



# ANATOMY OF THE PELVIS

Before going through the contents, make sure you check this [CORRECTION FILE](#) first

## pelvis

composed of 4 bones	<p>Two hip bones, which form the anterior and lateral walls.                  Sacrum and coccyx, which form the posterior wall.                  These 4 bones are connected by 4 joints and lined by 4 muscles.                  The bony pelvis with its joints and muscles form a strong basin-shaped structure (with multiple foramina),                  The pelvis contains and protects the lower parts of the alimentary &amp; urinary tracts &amp; internal organs of reproduction</p>		
Joints	<p><u>Anteriorly:</u> Symphysis pubis (cartilaginous joint)</p>	<p><u>Posteriolaterally:</u> Two Sacroiliac joints. (Synovial joints)</p>	<p><u>Posteriorly:</u> Sacrococcygeal joint (cartilaginous)</p>

The pelvis is divided into two parts by the pelvic brim. Above the brim is the False or greater pelvis, which is part of the abdominal cavity. Below the brim is the True or lesser pelvis

<p>The False pelvis is bounded by:  <u>Posteriorly:</u> Lumbar vertebrae.  <u>Laterally:</u> Iliac fossae and the iliacus muscle.  <u>Anteriorly:</u> Lower part of the anterior abdominal wall.                  It supports the abdominal contents.</p>	<p>The True pelvis has:                  An Inlet \ An Outlet \ A Cavity                  The cavity is a short, curved canal, with a shallow anterior wall and a deeper posterior wall.                  It lies between the inlet and the outlet.</p>
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<p><u>Pelvic inlet</u>  <u>Anteriorly:</u> Symphysis pubis.  <u>Posteriorly:</u> Promontory of sacrum, ala of sacrum.  <u>Laterally:</u> Ileopectineal (arcuate) lines.</p>	<p><u>Pelvic outlet</u>  <u>Anteriorly:</u> Symphysis pubis.  <u>Posteriorly:</u> Coccyx,  <u>Anterolaterally:</u> ischiopubic ramus  <u>Posterolaterally:</u> Sacrotuberous ligament,</p>
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In female the Sacrum is usually wider and shorter. Also, the Angle of the pubic arch is wider. The promontory and the ischial spines are less projecting. Information of the shape and dimensions of the female pelvis is of great importance for obstetrics, because it is the bony canal through which the child passes during birth.

Typical bony pelvis in female : gynecoid

# Pelvic walls

The pelvis has 4 walls:  
Anterior, Posterior, Lateral, Inferior or floor.  
The walls are formed by bones and ligaments that are lined with muscles covered with fascia and parietal peritoneum.

## ANTERIOR PELVIC WALL

It is the shallowest wall and is formed by the **posterior** surfaces of the bodies of the **pubic bones**, the **pubic rami**, and the **symphysis pubis**.

## POSTERIOR PELVIC WALL

It is large and formed by **sacrum**, **coccyx**, **piriformis muscles** and their covering of **parietal pelvic fascia**.

## LATERAL PELVIC WALL

It is formed by:

- 1- Part of the hip bone below **the pelvic inlet**,
- 2- **Obturator internus** and its covering fascia & the **obturator fascia**.
- 3- **Sacrospinous** ligament.
- 4- **Sacrospinous** ligament.

## INFERIOR PELVIC WALL, OR PELVIC FLOOR

**Basin-like** structure which supports the pelvic viscera and is formed by the **pelvic diaphragm**.

It stretches across the true pelvis and divides it into:  
**Main (true) pelvic cavity above**, which contains the pelvic viscera, &  
**Perineum below** which carries the external genital organs .

It is **incomplete** anteriorly to allow **passage** of the **urethra** in **males** and **urethra and vagina** in **females**.

It is formed by the **levator ani** and the **coccygeus** muscles and their covering fasciae.

## Muscles

	Piriformis	Obturator Internus	Coccygeus muscle small triangular muscle.
Origin	Pelvic surface of the middle 3 sacral vertebrae. It leaves the pelvis through the greater sciatic foramen.	Inner surface of the obturator membrane and the hip bone.	Ischial spine.
Insertion	Greater trochanter of the femur.	It leaves the pelvis through the lesser sciatic foramen to be inserted into the greater trochanter of the femur.	Lower end of sacrum and coccyx
Action	Lateral rotator of the femur at the hip joint.	Lateral rotator of the femur at the hip joint	Assist the levator ani in supporting the pelvic viscera
Nerve supply	Sacral plexus .	Nerve to obturator internus.	branches of the 4th and 5th sacral nerves

# LEVATORES ANI MUSCLES

*It is a wide thin sheet-like muscle .*

Origin

- \*Back of the body of the **pubis**
- \*Tendinous arch of the **obturator fascia**
- \*Spine of the **ischium**.

the levator ani is divided into three parts:

**Iliococcygeus** muscle , **Pubococcygeus** muscle , **Puborectalis** muscle

The **pubococcygeus** muscle is then divided into three parts on its own.

\*The true **pubococcygeus** , \***puborectalis** , \***pubovaginalis** (female) or **puboprostaticus** (male) .

**Anterior fibers :**  
**1.Pubococcygeus.**

originates from the **posterior** surface of the body of the **pubis**

descend upon the side of the prostate to unite beneath it with the muscle of the opposite side, joining with the fibers of the **external anal sphincter and transversus perinei**, at the central tendinous point of the **perineum**.

inserted into the **perineal** body (and coccyx).

-The **anterior** portion is occasionally separated from the rest of the muscle by connective tissue.

From this circumstance, as well as from its peculiar relation with the **prostate**, which it supports as in a sling, it has been described as a distinct muscle, under the name of **levator prostatae**.

In the **female** the anterior fibers of the levator ani descend upon the side of the vagina (**sphincter vagina**)

**The puborectalis**  
**(middle fibers)**

forms a sling around the **recto-anal Junction**.

They are inserted into the side of the rectum, blending with the fibers of the Sphincter muscles

It has a very important role in **maintaining fecal continence**.

**Posterior Part**  
**Iliococcygeus**  
**(ischiococcygeus)**

inserted into the side of the last two segments of the **coccyx**; those placed more anteriorly unite with the muscle of the opposite side, in a median fibrous ridge called the **anococcygeal** body or **raphe**, which extends between the **coccyx** and the margin of the **anus**.

## LEVATORES ANI MUSCLES “ continue “

Nerve supply to levator ani:

1. perineal branch of the **fourth** sacral nerve “pelvic surface”
2. perineal branch of the **pudendal** nerve. “perineal surface”

Actions of levator ani:

1. The muscles of the two sides form an efficient muscular sling that supports and **maintains the pelvic viscera in position** (posterior part).
2. They **resist the rise in intra pelvic pressure** during the straining and expulsive efforts of the abdominal muscles (as in coughing).
3. They have a very important role in **maintaining fecal continence**.(middle part)
4. They serve as a **vaginal sphincter** in the female (anterior part).

# Arteries of the Pelvis

## 1. Internal iliac artery(IIA):

One of the 2 terminal branch of the Common iliac artery.

Arises in front of the sacroiliac joint

It descends downward & backwards over the pelvic inlet.

It divides at the upper border of the greater sciatic foramen into: **Anterior & Posterior divisions.**

**Posterior division Supplies:**

1. Posterior abdominal wall. 2. Posterior pelvic wall. 3. Gluteal region.

**Anterior division supplies:**

1. Gluteal region 2. Perineum.3. Pelvic viscera. 4. Medial (adductor) region of thigh  
5.The fetus (through the umbilical arteries).

### **Parietal Branches**

**From posterior division:**

1. Iliolumbar artery.
2. Lateral sacral arteries (2 branches.)
3. Superior gluteal artery.

**From anterior division:**

1. Obturator artery.
2. Inferior Gluteal artery.

### **Visceral Branches**

(all from anterior division)

#### **Umbilical artery :**

Gives the **superior vesical artery**: The distal part of this artery fibrosed and forms **the Medial Umbilical Ligament.**

**Inferior Vesical artery** in **male** or **vaginal artery** in **female**:

In the male it supplies, the Prostate and the Seminal Vesicles.

It also gives the artery of the Vas Deferens.

#### **Middle rectal artery**

#### **Internal pudendal artery**

It is the main arterial supply to the **perineum.**

## 2. Ovarian artery:

Arises from the abdominal aorta.

**Visceral Branches (in Female) : Vaginal artery:** Replaces the inferior vesical artery.

**Uterine artery:** Crosses the Ureter superiorly and supplies the uterus & uterine tubes.

## Venous Drainage

### **INTERNAL ILIAC VEINS**

It collect tributaries corresponding to the branches of the internal iliac artery. joins the external iliac vein in front of the sacroiliac joint to form the **common iliac vein**

### **Ovarian vein:**

Right vein drains into IVC  
Left vein drains into left renal Vein.

## LYMPHATICS OF THE PELVIS

The lymph nodes and vessels are arranged in a chain along the main blood vessels. Thus, there are **external iliac nodes, internal iliac nodes, and common iliac nodes.**

lymph from Common iliac nodes & the (Ovaries, uterine tubes & fundus of uterus) passes to **Lateral aortic (paraortic) nodes.**

## Nerve Supply

### **Somatic:**

**Sacral plexus**

### **Autonomic:**

Sympathetic:

Pelvic part of sympathetic trunk

∴ The 2 sympathetic trunks unite inferiorly in front of the coccyx and form a single ganglion (**Ganglion Impar**).

### **II- Superior & Inferior Hypogastric plexuses**

### **Parasympathetic:**

**Pelvic splanchnic nerves**  
(From S 2 , 3 & 4)

# MCQs

1-which one of the following joints lies in the posterior of pelvic bone :

- a) Symphysis Pubis
- b) Sacrococcygeal joint
- C) Two Sacroiliac joints

2- the posterior boundary of false pelvis is :

- a) iliac fossae and iliacus muscle
- b) lumbar vertebrae
- C)coccyx

3-regarding the female pelvis which one is false :

- a) wider and shorter sacrum
- b) angle of the pubic arch is wider
- C) promontory and the ischial spines are more projecting

4- the most female bony pelvis is:

- a) android
- b) anthropoid
- C) gynecoid

5- what are the action and the nerve supply of piriformis muscle

- A) lateral rotator of the femur + sacral plexus
- b) medial rotator of the femur + sacral plexus
- C )lateral rotator of the femur +4th ,5th sacral nerves

6-Which one of the following Not formed the lateral pelvic wall :

- a) sacrospinous ligament
- b) obturator internus and its covering fascia
- C) pubic rami

7- which one of these is false origin of levator ani muscle :

- a) tendinous arch of the obturator fascia
- b) ischial spine
- C) middle 3 sacral vertebrae

8- which fiber from levatores ani muscles has important role in maintaining fecal continence :

- a) pubococcygeus
- b) puborectalis
- C) iliococcygeus

9- the drainage of right ovarian vein is :

- a) common iliac vein
- b) inferior vena cave(IVC)
- C) left renal vein

10- the parasympathetic nerve fiber is :

- a) pelvic splanchnic nerves (S2,S3,S4)
- b) pelvic splanchnic nerves (S1,S2,S3)
- C) Sacral plexus

THANK YOU FOR CHECKING OUR WORK  
GOOD LUCK DOCTORS

### Key Answers

B -1

B -2

C -3

C -4

A -5

C- 6

C- 7

B- 8

B -9

A-10

اللهم أني استودعتك ما قرأت و ما حفظت و ما تعلمت

فرده عند حاجتي اليه انك على كل شيء قدير حسبنا الله و نعم الوكيل.

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