

FEMALE BONY PELVIS



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The purpose of these lectures is to deliver the basic obstetrical, and gynecological knowledge to the undergraduate medical student, without sophistications or unnecessary details.

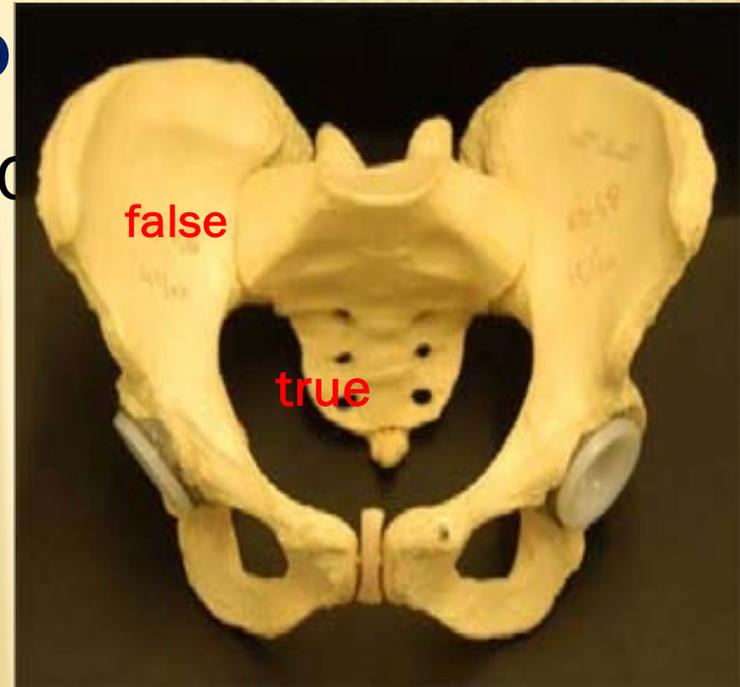


ان الغرض من وراء هذه المحاضرات هو تقديم المعلومات الأساسية في علم التوليد و أمراض النساء دون تفاصيل لا تفيد طالب البكالوريوس. والله من وراء القصد.

INTRODUCTION

The bony pelvis is divided into

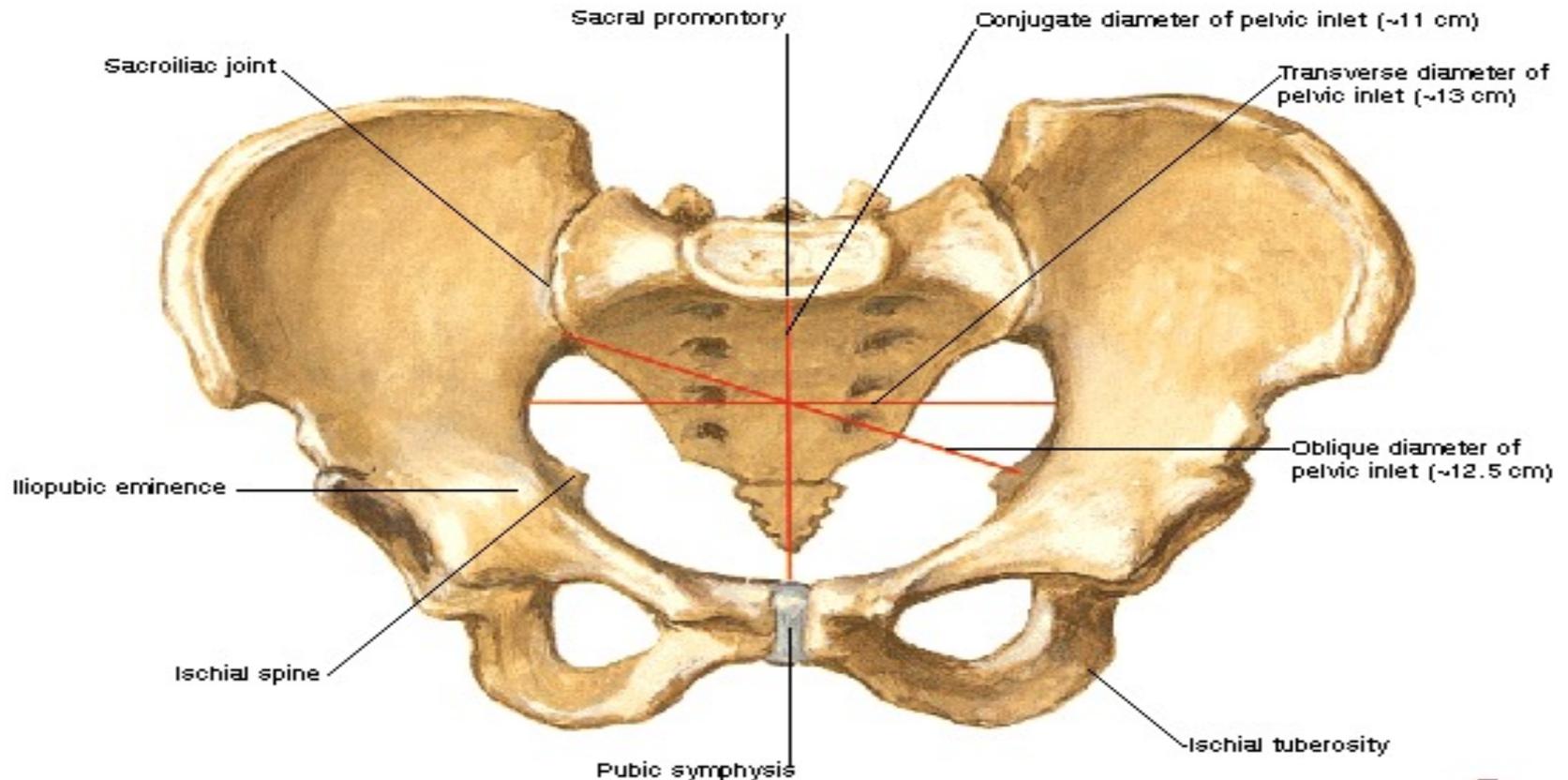
- **False pelvis:** above the pelvic brim and has no obstetric importance.
- **True pelvis:** below the pelvic brim and related to the child -birth.



BONY PELVIS CONSISTS OF:

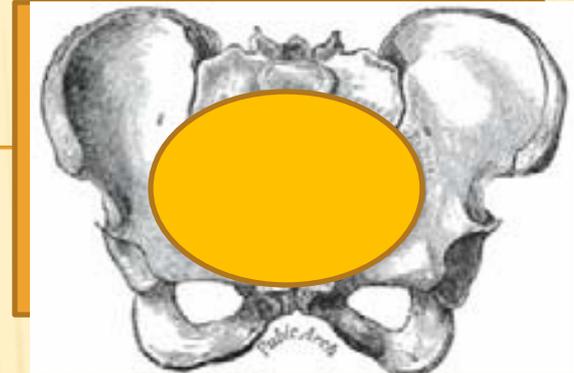
Female Pelvis

Measurements - Anterior View



THE BONY PELVIS

WHAT IS THE PELVIC BRIM

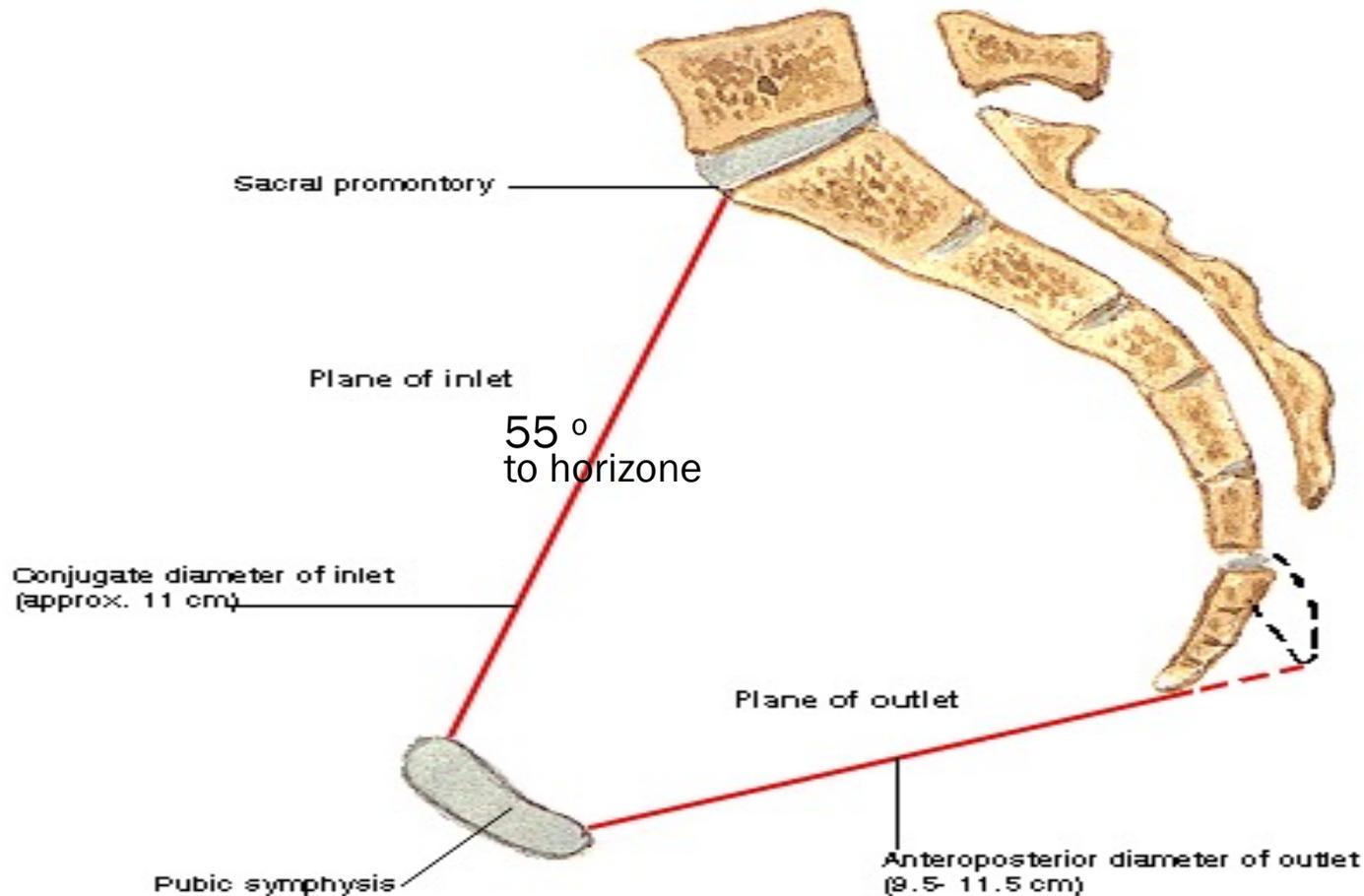


- ▶ It is the inlet of the pelvis which divides the pelvic cavity into false & true pelvis
- ▶ It is formed by the **sacral promontory, ala of the sacrum, arcuate line of the ilium, iliopubic eminence, pectineal line of the pubis, pubic crest & symphysis pubis** to the other side.
- ▶ The plane of the brim is 55-60 ° above the horizontal (*pelvic inclination*)

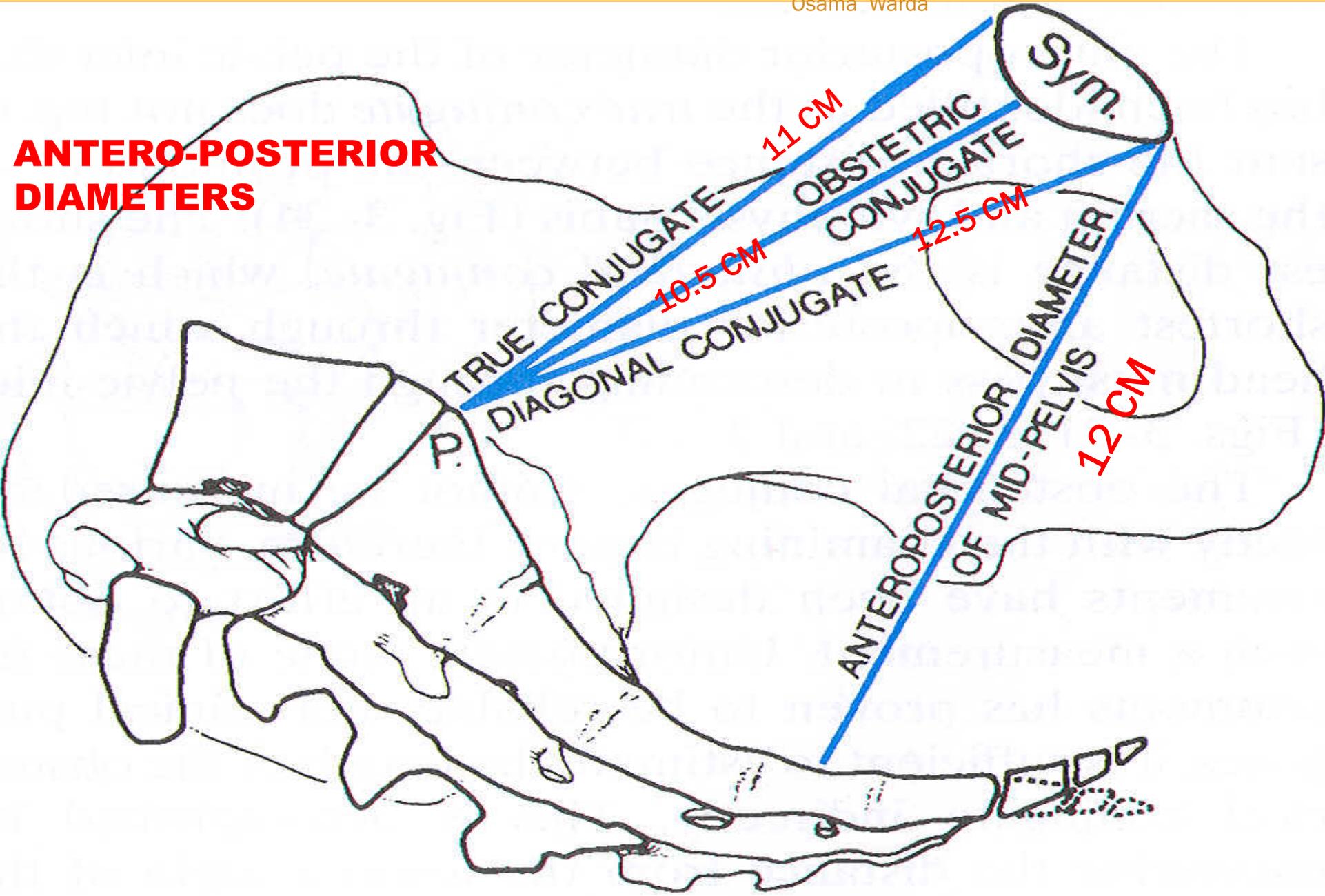
BONY PELVIS; DIAMETERS & PLANES:

Female Pelvis

Measurements - Sagittal Section

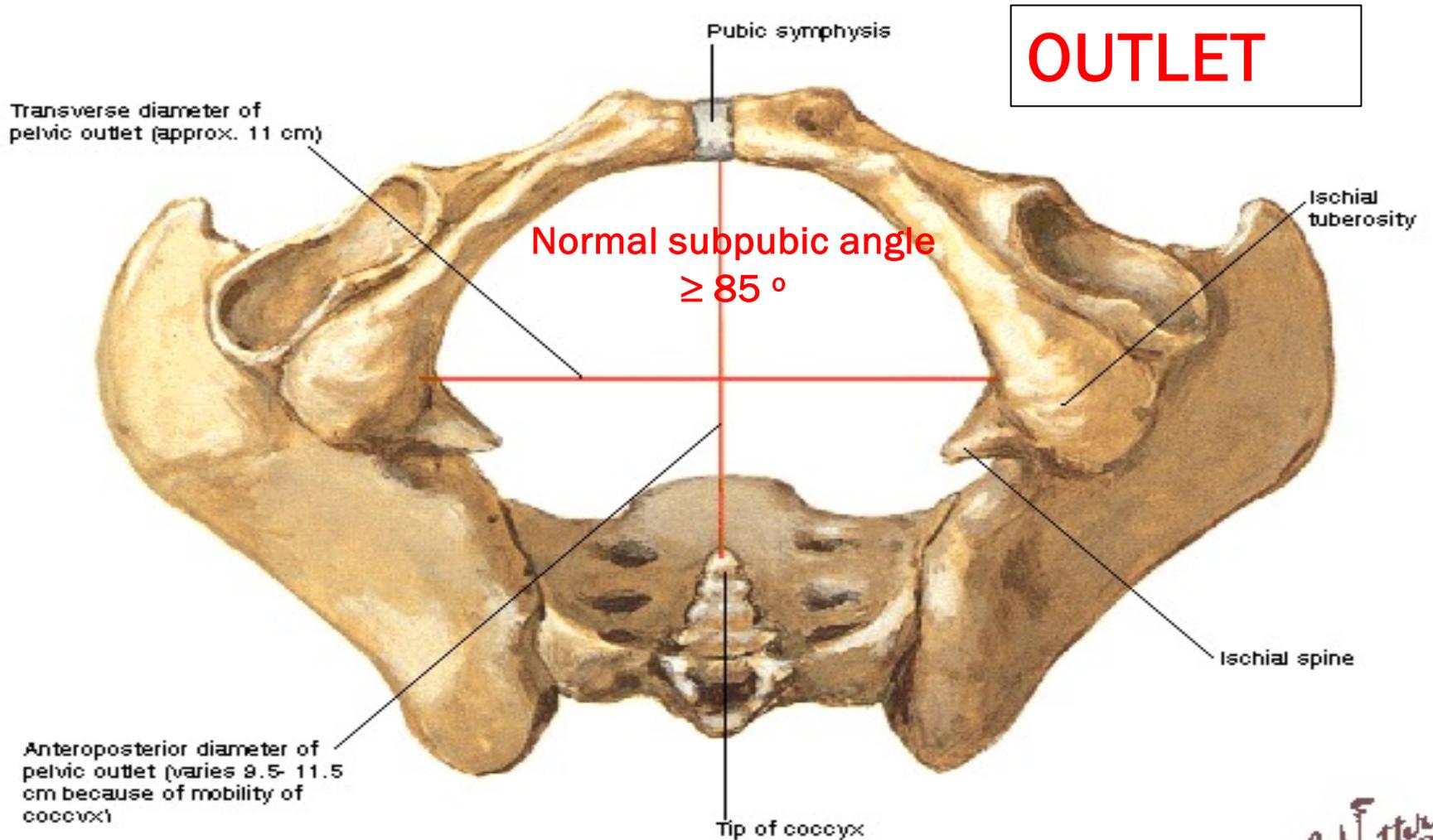


ANTERO-POSTERIOR DIAMETERS

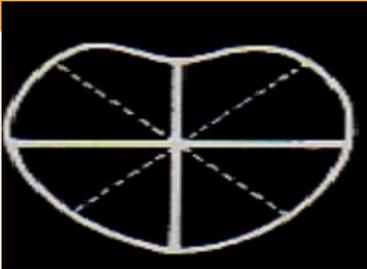
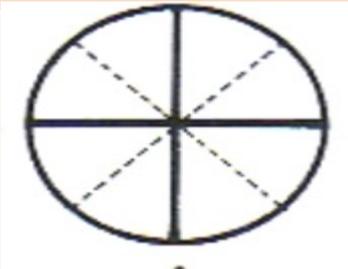
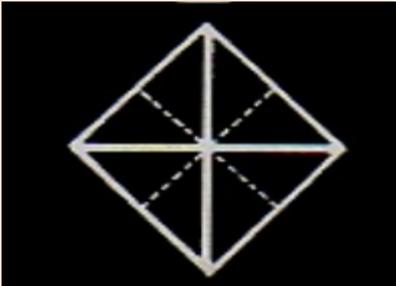


Female Pelvis

Measurements - Inferior View



F. Natter
M.D.
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Pelvic diameters	Antero-posterior	Right and left oblique	Transverse
INLET 	11 cm	12cm	13cm
CAVITY 	12cm	12cm	12 cm
CAVITY 	13cm	12cm	11cm

PLANES OF THE BONY PELVIS:

- ✘ **INLET**: the plane of the inlet is that of the brim; it makes an angle of 55-60° with the horizontal. Inlet is OVAL. (AP=11, OBLIQUE=12, TD=13CM)
- ✘ **CAVITY**: The pelvic canal is curved (C), the post wall is longer than the anterior.
 - ▶ The most roomy zone with almost ROUND shape (12-12.5 CM)
- ✘ **THE OBSTETRIC OUTLET / PLANE OF LEAST PELVIC DIMENSIONS/ MIDPELVIS** : Diamond shaped
 - ▶ **APD** ----- lower border of the symphysis pubis to last fixed point of the sacrum----- 12-12.5 cm
 - ▶ **TD** ----- between the ischial spines ----- 10-10.5 cm

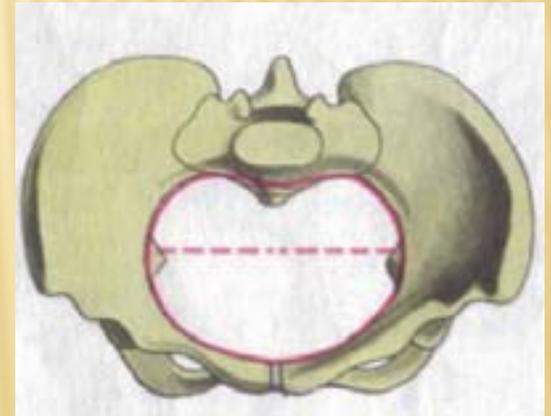
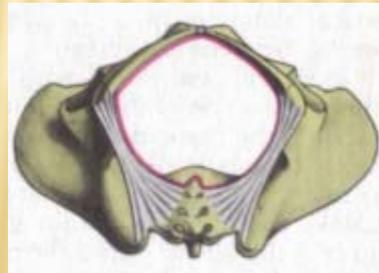
TYPES OF PELVES:

- ✘ Caldwell- Moloy (1933) Classified pelves into 4 basic types;
 - 1- **Gynecoid**; typical **female** pelvis (50%)
 - 2- **Android**, typical **male** (30%)
 - 3- **Anthropoid**, **ape** pelvis (25%)
 - 4- **Platypeloid**. shallow pelvis (5%)
- ✘ Actually, the majority of pelves are of **mixed** types

TYPES OF PELVES:

1-GYNECOID

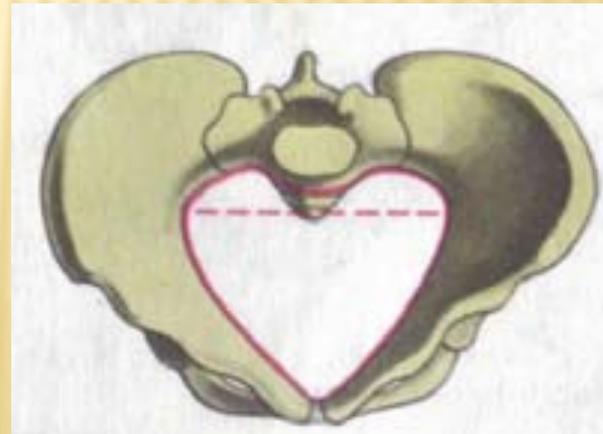
- ▶ Typical female pelvis found in 50% of women
- ▶ Rounded—slightly oval inlet
- ▶ Straight pelvic sidewalls with roomy pelvic cavity
- ▶ Good sacral curve
- ▶ Ischial spines are not prominent
- ▶ Pubic arch is wide



TYPES OF PELVES:

2-ANDROID

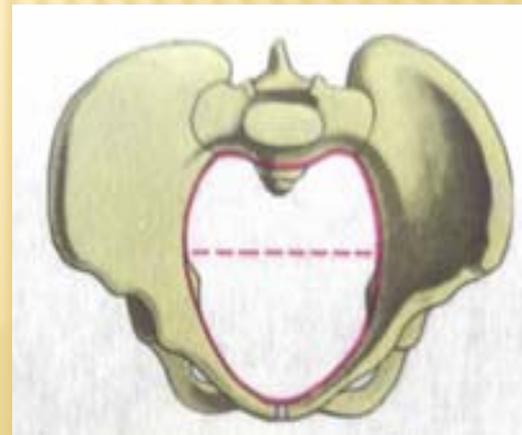
- ▶ Typical male pelvis found in 30% of women
- ▶ Pelvic brim is heart shaped
- ▶ Pelvis funnels from above downwards (convergent sidewalls)
- ▶ Narrow pubic arch
- ▶ Prominent spines



TYPES OF PELVES:

3-ANTHROPOID

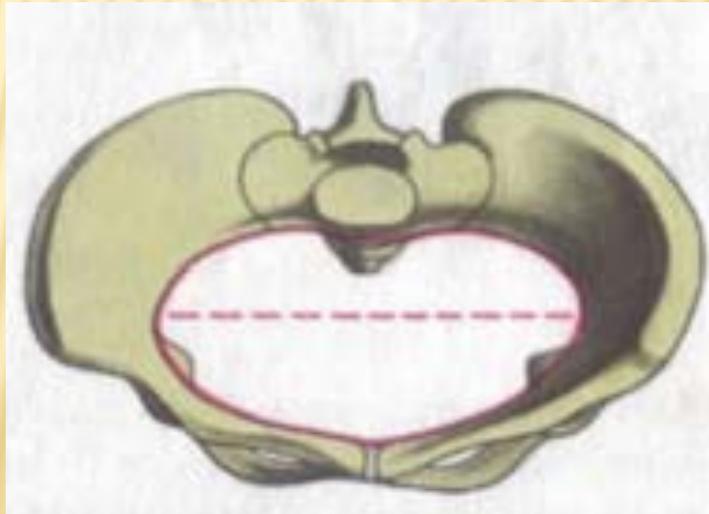
- ▶ 25% white women & 50% nonwhite
- ▶ Pelvic brim APD > TD
- ▶ Long & narrow pelvic canal with long sacrum
- ▶ Straight pelvic sidewalls

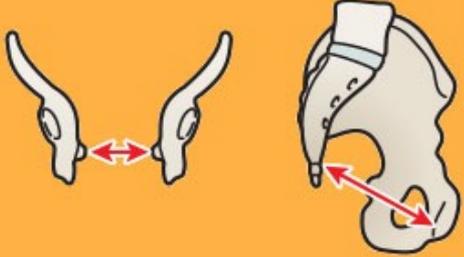
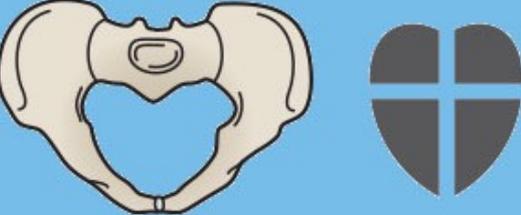
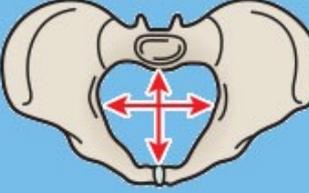
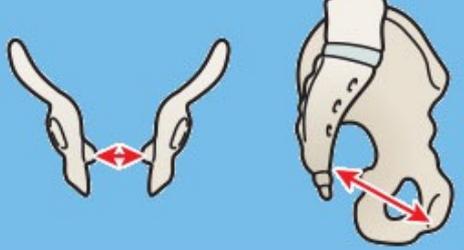
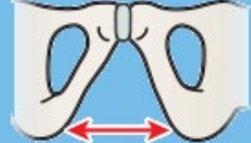
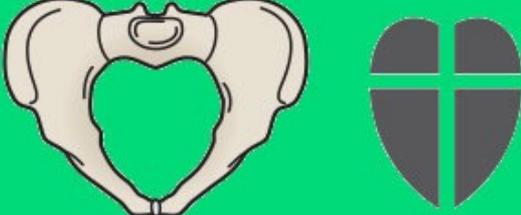
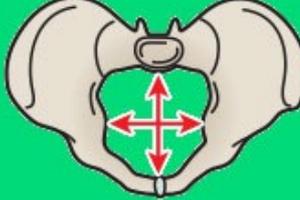
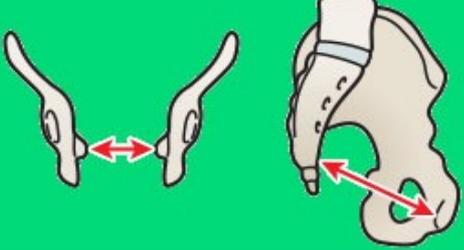
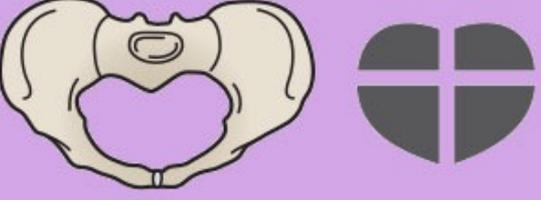
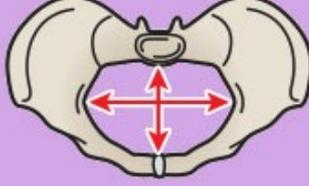
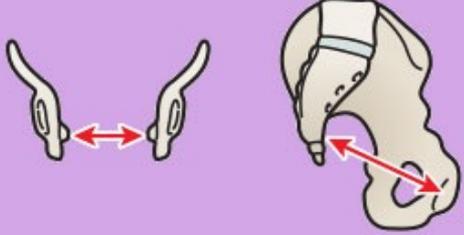


TYPES OF PELVES

4-PLATYPELLOID

- ▶ 3% of women
- ▶ Pelvic brim TD $>$ APD \rightarrow kidney shape
- ▶ Sacral promontory pushed forwards



	SHAPE	INLET	MIDPELVIS	OUTLET
Gynecoid				
Android				
Anthropoid				
Platypelloid				

Four Pelvic Types



Gynecoid



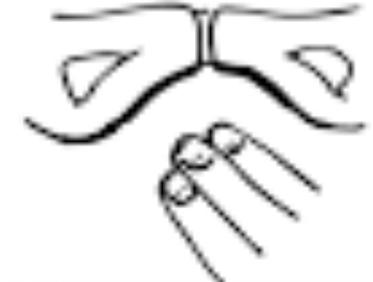
Android



Anthropoid



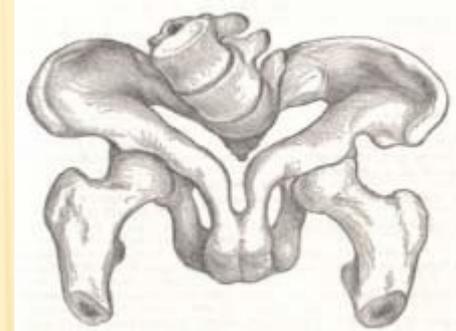
Platypelloid



Note that both android, and anthropoid pelves have narrow fore-pelvis, so they favour the occiput posterior malposition (the bulkier occiput occupy the wider hind-pelvis)

ASYMMETRICAL PELVES

- 1- Abnormality of lower limb
- 2- Abnormality of pelvic girdle
- 3- Abnormality of vertebral column



Osteomalacic pelvis



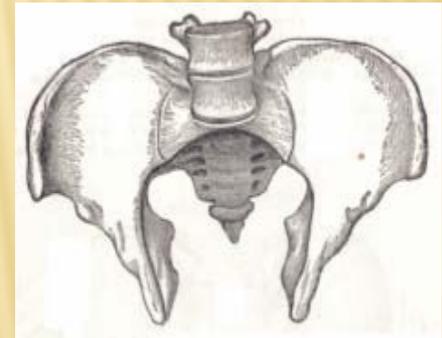
Rober's pelvis



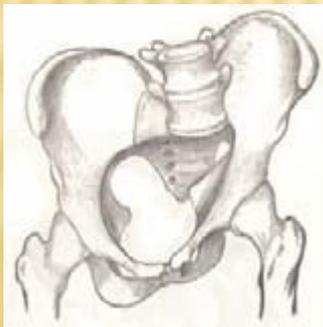
Scoliotic pelvis



Coxalgic pelvis



Split pelvis



Naegle's kyphotic pelvis

PELVIC WALLS

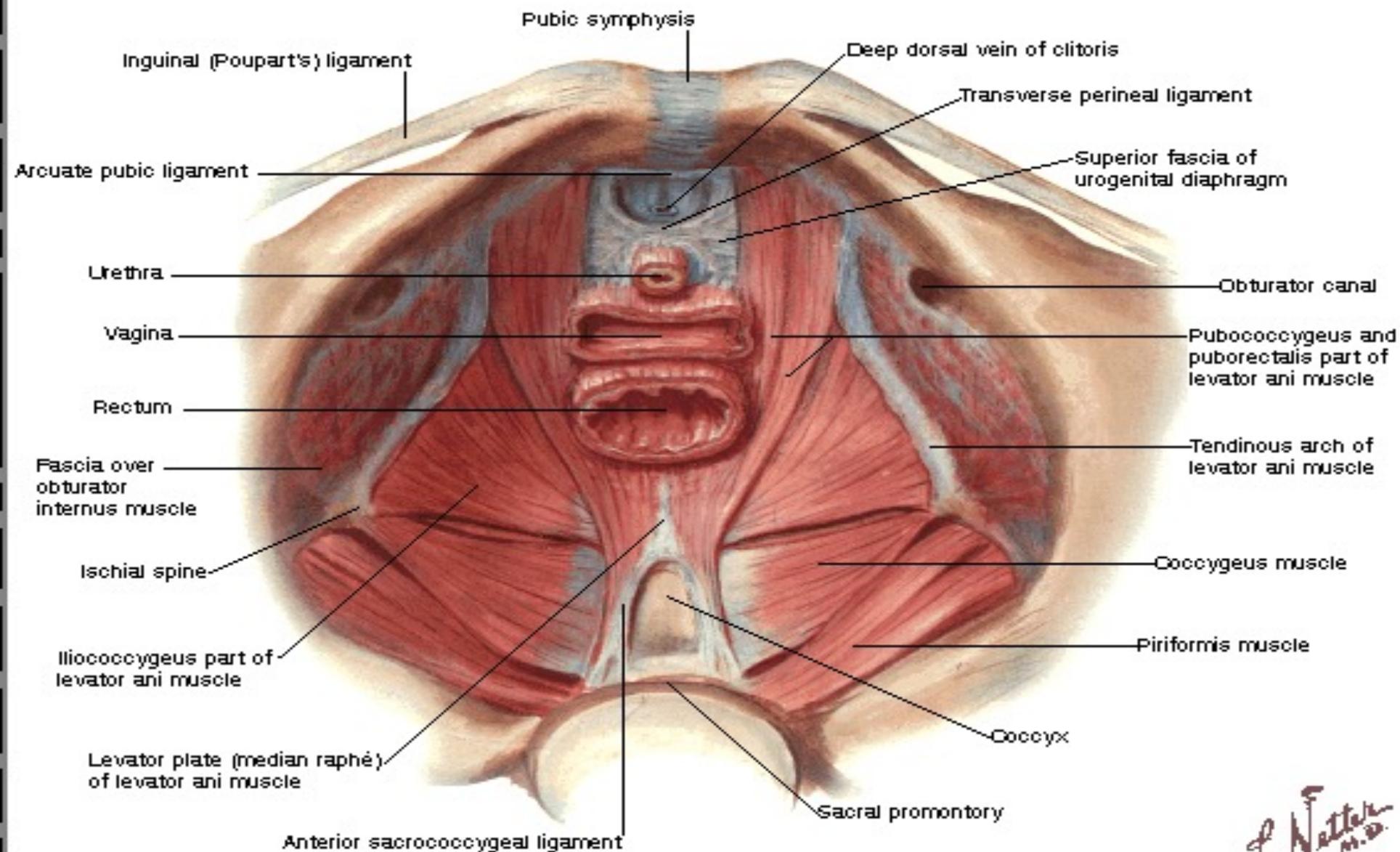
The inner aspect of the bony pelvis is covered with muscles:

- ▶ **Above the brim** --- iliacus & psoas
- ▶ **Sidewalls** --- obturator internus & its fascia
- ▶ **Post wall** --- pyriformis
- ▶ **Pelvic floor** --- levator ani & coccygeus

Pelvic Diaphragm of Female

Osama Warda

Superior View



PELVIC LIGAMENTS

- ▶ **Sacro-spinous ligament** ➔ lateral aspect of the sacrum to ischial spines
- ▶ **Sacro-tuberous ligament** ➔ lateral aspect of the sacrum to inner aspect of ischial tuberosity
- ▶ **Sacroiliac ligament** ➔ medial surface of the ilium to sacrum
- ▶ **Ilio-lumbar ligament** ➔ iliac crest to transverse processes of lumbar vertebra

PELVIMETRY

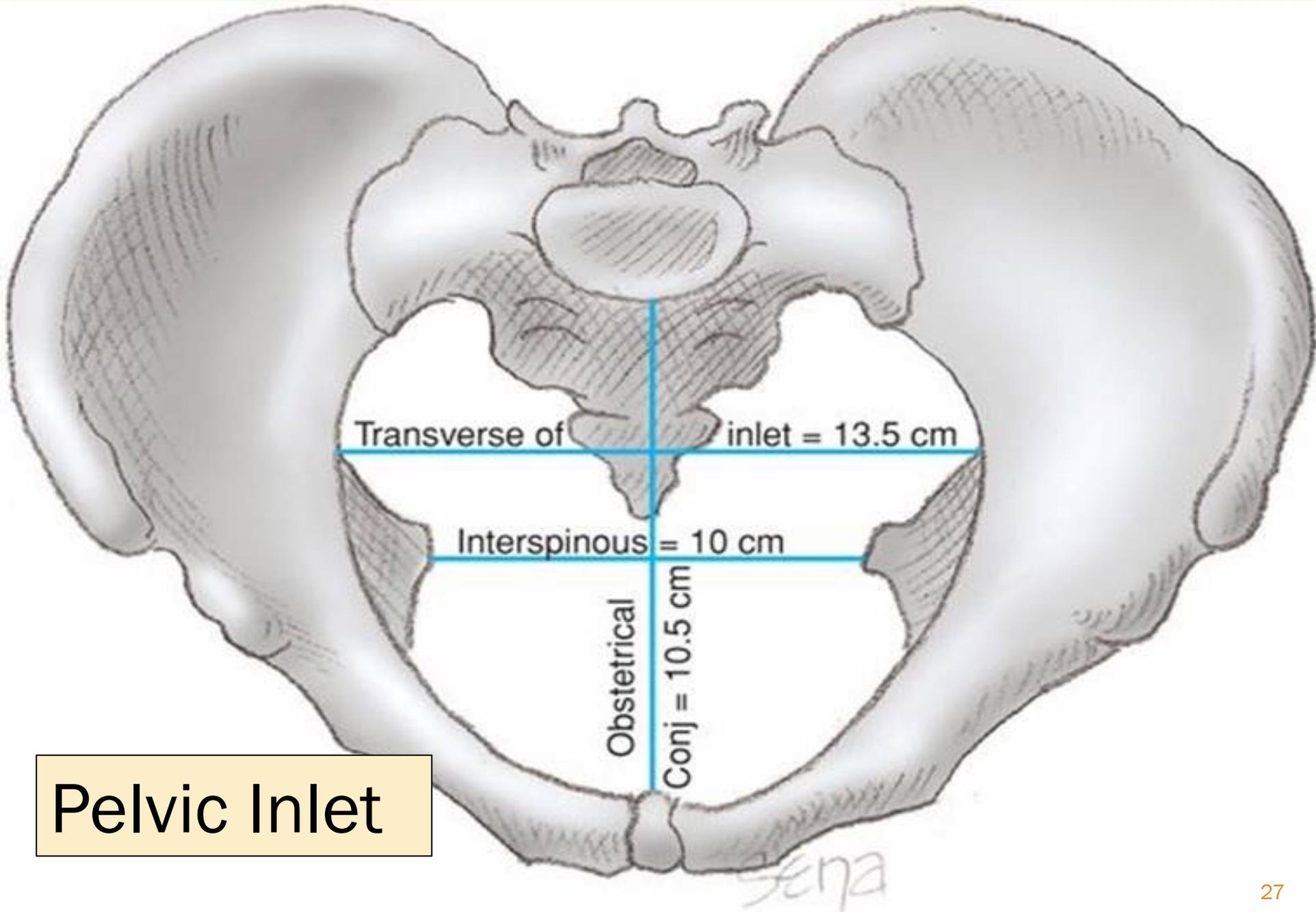
- Pelvimetry is the assessment of the dimensions & capacity of adult female pelvis in relation to the birth of a baby.
- Pelvimetry was heavily used in leading the decision of normal, operative vaginal delivery or CS.

PELVIMETRY

- × External/indirect pelvimetry: measures diameters of false pelvis. Little value, unreliable, no longer used
- × Internal/ 'CLINICAL' pelvimetry; most important.
- × Radiographic pelvimetry; X-ray, MRI pelvimetry; rarely used in certain circumstances.

CLINICAL PELVIMETRY

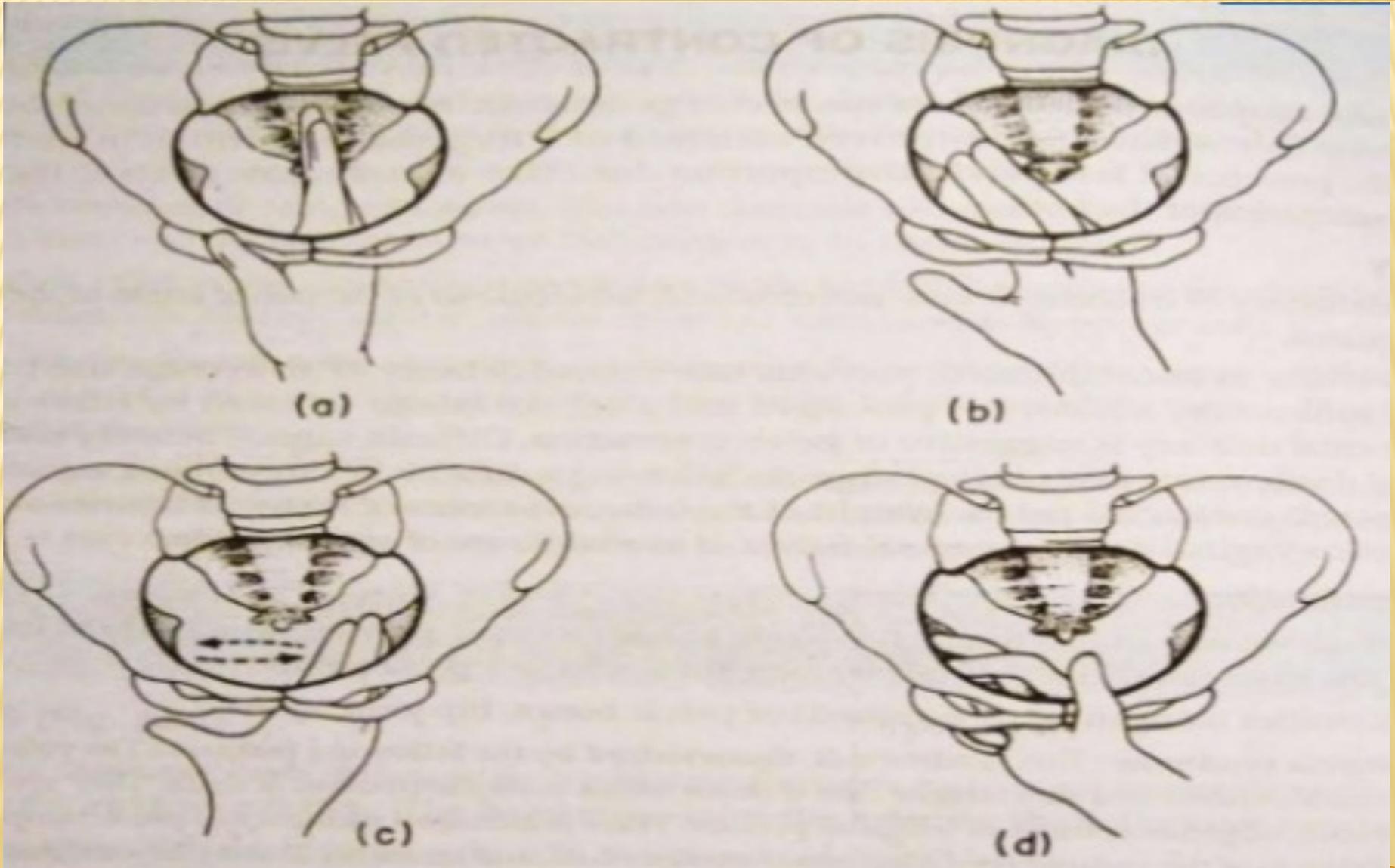
- ✘ Through vaginal examination.
- In late pregnancy ; (≥ 37 weeks) or
- at the onset of labor (when the soft tissues are more distensible, more accurate, less uncomfortable)



CLINICAL PELVIMETRY

The gloved, lubricated index & middle fingers of the right hand are introduced in the vagina directed towards the sacral promontory to assess the *diagonal conjugate diameter*, then moved to slide over the *sacral concavity* to assess the width of the sacrum, then directed laterally to assess the *width of the sacrospinous ligament, The sciatic notch*, then palpate the *ischial spine*. The side of the pelvis is evaluated in the same manner, then the *sub-pubic angle* is evaluated.

CLINICAL PELVIMETRY



CLINICAL PELVIMETRY

Inlet	Cavity	Outlet
Sacral promontory	Sacral curvature Pelvic side walls Ischial spines	Subpubic angle Subpubic arch
Diagonal conjugate	Sacrosciatic notch	Transverse diameter

CLINICAL PELVIMETRY

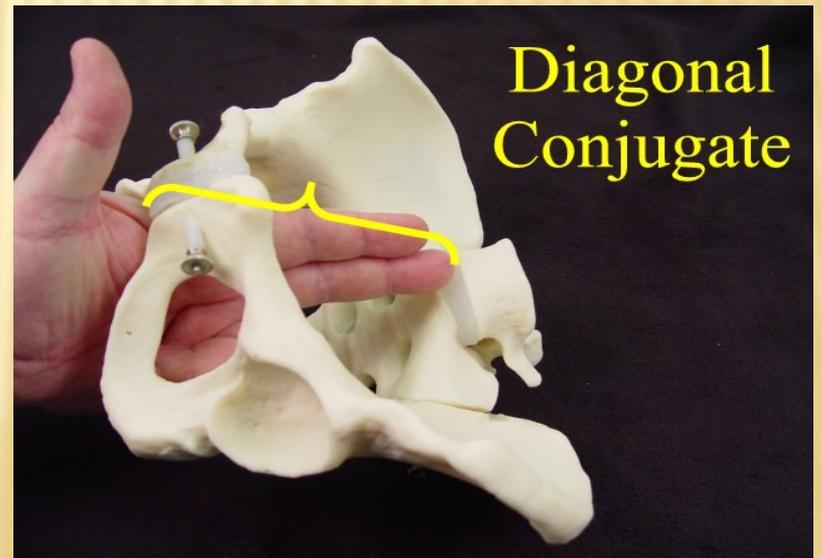
The item	Normal value
Diagonal conjugate	12.5cm. By subtraction of 1.5 cm it gives the true conjugate (antatomical anteroposterior diameter of the inlet).
Sacral concavity	smooth, admits 2 fingers easily.
Sacrospinous ligament	3 fingers breadth.
Sciatic notch:	2.5 fingers
Ischial spine	not projecting towards the cavity, the interspinous diameter is 10 cm
Subpubic angle	$\geq 90^\circ$ (2 finger breadth)

THE INLET



Diagonal conjugate

measurement. Normal = 12.5 cm. Useful to calculate the true conjugate diameter of the inlet by subtracting 1.5 cm.

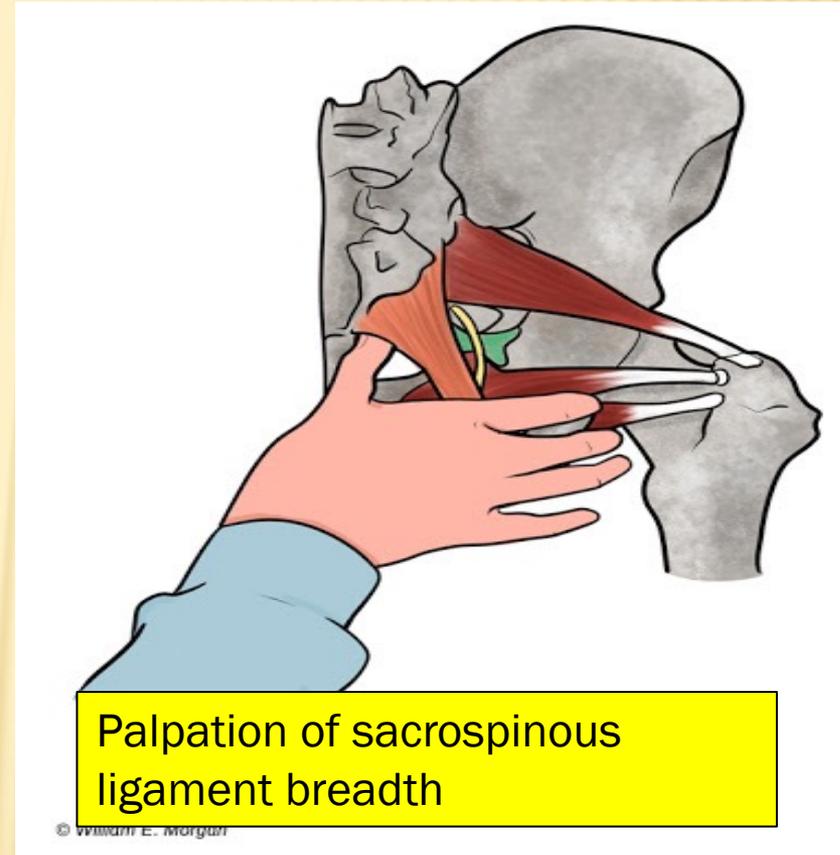
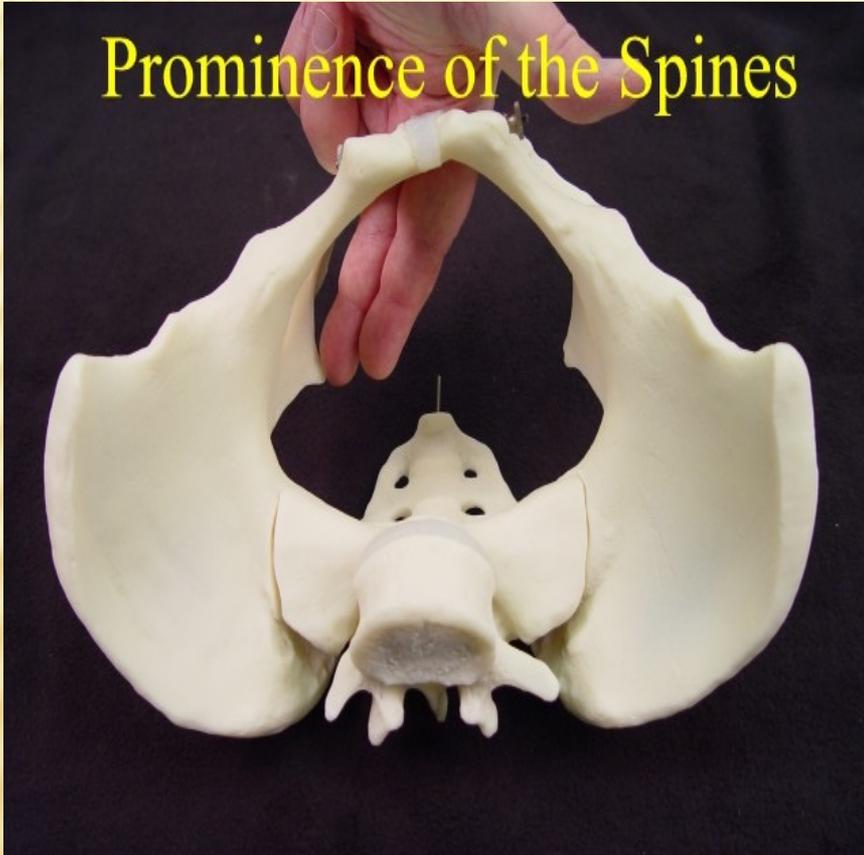


THE MICAVITY

- 1) Symphysis:** Height, thickness & curvature
- 2) Sacrum:** Shape & curvature. Concave usually. Flat or convex shape may indicate AP constriction throughout the pelvis.
- 3) Side walls:** Straight, convergent or divergent starting from the pelvic brim down to the base of ischial spines. Normally almost parallel or divergent

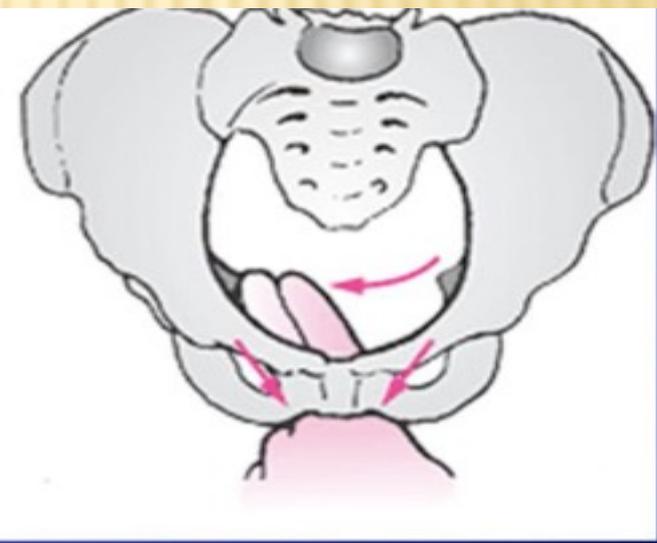
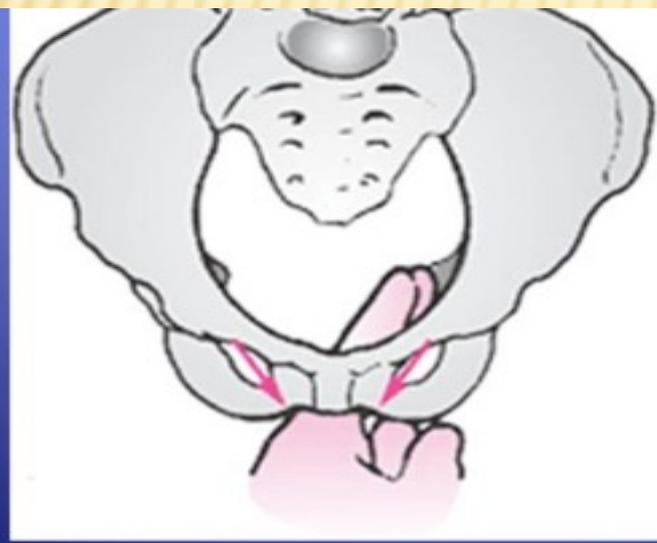
THE CAVITY

Prominence of the Spines

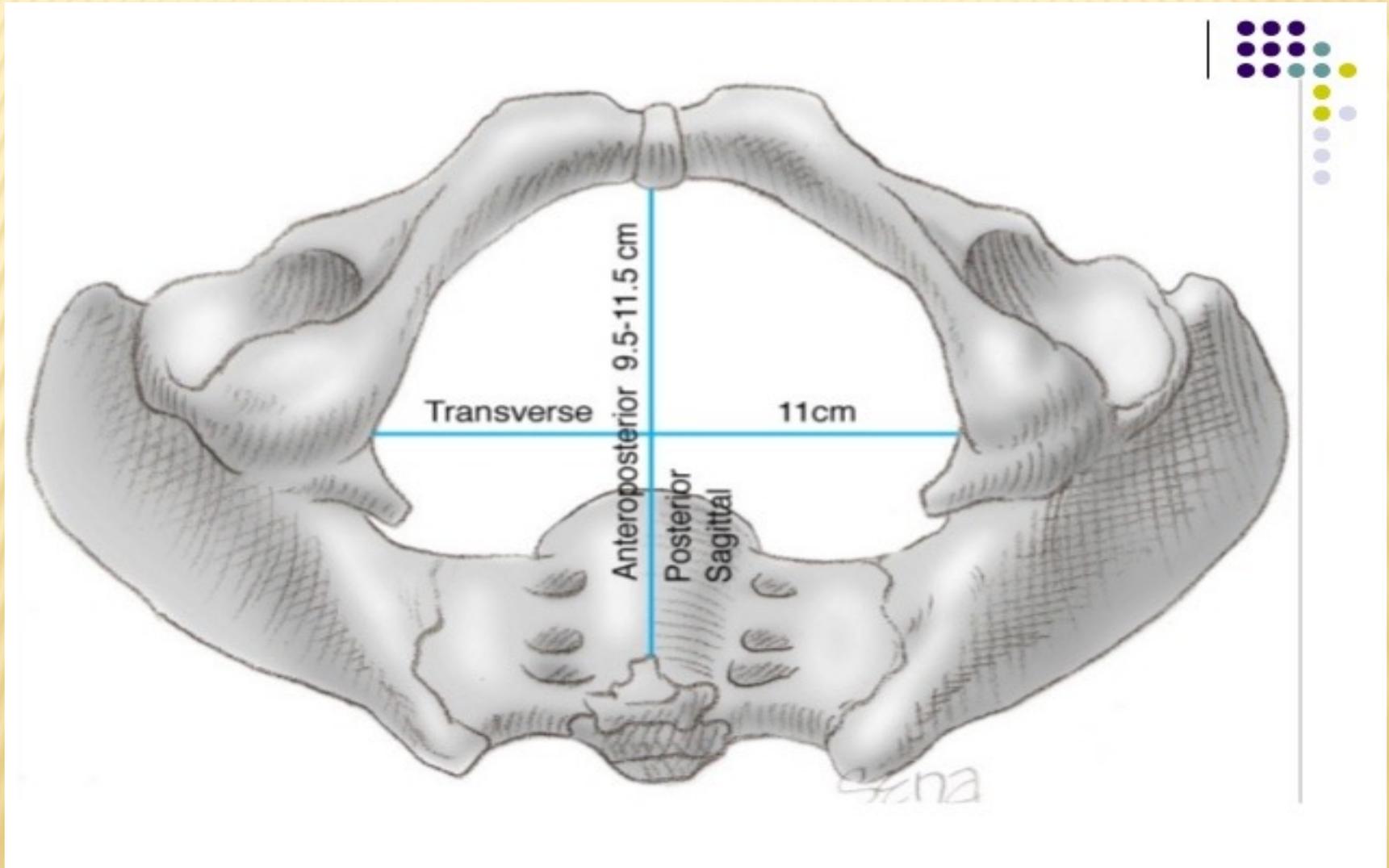


The plane passing through the ischial spines is the plane of the least pelvic dimension

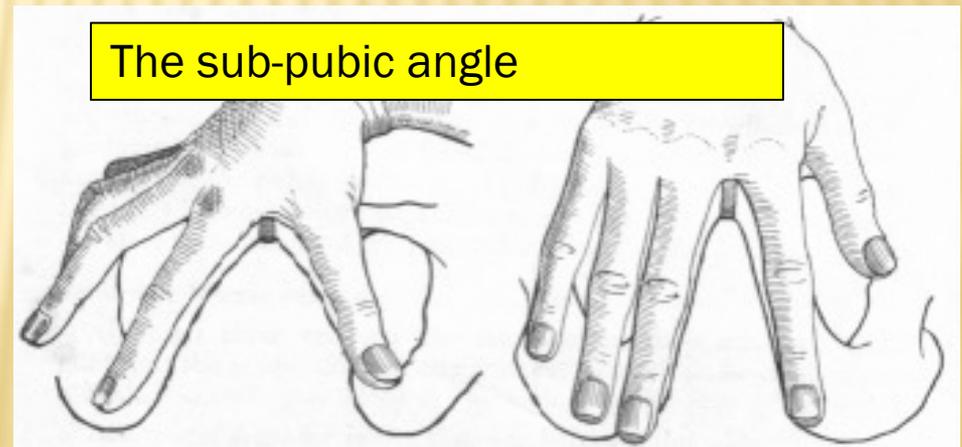
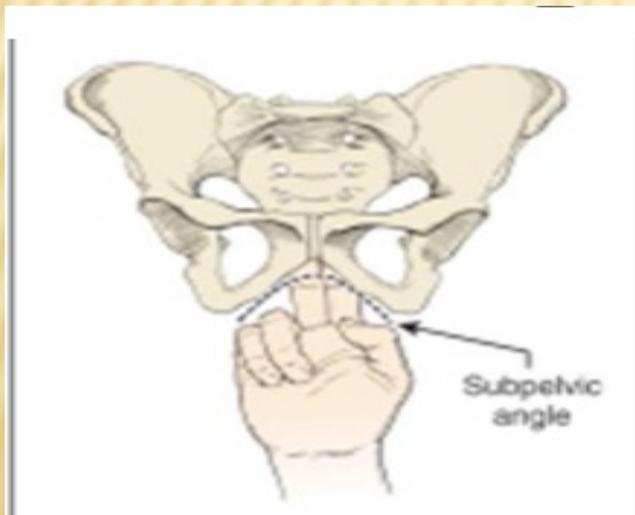
THE CAVITY



THE OUTLET



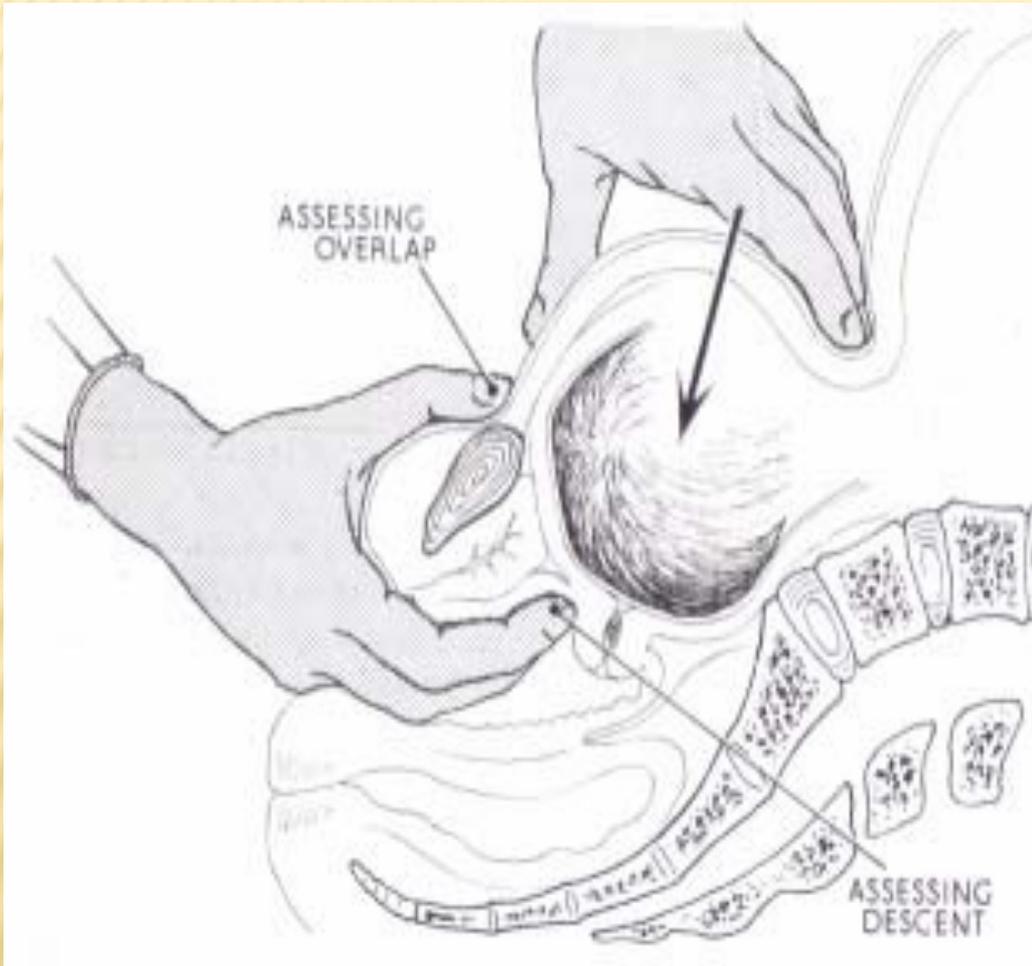
THE OUTLET



“THE ADEQUATE PELVIS”

Data	Finding
Forepelvis (pelvic brim)	Round.
Diagonal conjugate	≥ 11.5 cm.
Symphysis	Average thickness, parallel to sacrum.
Sacrum	Hollow, average inclination.
Side walls	Straight.
Ischial spines	Blunt.
Interspinous diameter	≥ 10.0 cm.
Sacrosciatic notch	2.5 -3 finger - breadths.
Subpubic angle	2fingerbreadths (90°).
Bituberous diameter	4 knuckles (> 8.0 cm).
Coccyx	Mobile.
Anteroposterior diameter of outlet	≥ 11.0 cm.

CEPHALOPELVIC DISPROPORTION TESTS



**Munro Kerr's
method of
assessing for
engagement**

CEPHALOPELVIC DISPROPORTION TESTS

Results :-

- the head can be pushed down up to the level of ischial spines and there is no overlapping of the parietal bone over the symphysis pubis:- **no disproportion**
- The head can be pushed down a little but not up to the level of ischial spine and there is slight overlapping of the parietal bone:- **slight or moderate disproportion**
- The head can not be pushed down and instead the parietal bone overhangs the symphysis pubis displacing the thumb:- **sever disproportion.**

CLINICAL IMPORTANCE OF THE ISCHIAL SPINE

- 1- The plane of obstetric outlet (plane of the least pelvic dimensions) is at this level.
- 2- The levator ani muscles are situated at this level and its ischio-coccygeous part is attached to the ischial spines.
- 3- The obstetric axis of the pelvis changes its direction.
- 4- The head is considered engaged when the vault is felt vaginally at or below this level.
- 5- Internal rotation of the head occurs when the occiput is at this level.
- 6- Forceps is applied only when the head at this level (mid forceps) or below it (low and outlet forceps).
- 7- Pudendal nerve block is carried out at this level.
- 8- The external os of the cervix is located normally.
- 9- The vaginal vault is located nearly.
- 10- The ring pessary should be applied above this level for treatment of prolapse.

tusind tak
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ngiyabonga
dziekuję
merci
suksema
danke
thank
baie dankie
धन्यवाद molte grazie
gracias
takk
you
obrigada
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dank u
teşekkür ederim
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