

Academic year 2019-2020

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

# REPRODUCTION SYSTEM MODULE

SESSION 4:

LECTURE:

DR lec

## Pelvic osteology

presented by Dr Nawal Mustafa

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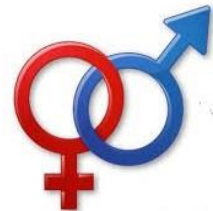
Dr. Ihsan Mardan Humod

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



## Learning objectives:

LO

- 1- Describe the bony structure of **pelvis** in female and male
- 2-Identify the bony landmarks forming **pelvic inlet** and **pelvic outlet**
- 3- Describe **greater** and **lesser pelvis**



## Pelvic girdle

LO1

The pelvic girdle is formed by **4 Bones**:

The right and left **Hip Bones**

Ilium

Ischium

Pubis

**Sacrum**-Formed by the fusion of five, originally separate, sacral vertebrae

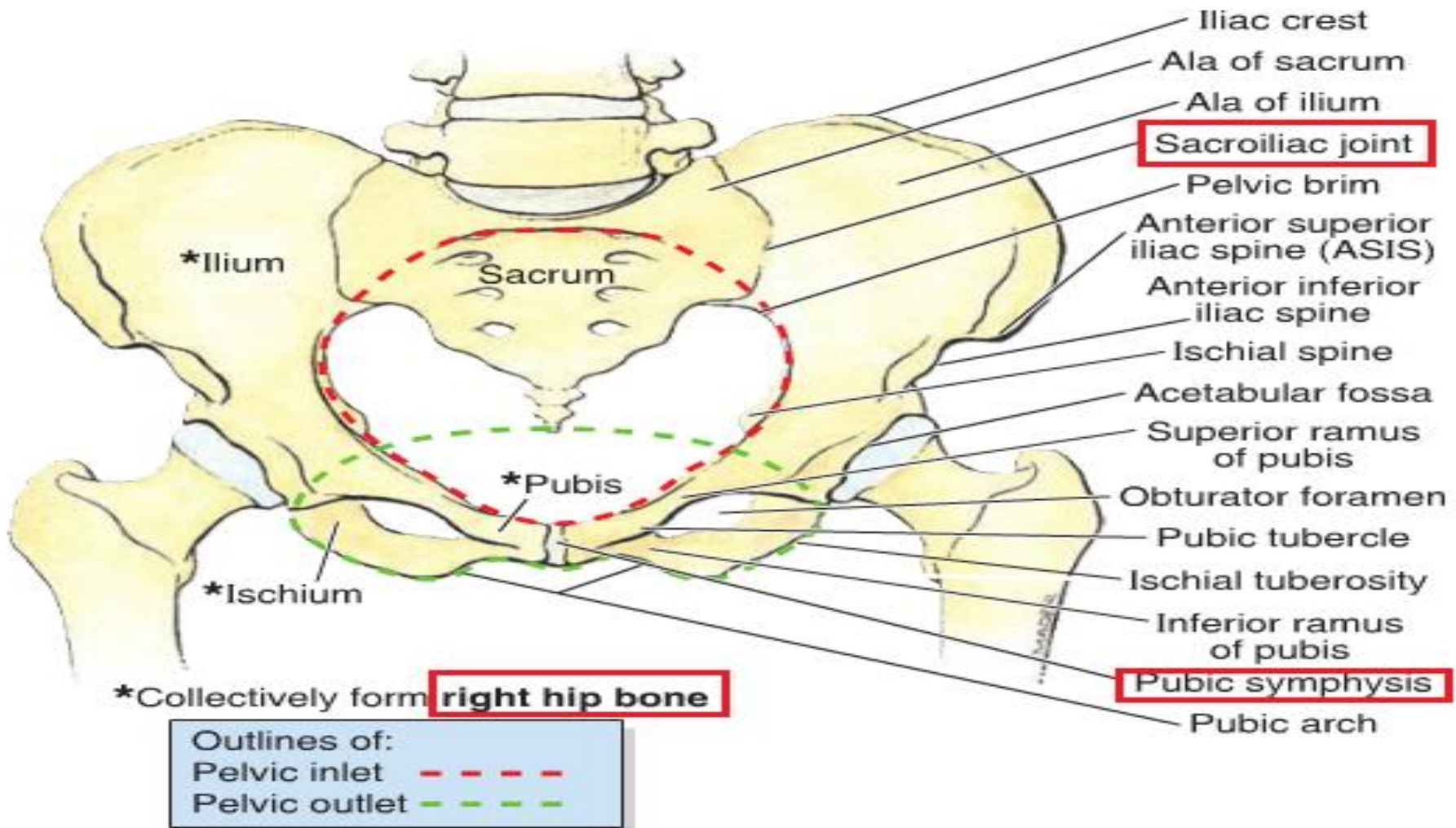
**Coccyx**-formed by fused 4 vertebrae.

The hip bones articulate with the sacrum at the **Sacroiliac Joint** and with each other at **the Pubic Symphysis**.



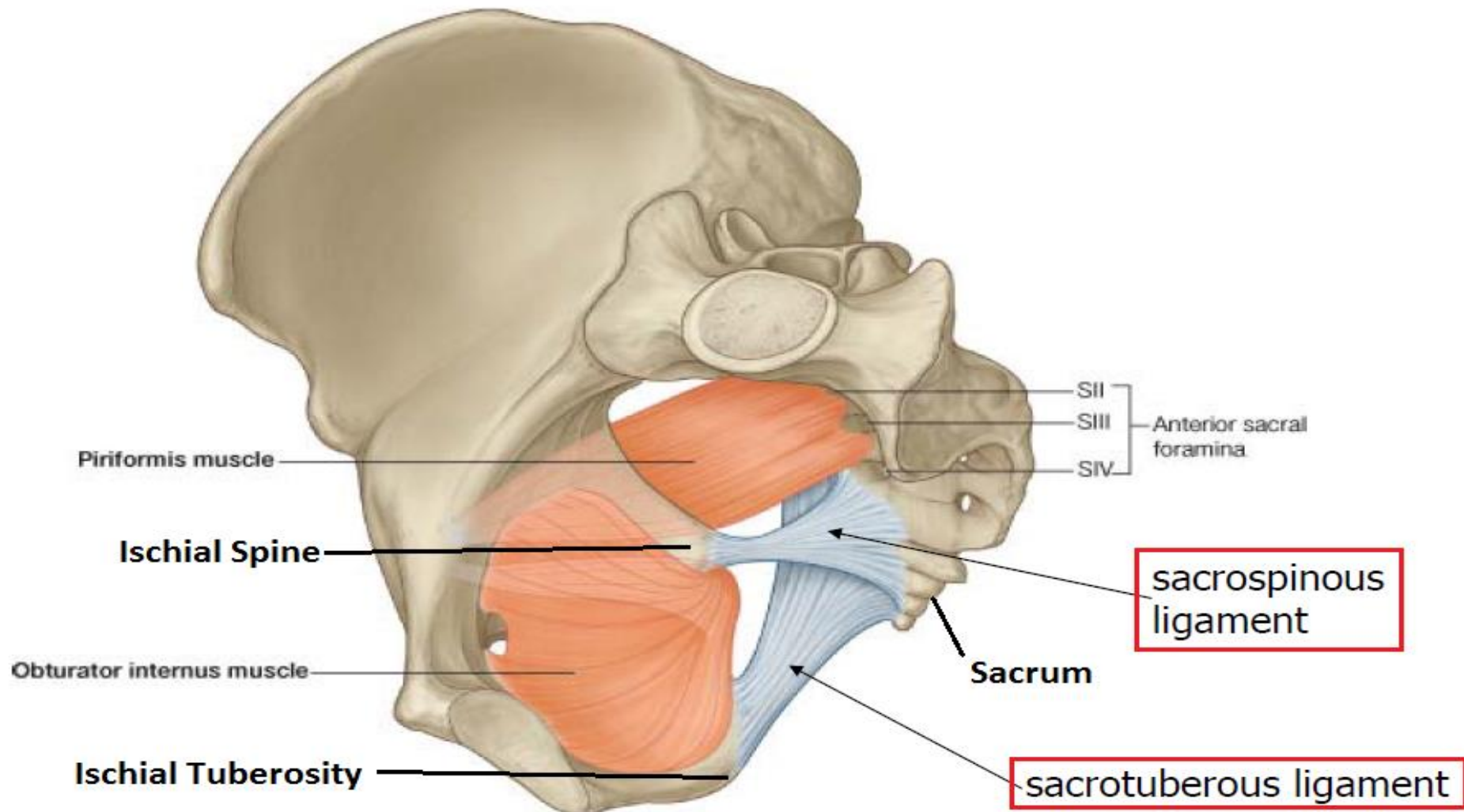
# Pelvic girdle

LO1



# Ligaments

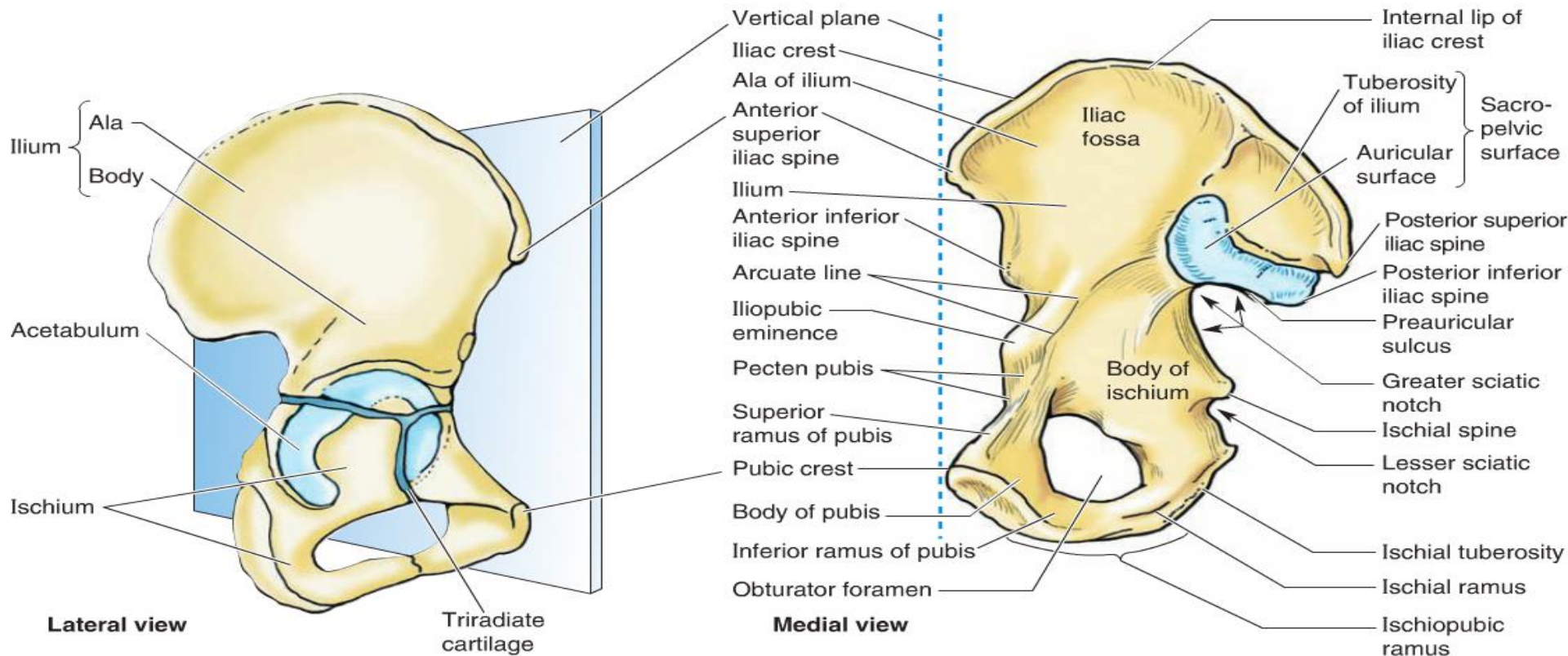
LO1





# Lateral and medial views

LO1



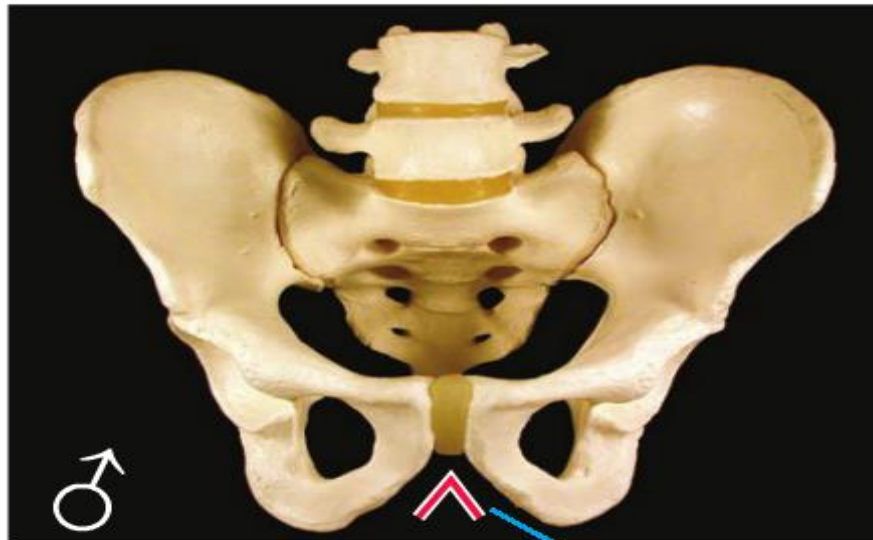
The front of the symphysis pubis and the anterior superior iliac spines should lie in the same vertical plane.



# Differences between male & female

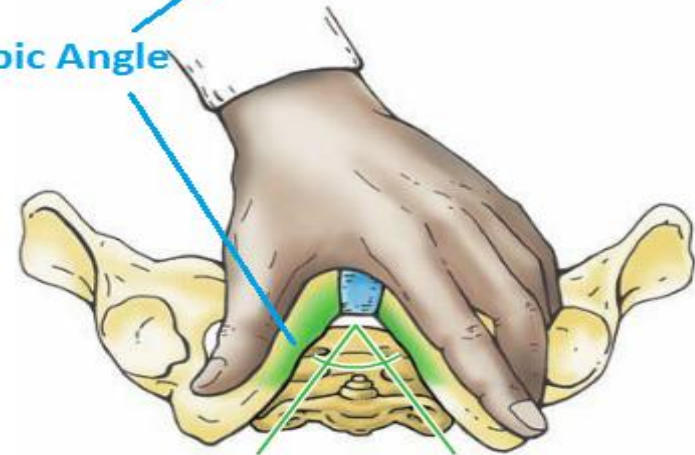
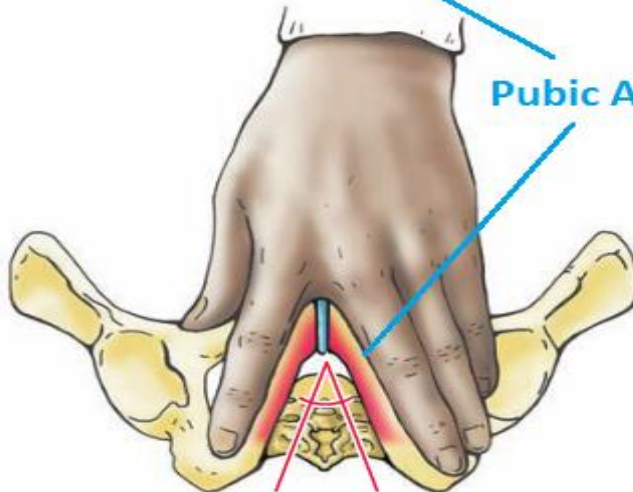
LO1

Bony Pelvis	Male (♂)	Female (♀)
General structure	Thick and heavy	Thin and light
Greater pelvis (pelvis major)	Deep	Shallow
Lesser pelvis (pelvis minor)	Narrow and deep, tapering	Wide and shallow, cylindrical
Pelvic inlet (superior pelvic aperture)	Heart-shaped, narrow	Oval and rounded; wide
Pelvic outlet (inferior pelvic aperture)	Comparatively small	Comparatively large
Pubic arch and subpubic angle	Narrow (<70°)	Wide (>80°)
Obturator foramen	Round	Oval
Acetabulum	Large	Small
Greater sciatic notch	Narrow (~70°); inverted V	Almost 90°



Anteroposterior Views

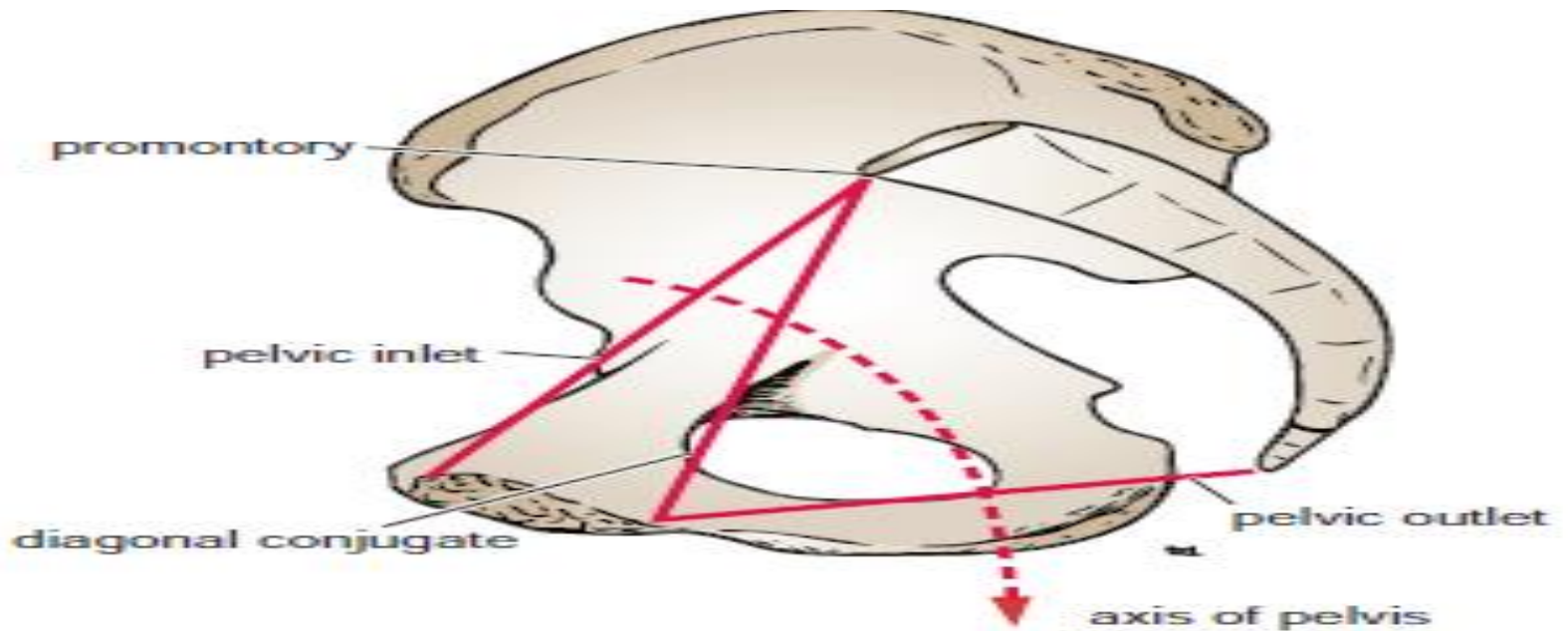
Pubic Arches / Subpubic Angle



**Pelvic girdles of male and female.** Pubic arches, or subpubic angles typical for each gender (male = red; female = green) can be approximated by spreading index and middle finger (demonstrating narrow subpubic angle of male pelvis) or thumb and index finger (demonstrating wider subpubic angle of female pelvis).



L02



## Criteria of : A 'Good' Pelvis for Childbirth

LO2

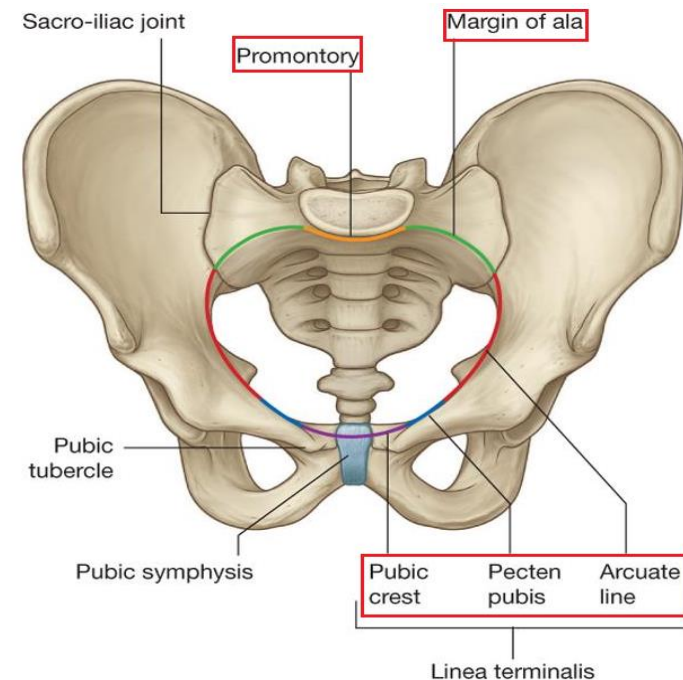
- Round inlet
- Straight side walls
- Ischial spines not too prominent
- Well-rounded greater sciatic notch
- Well-curved sacrum (to fit with foetal head)
- Sub-pubic arch  $> 90^{\circ}$

## Pelvic Inlet

LO2

Pelvic inlet (superior pelvic aperture, pelvic brim) is formed by:

- Promontory and ala of the sacrum posteriorly\_Superior surface of its lateral part, adjacent to the body of the sacrum
- Right and left linea terminalis anteriorly
  - Arcuate line on the inner surface of the ilium
  - Pectineal line and pubic crest

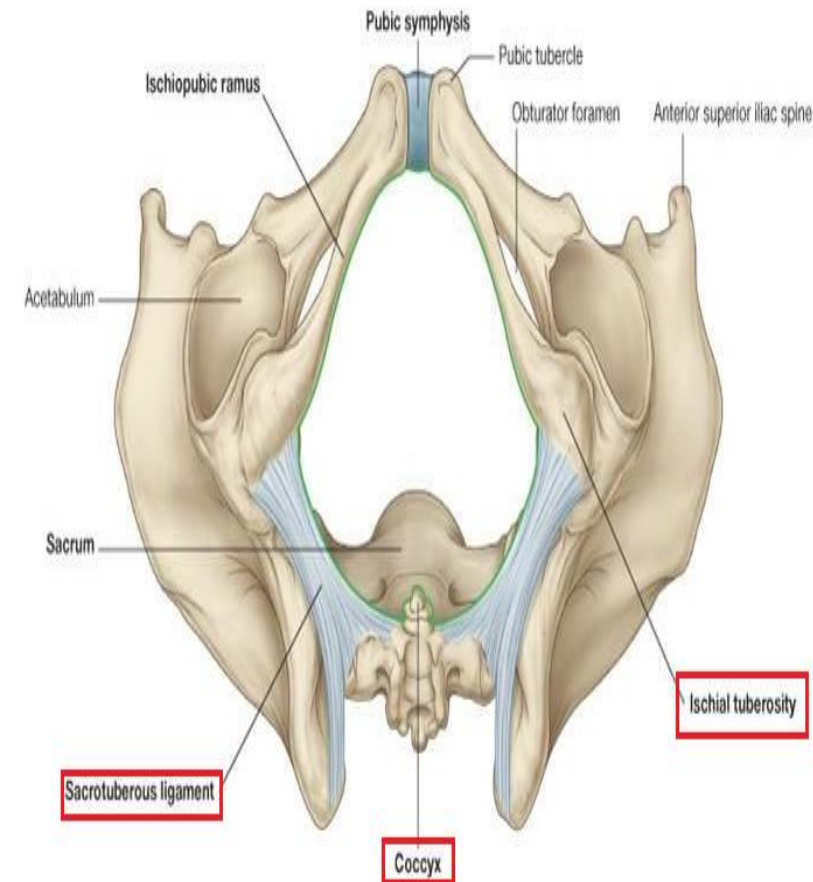


## Pelvic outlet :

LO2

Pelvic Outlet = (inferior pelvic aperture) is formed by:

- Pubic arch anteriorly
- Ischial tuberosities laterally
- Inferior margin of the sacrotuberous ligament posterolaterally
- Tip of the coccyx posteriorly



## Pelvic outlet :

LO2

N:

*The Pelvic outlet is bony anteriorly, but is partially made up by the sacrospinous ligament posteriorly. The ligament is potentially stretchy and indeed throughout pregnancy **progesterone** works to soften the ligament to increase the size of the pelvic outlet to aid childbirth.*





# Clinical Assessment of the Pelvic Inlet (Pelvimetry)

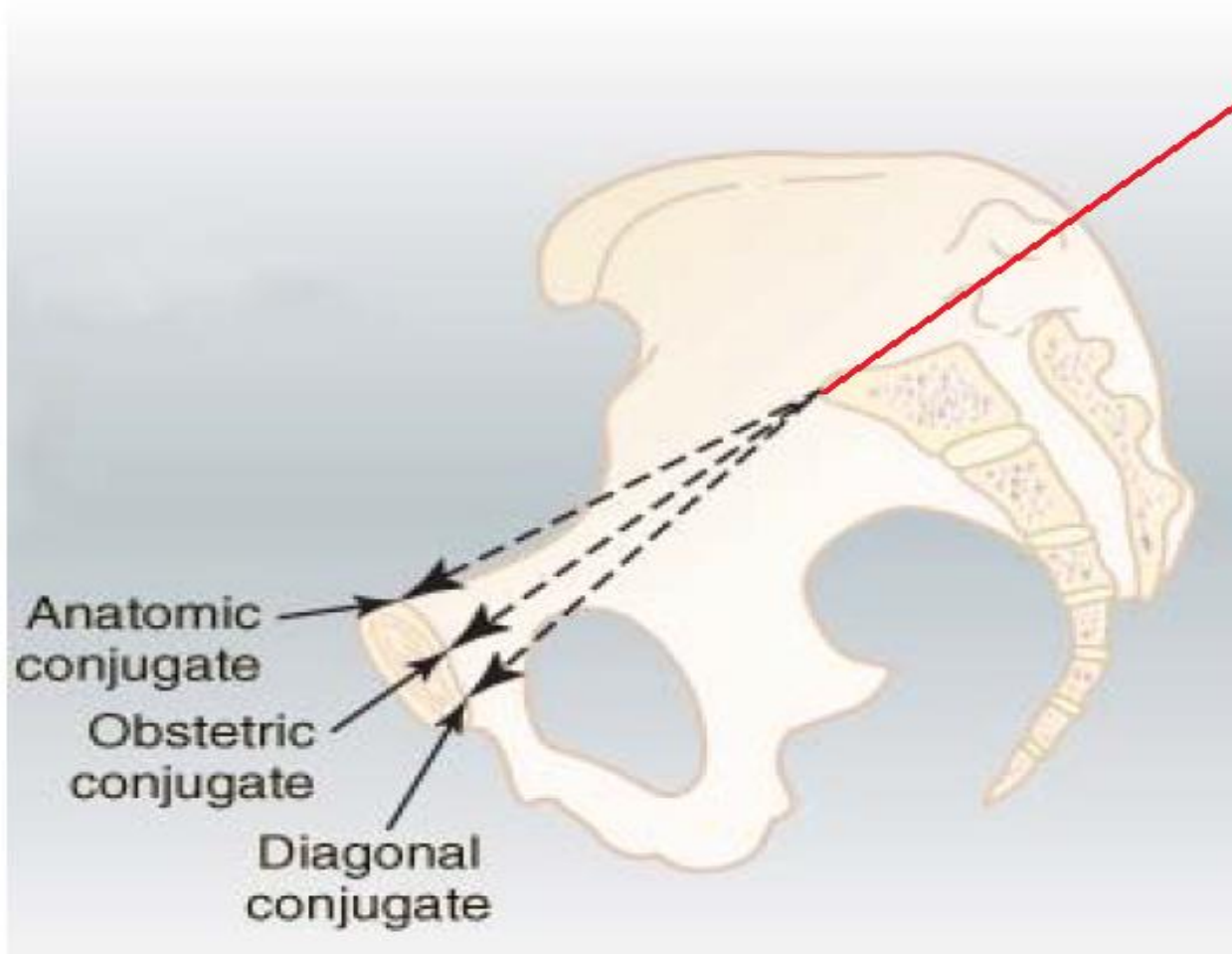
LO2

- **Anatomic Conjugate**
  - Measured from the sacral promontory to the superior border of the pubic symphysis
- **The Obstetric Conjugate**
  - Measured from sacral promontory to the midpoint of the pubic symphysis.
  - **Minimum diameter of the canal, as this is where the pubic bone is the thickest**
- **The Diagonal Conjugate**
  - Measured from sacral promontory to the inferior border of the pubic symphysis



# Pelvimetry

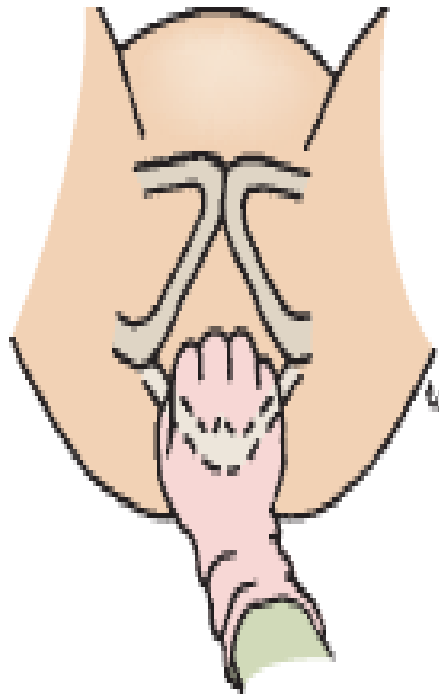
L02



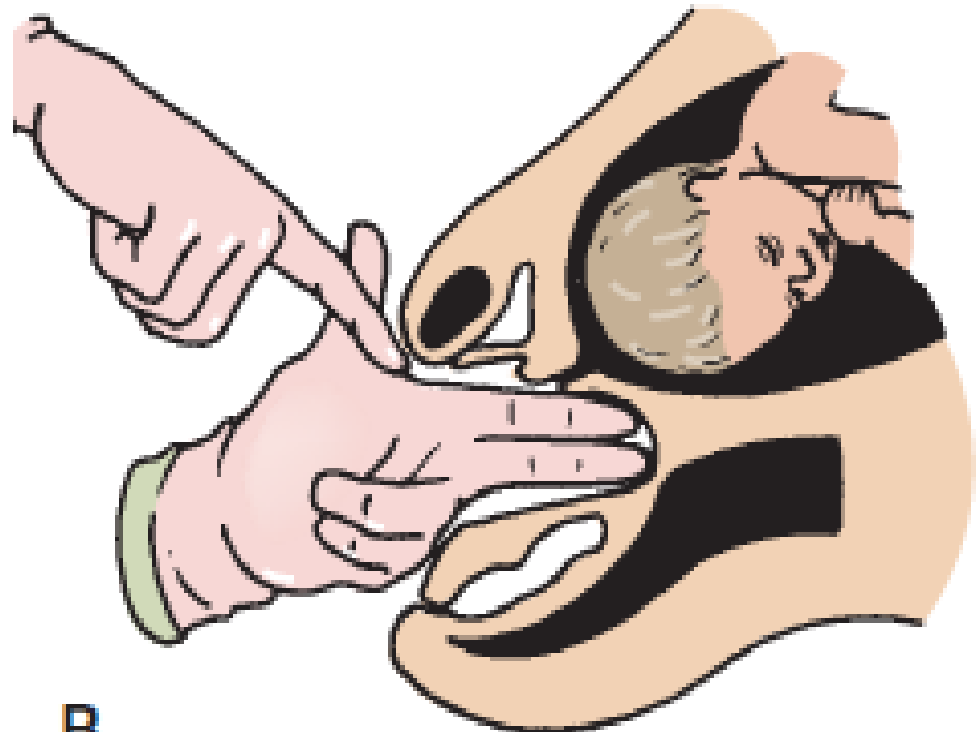
**Sacral Promontory**  
Prominent anterior  
edge of the 1st Sacral  
Vertebrae.  
Palpable on  
posterior of Vagina.

## Pelvimetry :

L02



A) measuring transverse diameter of pelvic outlet



B

measuring the diagonal conjugate

## X ray :

L02

Iliac crest  
Ala of sacrum  
Ala of ilium  
Sacroiliac joint  
Pelvic brim  
Anterior superior  
iliac spine (ASIS)  
Anterior inferior  
iliac spine  
Ischial spine  
Acetabular fossa  
Superior ramus  
of pubis  
Obturator foramen  
Pubic tubercle  
Ischial tuberosity  
Inferior ramus  
of pubis  
Pubic symphysis  
Pubic arch



**Anteroposterior radiograph**

- **Greater Pelvis (false pelvis )**

- Superior to the pelvic inlet
- Bounded posterolaterally by the iliac alae
- Bounded posteriorly by the anterosuperior aspect of the S1 vertebra (sacral promontary).
- Occupied by abdominal viscera (E.g. the ileum and sigmoid colon)
- **The greater pelvis has no obstetrical significance.**

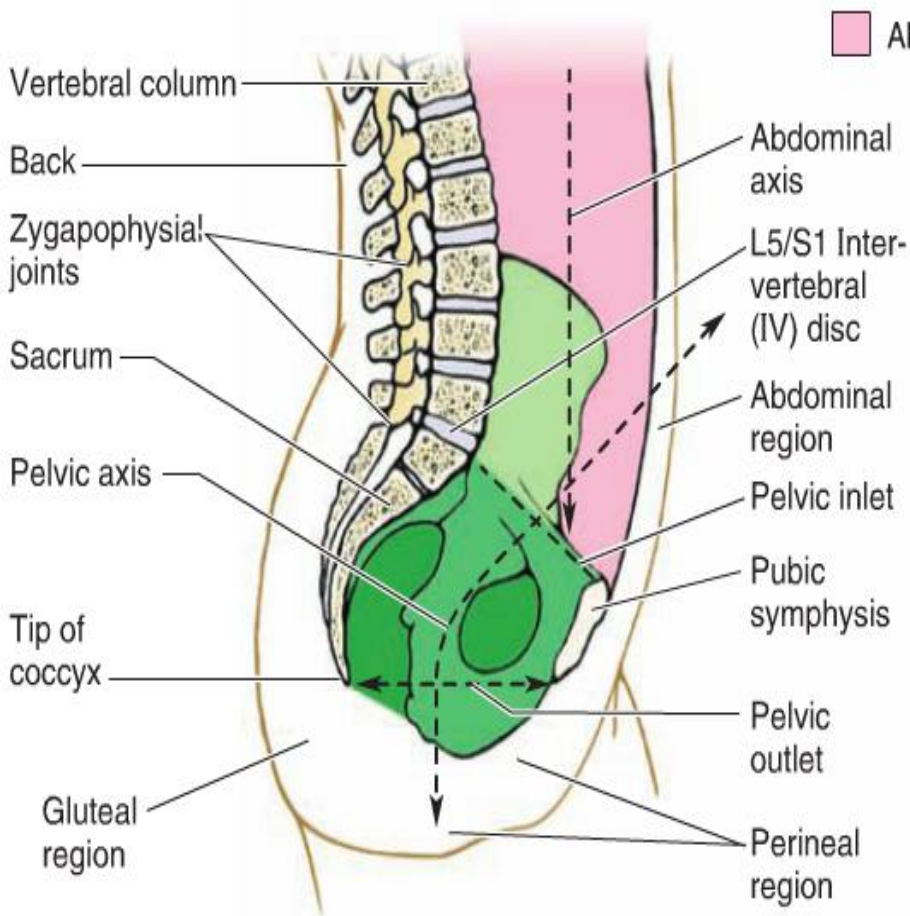
- **Lesser Pelvis or true pelvis**

- The bony canal through which the child passes during birth, which is solid and immovable, it is the pelvic cavity between the pelvic inlet and outlet
- Bounded by the pelvic surfaces of the hip bones, sacrum and coccyx
- **The lesser pelvis is of major obstetrical and gynaecological significance.**

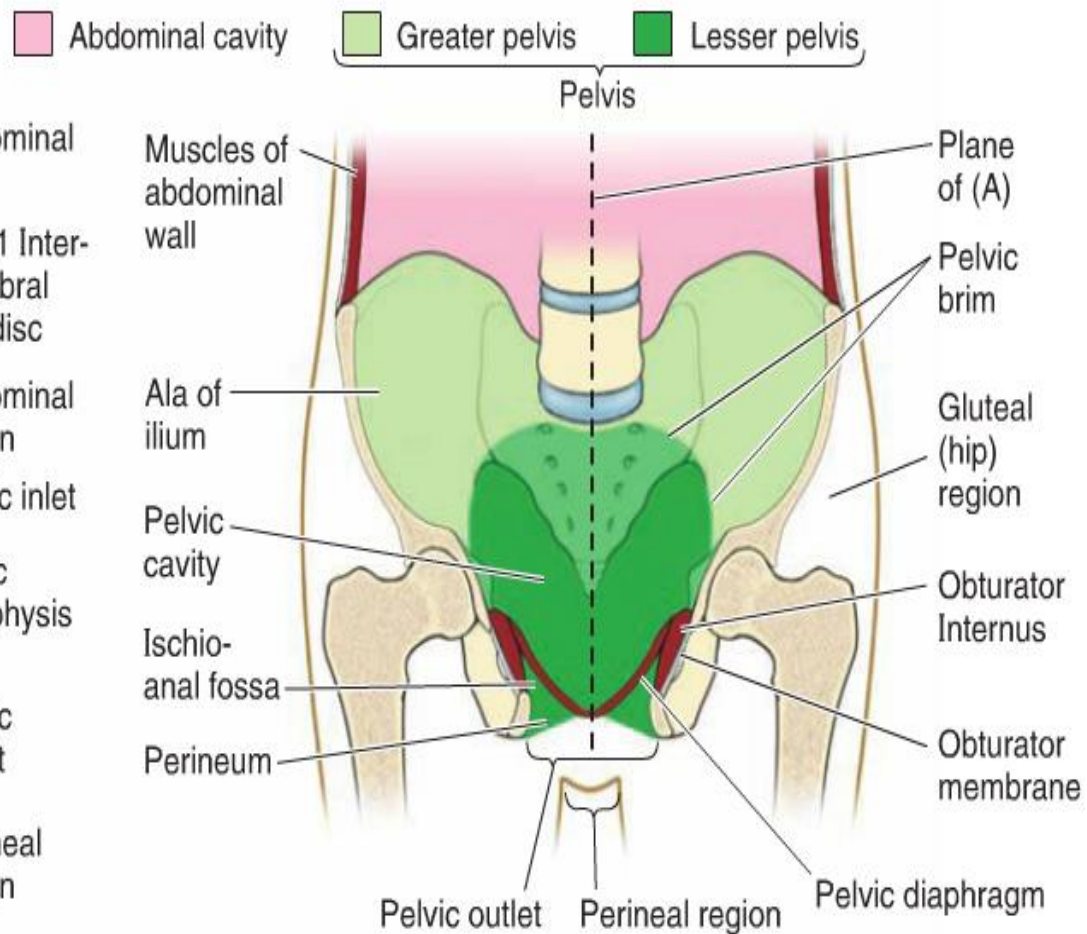




# Abdominal cavity, greater pelvis & lesser pelvis LO3



Medial view of left half of bisected lower trunk



Anterior view of posterior half of coronally-sectioned lower trunk