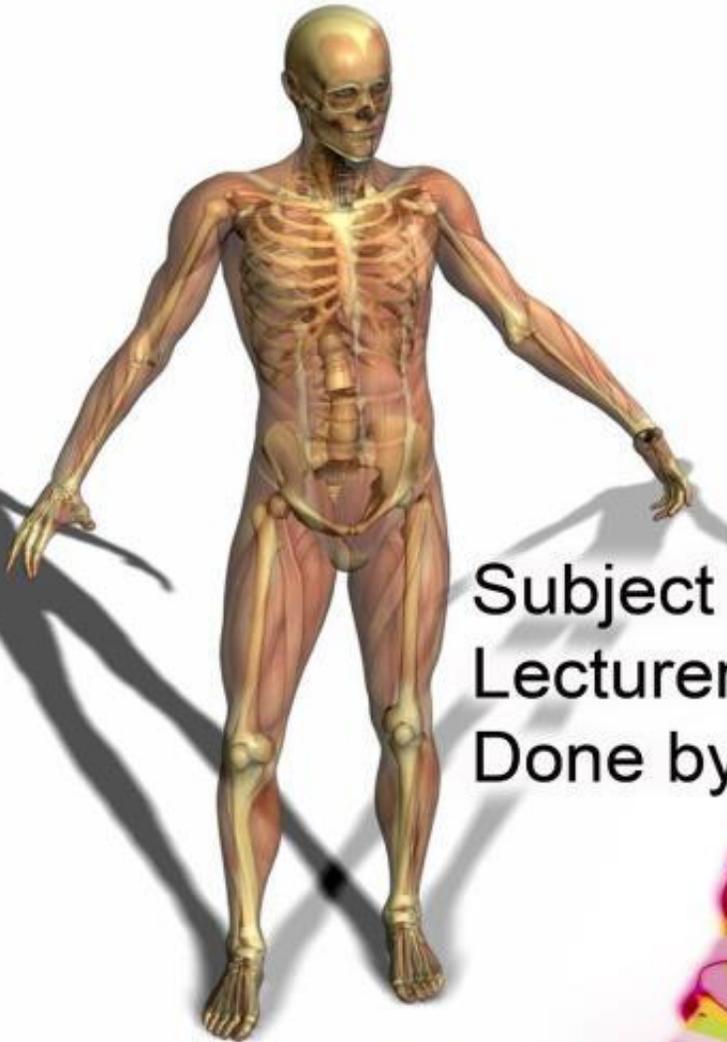




ANATOMY

Sheet



Subject : *Introduction to Anatomy*

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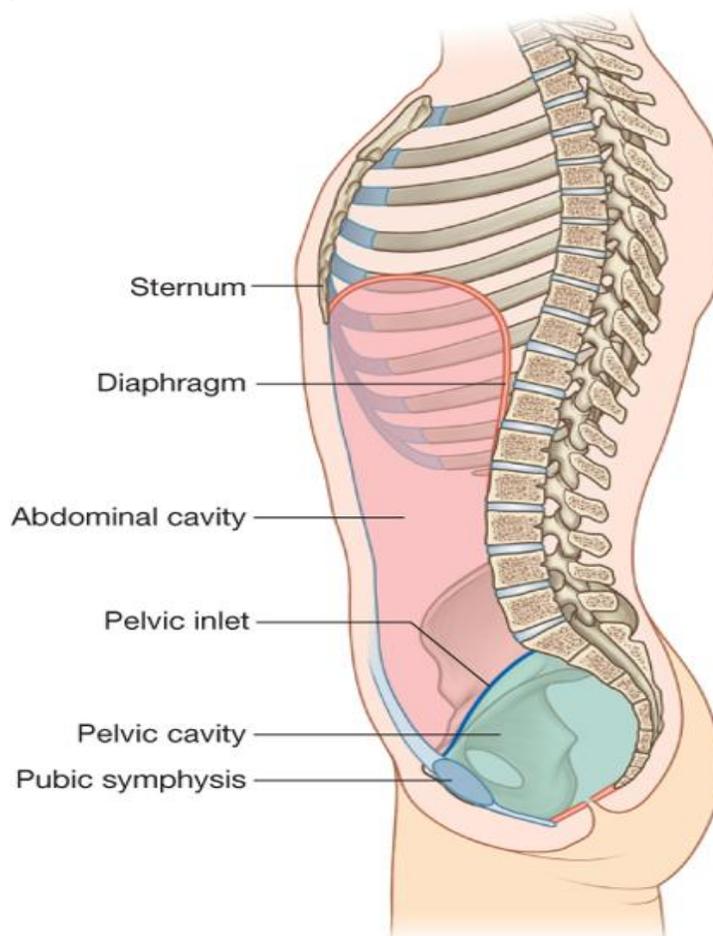
ABDOMEN

Abdomen:

The part of the body extending between Thoracic cavity & Pelvic cavity.

Borders (boundaries):

- Superiorly (The Roof) → Diaphragm.
 - Inferiorly (The Floor) → Pelvic Inlet (Imaginary line).
 - Anteriorly → Anterior abdominal wall.
 - Posteriorly → Posterior abdominal wall.
- All borders surround what is called **Abdominal Cavity**
- Each part has its own contents and structure.



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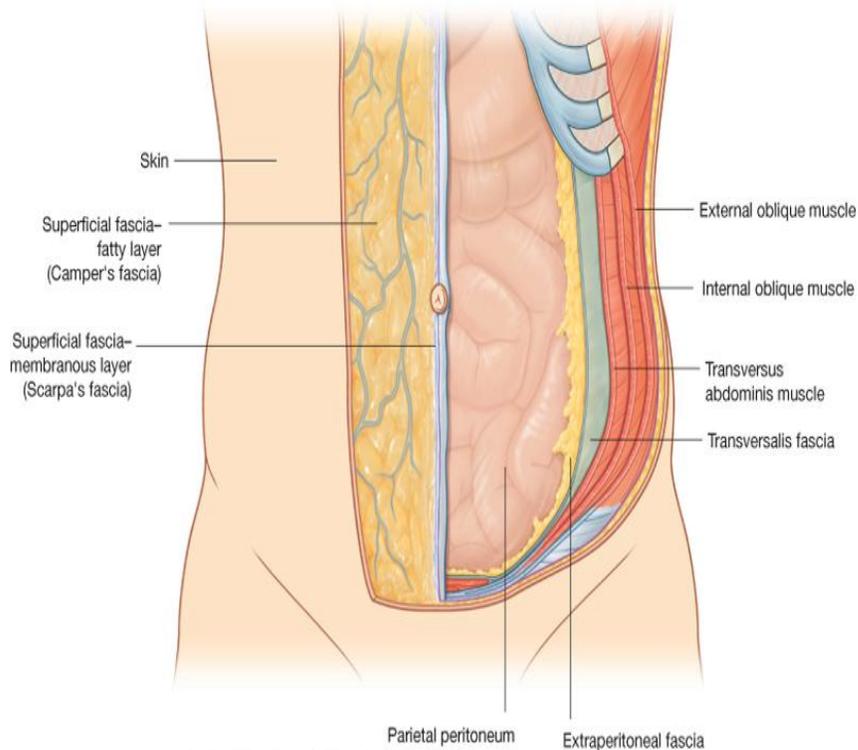
ANTERIOR ABDOMINAL WALL

Formed by the following 7 structures: just like the wall of the thorax

- Skin
- Superficial Fascia (made up of two layers)
- Deep Fascia
- 3 muscles:
 - 1- External Oblique muscle.
 - 2- Internal Oblique muscle.
 - 3- Transversus Abdominis
- Transversalis Fascia
- Extraperitoneal Fat
- Peritoneum

Note => Layers here are very similar to layers of the thorax.

=> More detailed layers do exist, but at this stage of studying we are only summarizing, just a survey.



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Muscles

- Muscles of the abdomen are most obvious in athletes.
- Inferolateral from the xiphoid process is the large costal margin formed by costal cartilages of ribs: 7, 8, 9 & 10.

-Linea Alba:

The central line connecting between the xiphoid process & the symphysis pubis dividing the anterior abdominal wall into right & left. It is the site of fusion (where we were fused before birth)

At each half, halves made by linea alba, we have:

- A- Peripheral Muscles (flat muscles. Sheet-like)
- B- Central Muscles

A- Peripheral Muscles (3)

- 1- External Oblique muscle.
- 2- Internal Oblique muscle.
- 3- Transversus Abdominis.

Alligned in different direction, just like jeans, different direction to strengthen the wall and protect the abdominal contents.

Origin (peripheral) is fleshy, but their insertion (central) is aponeurosis.

-Each has an aponeurosis, the three aponeurosis fuse with each other, interconnect with one another, INTERDIGITATE with each other at the central line of the Ant. Abd. wall forming **Linea Alba**

=> Linea Alba:

It is a white line that doesn't let you penetrate through the abdominal wall easily.

Is formed by dictating fibers of the aponeurosis of the three muscles marking the central line of the Ant. Abd. wall, The function of these aponeurosis & their interdigitating:

- 1- Protection of the abdominal contents
- 2- Decrease the interabdominal pressure for: Bathroom use, ladies during delivery, weight lifting.. etc

-All aligned in different directions like a jeans, strengthening the ant. abd. wall protecting the abdominal contents.

-Fleshy origin (peripheral), aponeurosis insertion (central)

-All innervated by the lower 6 intercostal nerves & L1.

B- Central Muscle

One muscle, Rectus Abdominis:

-Strapped central muscle located at both sides of linea alba.

-Origin=> Symphysis Pubis

-Insertion=> Xiphoid process & costal cartilages of ribs 5, 6 & 7.

- Action=> Sit up, bringing the head toward the knees.
- Innervation=> Lower 6 intercostal nerves

Nerve Supply

-Our body in the thorax & abdomen is like "مرتديلا" => like segments.

-In the thorax, we have intercostal nerves each supply structures within its intercostal space.

-We have in the abdomen **the lower 6 intercostal (Thoracic) nerves & L1** supplying: skin, muscles, fascia & peritoneum.

But how can we distinguish which nerve supplies which "segment" ??

We can do so by recognizing the following:

1- Epigastric Angle -Infrasternal angle- → Supplied by T7

-T7 supplies skin & what is beneath.

E.g:

A patient with حرقة there => associated with nerve T7

2- The Umbalicus → Supplied by T10

3- The Inguinal ligament → Skin there supplied by L1

-A patient suffering from حزام ناري within that level => L1 nerve

-Within the level of epigastric => T7

-Within the level of Umbalicus => T10

-Gastritis (التهاب المعدة) => T7

-Intestinal Colic (مغص بالامعاء) => T10

CLINICAL CASE:

Patient suffering from pain in the right iliac fossa then the pain spreaded to the umbalicus, WHY??

→ Peritonum of the Appendix is supplied by T10, which also supplies the umbalicus

After running few tests pain around umbalicus observed → Appenditis → عالسكين يا

-Appendectomy- P: بطيخ

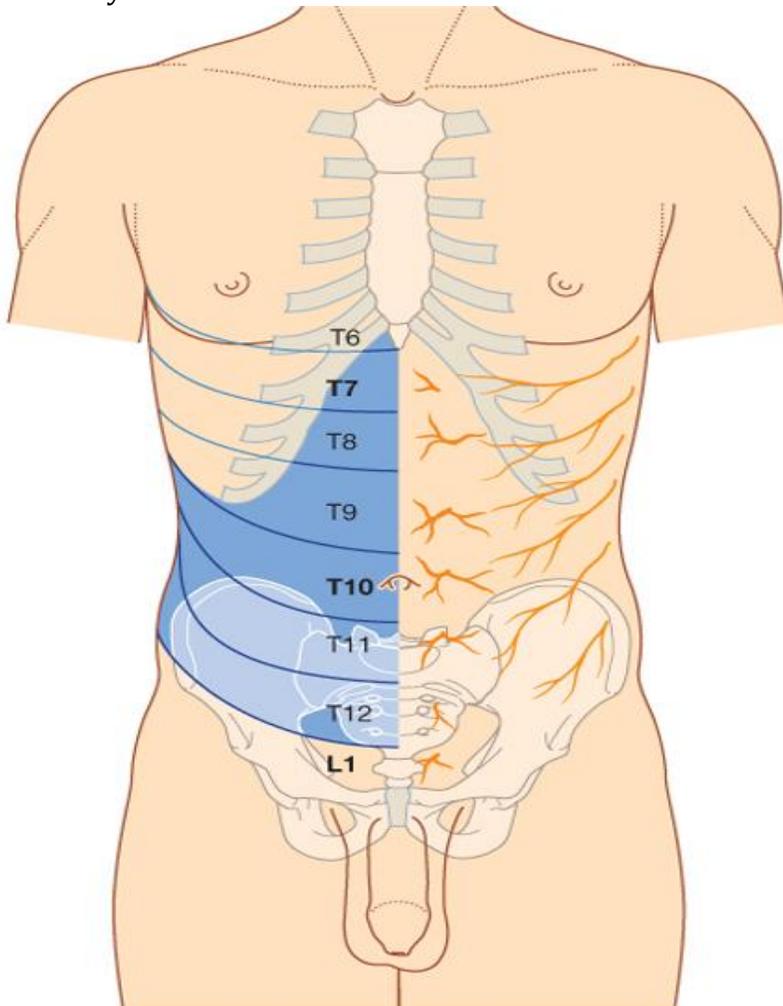
Summary of nerve supply:

- Epigastric => T7
- Umbilicus => T10
- Inguinal Ligament => L1
- ➔ Innervation between them can be distinguished easily with experience.

Remember:

- All peripheral muscles are innervated by the lower 6 intercostal nerves + L1.
- Rectus Abdominis is innervated by the lower 6 intercostal nerves (NUG6A) –L1 is NOT included-

Note: Sometimes an extra abdominal muscle called *Pyramidalis* may exist & it's innervated by L1.



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Arterial Supply

-**Periphery** => Lower 2 intercostal arteries.

=> 4 lumbar arteries (Branches from Abdominal Aorta).

-**Central** =>

1- Superior Epigastric artery

-Terminal branch of the internal thoracic artery, which is a branch of subclavian artery.

Subclavian artery => Internal Thoracic artery => Superior Epigastric artery
Goes towards the umbilicus

2-Inferior Epigastric artery

-Branch of the External Iliac artery before it passes below the inguinal ligament

Goes towards the umbilicus

-Both supply the midline of the wall and they anastomose around the umbilicus.

PERITONEUM

-Behind the Anterior Abdominal wall we have the abdominal cavity.

-We have the peritoneum lining the abdominal cavity and most of its contents.

-Peritoneum: complete sac of thin serous membrane that lines abdominal wall & most of its contents.

-Peritoneum has two layers:

1-Parietal => Covering the outside of the abdominal cavity

2-Visceral => Covering organs in the following two ways:

1- Intra-peritoneal organs => organs are covered *completely* by the visceral peritoneum

Such as: Small intestines and stomach

2- Retroperitoneal organs => *partially* covered organs by the visceral peritoneum like the pancreas and the aorta

-Between both layers of peritoneum we have Peritoneal Cavity, which is a potential space becomes a true space by diseases.

Clinical cases in which peritoneal cavity becomes true:

- استسقاء كبدي => water released by liver filling the peritoneal cavity turning it into true space

-Peritonitis => Inflammation of peritoneum, you have to be careful while dealing with it. If it inflames, the inflammation will spread widely.

ABDOMINAL AORTA

- The direct continuation of Thoracic Aorta.
- Started at level of T12 by passing through Aortic Opening at the diaphragm.
- Ends at the level of L4 by dividing into right & left Common Iliac arteries.
- It gives single & paired (peripheral)branches.

Single branches:

- Branch from the anterior aspect of the Abd. Aorta.
- Designed for the GIT*
- They are three in number:
 - 1- Celiac artery => Supplies the Foregut.
=> Originates at the level of T12
 - 2- Superior Mesenteric artery => Supplies the Midgut
=> Originates at the level of L1
 - 3- Inferior Mesenteric artery => Supplies Hindgut.
=> Originates at the level of L3

The doctor named the parts of the GIT, but he will repeat them in later lectures

Clinically :

Problem at stomach → Celiac artery

Problem in the small intestines (superior mesenteric artery

Descending column (mesenteric)

Etc....

gangerene: intestines twist over each other and the blood supply is cut... we need to look at which artery is involved.

*GIT:

Gastrointestinal tract (tube), extends from mouth to anus.

“If you want to shine like sun first you have to burn like it.”