



Anatomy Team
433

**King Saud University
College of medicine
Musculoskeletal Block**



PELVIS AND SACRUM

6

Objectives

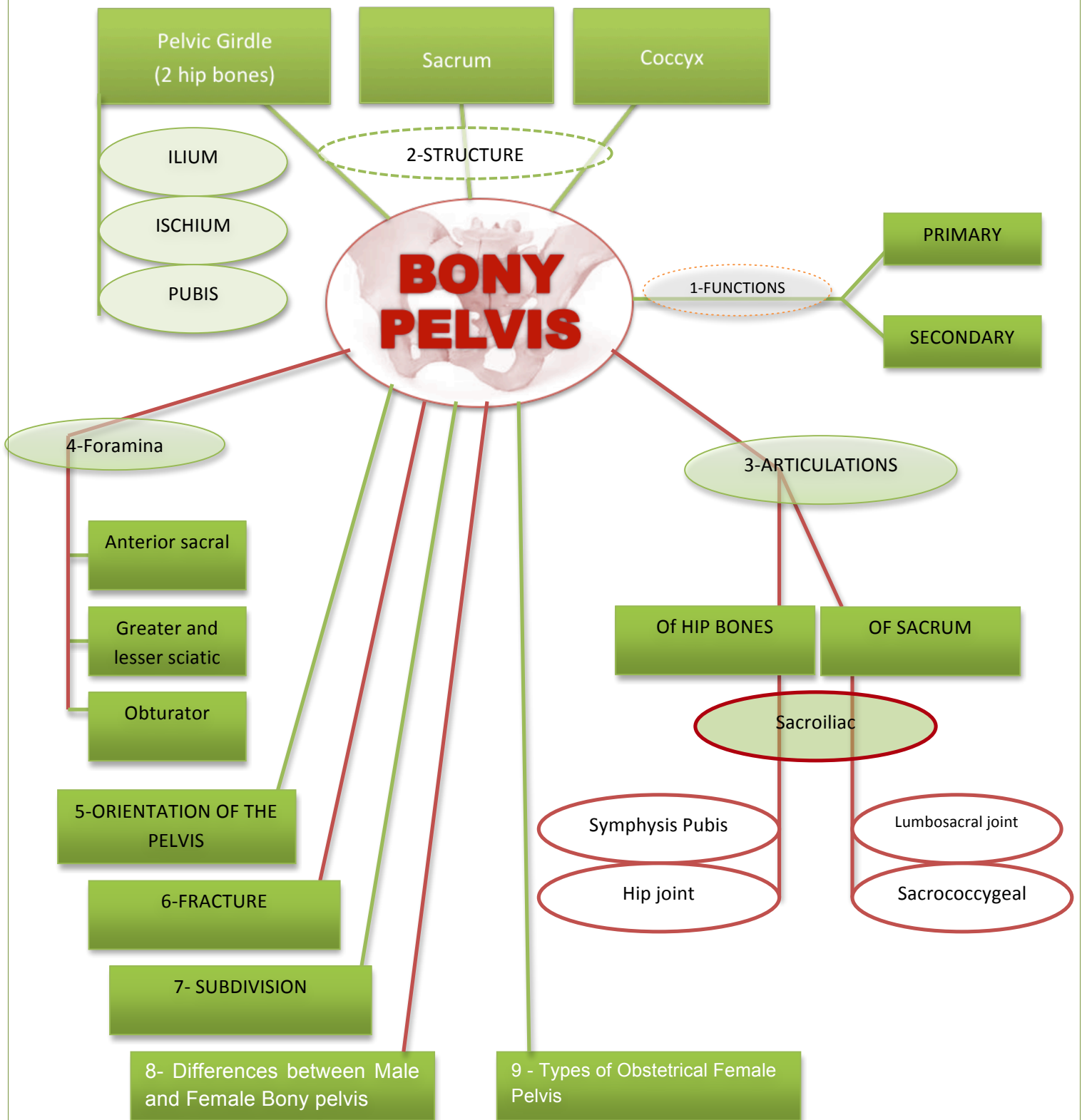
- ❖ Describe the **bony structures** of the pelvis.
- ❖ Describe in detail the hip bone, the sacrum, and the coccyx.
- ❖ Describe the **boundaries** of the pelvic inlet and outlet.
- ❖ Identify the structures forming the pelvic walls.
- ❖ Identify the **articulations** of the bony pelvis.
- ❖ List the major **differences** between the male and female pelvis.
- ❖ List the **different types** of female pelvis.

Color Index

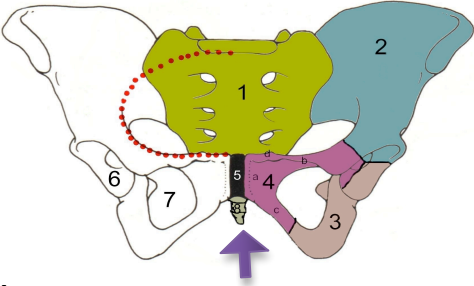
- **Red : Important.**
- **Violet: Explanation.**
- **Gray: Additional Notes.**

Other colors are for
Coordination

Mind Map



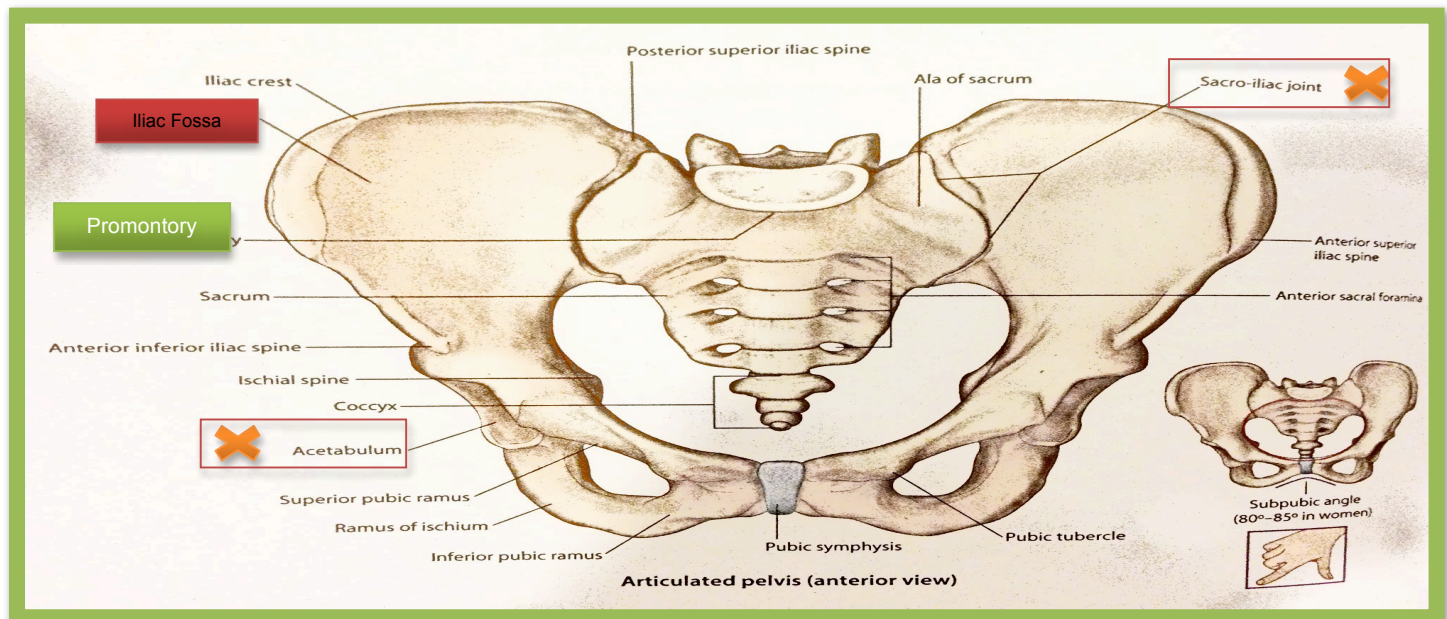
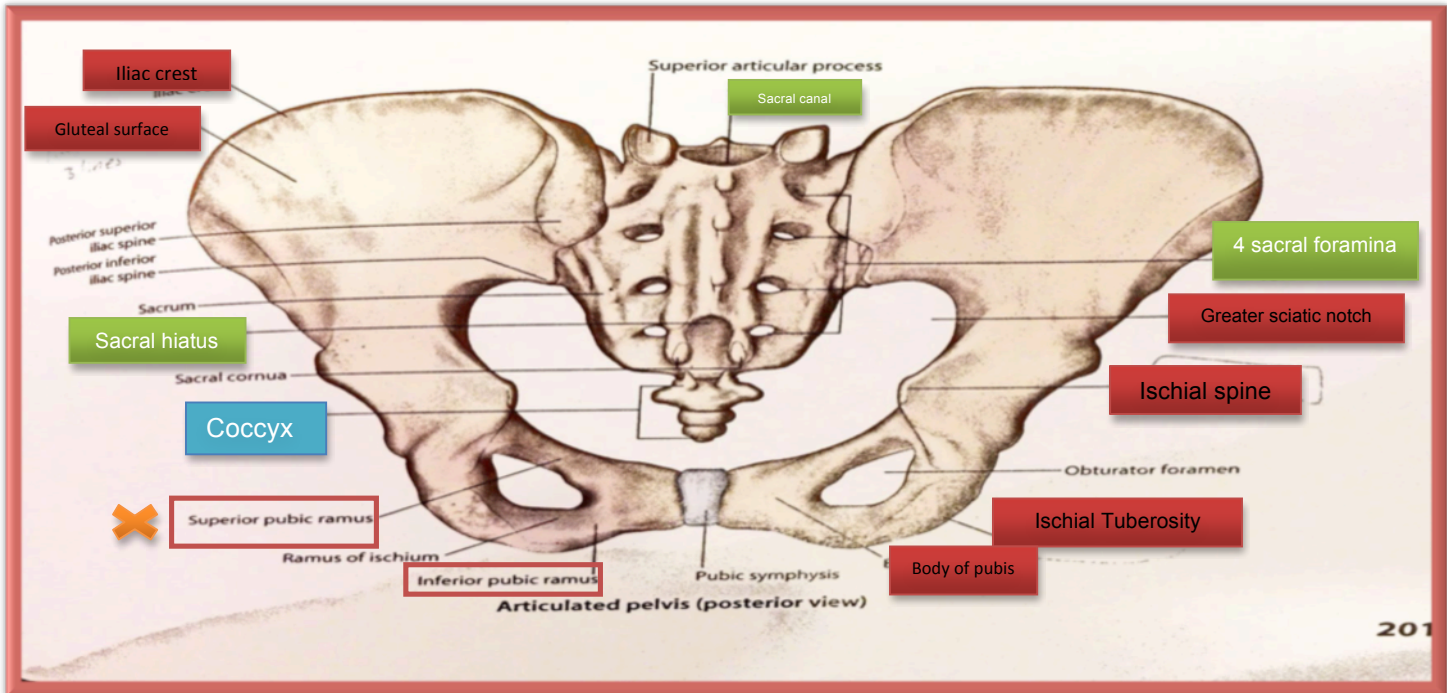
BONY PELVIS

Location	SHAPE	Structure		Function
Trunk below the abdomen.	Bowel shaped.	4 bones	4 joints	✓ <u>Primary</u> <ul style="list-style-type: none"> Bear the weight of the body when sitting or standing Transfer that weight to femur when walking Attachment for locomotion and posture muscles
		A. Two hip bones (Pelvic Girdle) B. Sacrum C. Coccyx	<ul style="list-style-type: none"> Lumbosacral. Sacroiliac. Hip joint. Symphysis pubis. 	✓ <u>Secondary</u> <ul style="list-style-type: none"> Protect pelvic and abdominal viscera. Attachment for organs.

A – PELVIC GIRDLE (TWO HIP BONES)

Part	ILIUM		ISCHIUM		PUBIS		
Region at the hip bone	Joined at ACETABULUM						
	Upper flattened part			Inferior and posterior		Anterior & inferior part	
Possesses	-Iliac Crest	Runs between Anterior & posterior		- Ischial Tuberosity	Receives body weight in sitting	- Body	Bear the pubic crest and tubercle
	- Gluteal lines	• Rough	Outer surface	-Ischial spine	Important in pregnant women	- Two pubic Rami	- Superior and inferior - Bound the Obturator foramen
	-Iliac Fossa	Form false pelvis		-Greater sciatic notch			
	-Auricular surface	Articulate with the sacrum		-Lesser sciatic notch			
	-Iliopectinial (Arcuate) line	Separates between T & F PELVICE					

B- SACRUM		C- COCCYX	
Shape	<ul style="list-style-type: none"> • Single Wedge • 5 rudimentary vertebrae fused. 		Single triangular piece
Possesses	- Sacral promontory	<ul style="list-style-type: none"> • Anterior and upper margin • Tilted forward forming LUMBOSACRAL ANGLE 	Consist of 4 vertebrae fused together
	- 4 sacral foramina	In the anterior and posterior surfaces	
	- Sacral canal	Fused vertebral foramina	
	- Sacral hiatus	Low limit of the canal	

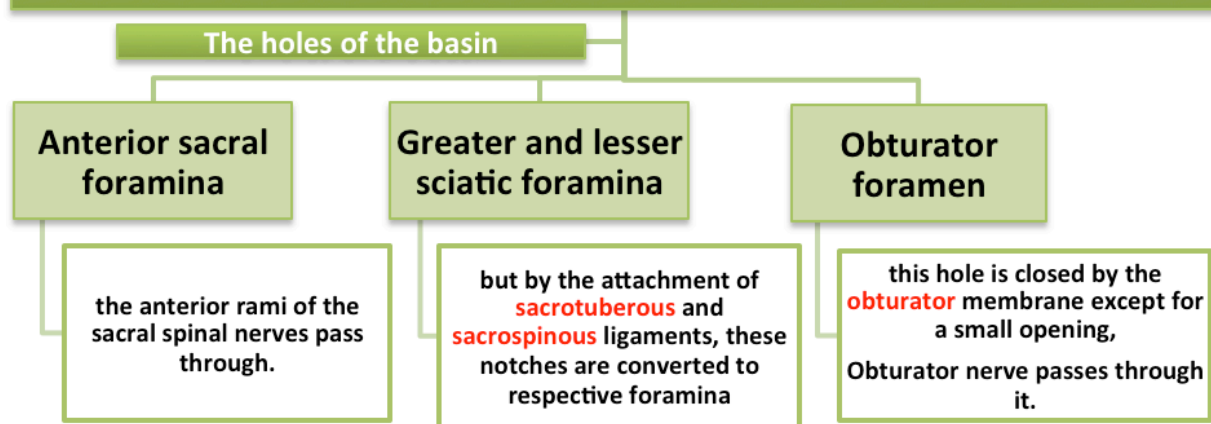


Related to the pelvic Girdle
Related to the sacrum
Coccyx
✗ Weakest part (fracture)

3- ARTICULATIONS

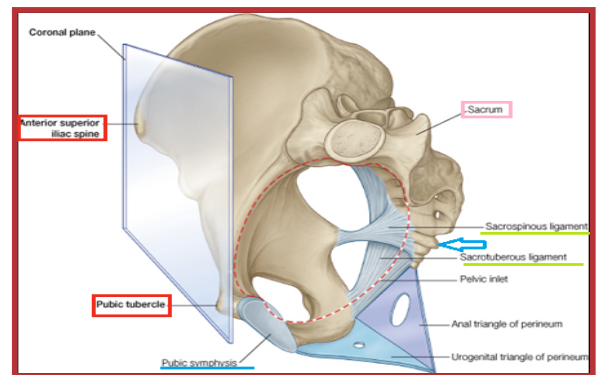
	NAME OF THE JOINT	TYPE	BETWEEN	FEATURES
HIP BONE	Symphysis Pubis	Secondary cartilaginous	2 pubic bones	
	Hip joint		Attachment with the head of femur	
	Sacroiliac	Synovial	Auricular surface of ilium and sacrum	Strong Lateral with bone of sacrum
SACRUM	Lumbosacral		Upper border of sacrum with 5L	
	Sacrococcygeal		Anterior part of sacrum with coccyx	

4- Foramina in bony pelvis



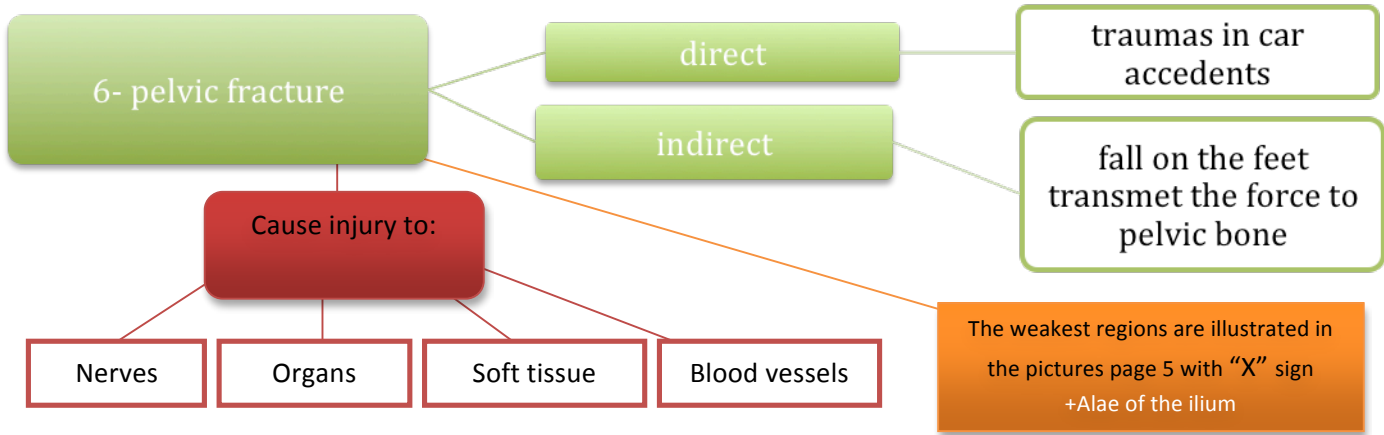
5-Orientation of the Pelvis (in the anatomical position)

1. The anterior-superior iliac spine and the pubic tubercles are in the same vertical plane.
2. The coccyx is in the same horizontal plane as the upper margin of the pubic symphysis.
3. The axis of the pelvic cavity running through the central point of the inlet and the outlet almost parallels the curvature of the sacrum.



in this position

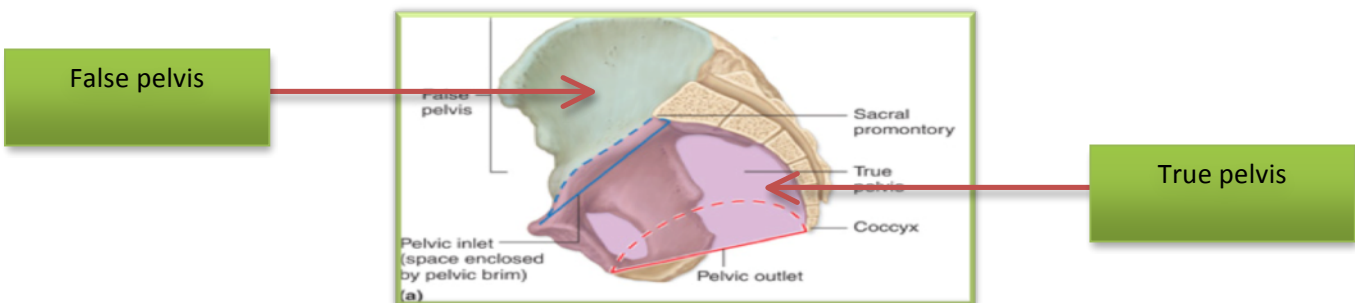
- anterior Sacrum is directed forward and downward
- symphysis pubis faces upward and backward.



7- SUBDIVISION OF THE PELVIS

PELVIS IS DIVIDED INTO 2 PARTS BY **PELVIC BRIM**

BRIM FORMED OF:	POSTERIORLY	LATERALLY	ANTERIORLY
	SACRAL PROMONTORY	ILIOPECTINEA LINE	SYMPHYSIS PUBIS
BRIM separate the pelvis into:	True pelvis		False pelvis
	<ul style="list-style-type: none"> ✓ Inferior to the pelvic prime ✓ Encloses the pelvic cavity ✓ Contains: pelvic organs 		<ul style="list-style-type: none"> ✓ Superior to pelvic prime ✓ Enclosed by: the Fossae of the iliac bones ✓ Contains: the inferior abdominal organs
	It has:		
Bounded by:	Pelvic inlet	Pelvic outlet	
	<ul style="list-style-type: none"> ✓ SACRAL PROMONTORY ✓ ILIOPECTINEA LINE ✓ Symphysis pubis 	<ul style="list-style-type: none"> ✓ Coccyx ✓ Ischial tuberosities ✓ Pubic arches & Symphysis pubis 	



8- Differences between Male and Female Bony pelvis

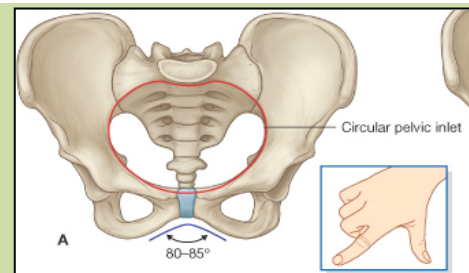
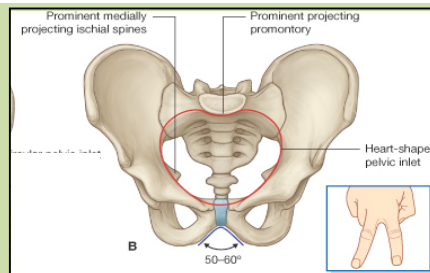
Bony pelvis	Male	Female
General structure	Thick & heavy	Thin, Smaller & lighter
False (major) pelvis (iliac fossae)	Deep	Shallow سطحية
True (lesser) pelvis	Narrow & Deep	Wide & Shallow
Pelvic inlet المحدد بالأحمر	Heart shaped	Oval or Rounded
Pelvic outlet	Small	Larger because of the everted Ischial tuberosities
Pubic arch & subpubic angle	Narrow	Wide
كلما كبرت الزاوية تبعد العظمتين عن بعض والعكس	<90	>90
Obturator foramen	Round	Oval
acetabulum	Large	Small

SACRUM

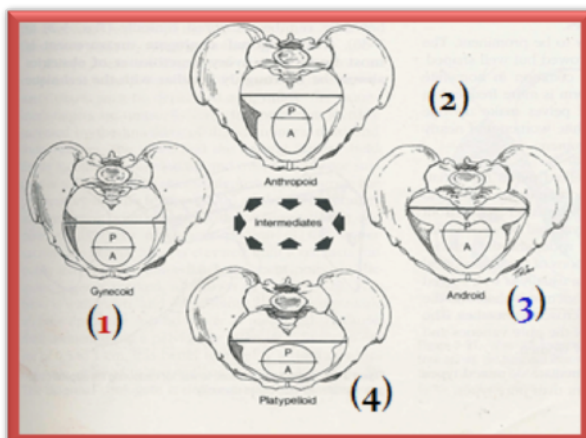
LENGTH	LONG	SHORTER
BREADTH	LONG AND NARROWER	SHORT AND WIDER
Curvature	More curved	Less Curved

NOTE:

For identification of human skeletal remains, the bony pelvis is of prime focus of attention because sexual differences are clearly visible. Even parts of the pelvis are useful in making a diagnosis of sex.



9-Types of Obstetrical Female Pelvis



1. **Gynaecoid:** it is the normal female type

2. **Anthropoid:** not 100% female type, some male criteria

3. **Android (Common in male):** if in a woman it causes hazards to normal vaginal delivery

4. **Platypelloid:** Uncommon in both sexes

SUMMARY

- ✓ Pelvis is the region of the trunk that lies below the abdomen.
- ✓ It is composed of four bones which are **2 hip bones** (lateral and anterior walls), **Sacrum** (posterior wall) and **Coccyx** lower part of posterior wall).
- ✓ Its **primary function** is to bear the weight of the upper body and **secondary function** is protecting the pelvic and abdominopelvic viscera.
- ✓ **Pelvic Girdle** is composed of **Two Hip (Coxal) Bones**. Each one is a large irregular bone. And formed of three bones: **Ilium**, **Ischium** and **Pubis**.
- ✓ **Sacrum** consists of **Five fused vertebrae** and **four Sacral Foramina**.
- ✓ **Coccyx** Consists of **four fused vertebrae** forming Triangular.
- ✓ **Foramina in bony pelvis** are **Anterior sacral foramina, Greater and lesser sciatic foramina** and **Obturator foramen**.
- ✓ The **Pelvic Brim** is formed **posteriorly** by the **sacral promontory**, **laterally** by the **iliopectineal line** and **anteriorly** by the **symphysis pubis**.
- ✓ Above the pelvic brim lies the **False pelvis** and Below is the **True pelvis**.
- ✓ **Pelvic Inlet** is the of (**pelvic Brim**) and **pelvic outlet** is Bounded by **Coccyx, Ischial tuberosities, Pubic arches & symphysis pubis**.
- ✓ Types of Obstetrical Female Pelvis are **Gynaecoid, Anthropoid, Android and Platypelloi**.

WE HOPE THIS VIDEO WILL HELP YOU TO UNDERSTAND THE ANATOMY OF THE PELVIS:

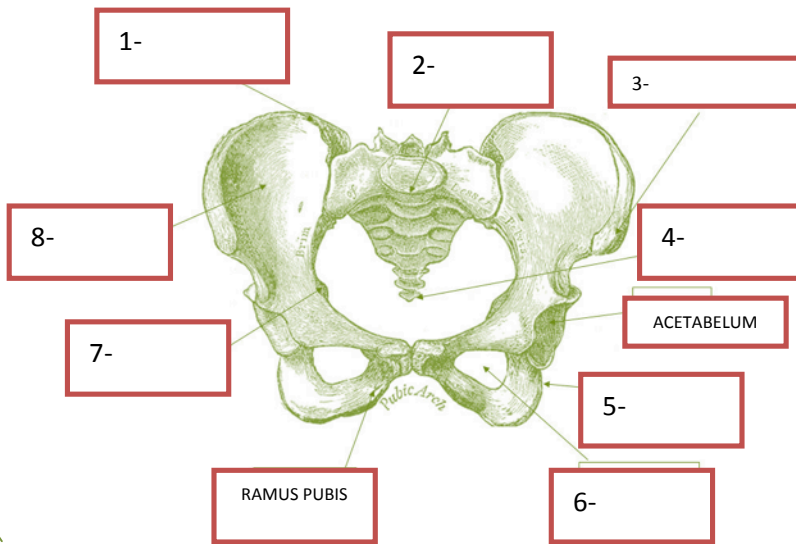
IT IS 13:11 LONG



<http://youtu.be/3v5AsAESg1Q>

Questions

Q1: IDENTIFY THE MISSING LABELS



- A- anterior superior iliac spine
- B- iliac fossa
- C- Obturator foramen
- D- Posterior superior iliac spine.
- E- Ischial spine
- F- Sacral promontory.
- G- Ischium
- H- coccyx

Q2: FUSING OF THE VERTEBRAL FORAMINA IN THE SACRUM FORM

- A) SACRAL hiatus.
- B) SACRAL CANAL.
- C) SACRAL FORAMEN

Q3: which of the following bound to form Obturator foramen

- A) Pubic Crest.
- B) Greater & lesser sciatic notch.
- C) Pubic rami.
- d) Pubic tubercle.

Q4: Which one of following Foramina in bony pelvis sacrotuberous and sacrospinous ligaments is converted to respective foramina?

- A) Anterior sacral foramina.
- B) Greater and lesser sciatic foramina.
- C) Obturator foramen.

Q5: Which one of following feature of female bony pelvis:

- A) Has Oval or Rounded pelvic inlet.
- B) Has small Pelvic outlet.
- C) Has deep false pelvis.

Q6: As types of obstetrical female pelvis which one of following women she never deliver normally?

- A) Anthropoid.
- B) Gynaecoid.
- C) Android.

ANSWERS:

Q1: 1-D, 2-F, 3-A, 4-H, 5-G, 6-C, 7-E, 8-B Q2: B Q3: C Q4: B Q5: A Q6: C



Anatomy Team

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For any comments Please don't hesitate

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