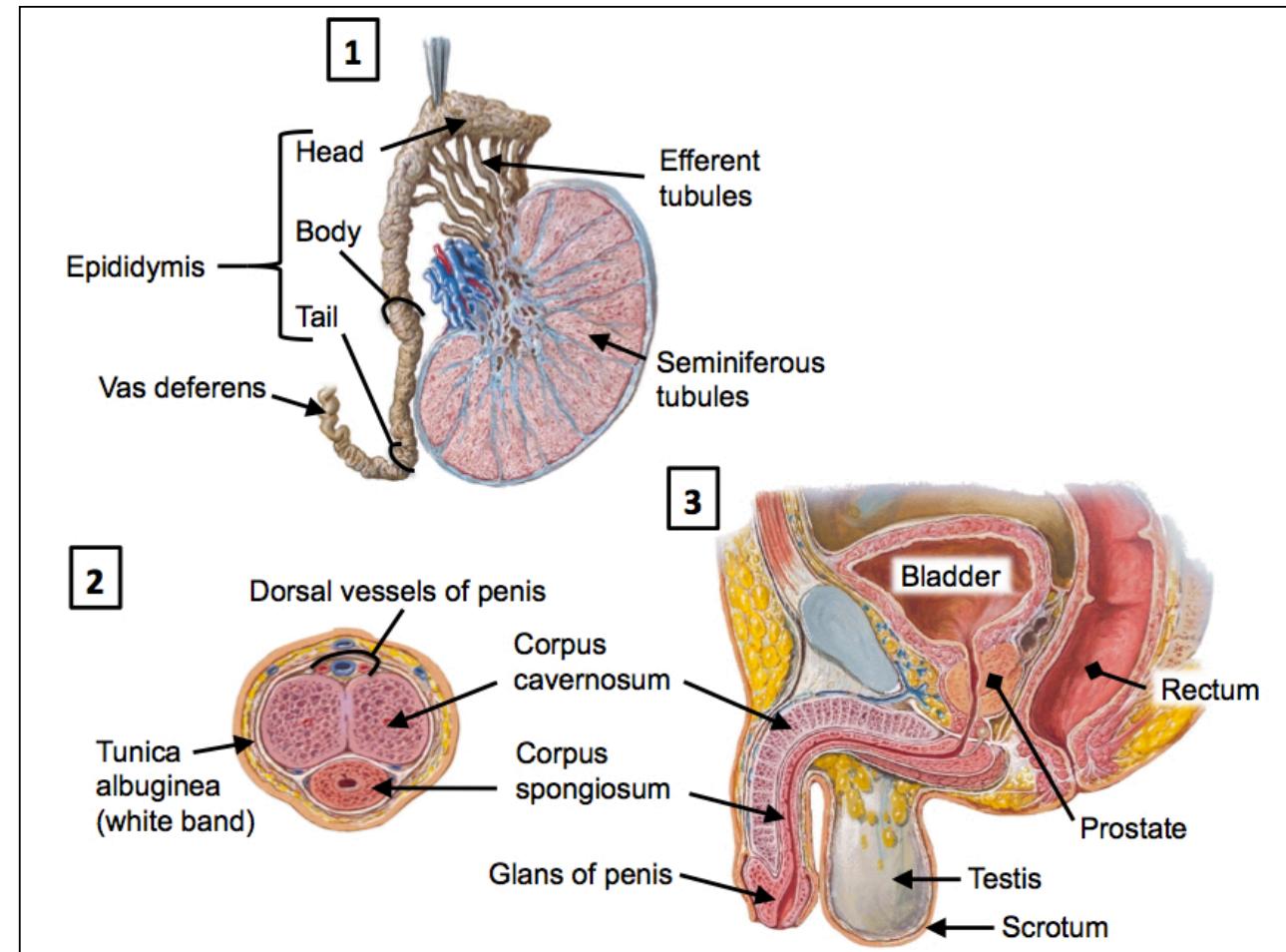
- Location of the **uterus** versus the **bladder**
- Location of the **fallopian tubes** within the peritoneal space
- Location of the **ovaries** with respect to the **fallopian tubes** (if the former are present; also may require some probing if not readily visible)

Check with a demonstrator if unable to identify any of these features.

BSMS MODULE: 203, Reproduction and Endocrinology.

DR SESSION 1:

Inspection of the male pelvic organs



PROSECTION:

◆ Testis (pl. Testes) and its constituents

These small egg-shaped organs normally lie in the scrotum (Figure 3), suspended by the spermatic cord. Before examining the prosected testis take a short moment to remind the main constituents of the spermatic cord, from the content learnt in module 104.

Each testis and epididymis is enclosed by the tunica vaginalis (shown cut open in the prosection image). The testis in turn is also surrounded by a tough fibrous outer surface, the **tunica albuginea**, that is whitish in appearance (also shown in the prosection image).



Locate the two tunica named above on the prosection. Ask a demo if unable to view these.

Next view the inner lobules in the bisected testis. Recall that these enclose numerous, highly coiled **seminiferous tubules** where sperm is produced (Figure 1).

If possible, try to locate the entry/exit point of the gonadal vessels. See if this prosection reveals the small efferent tubules that lead to the epididymis.

On this prosection, or that on another station, locate the **epididymis** (Figure 1) and try to distinguish the three portions of this duct: head, body and tail. Note also its coiled appearance and how its tail is continuous with the vas deferens. Both the spermatic cord and the path of the vas deferens is illustrated in another station.

◆ Penis

Look for the main regions of the penis on this prosection: **glans**, **body** and **root**. The penis shown on this station was also cut to reveal some the three masses of tissue within this erectile organ (Figures 2 and 3):

- two **corpora cavernosa**. The larger cavernosa bodies, on the dorsal side of the penis are in turn responsible for erection, after filling with blood to produce considerable hydraulic pressure.
- one **corpus spongiosum**, that surrounds the **spongy or penile urethra**

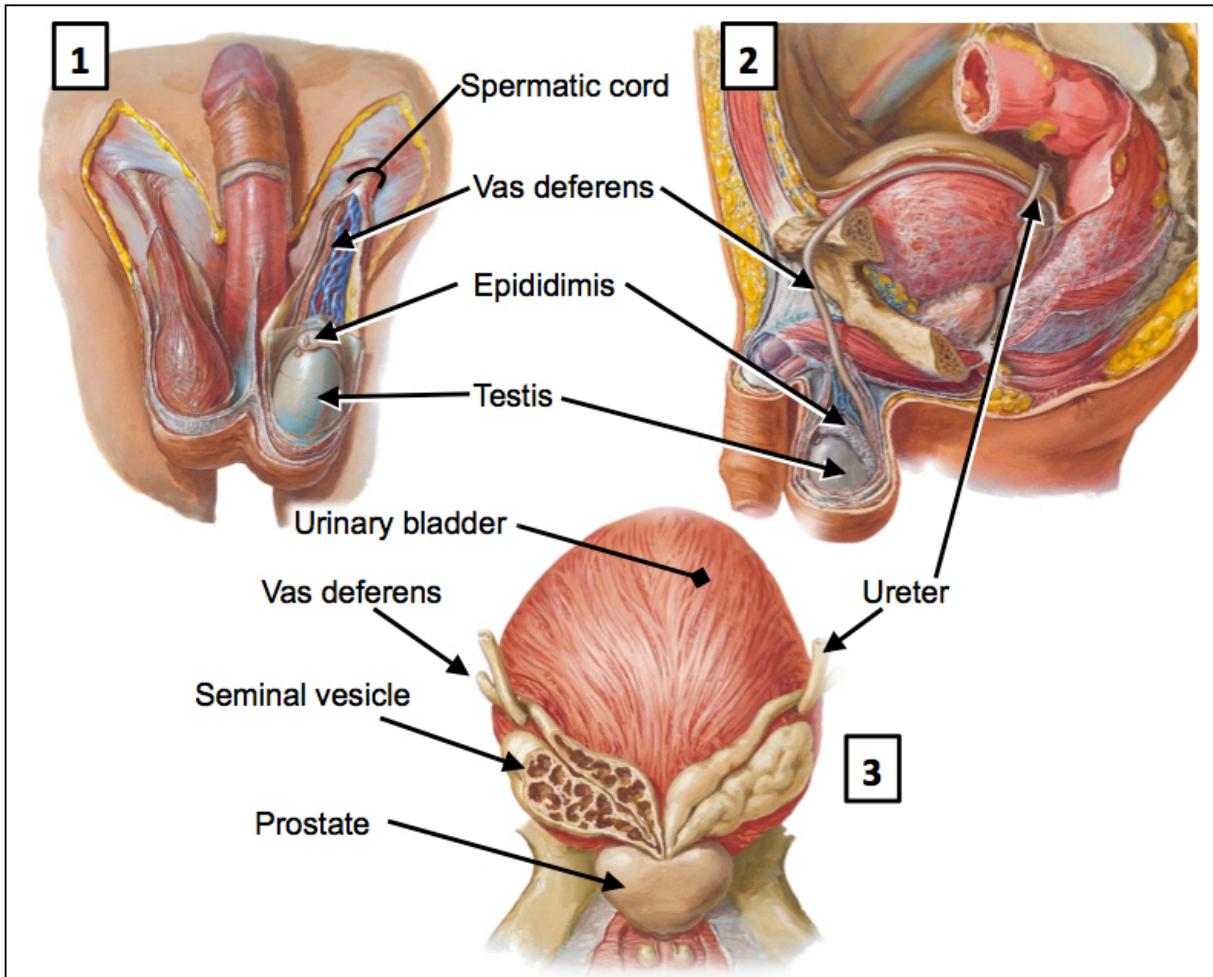
Note in particular the fibre arrangement inside the cavernosa bodies, which prevent the penis from 'ballooning' thus keeping its characteristic cylindrical shape; and the surrounding tough fibrous cover, or capsule, called the **tunica albuginea**, that limits distension.



Point out the following features:

- Corpus cavernosum
- Corpus spongiosum
- Glans, body and root of penis

Ensure that you are able to find these main features on the other male prosections.



PROSECTION:

◆ Vas deferens

Follow the course of the **vas deferens** from the scrotum to the point it enters the abdomen, via the inguinal canal (Figure 1). Within the abdomen this duct reappears from the **deep inguinal ring** and projects to the posterior aspect of the bladder (Figures 2 and 3). This long duct receives blood from two sources – vesical and testicular veins – that form an anastomosis. Venous drainage in turn is to the equivalent named veins.



Point out on any of the male prosections, the exact location of the vas deferens.

◆ Seminal vesicles

Once satisfied with the course taken by the vas deferens note where its diameter dilates once at the posterior aspect of the bladder, called the **ampulla**. The two ampullae lie medial to the **seminal vesicles** and each ampulla joins the duct of a seminal vesicle to form the two **ejaculatory ducts** that pass through the **prostate gland** to open into the **prostatic urethra**.



Locate the two ampullae and seminal vesicles on the prosection and note the relative size of the latter.

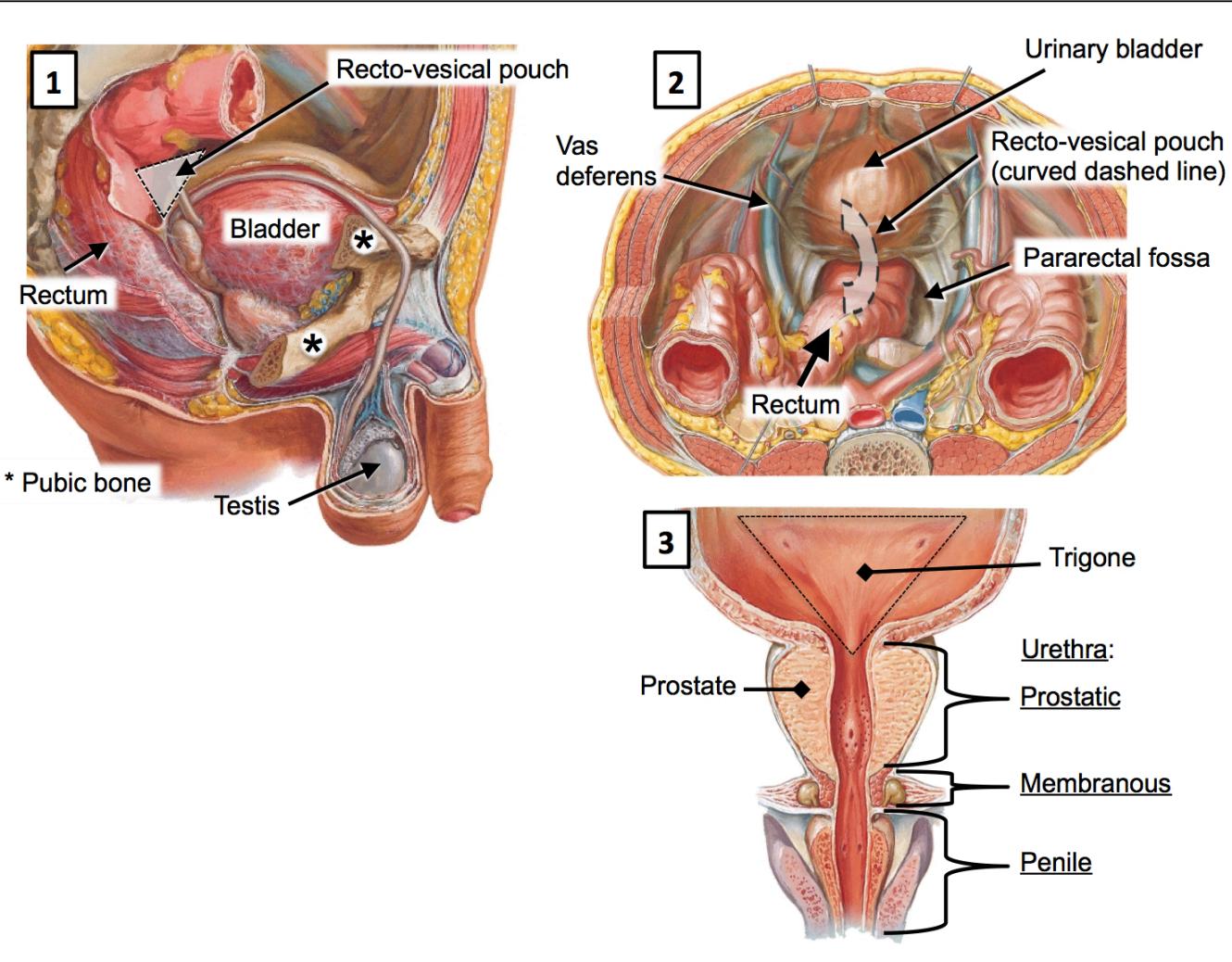
◆ Prostate gland

Finally, examine the **prostate gland**, located immediately inferior to the bladder. This gland surrounds the **prostatic urethra** and consists of several lobes with only a very small portion of the gland lying in front of the urethra. Between the ejaculatory ducts and the urethra lies the **small median lobe of the prostate** – this is the lobe that most commonly becomes enlarged in **benign senile hypertrophy** of the prostate.

Point out the following features:

- Prostate gland
- Prostatic urethra
- Penile urethra

Recall what should be the normal size of a prostate. Is the one on this specimen a normal sized gland?



This station concerns the location of pelvic viscera *in situ*, the peritoneal reflections over the pelvic organs and the urinary bladder in particular.

◆ **Peritoneal coverings**

Observe and discuss the course of the peritoneal folds in the male pelvis. Note in particular the main pouches these create: the **recto-vesical pouch** (Figure 1), from the section of peritoneum extending from the middle part of the rectum on to the posterior surface of the bladder and seminal vesicles, the latter being covered below. In addition, the peritoneum is reflected anteriorly from the bladder onto the anterior abdominal wall and plus to the sides of the rectum, forming the **pararectal fossae** (Figure 2).



Point out on the prosection the precise location of the pouch plus fossa named above

◆ **Urinary bladder**

Observe that the bladder, when empty, is confined mostly to the lesser pelvis and that its upper half has some (albeit limited) freedom of movement – test this by carefully moving the bladder. This allows for the bladder to expand without causing excessive tension on its supportive structures: the **peritoneal folds** above and laterally, and the **pubic bones** plus **pelvic floor muscles** inferiorly.

As with the female, the bladder in the male is supported inferiorly by the **pubic bones** plus **pelvic floor muscles**, and above/laterally by **peritoneal folds**. Also at the bottom half of the bladder, the area called the **neck of the bladder**, movement is very restricted – test this by carefully moving the lower portion of this organ.



Point out on the prosection the urinary bladder and the predicted location of the puboprostatic ligament

PROSECTION:

This restriction to movement is due to the presence of the **prostate** - labeled on the prosection in another station - as well as the **puboprostatic ligament**, the equivalent in females being the **pubovesical**. The reason is obvious: any movement here could stretch, bend or kink the urethra, thereby impeding normal micturition. The puboprostatic/pubovesical ligament is located within the **pelvic diaphragm**, this feature - and muscles of pelvic floor - will be covered in the next DR session.

Observe the inside of the bladder if one is present on this prosection. If not then look at a prosection at another station. Try to discern the **trigone** (Figure 3), a small triangular area located on the floor of the urinary bladder formed by three edges: two **ureteric** plus one **urethral orifice**, the openings for both the ureters (the site where kidney stones can potentially become lodged) and the urethra. The orifices are hard to locate but have a go.

Finally, pay particular attention to the position of the bladder apex, aiming roughly at the upper edge of **pubic symphysis**, the latter therefore serving as a bony landmark to estimate the location of an (empty bladder) apex.



Note how the surface of the trigone is smooth, as opposed to the rugged appearance seen on the rest of the bladder internal wall. Why is this?