

Muscles Of the Trunk

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Muscles of The Thorax

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1. External intercostal.
2. Internal intercostal.
3. Innermost intercostal
4. diaphragm.
5. Levator costarum.
6. Serratus posterior superior.
7. Serratus posterior inferior.

Table 13-4 Muscles of the Thorax

Name of Muscle	Origin	Insertion	Nerve Supply	Action
External intercostal muscle (11) (fibers pass downward and forward)	Inferior border of rib	Superior border of rib below	Intercostal nerves	With first rib fixed, they raise ribs during inspiration and thus increase antero-posterior and transverse diameters of thorax. With last rib fixed by abdominal muscles, they lower ribs during expiration
Internal intercostal muscle (11) (fibers pass downward and backward)	Inferior border of rib	Superior border of rib below	Intercostal nerves	
Innermost intercostal muscle (incomplete layer)	Adjacent ribs	Adjacent ribs	Intercostal nerves	
Diaphragm (most important muscle of respiration)	Xiphoid process; lower six costal cartilages, first three lumbar vertebrae	Central tendon	Phrenic nerve	Very important muscle of inspiration; increases vertical diameter of thorax by pulling central tendon downward, assists in raising lower ribs. Also used in abdominal straining and weight lifting
Levatores costarum (12)	Tip of transverse process of C7 and T1–11 vertebrae	Rib below	Posterior rami of thoracic spinal	Raise ribs and therefore inspiratory muscles
Serratus posterior superior	Lower cervical and upper thoracic spines	Upper ribs	Intercostal nerves	Raises ribs and therefore inspiratory muscles
Serratus posterior inferior	Upper lumbar and lower thoracic spines	Lower ribs	Intercostal nerves	Depresses ribs and therefore expiratory muscles

From Snell RS: Clinical Anatomy. 7th Ed. Philadelphia: Lippincott Williams & Wilkins, 2004, p. 68.

External Intercostal Muscles

➤ Origin:

The inferior border of the rib above.

➤ Insertion:

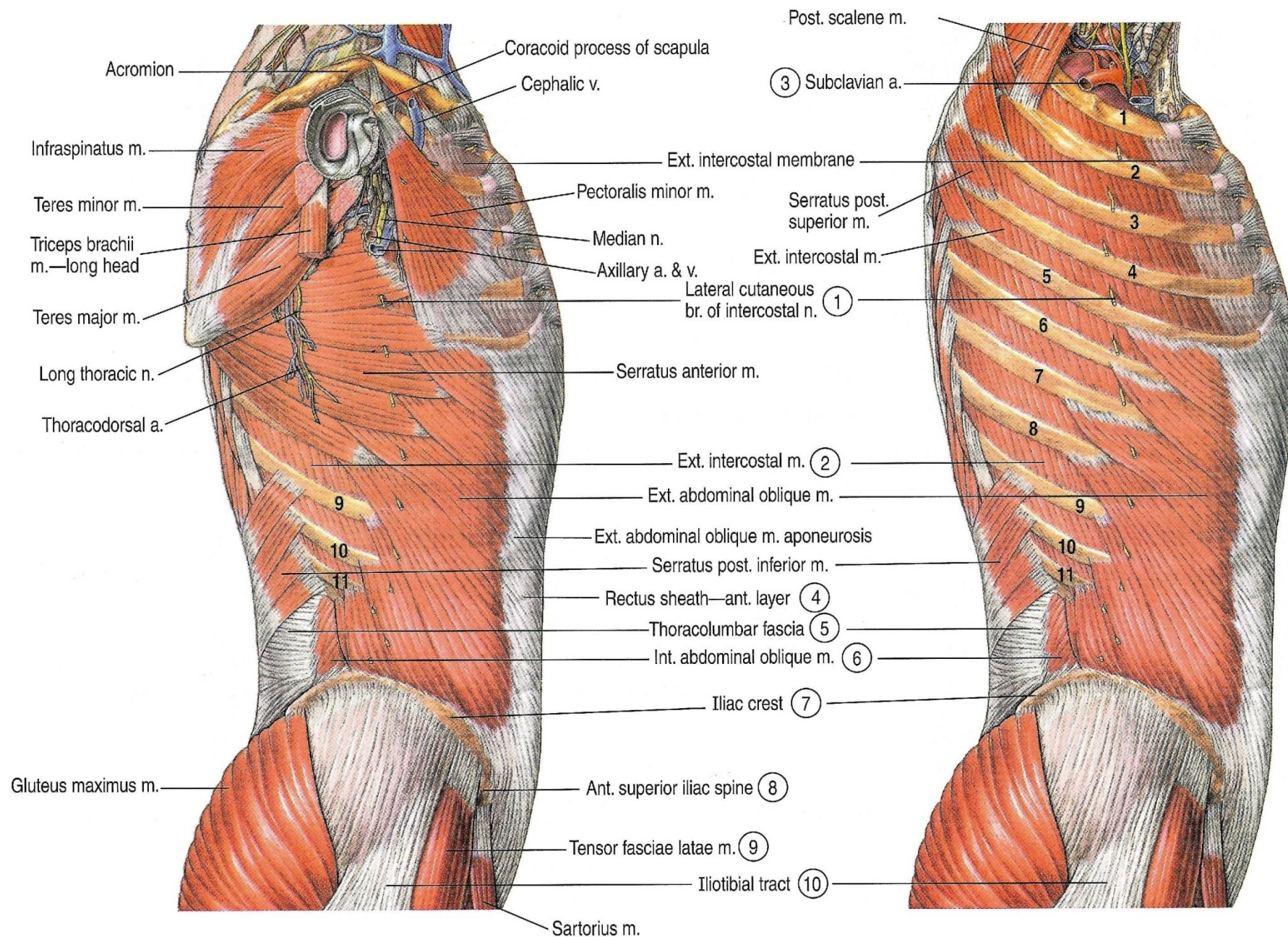
The muscle fibers are directed downwards, forwards and medially to be inserted into the superior border of the rib below.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

With fixation of the first rib, they pull the ribs upwards, so they are muscles of inspiration.



Internal Intercostal Muscles

➤ Origin:

The upper border of the rib below.

➤ Insertion:

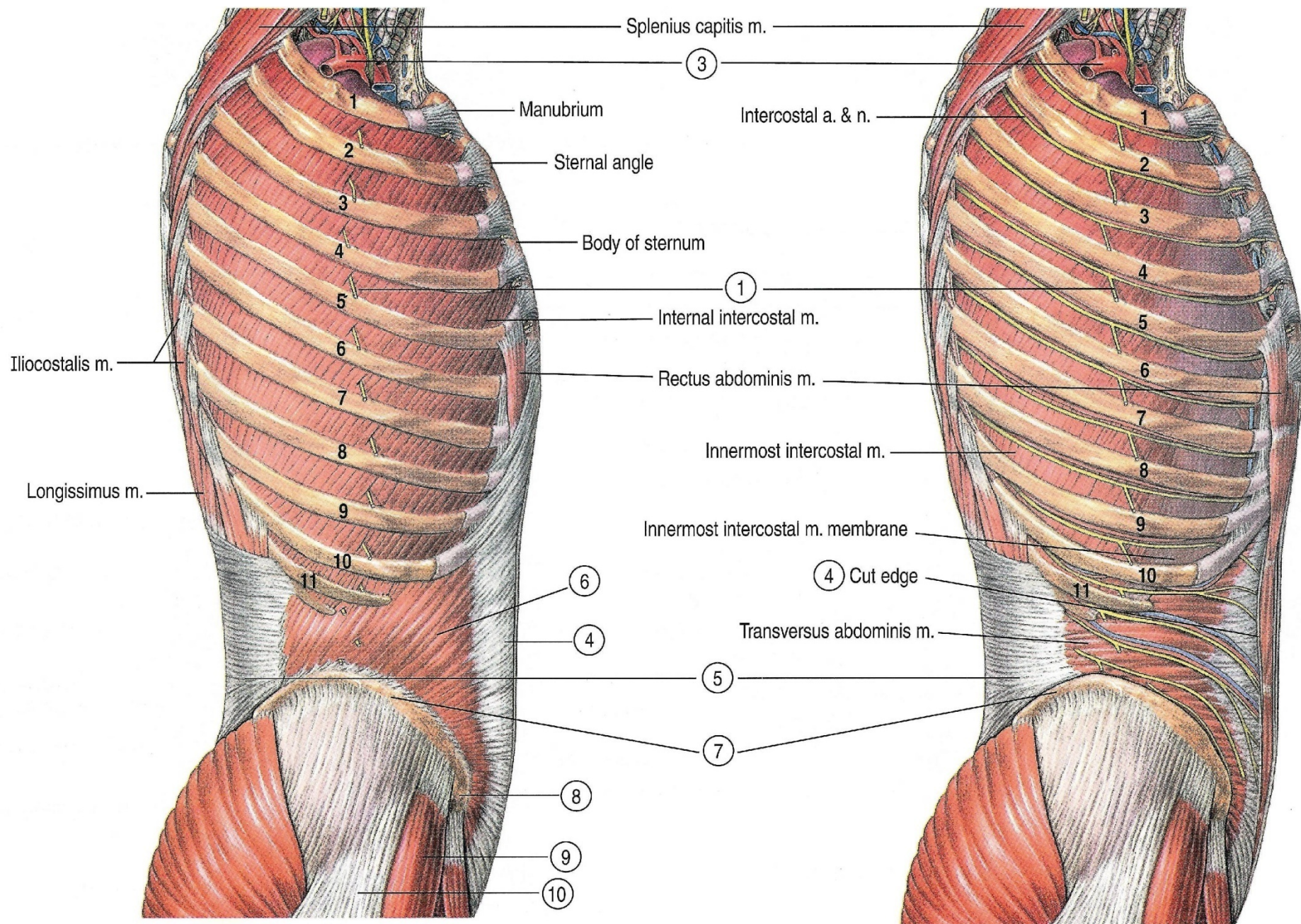
The muscle fibers are directed upwards, forwards and medially to be inserted into the inferior border of the rib above.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

With fixation of the last ribs, they pull the ribs downwards, so they are muscles of expiration.



Innermost Intercostal Muscles

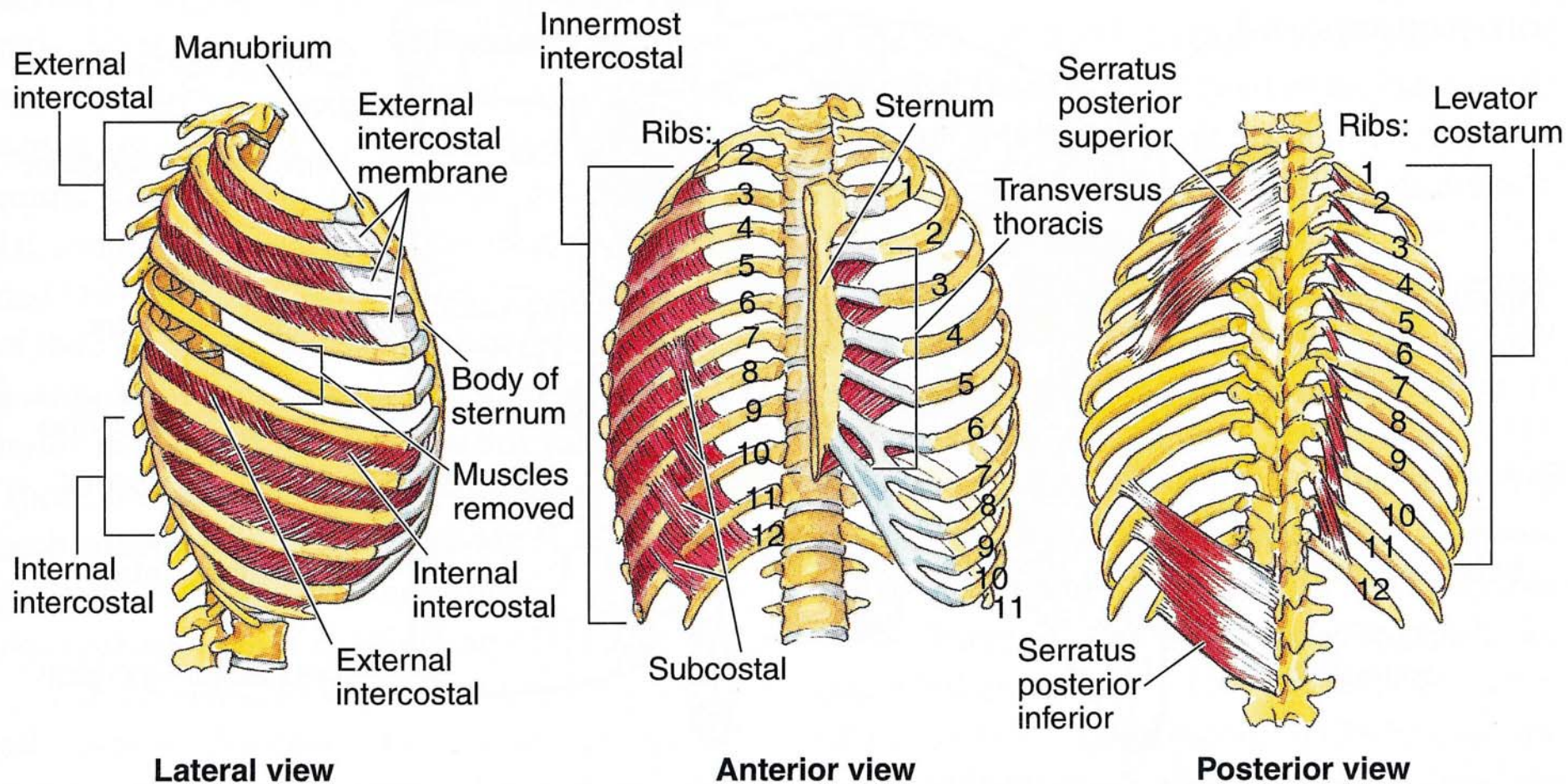
Incomplete layer of muscles fibers that can transverse more than one intercostal space

- **Nerve Supply:**

Intercostal nerves.

- **Action:**

Muscles of respiration.



Diaphragm

➤ Origin:

1. Sternal head: from xiphoid process.
2. Costal head: lower six ribs and costal cartilage.
3. Vertebral head: right and left crura from the first, second and third lumbar vertebrae and arcuate ligaments.

➤ Insertion:

Central tendon of the diaphragm.

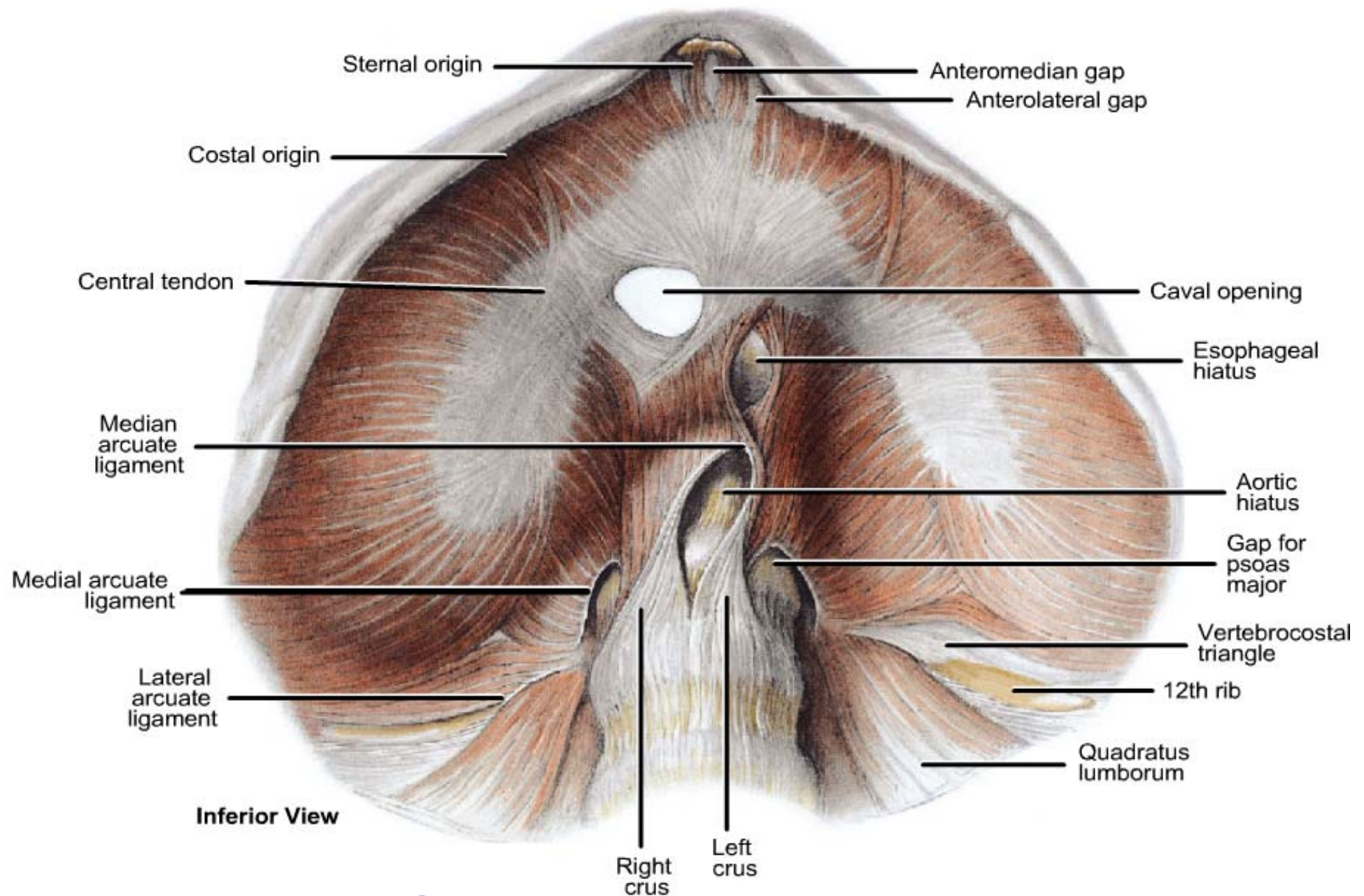
➤ Nerve Supply:

Motor: phrenic nerve.

Sensory: phrenic and Intercostal nerves.

➤ Action:

Increase the vertebral diameter of the thoracic cavity (muscle of inspiration).



Muscles of The Abdomen

Muscles of the Anterior Abdominal Wall

- 1.External oblique.**
- 2.Internal oblique.**
- 3.Transversus abdominis.**
- 4.Rectus abdominis.**
- 5.Pyramidals (if present).**

Table 13-5 Muscles of the Anterior Abdominal Wall

Name of Muscle	Origin	Insertion	Nerve Supply	Action
External oblique	Lower eight ribs	Xiphoid process, linea alba, pubic crest, pubic tubercle, iliac crest	Lower six thoracic nerves and iliohypogastric and ilioinguinal nerves (L1)	Supports abdominal contents; compresses abdominal contents; assists in flexing and rotation of trunk; assists in forced expiration, micturition, defecation, parturition, and vomiting
Internal oblique	Lumbar fascia, iliac crest, lateral two thirds of inguinal ligament	Lower three ribs and costal cartilages, xiphoid process, linea alba, symphysis pubis	Lower six thoracic nerves and iliohypogastric and ilioinguinal nerves (L1)	As above
Transversus	Lower six costal cartilages, lumbar fascia, iliac crest, lateral third of inguinal ligament	Xiphoid process, linea alba, symphysis pubis	Lower six thoracic nerves and iliohypogastric and ilioinguinal nerves (L1)	Compresses abdominal contents
Rectus abdominis	Symphysis pubis and pubic crest	Fifth, sixth, and seventh costal cartilages and xiphoid process	Lower six thoracic nerves	Compresses abdominal contents and flexes vertebral column; accessory muscle of expiration
Pyramidalis (if present)	Anterior surface of pubis	Linea alba	Twelfth thoracic nerve	Tenses the linea alba

From Snell RS: Clinical Anatomy. 7th Ed. Philadelphia: Lippincott Williams & Wilkins, 2004, p. 167.

External oblique Muscle

➤ Origin:

The lower eight ribs.

➤ Insertion:

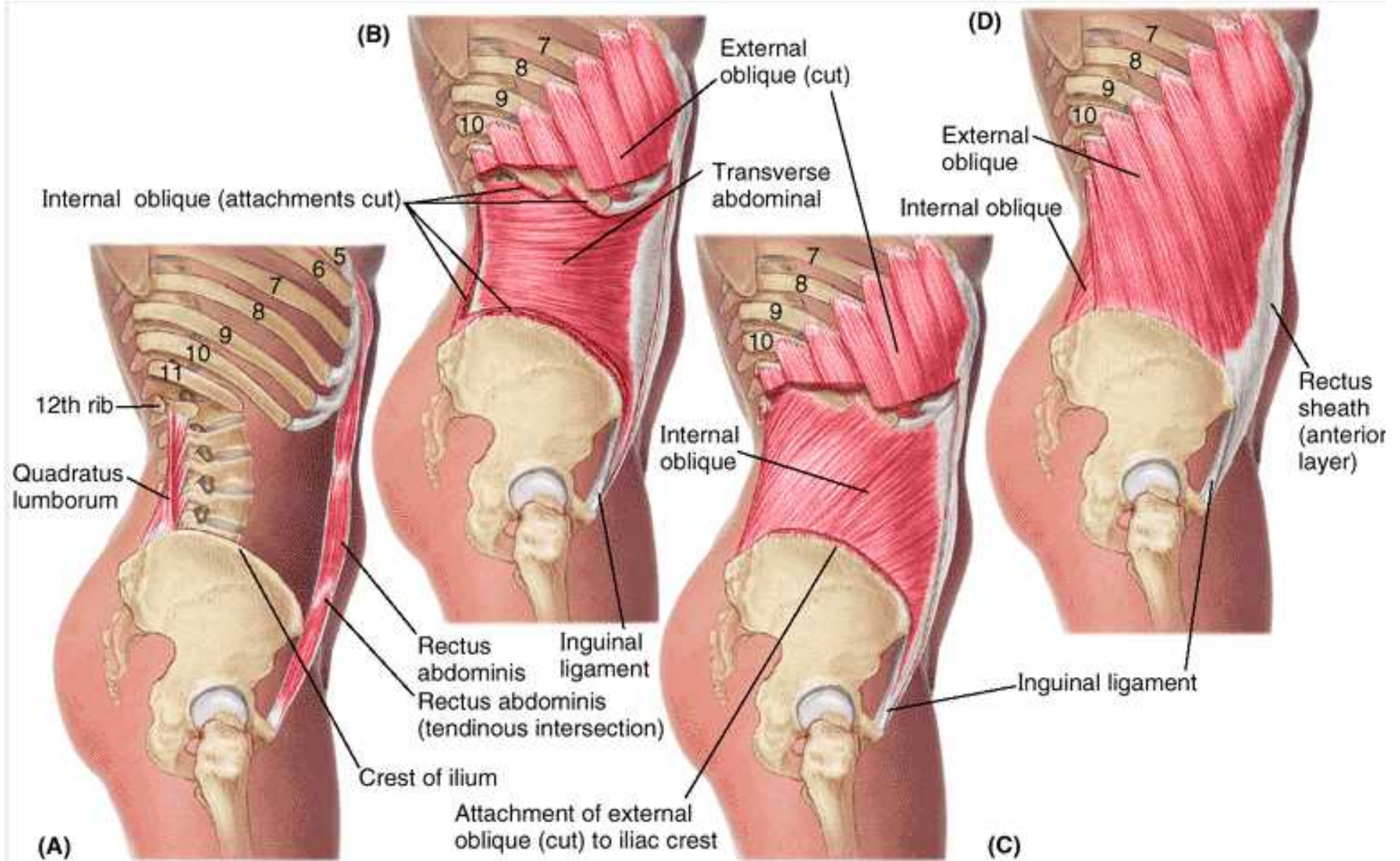
Xiphoid process, linea alba, pubic crest, pubic tubercle, anterior half of iliac crest.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

Increase the intra-abdominal pressure.



Internal oblique Muscle

➤ Origin:

The lumbar fascia, anterior 2/3 of iliac crest, lateral 2/3 of inguinal ligament.

➤ Insertion:

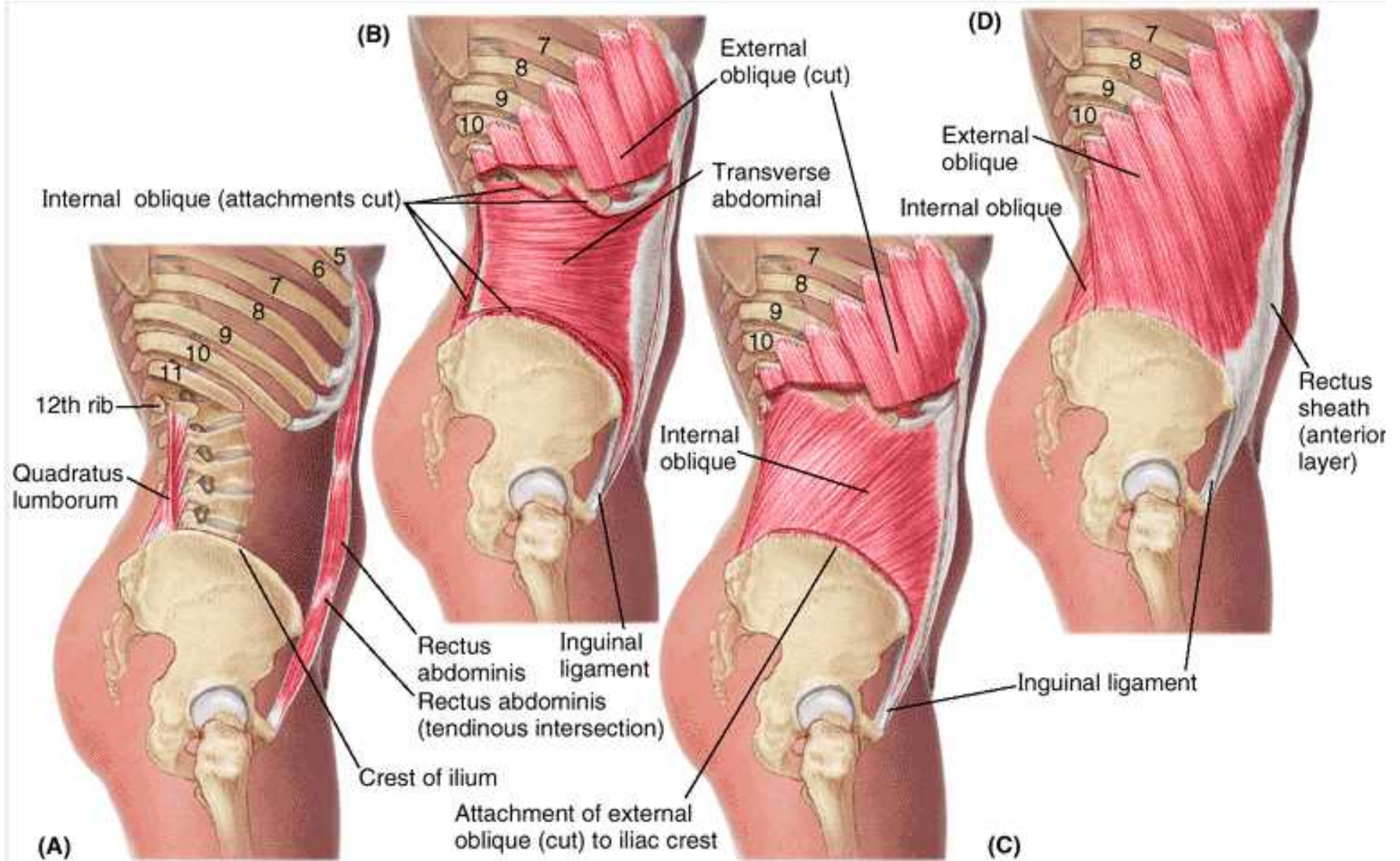
Lower 3 ribs and costal cartilage, xiphoid process, linea alba, pubic crest and pectineal line.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

Increase the intra-abdominal pressure.



Transversus Abdominis Muscle

➤ Origin:

The lower 6 costal cartilage, lumbar fascia, anterior 2/3 of iliac crest, lateral 1/3 of inguinal canal.

➤ Insertion:

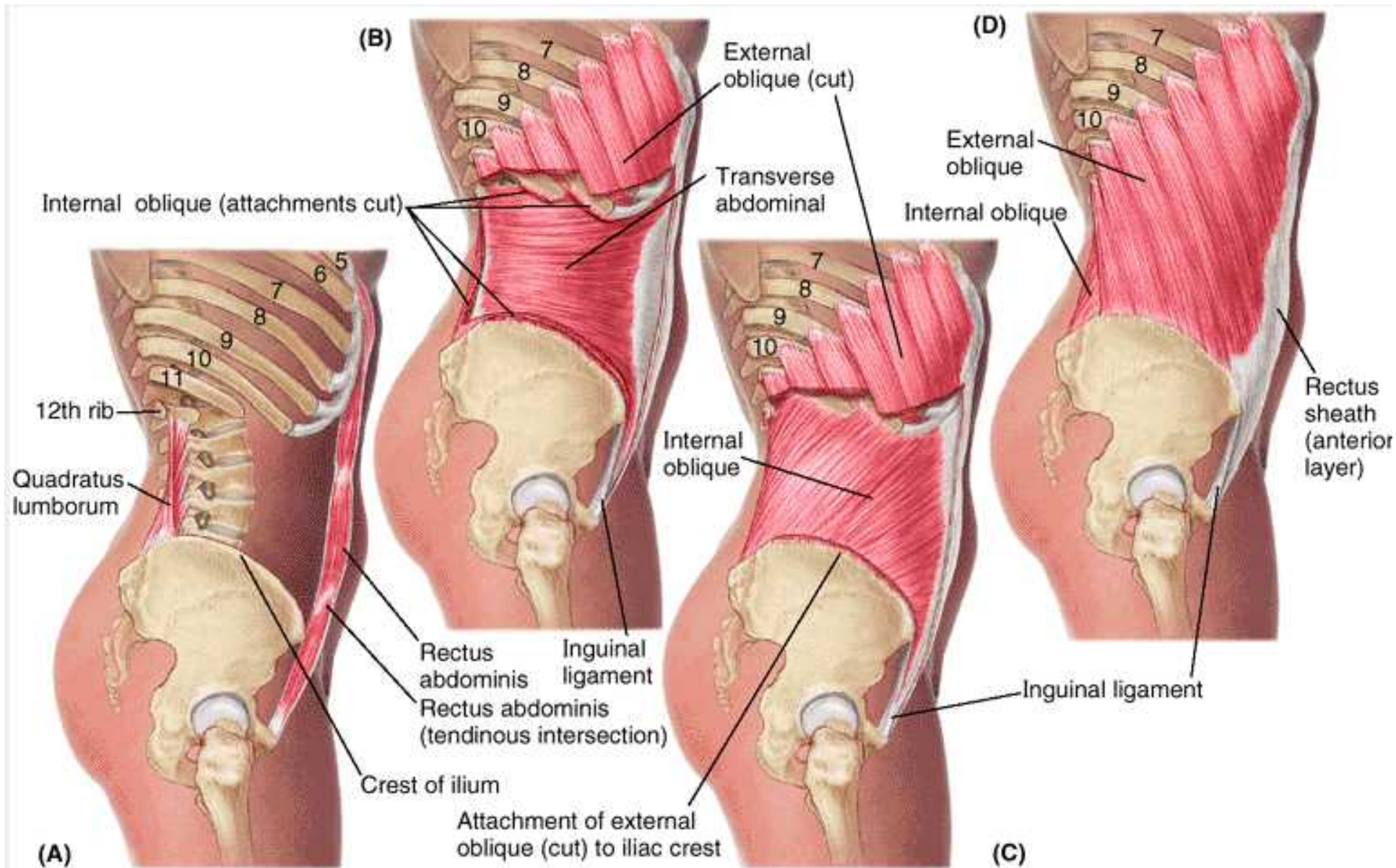
The xiphoid process, linea alba, pubic crest and pectineal line.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

Increase the intra-abdominal pressure.



Rectus Abdominis Muscle

➤ Origin:

The symphysis pubis and pubic crest.

➤ Insertion:

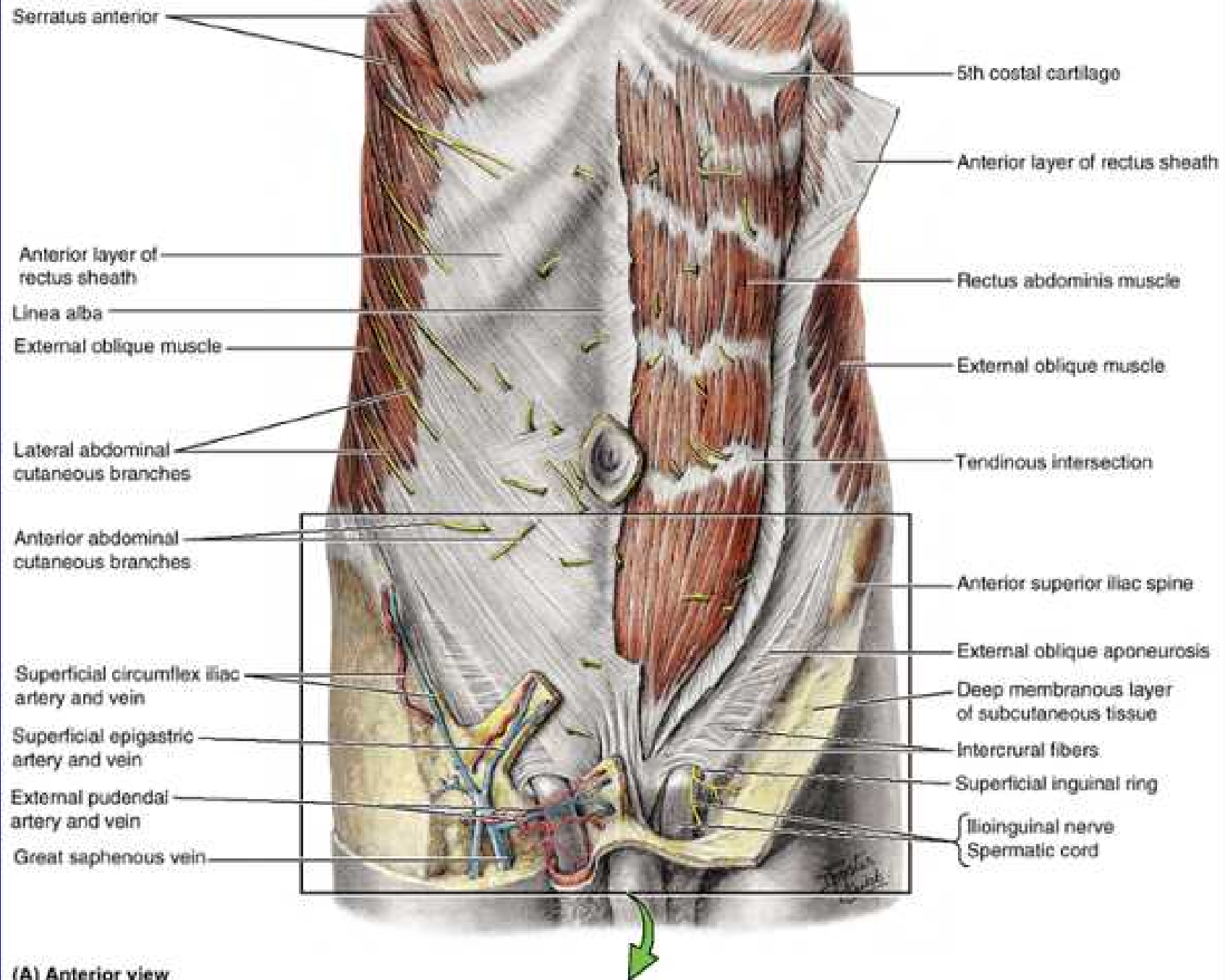
5th, 6th, 7th costal cartilage and xiphoid process.

➤ Nerve Supply:

Intercostal nerves.

➤ Action:

1. Increase the intra-abdominal pressure.
2. Flexion of the trunk.



Muscles of the Posterior Abdominal Wall

- 1. Psoas major.**
- 2. Quadratus lumborum.**
- 3. Iliacus.**

Table 13-6**Muscles of the Posterior Abdominal Wall**

Name of Muscle	Origin	Insertion	Nerve Supply	Action
Psoas	Transverse processes, bodies, and intervertebral discs of twelfth thoracic and five lumbar vertebrae	With iliacus into lesser trochanter of femur	Lumbar plexus	Flexes thigh on trunk; if thigh is fixed, it flexes trunk on thigh, as in sitting up from lying position
Quadratus lumborum	Iliolumbar ligament, iliac crest, tips of transverse processes of lower lumbar vertebrae	Twelfth rib	Lumbar plexus	Fixes twelfth rib during inspiration; depresses twelfth rib during forced expiration; laterally flexes vertebral column same side
Iliacus	Iliac fossa	With psoas into lesser trochanter of femur	Femoral nerve	Flexes thigh on trunk; if thigh is fixed, it flexes the trunk on the thigh, as in sitting up from lying position

From Snell RS: Clinical Anatomy. 7th Ed. Philadelphia: Lippincott Williams & Wilkins, 2004, p. 188.

Psoas Major Muscle

➤ Origin:

The transverse processes and sides of vertebral bodies and their intervertebral discs from T12 till L5 vertebrae.

➤ Insertion:

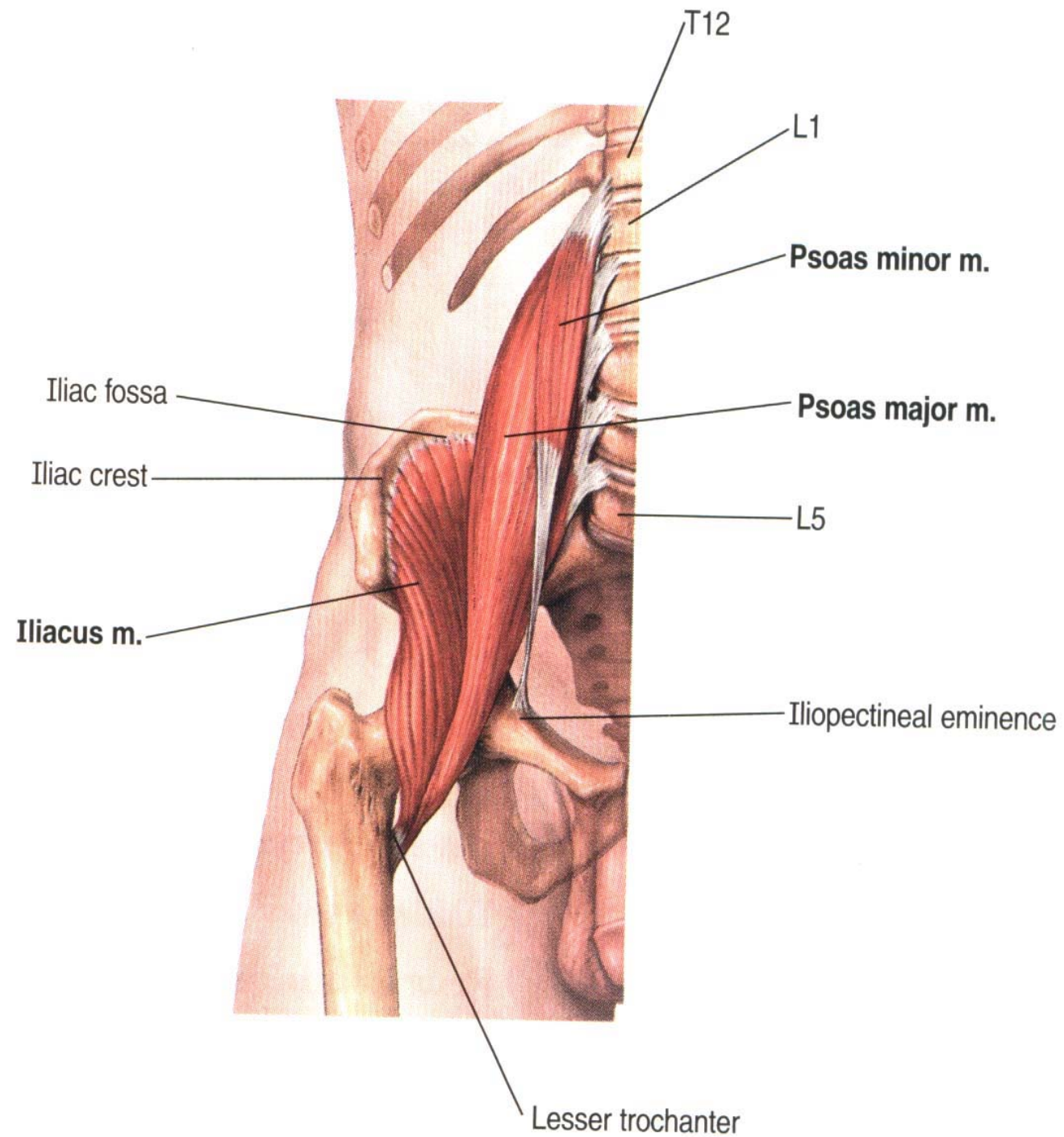
Lesser trochanter of the femur.

➤ Nerve Supply:

Lumbar spinal nerves (lumbar plexus).

➤ Action:

Flexion of the hip joint.



Quadratus Lumborum Muscle

➤ Origin:

The ilio-lumbar ligament, iliac crest and transverse processes of the lower lumbar vertebrae.

➤ Insertion:

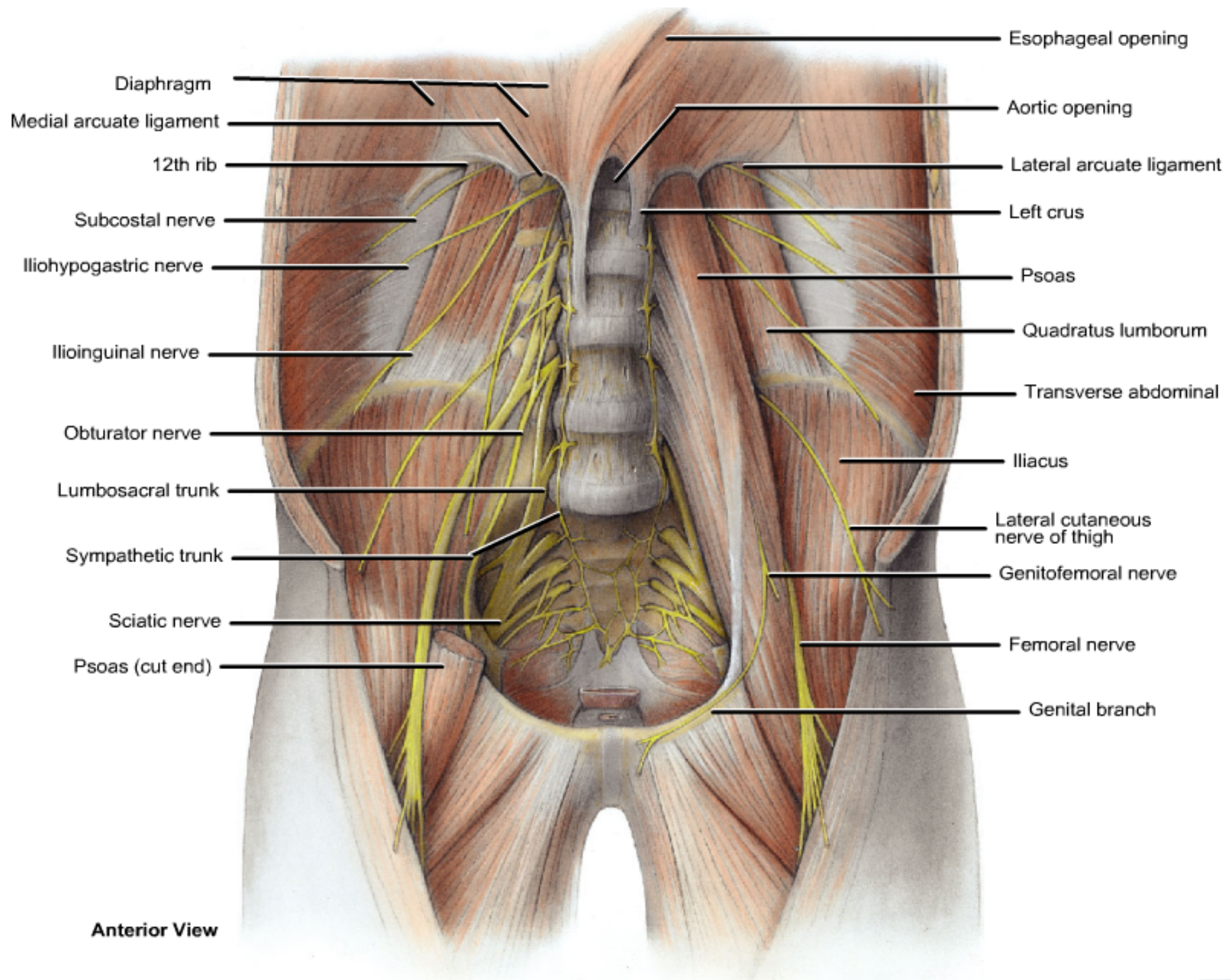
Last rib and transverse processes of upper lumbar vertebrae.

➤ Nerve Supply:

Lumbar spinal nerves (lumbar plexus).

➤ Action:

1. Lateral flexion of the vertebral column.
2. Fixation of the last rib during expiration.



Iliacus

➤ **Origin:**

Iliac fossa.

➤ **Insertion:**

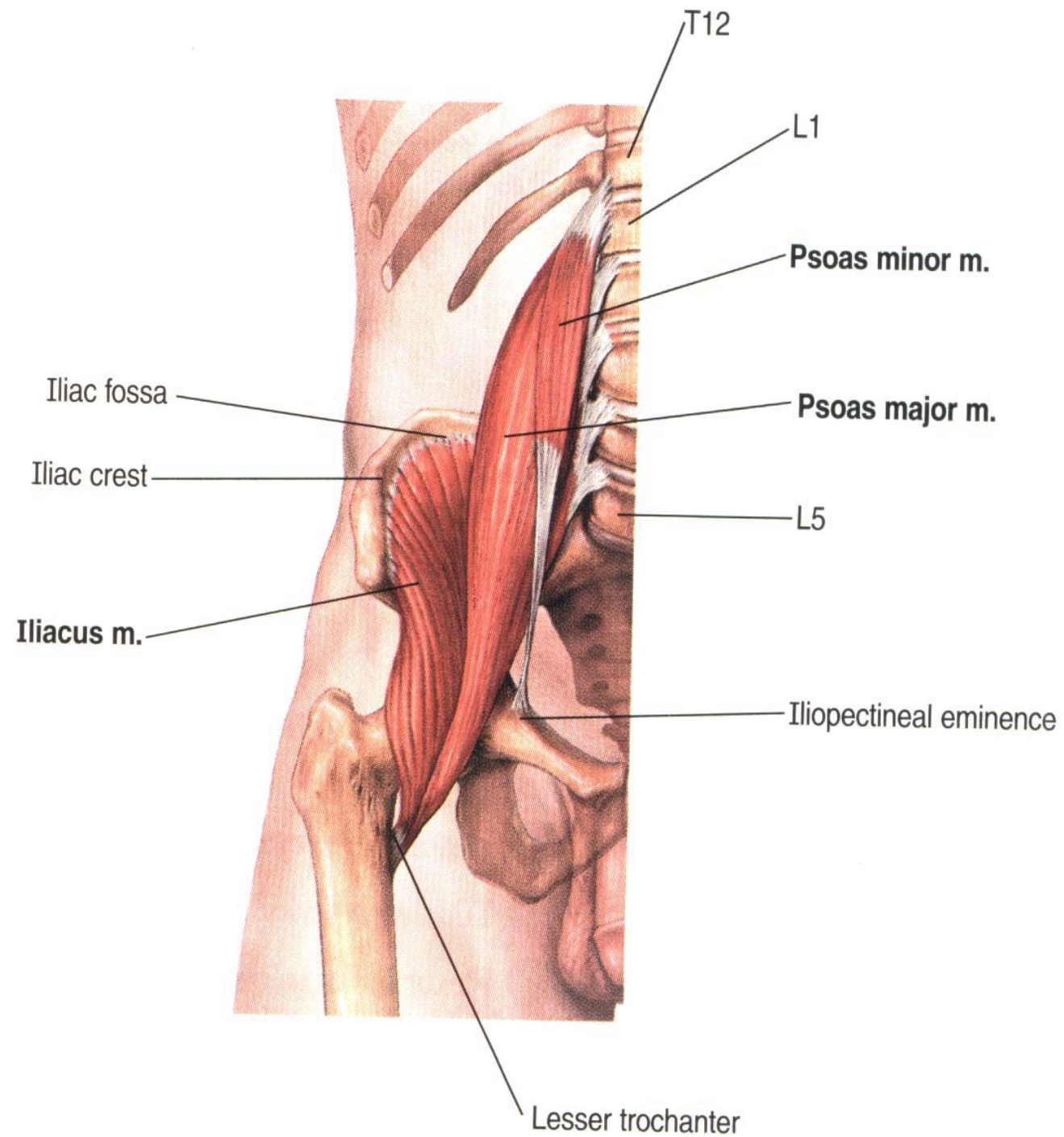
Lesser trochanter of the femur.

➤ **Nerve Supply:**

Femoral nerve.

➤ **Action:**

Flexion of the hip joint.



Muscles of The Pelvis

Muscles of the Pelvic Wall

- 1. Piriformis.**
- 2. Obturator Internus.**
- 3. Levator ani.**
- 4. Coccygeus.**

Table 13-7**Muscles of the Pelvic Walls and Floor**

Name of Muscle	Origin	Insertion	Nerve Supply	Action
Piriformis	Front of sacrum	Greater trochanter of femur	Sacral plexus	Lateral rotator of femur at hip joint
Obturator internus	Obturator membrane and adjoining part of hip bone	Greater trochanter of femur	Nerve to obturator internus from sacral plexus	Lateral rotator of femur at hip joint
Levator ani	Body of pubis, fascia of obturator internus, spine of ischium	Perineal body, ano-coccygeal body, walls of prostate, vagina, rectum, and anal canal	Fourth sacral nerve, pudendal nerve	Supports pelvic viscera; sphincter to anorectal junction and vagina
Coccygeus	Spine of ischium	Lower end of sacrum; coccyx	Fourth and fifth sacral nerve	Assists levator ani to support pelvic viscera; flexes coccyx

From Snell RS: Clinical Anatomy. 7th Ed. Philadelphia: Lippincott Williams & Wilkins, 2004, p. 347.

Piriformis

➤ **Origin:**

Anterior surface of the 2nd, 3rd and 4th sacral vertebrae.

➤ **Insertion:**

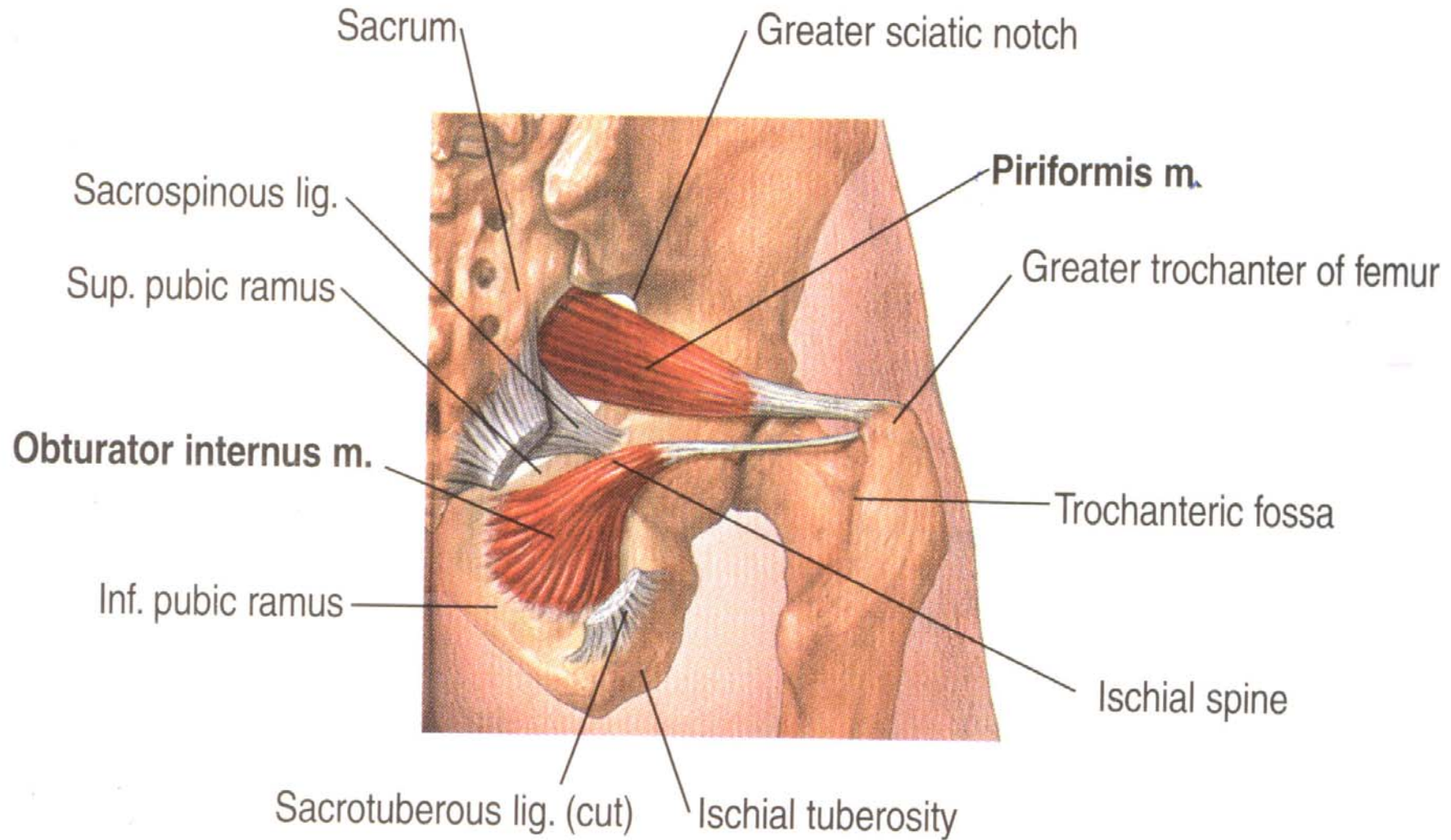
Upper border of the greater trochanter of femur

➤ **Nerve Supply:**

Anterior rami of the 1st and 2nd sacral nerves.

➤ **Action:**

Lateral rotation of the thigh (hip joint).



Obturator internus

➤ Origin:

Inner surface of obturator membrane and surrounding bones.

➤ Insertion:

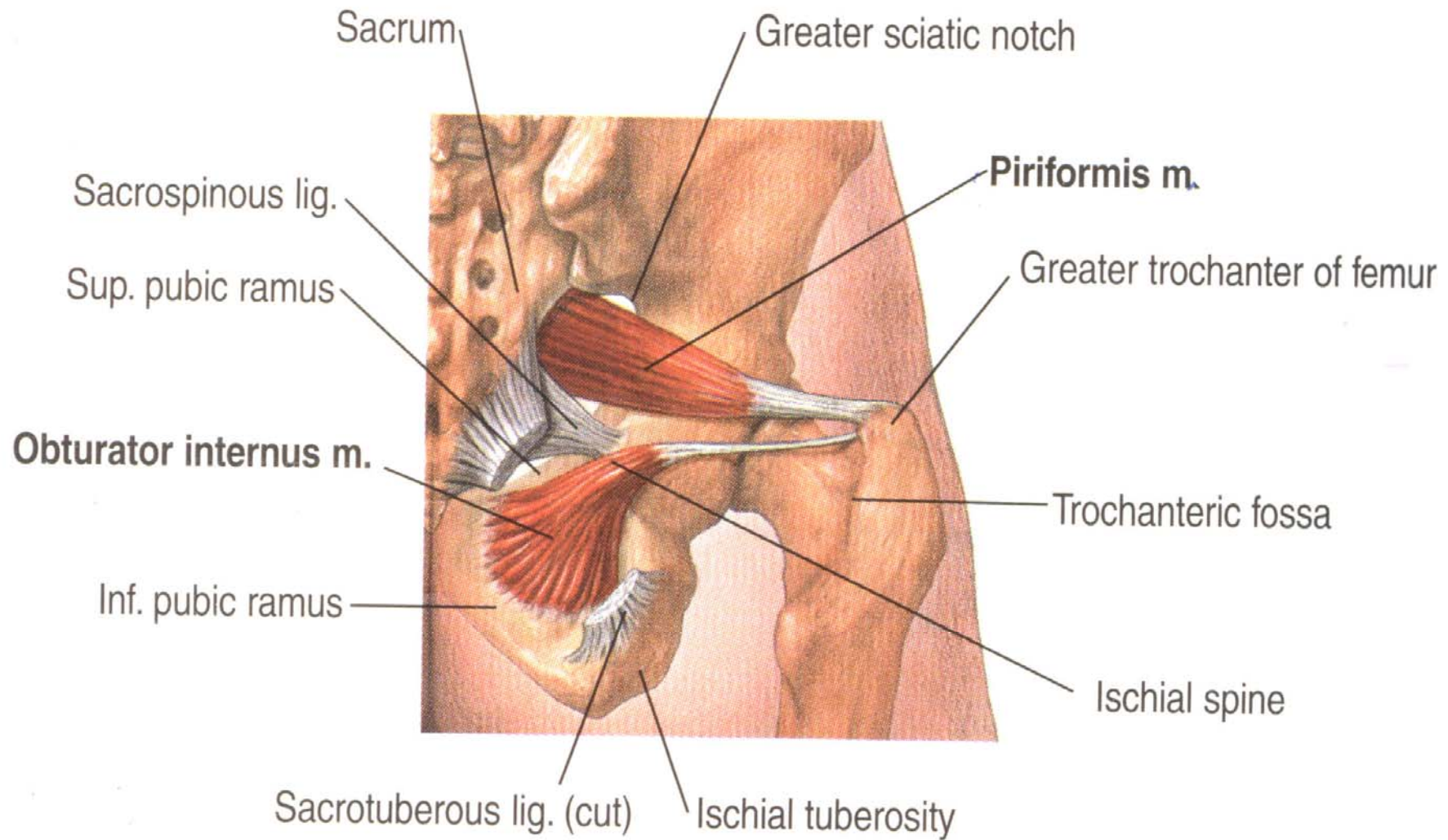
Upper border of the greater trochanter of femur

➤ Nerve Supply:

Nerve to obturator internus.

➤ Action:

Lateral rotation of the thigh (hip joint).



Levator Ani Muscle

➤ Parts:

1. Anterior fibers: levator prostatae or sphincter vaginae: from a sling around prostate or vagina.
2. Intermediate fibers: puborectalis, pubococcygeus .
3. Posterior fibers: iliococcygeus.

➤ Nerve Supply:

Perineal branches of both 4th sacral nerve and pudendal nerve.

➤ Action:

1. Increase intra-abdominal pressure.
2. Anorectal sphincter.
3. Vaginal sphincter.

Hip bone

Pubic
symphysis

Rectum

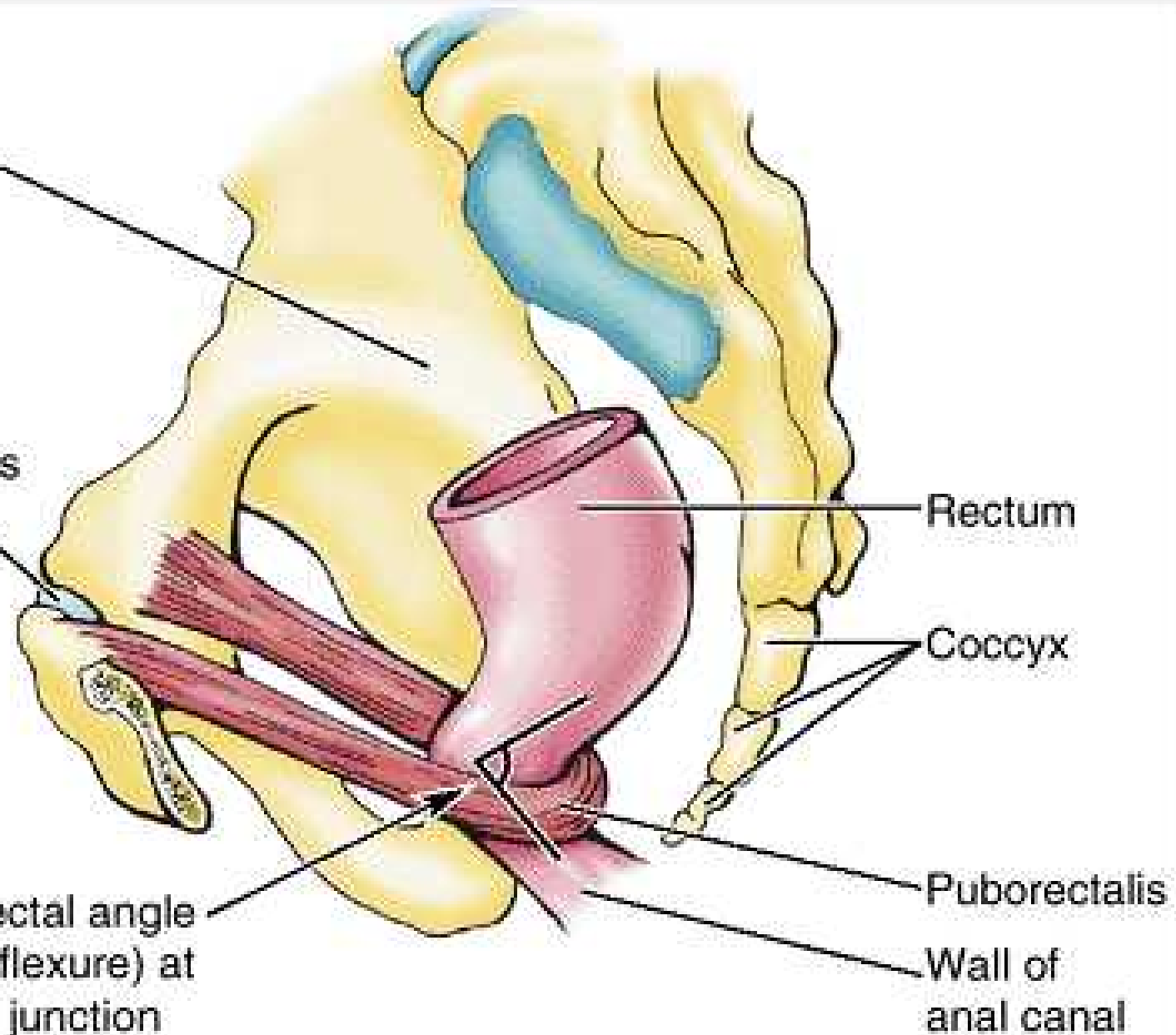
Coccyx

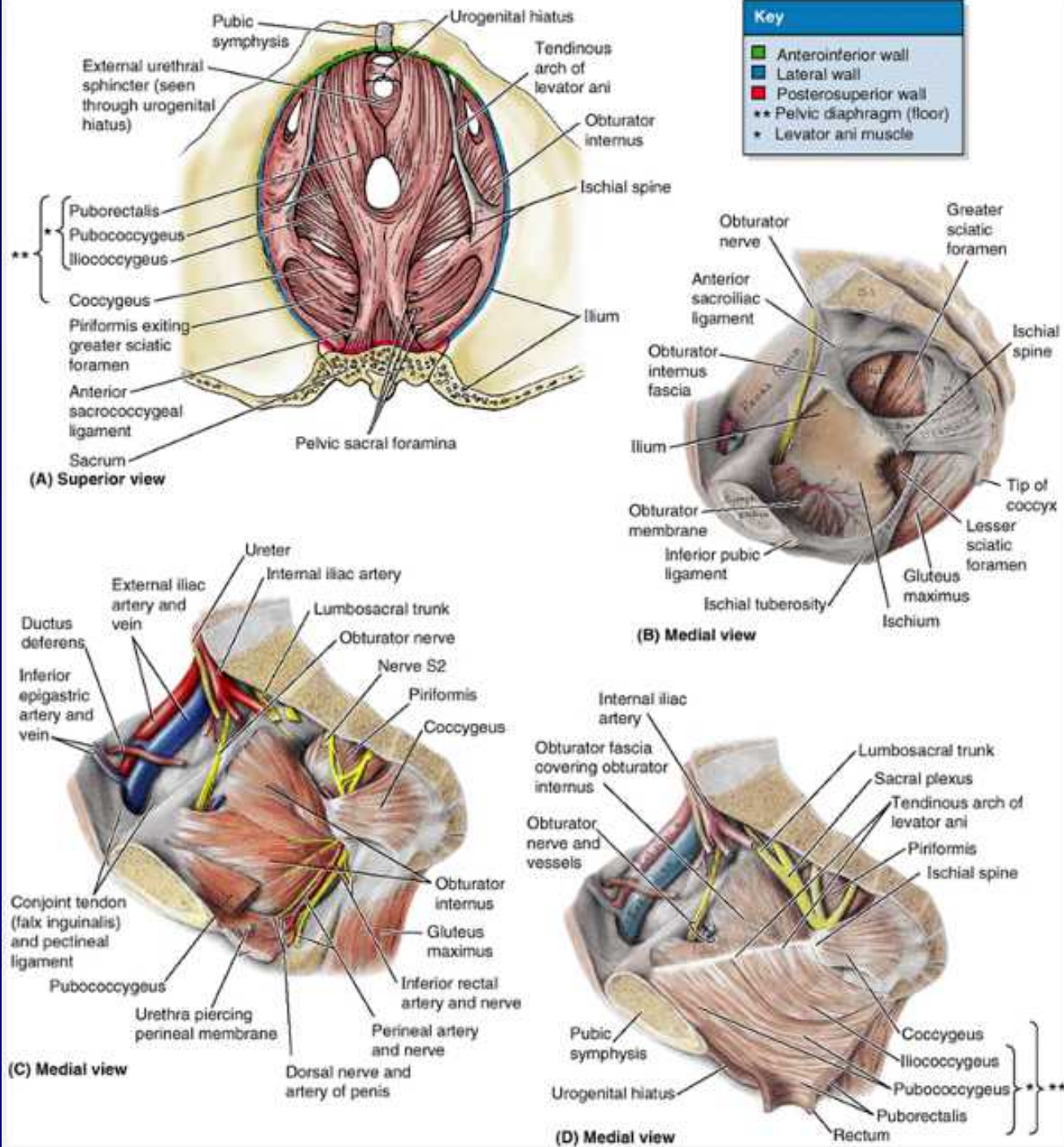
80° anorectal angle
(perineal flexure) at
anorectal junction

Puborectalis

Wall of
anal canal

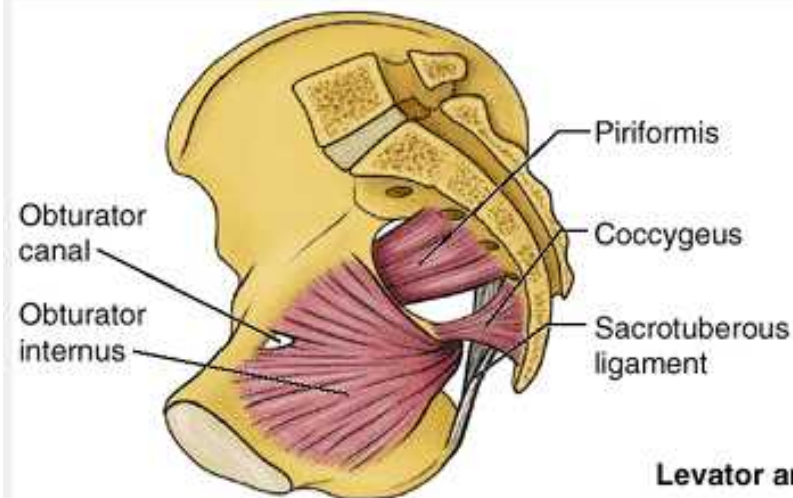
Medial view from left



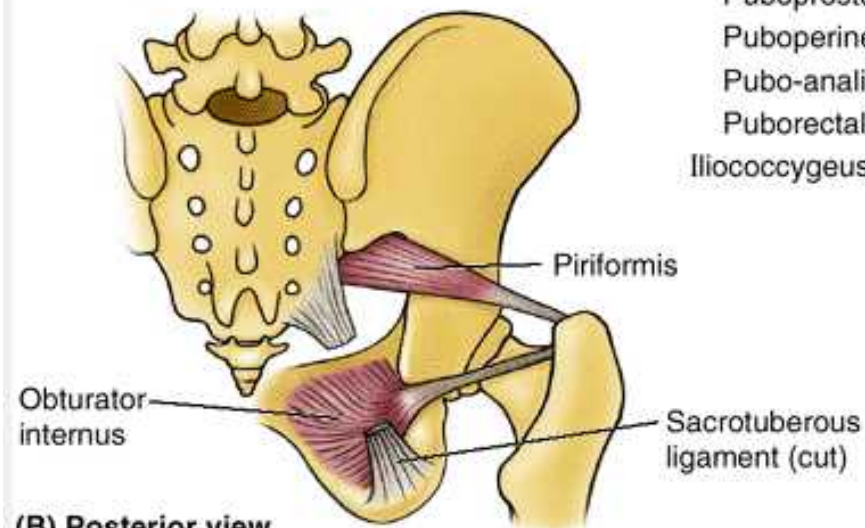


Coccygeus

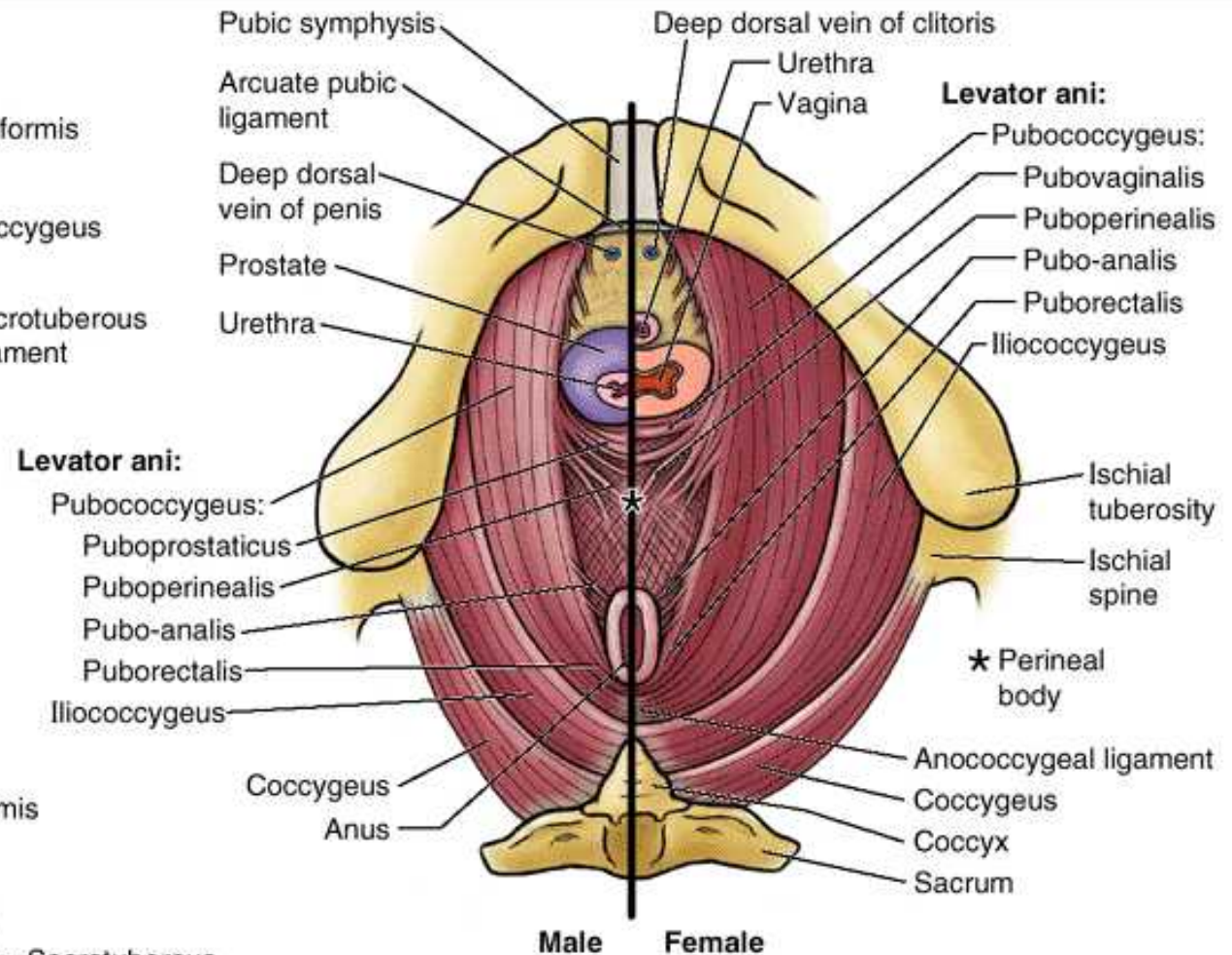
- **Origin:**
The ischial spine.
- **Insertion:**
Lower end of sacrum and coccyx
- **Nerve Supply:**
4th and 5th sacral spinal nerves.
- **Action:**
Supports the pelvic viscera.



(A) Medial view of hemisected pelvis



(B) Posterior view



(C) Inferior view of structures lying superior to the perineal membrane in the male (left) and female (right)