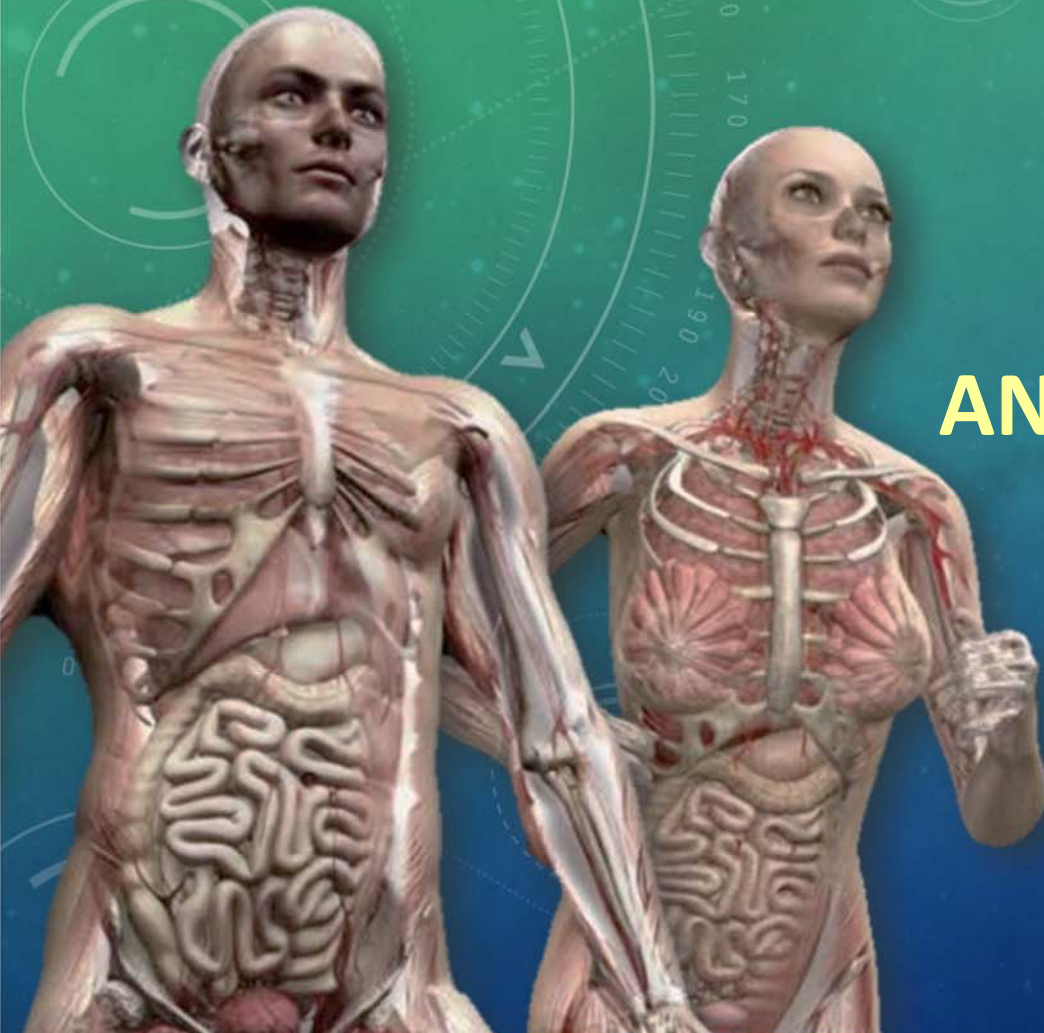


大體老師 無語良師



大體解剖學實驗

HUMAN DISSECTION

ANTERIOR ABDOMINAL WALL & INGUINAL REGION

盧家鋒 助理教授

臺北醫學大學醫學系 解剖學暨細胞生物學科

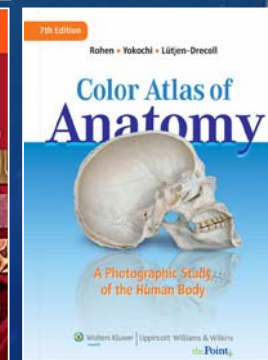
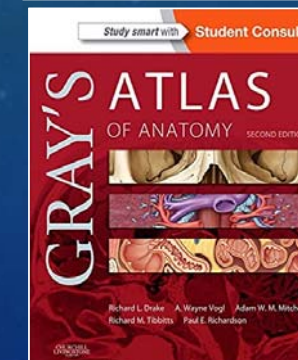
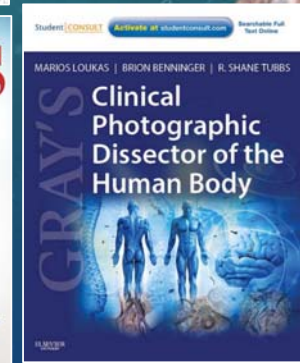
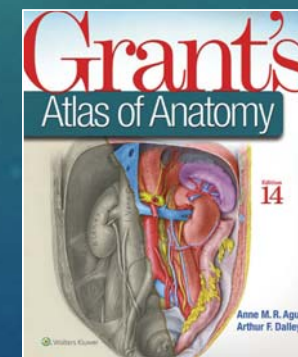
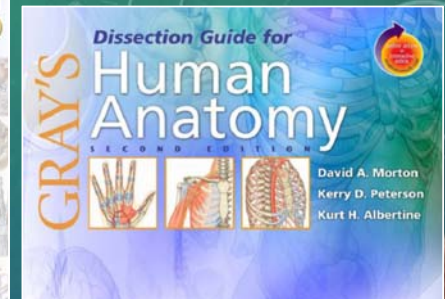
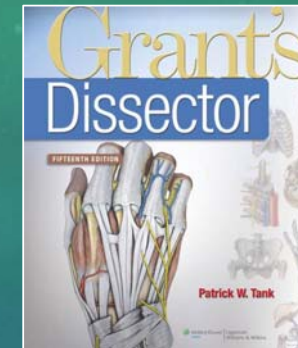
臺北醫學大學醫學院 轉譯影像研究中心

<http://www.ym.edu.tw/~cflu>

REFERENCES

- **Dissector's guide**
 - [1] Dissection Guide for Gray's Human Anatomy, 2ed, 2006
 - **[2] Grant's Dissector, 15ed, 2012**
- **Photographic Dissector**
 - [3] Gray's Clinical Photographic Dissector of the Human Body, 2013
- **Human Atlas**
 - [4] Gray's Atlas of Anatomy, 2ed, 2014
 - **[5] Grant's Atlas of Anatomy 13ed, 2012**
 - [6] Color Atlas of Anatomy: A Photographic Study of the Human Body, 7ed, 2011
 - [7] Atlas of Human Anatomy, 6ed, 2014

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ABDOMEN (1/3)

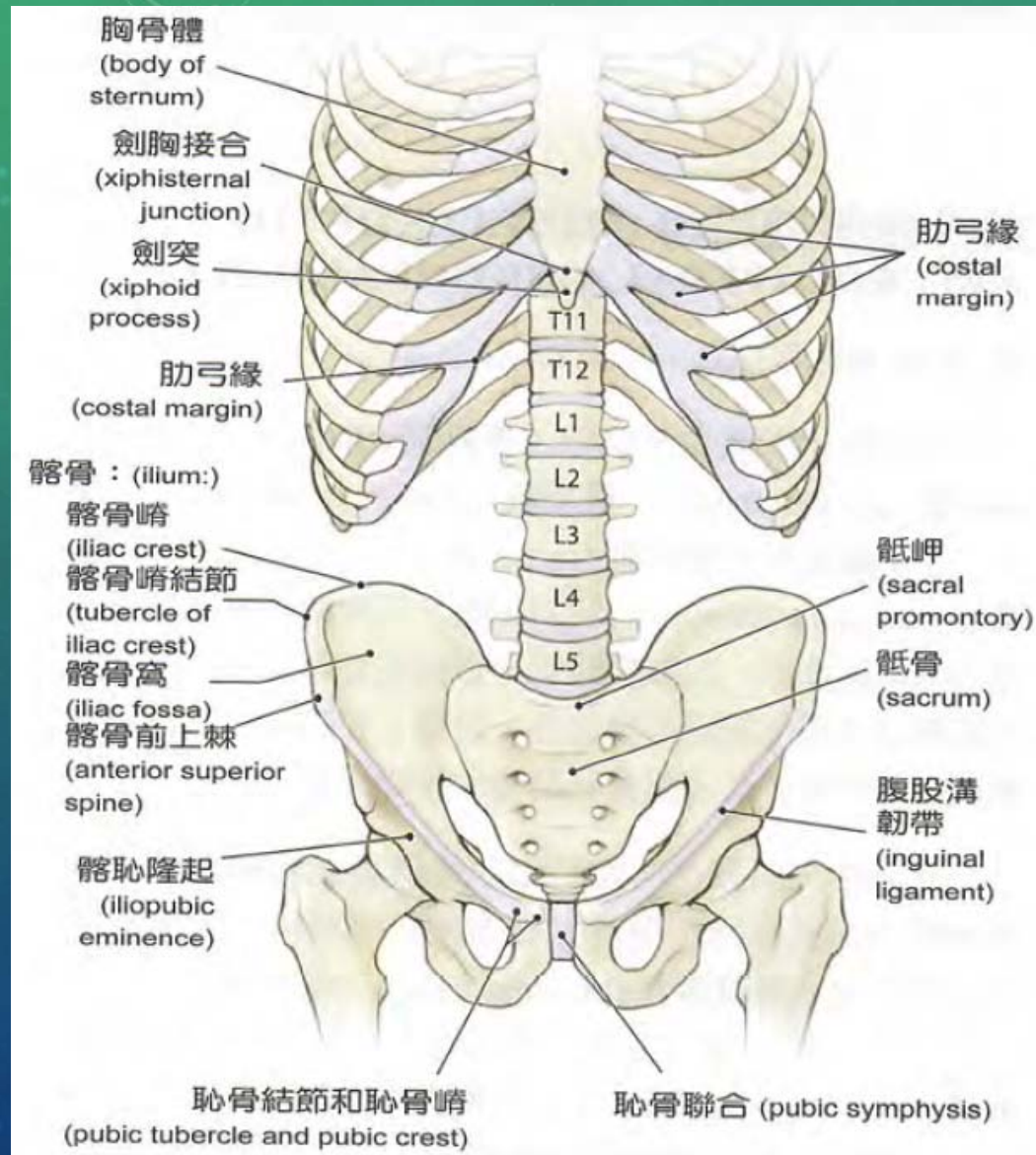
- Anterior Abdominal Wall
- Inguinal Canal
- Reflection of the Abdominal Wall



ANTERIOR ABDOMINAL WALL 前腹壁

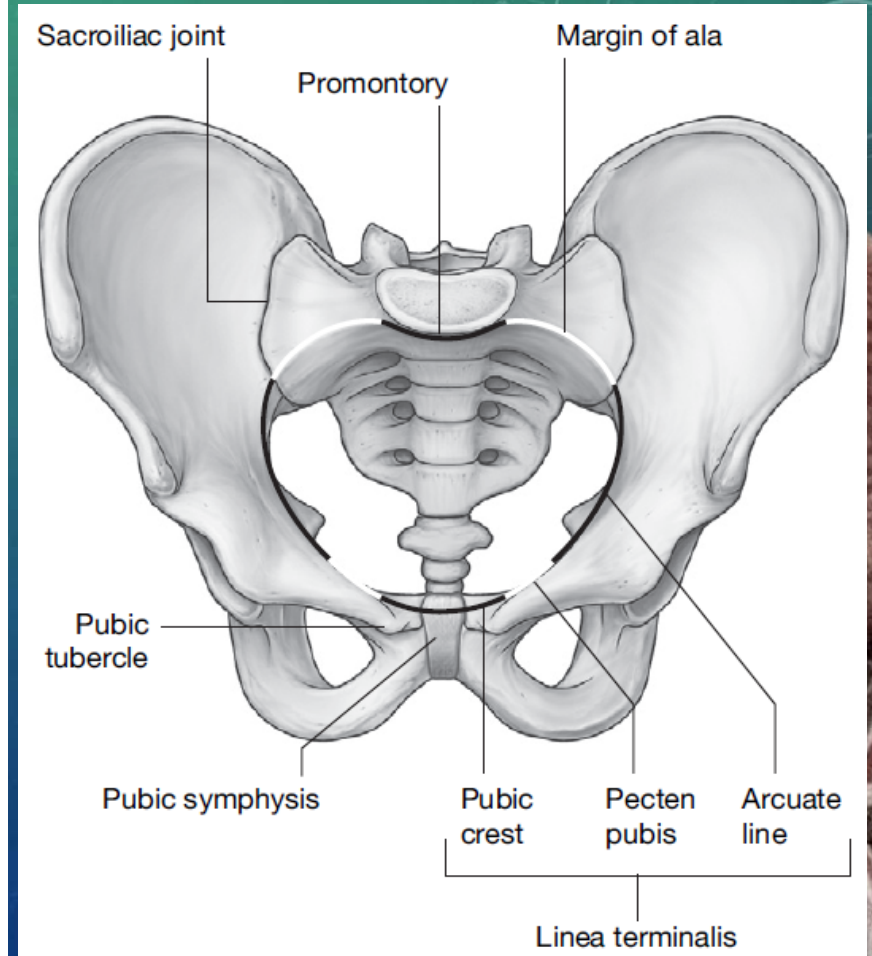
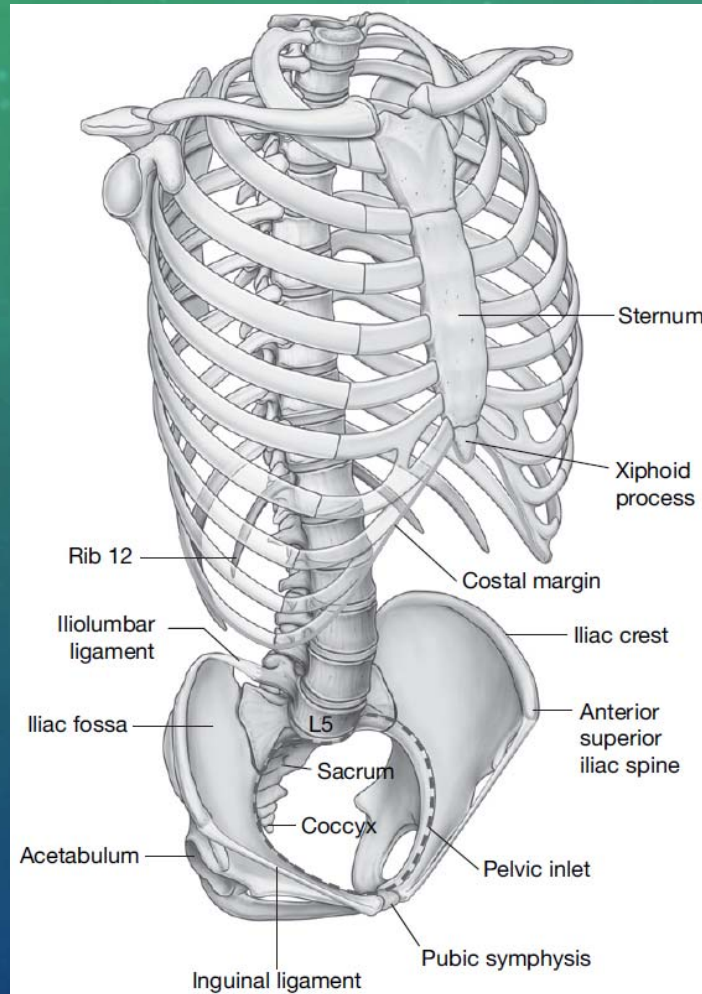
<http://www.ym.edu.tw/~cflu>

OSTEOLOGY



<http://www.ym.edu.tw/~cflu>

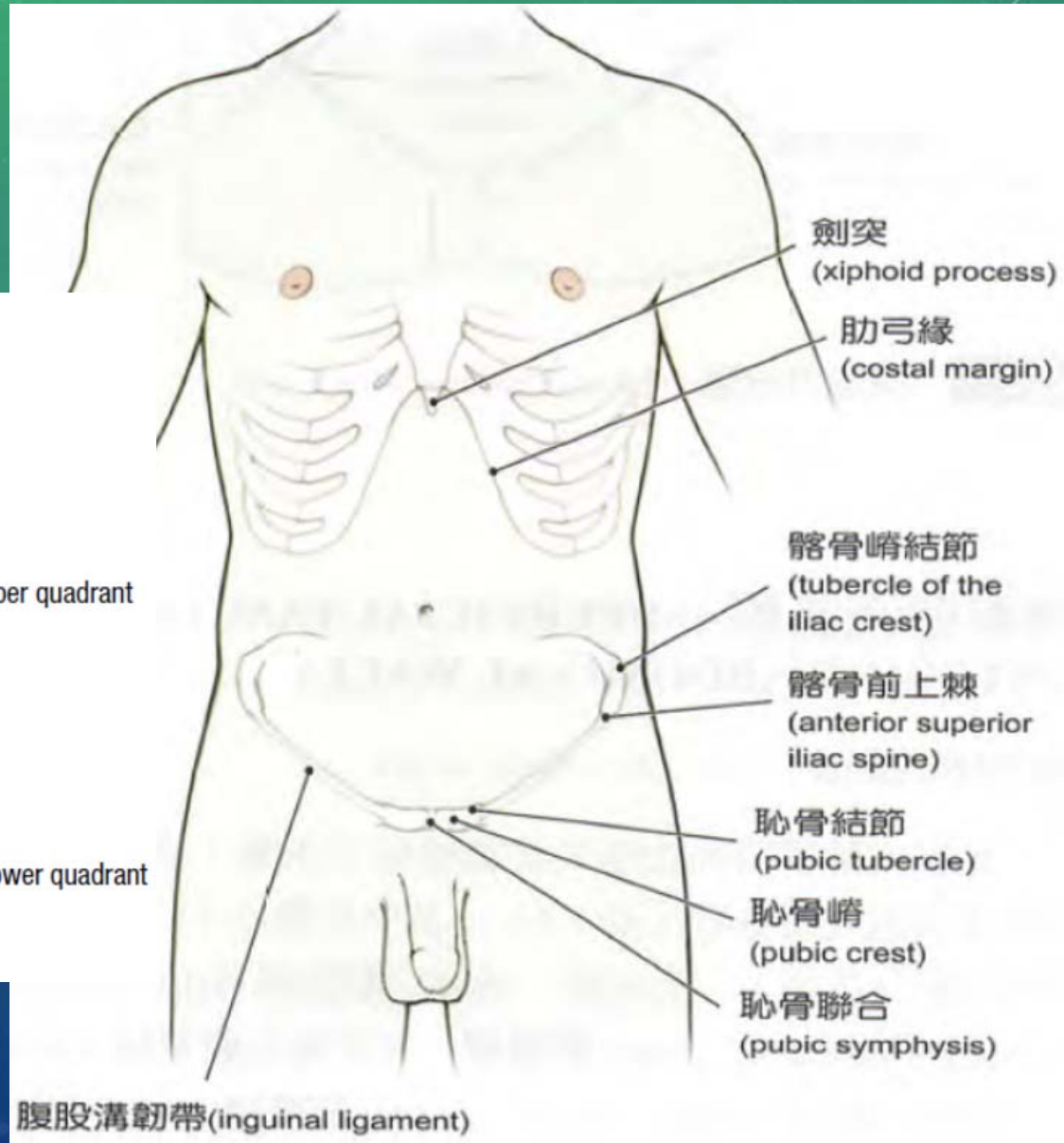
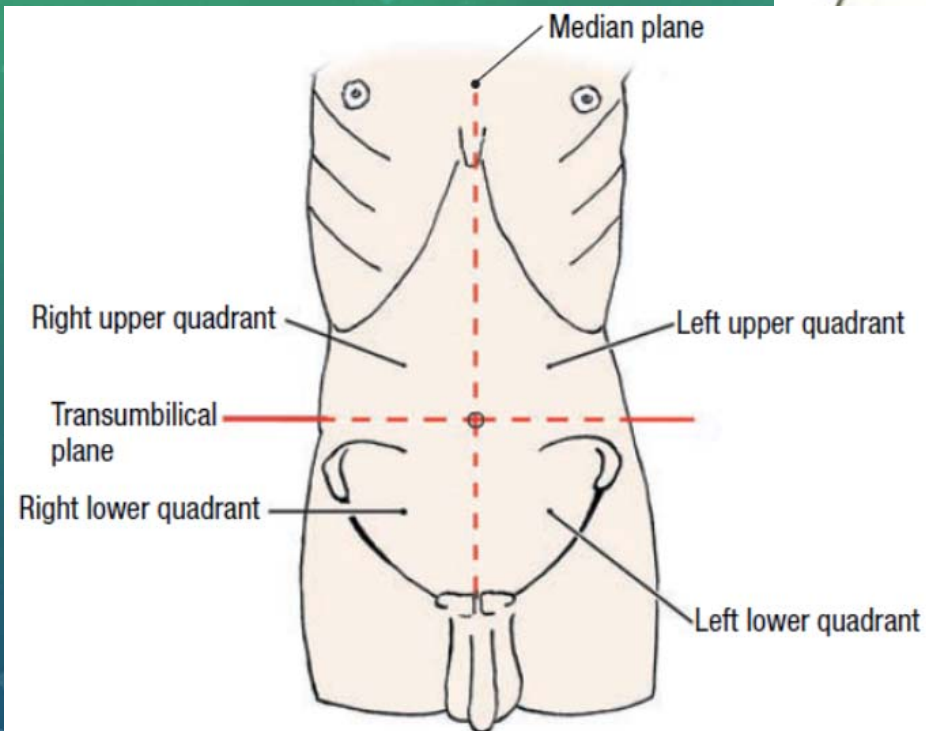
OSTEOLOGY



Ref. [1], p. 119-120

<http://www.ym.edu.tw/~cflu>

SURFACE ANATOMY



<http://www.ym.edu.tw/~cflu>



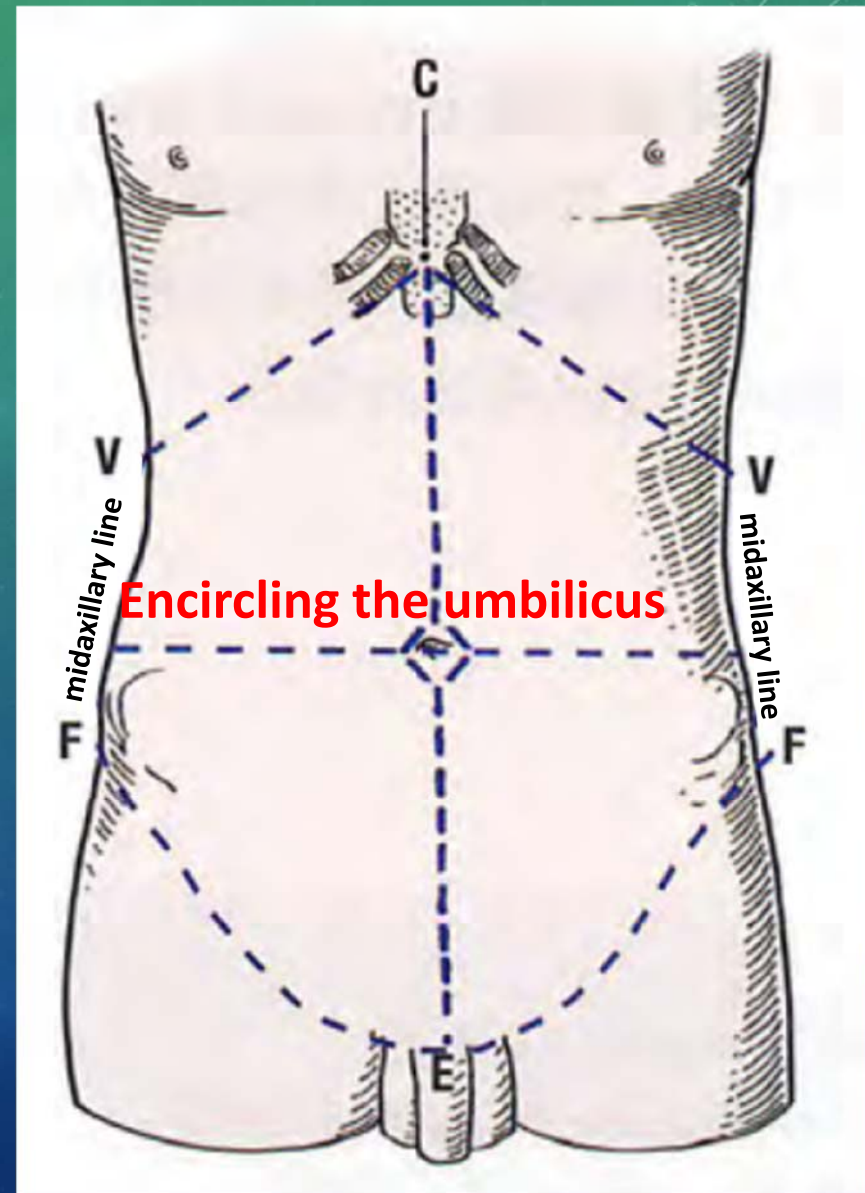
SKIN INCISIONS 翻皮

- C: xiphisternal junction
- E: 3 cm below the pubic crest
- E→F: 3 cm below the iliac crest & anterior superior iliac crest

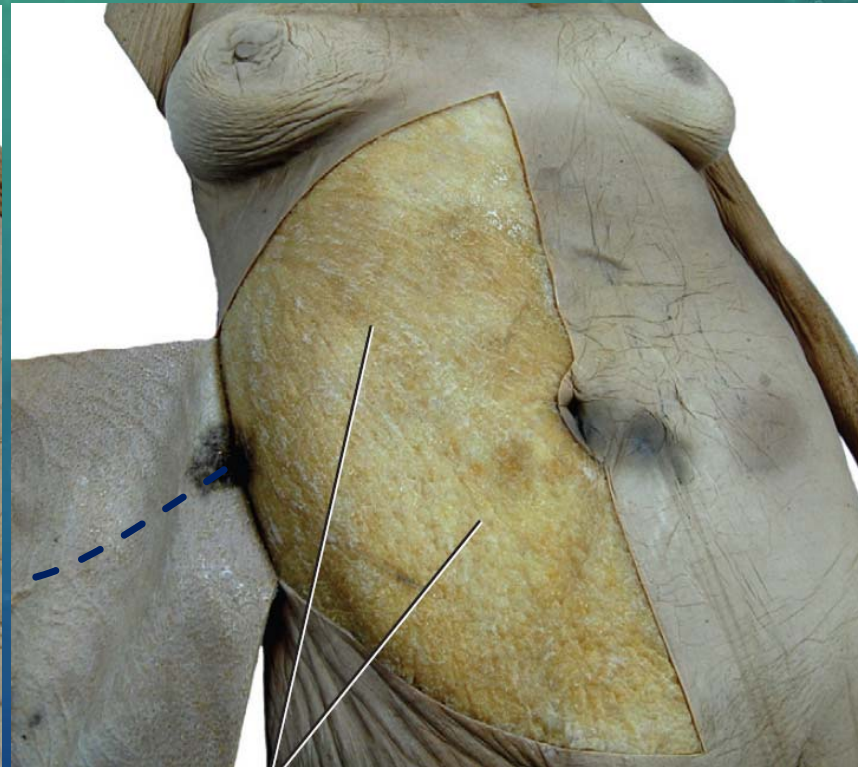
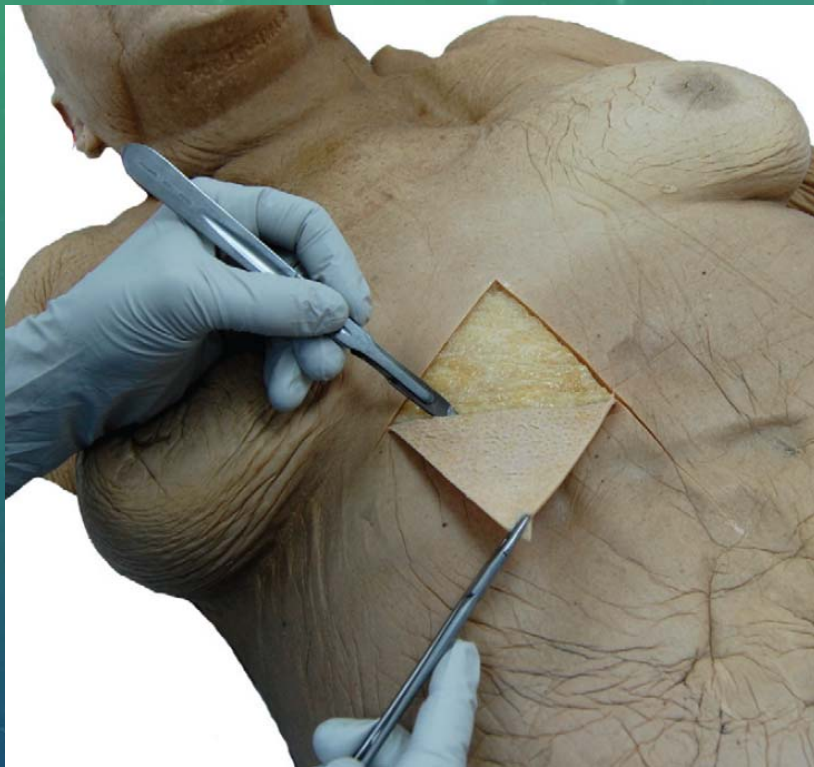
Reflect the skin flaps laterally to expose the superficial fascia.

<http://www.ym.edu.tw/~cflu>

Ref. [2], p. 90



SKIN REFLECTION

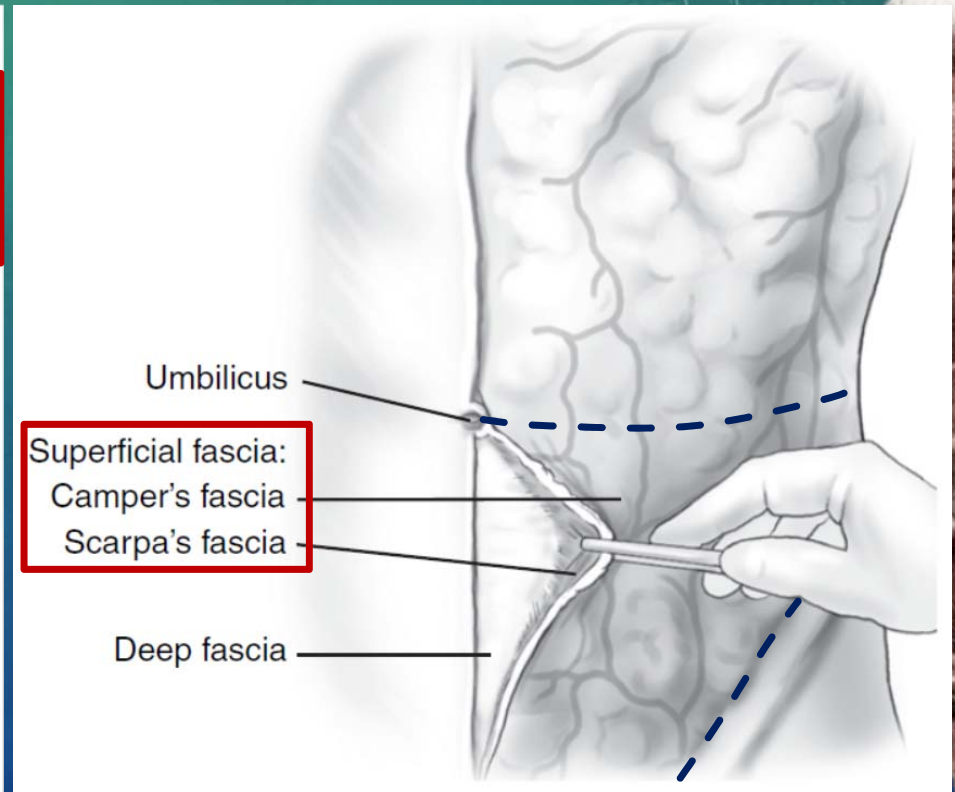
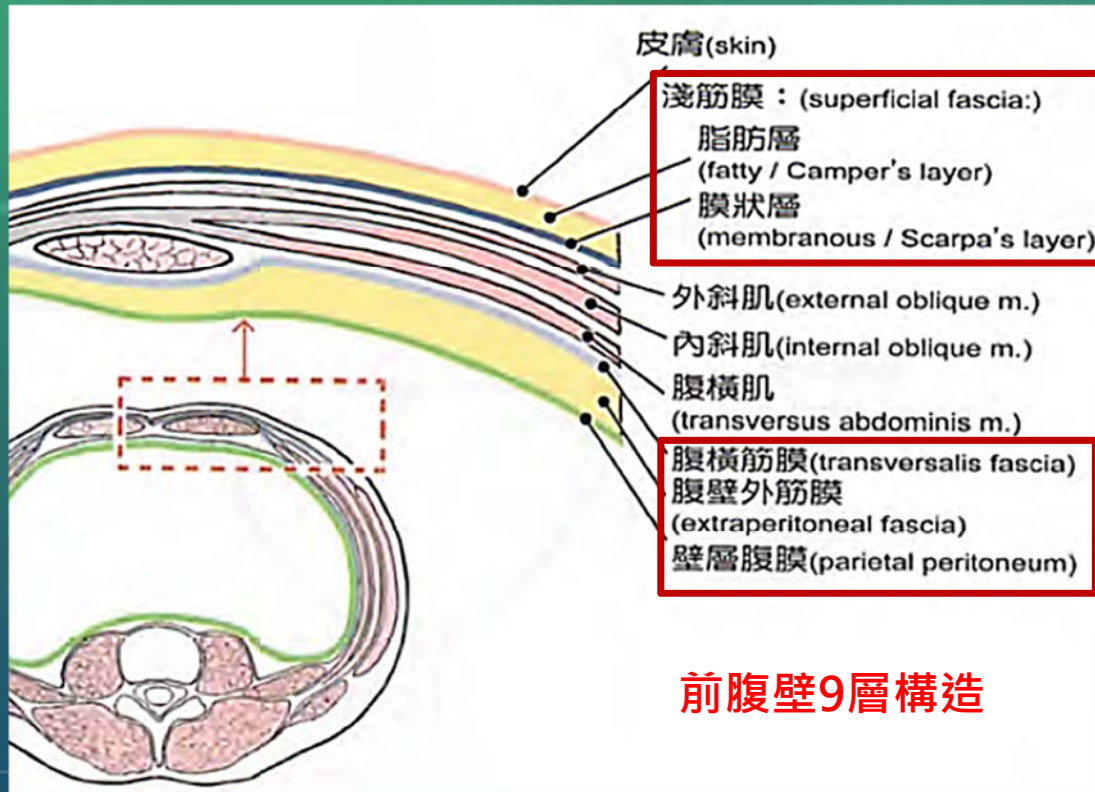


<http://www.ym.edu.tw/~cflu>

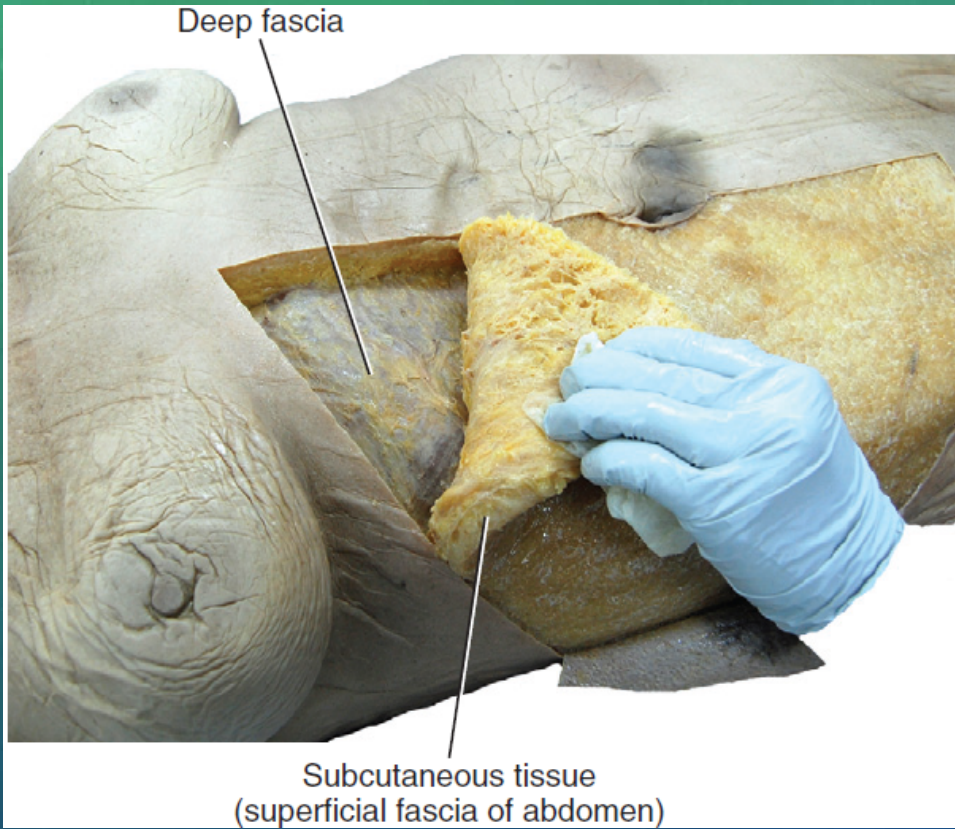
Superficial fascia

Ref. [3], p. 157

SUPERFICIAL FASCIA



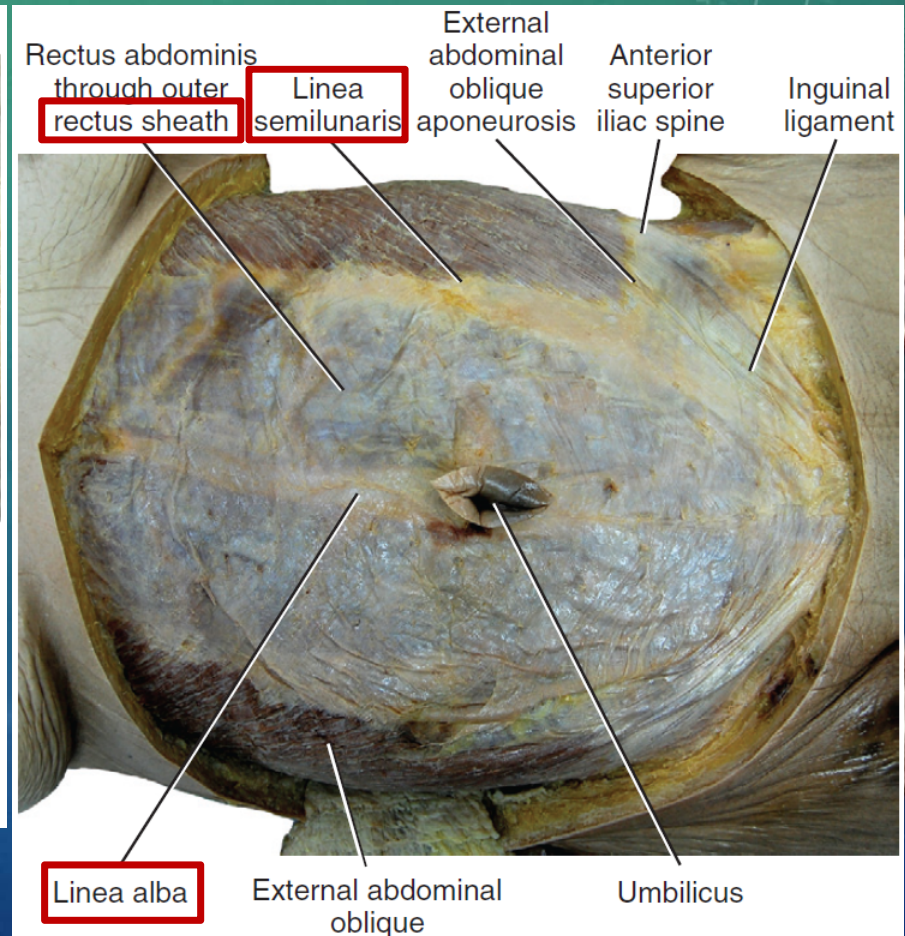
REFLECTION OF SUPERFICIAL FASCIA



Ref. [3], p. 157

<http://www.ym.edu.tw/~cflu>

Ref. [3], p. 158

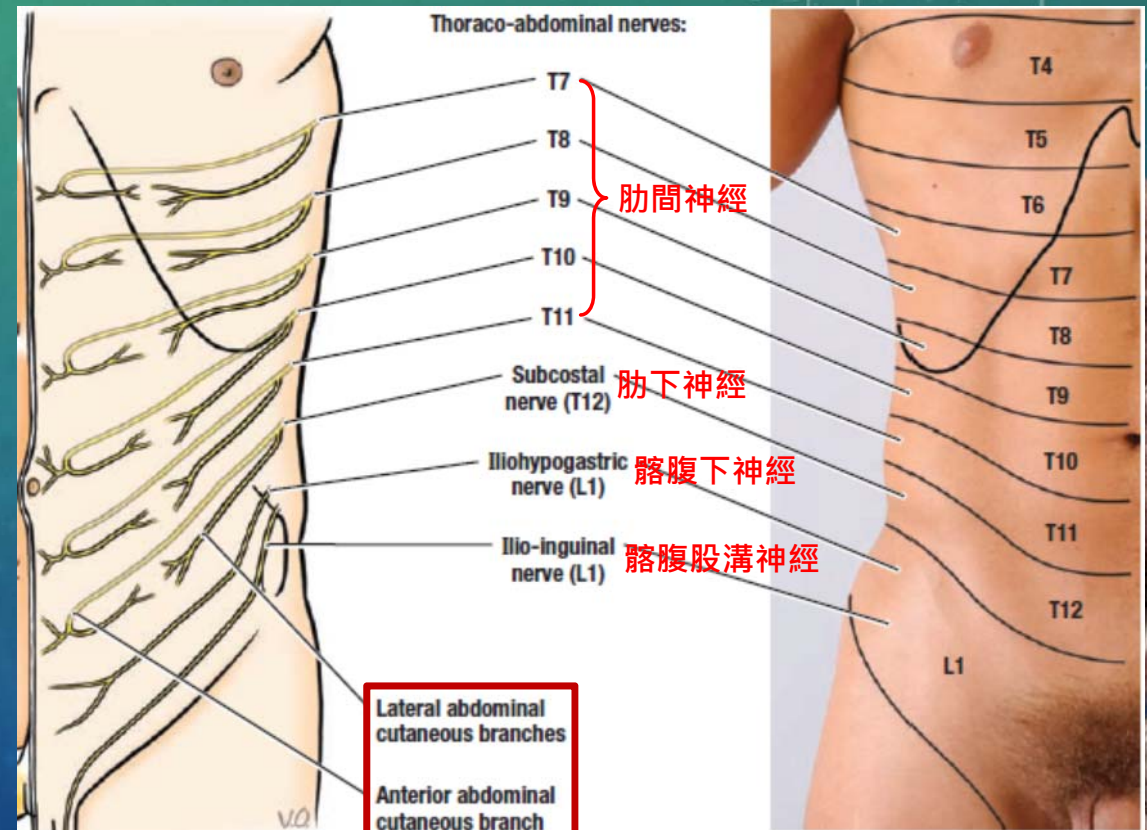


WHEN REFLECTING SUPERFICIAL FASCIA

→ IDENTIFY CUTANEOUS NERVE

試著辨識...

- **T6**: the skin superficial to the xiphoid process.
- **T10**: the skin of the umbilicus.
- **T12**: the skin superior to the pubic symphysis.
- **L1**: the skin overlying the pubic symphysis.



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Ref. [5], p. 103 12

WHEN REFLECTING SUPERFICIAL FASCIA

→ IDENTIFY CUTANEOUS NERVE

anterior cutaneous nerves



lateral cutaneous nerves



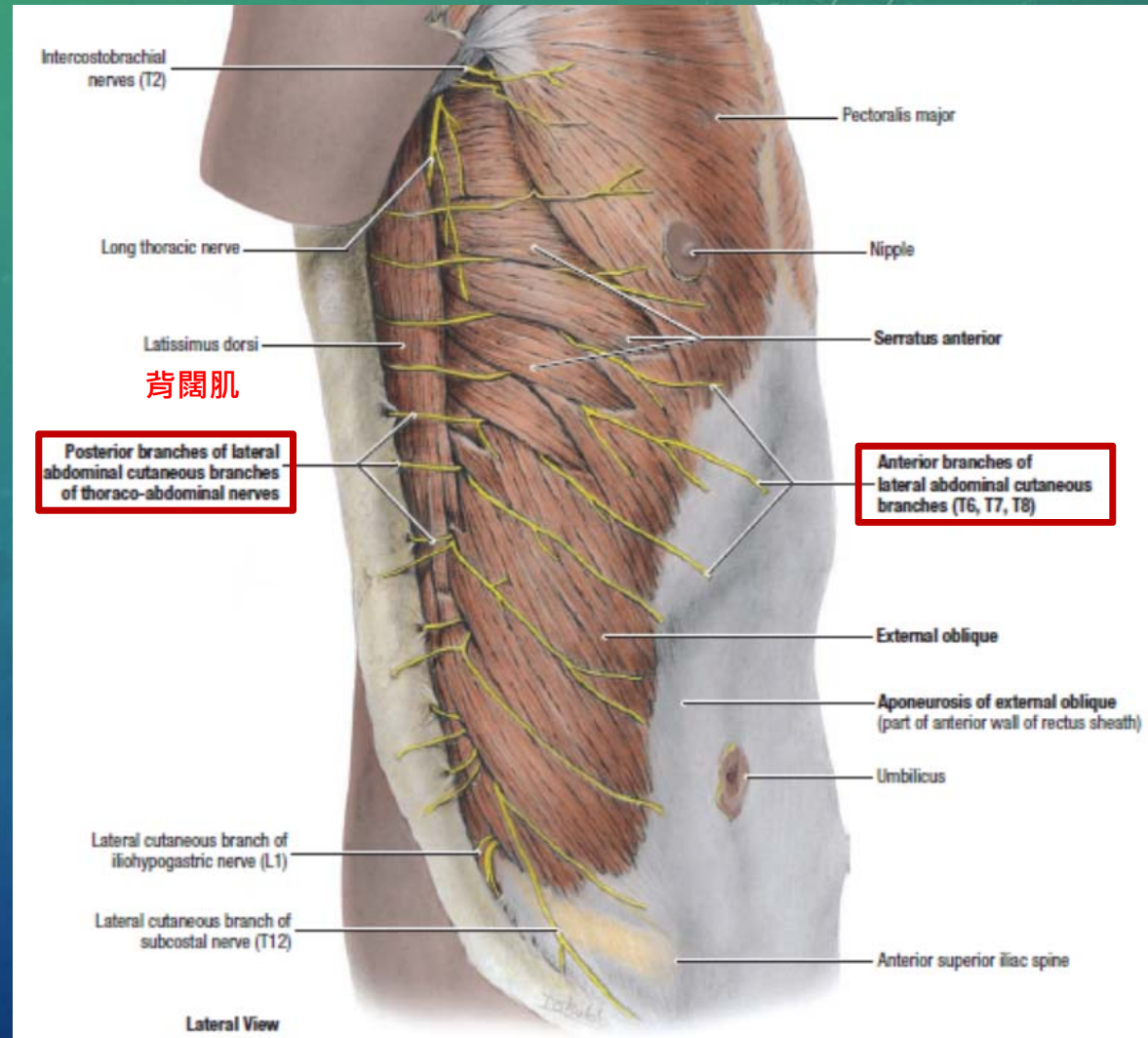
<http://www.ym.edu.tw/~cflu>

<https://youtu.be/SciJSfQ254w>

SUPERFICIAL FASCIA

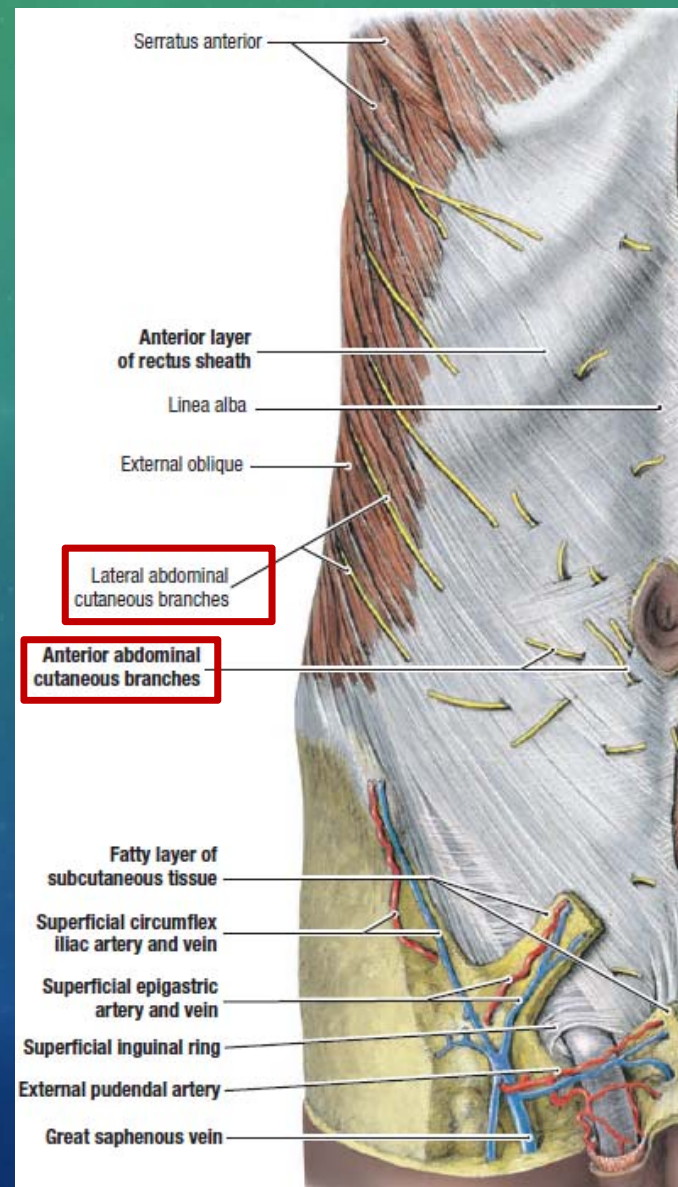
→ IDENTIFY CUTANEOUS NERVE

- 至少清出一條lateral cutaneous nerves作為代表
- 移除superficial fascia露出前外側 (anterolateral)腹壁肌肉



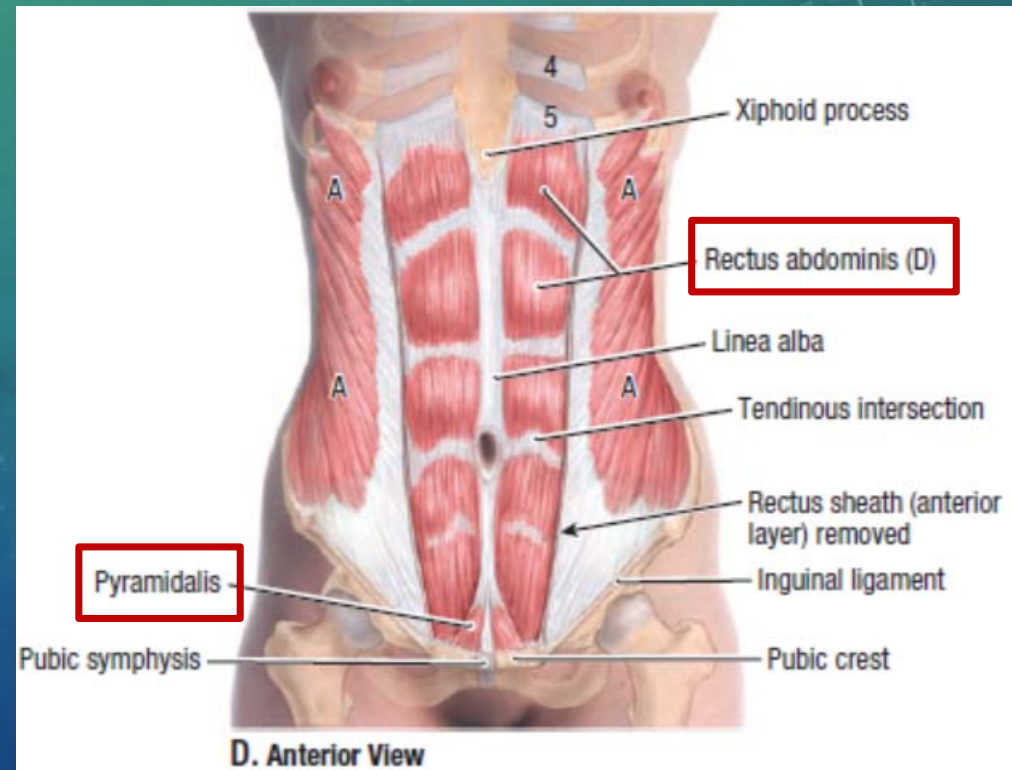
SUPERFICIAL FASCIA

→ IDENTIFY CUTANEOUS N.

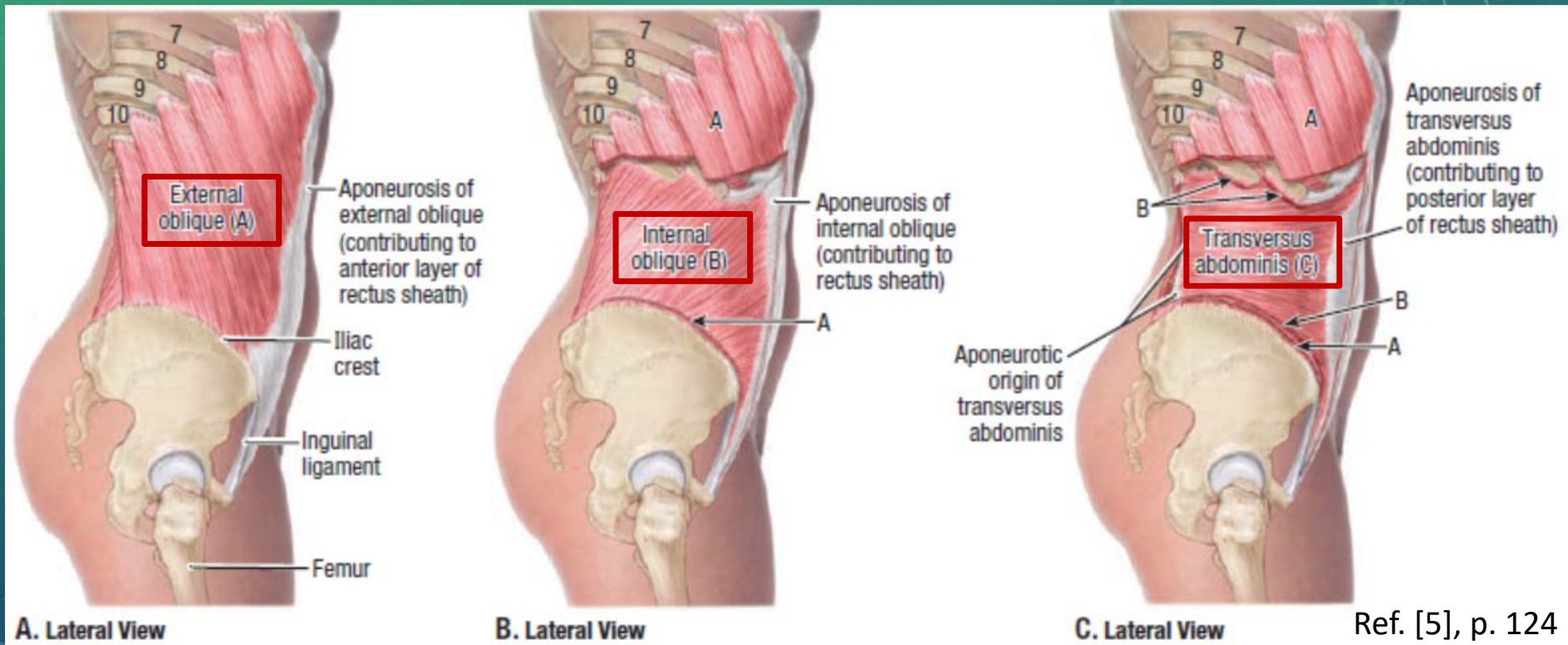


MUSCLES OF ANTEROLATERAL ABDOMINAL WALL

- Rectus abdominis muscle 腹直肌
- External oblique 外斜肌
- Internal oblique 內斜肌
- Transversus abdominis 腹橫肌
- Pyramidalis muscle 稜錐肌



MUSCLES OF ANTEROLATERAL ABDOMINAL WALL



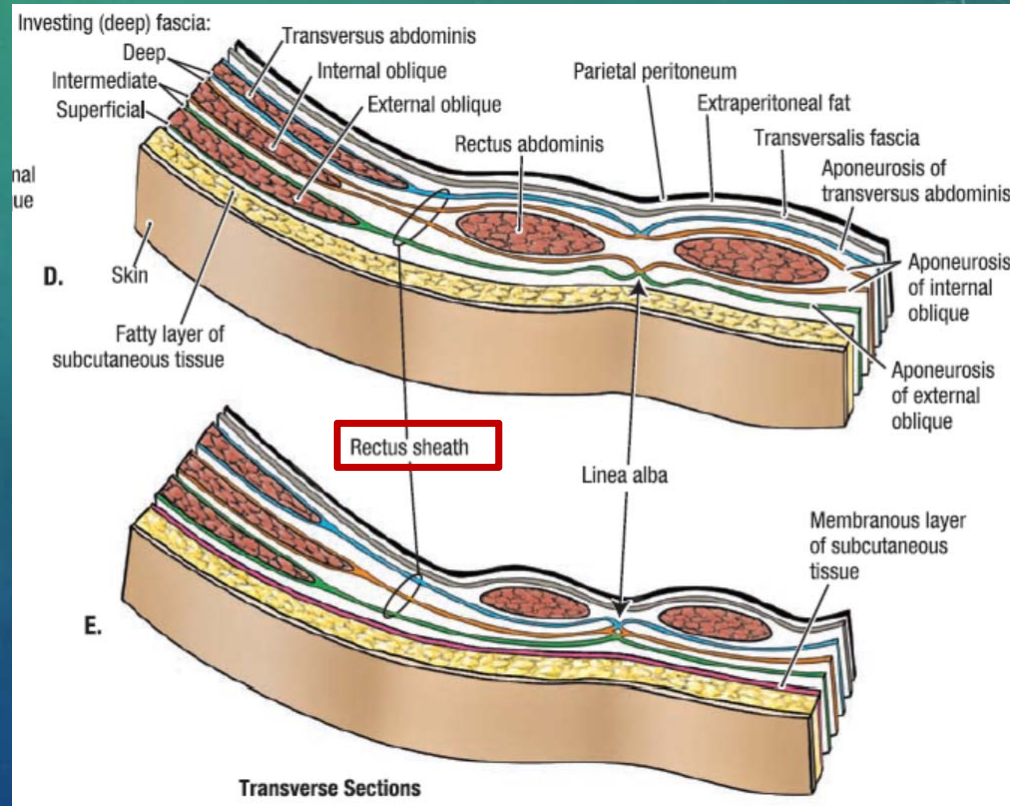
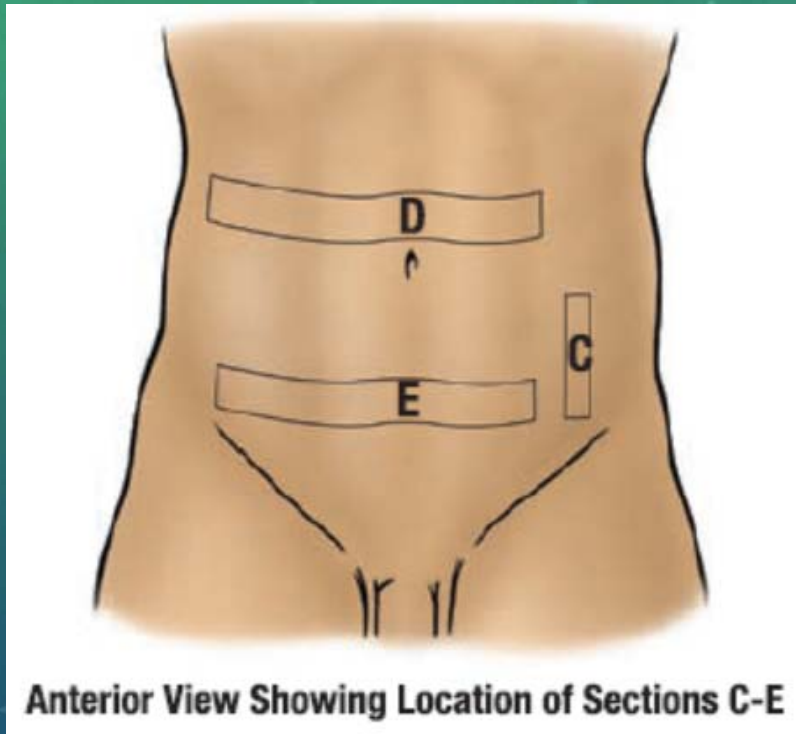
Superficial



Deep



MUSCLES OF ANTEROLATERAL ABDOMINAL WALL



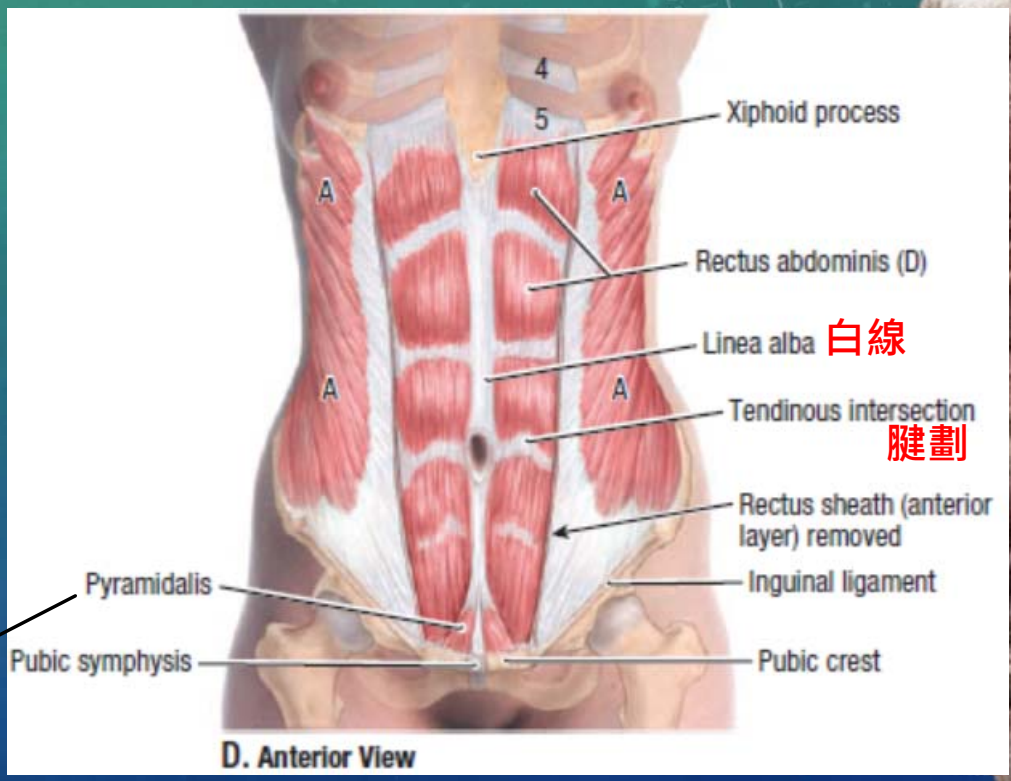
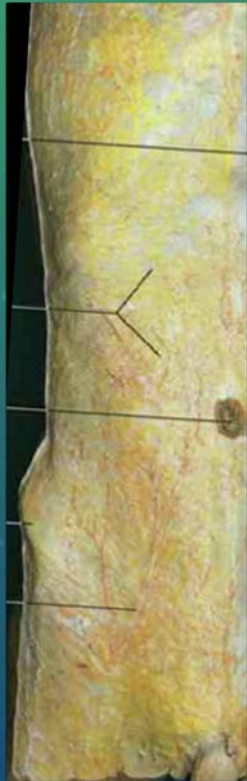
MUSCLES OF ANTEROLATERAL ABDOMINAL WALL

Skin

Subcutaneous
fatty tissue
(Camper's layer)

Anterior layer of
rectus sheath

Rectus
abdominis



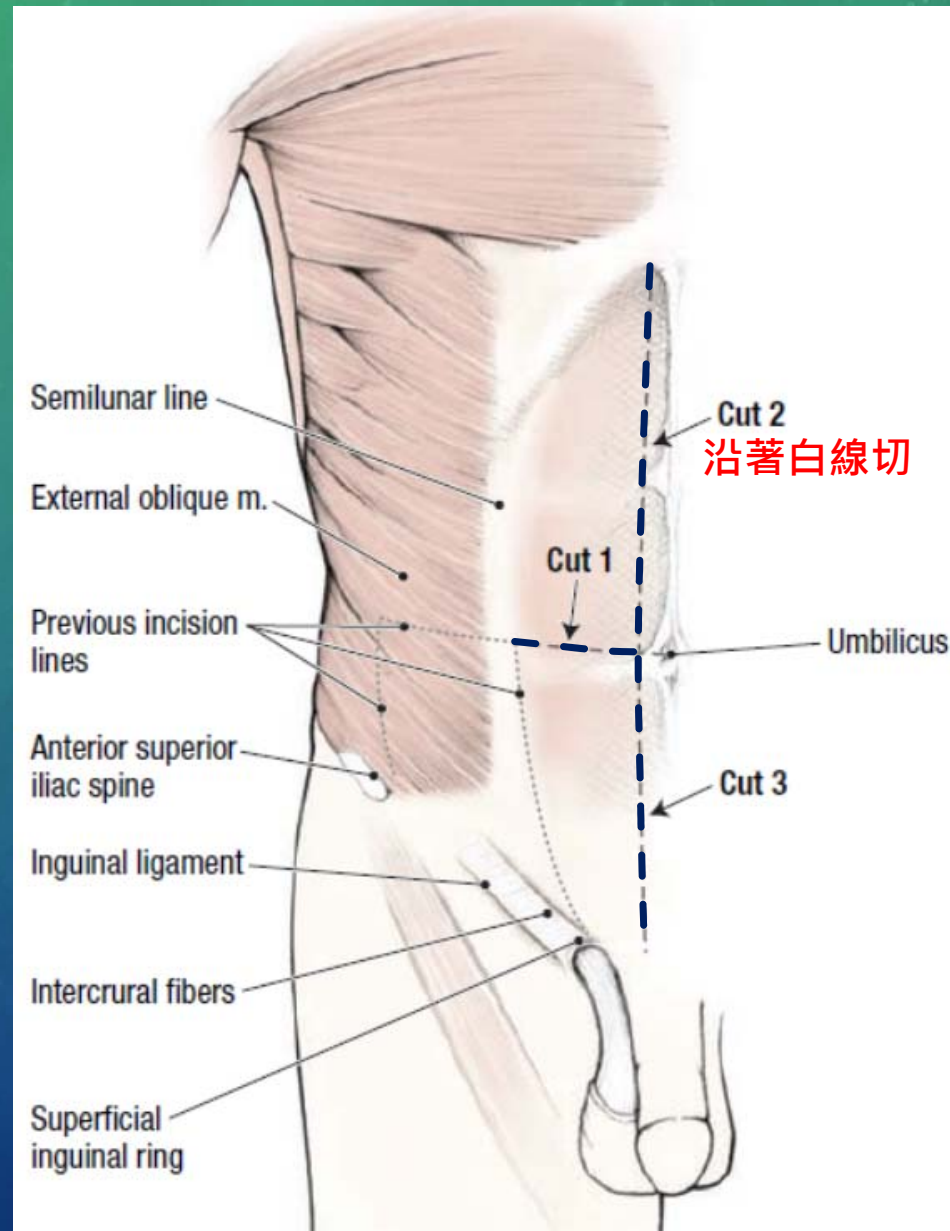
Superficial



Deep

Ref. [6], p. 210-211

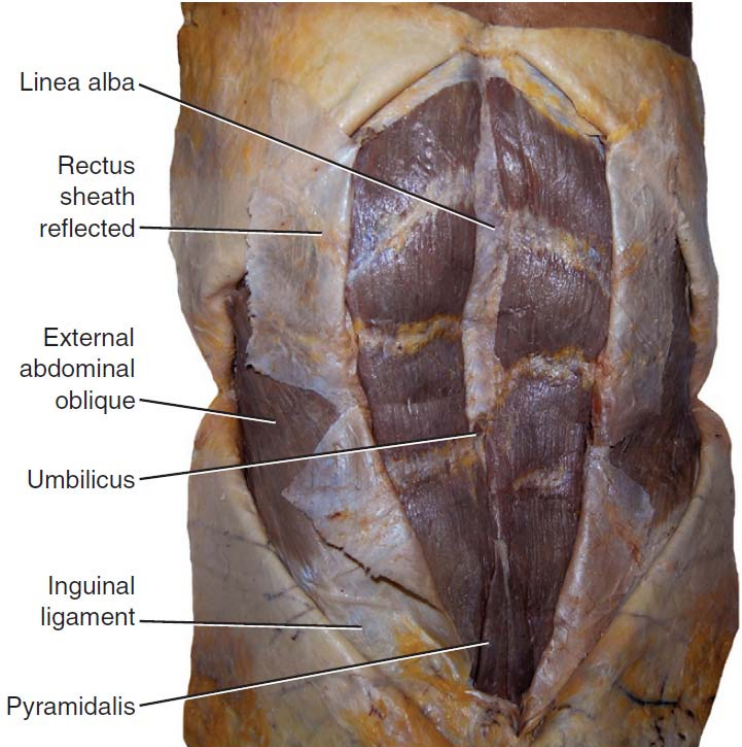
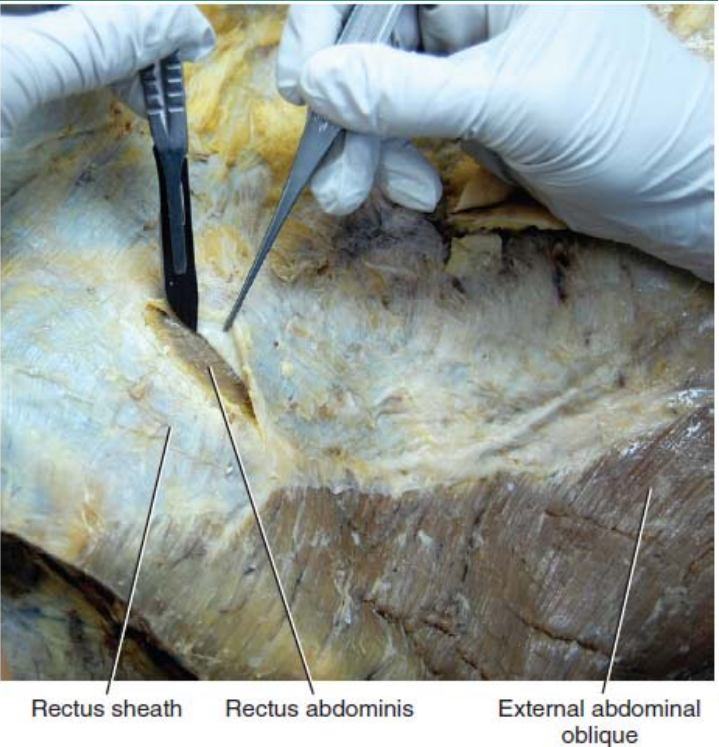
OPEN RECTUS SHEATH



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OPEN RECTUS SHEATH



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Ref. [3], p. 159-161

Table 11-1 Muscles of the Anterior Abdominal Wall

Muscle	Proximal Attachment	Distal Attachment	Action	Innervation
External oblique m.	Outer surfaces of ribs 5–12	Iliac crest; aponeurosis ending in the midline raphe (linea alba)	Compresses the abdominal contents; both muscles flex the trunk; each muscle bends the trunk to the same side, turning the anterior part of the abdomen to the opposite side	Anterior rami of spinal nerves T7–T12
Internal oblique m.	Thoracolumbar fascia; iliac crest and lateral two thirds of the inguinal ligament	Inferior border of ribs 9–12; aponeurosis ending in the linea alba; pubic crest and pectineal line	Compresses the abdominal contents; both muscles flex the trunk; each muscle bends the trunk and turns the anterior part of the abdomen to the same side	Anterior rami of spinal nerves T7–T12 and L1
Transversus abdominis m.	Thoracolumbar fascia; iliac crest; lateral one third of the inguinal ligament; costal cartilages of ribs 7–12	Aponeurosis ending in the linea alba; pubic crest and pectineal line	Compresses the abdominal contents	
Rectus abdominis m.	Pubic crest, pubic tubercle, and pubic symphysis	Costal cartilages of ribs 5–7; xiphoid process	Compresses the abdominal contents; flexes the vertebral column; tenses the abdominal wall	Anterior rami of spinal nerves T7–T12
Pyramidalis m.	Pubis and pubic symphysis	Linea alba	Tenses the linea alba	Anterior ramus of spinal nerve T12

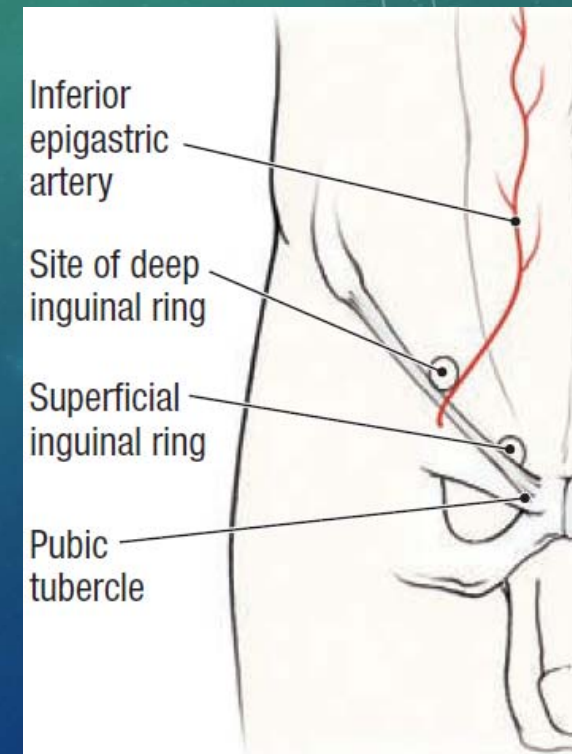
INGUINAL CANAL 腹股溝管

RELATION WITH MUSCLES

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INGUINAL CANAL

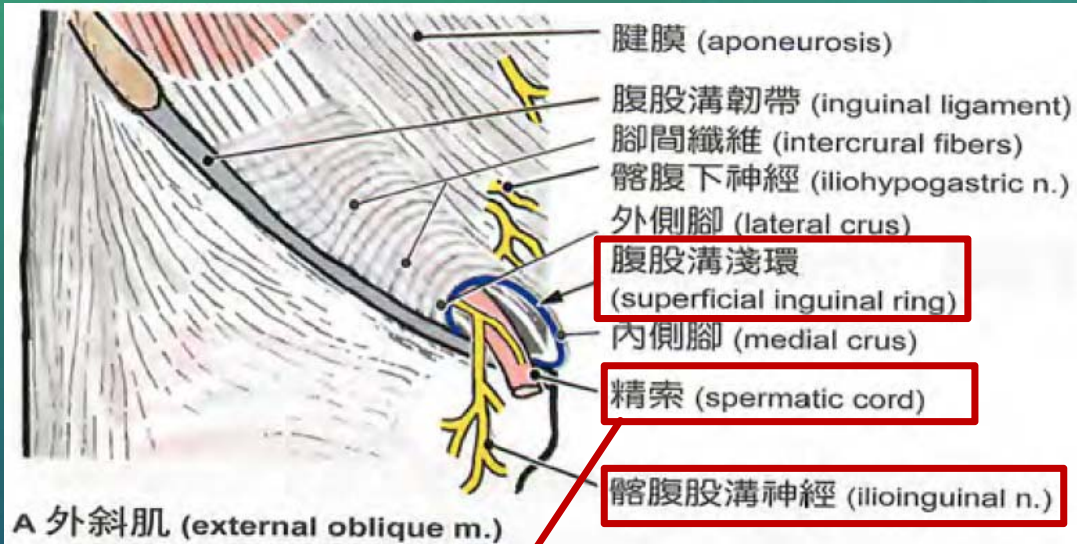
- Boundaries
 - **Deep** – deep inguinal ring
 - **Superficial** – superficial inguinal ring
 - **Anterior** – aponeurosis of the external oblique muscle
 - **Inferior (floor)** – inguinal ligament and lacunar ligament
 - **Superior (roof)** – the arching fibers of the internal oblique and transversus abdominis muscles
 - **Posterior** – transversalis fascia laterally and conjoint tendon medially



INGUINAL CANAL

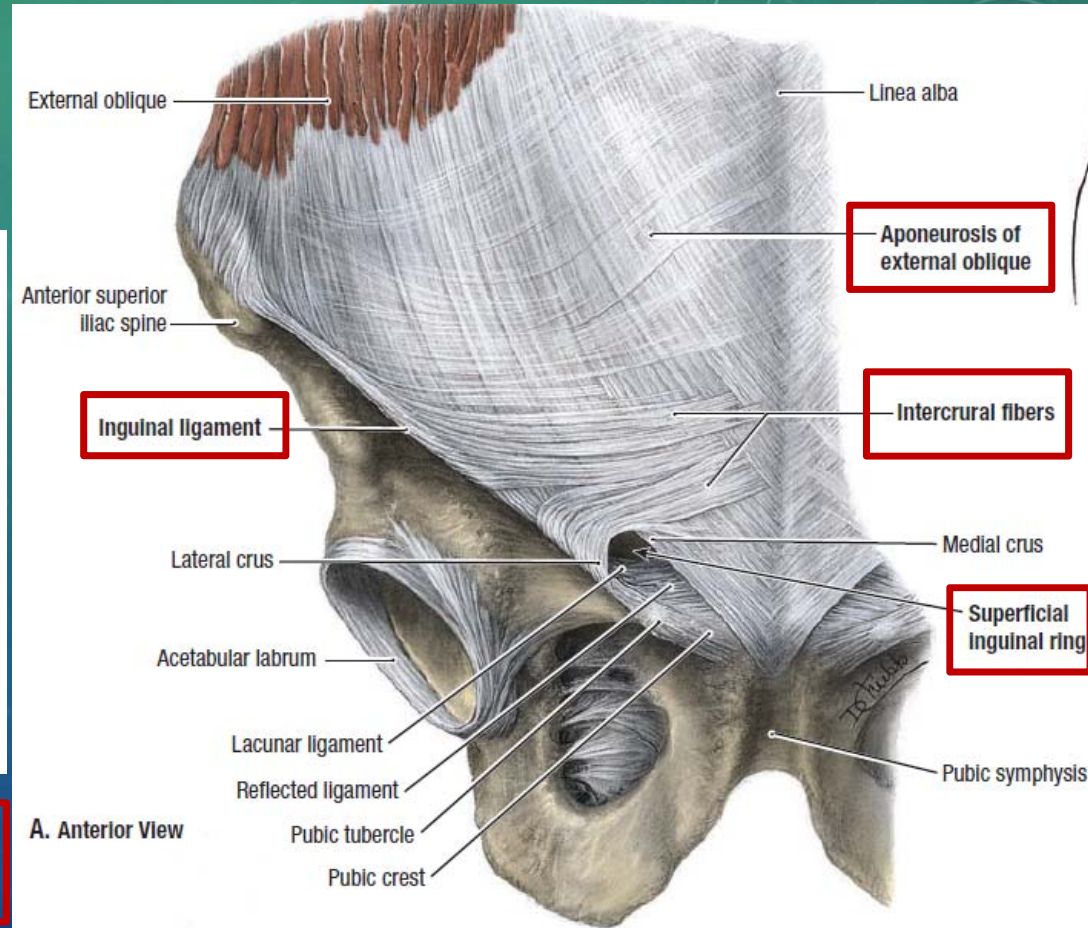
EXTERNAL OBLIQUE M.

superficial layer



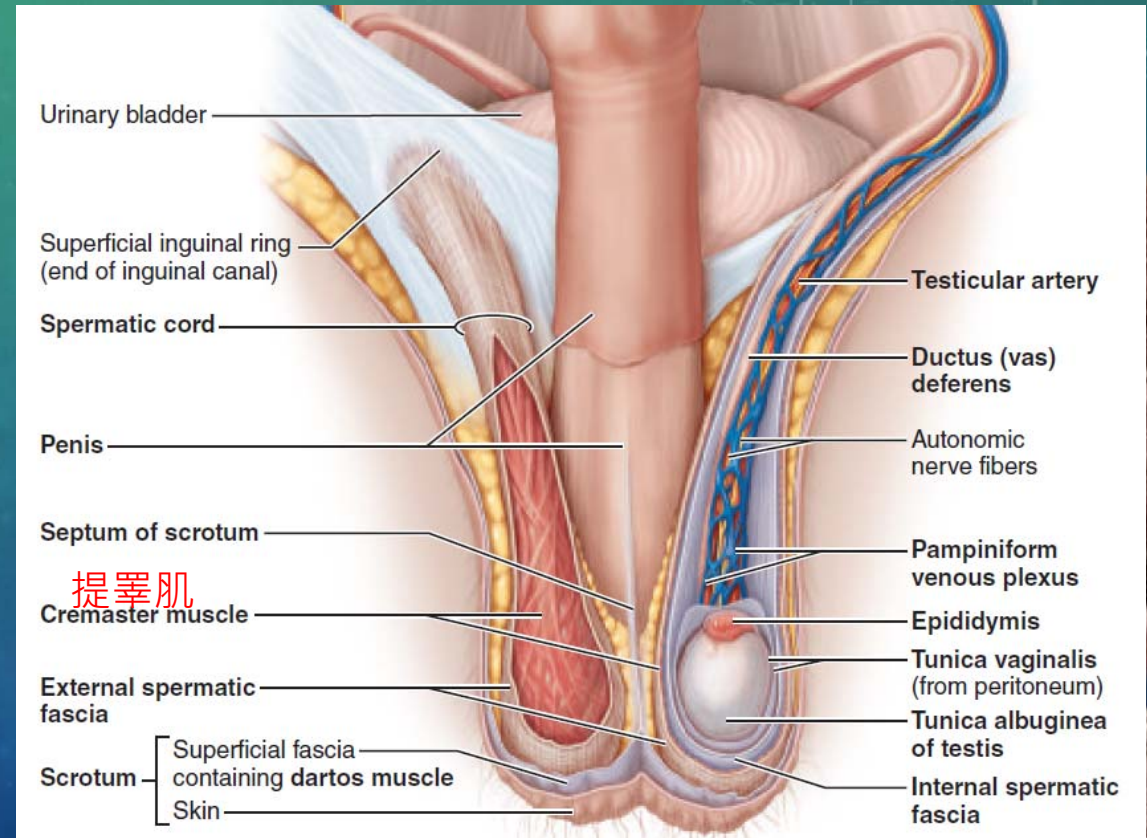
Male: Spermatic cord 精索

Female: round ligament of the uterus 子宮圓韌帶



SPERMATIC CORD 精索

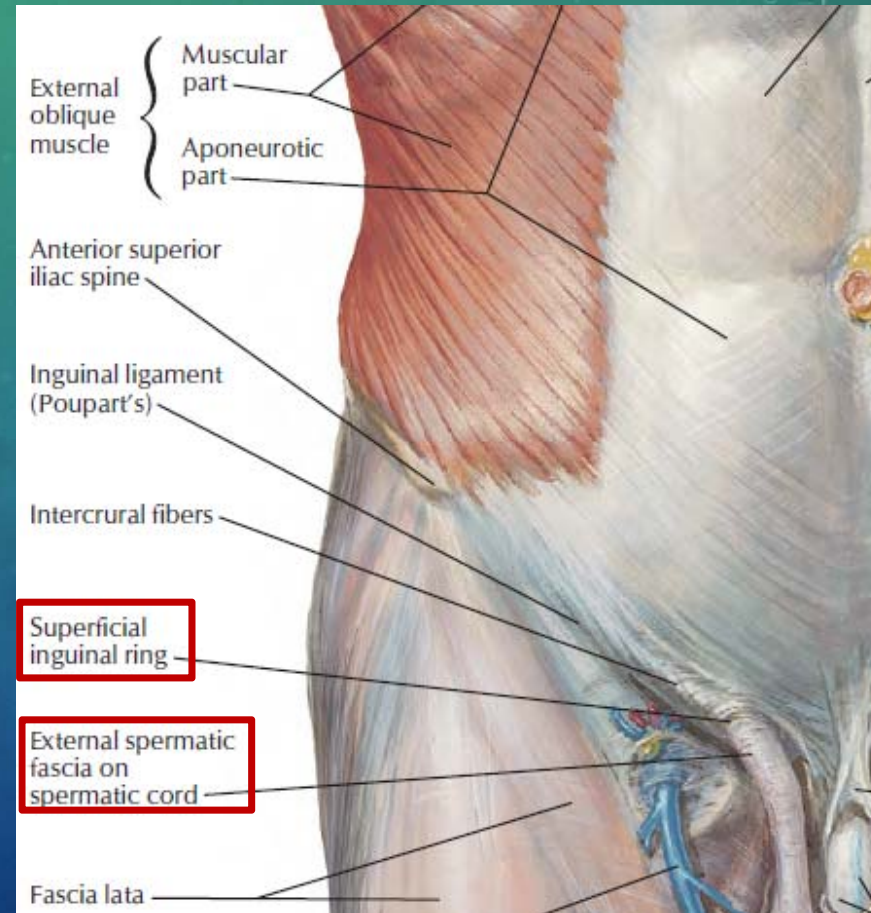
- Is ensheathed in three layers of tissue:
 - External spermatic fascia
 - Cremaster muscle and fascia
 - Internal spermatic fascia



INGUINAL CANAL

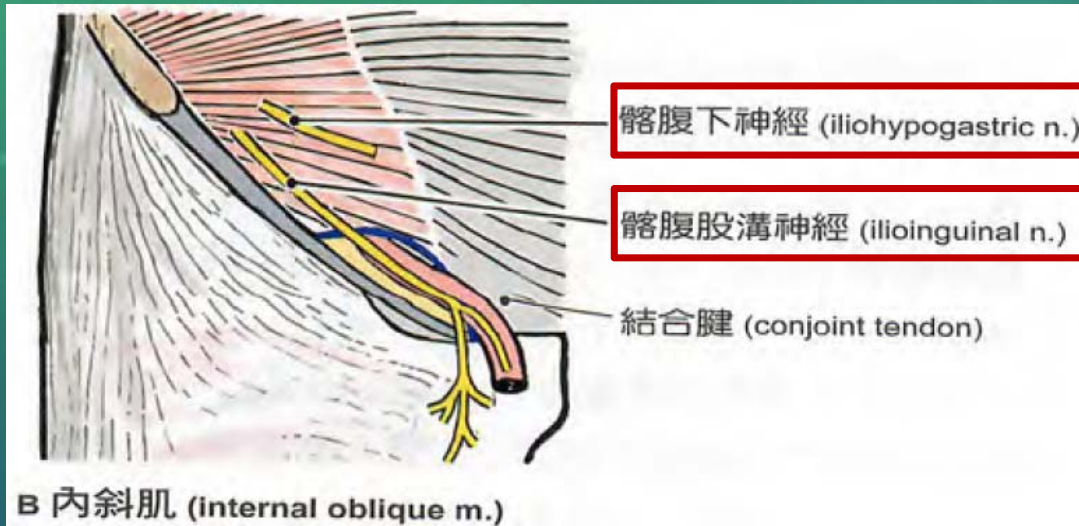
EXTERNAL OBLIQUE M.

- External spermatic fascia
 - extended from the external oblique aponeurosis onto the spermatic cord.
- ilioinguinal nerve 髂腹股溝神經
 - emerges at the superficial inguinal ring, anterior to the spermatic cord (round ligament of the uterus).

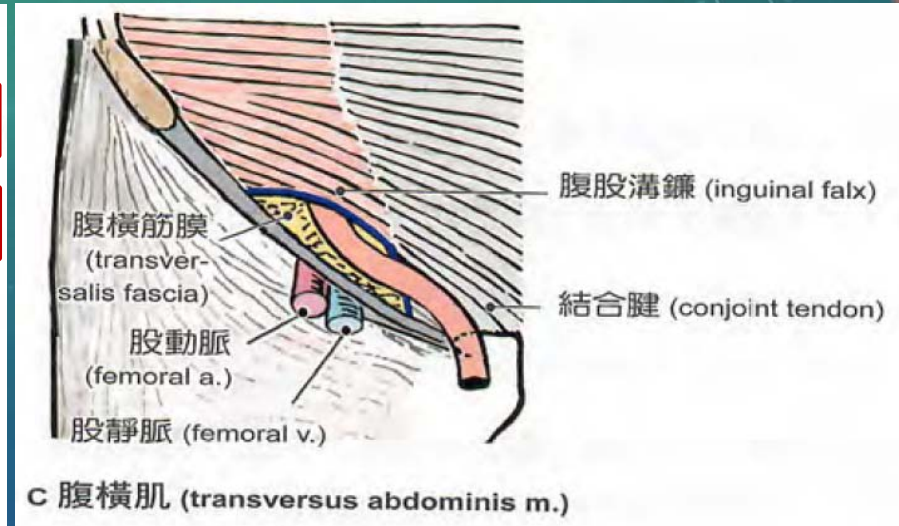


INGUINAL CANAL

INTERNAL OBLIQUE M.



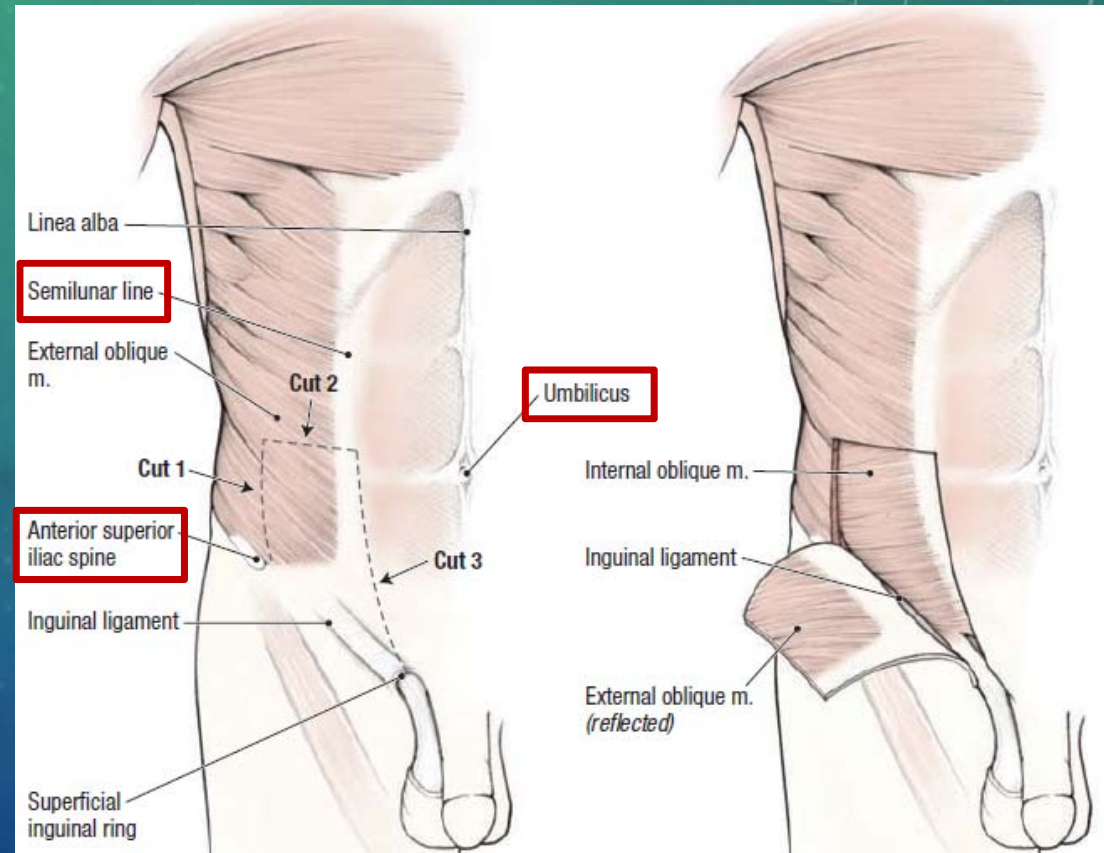
TRANSVERSUS ABDOMINIS M.



The tendons of transversus abdominis muscle and internal oblique are fused near their distal attachments to form the **conjoint tendon**.

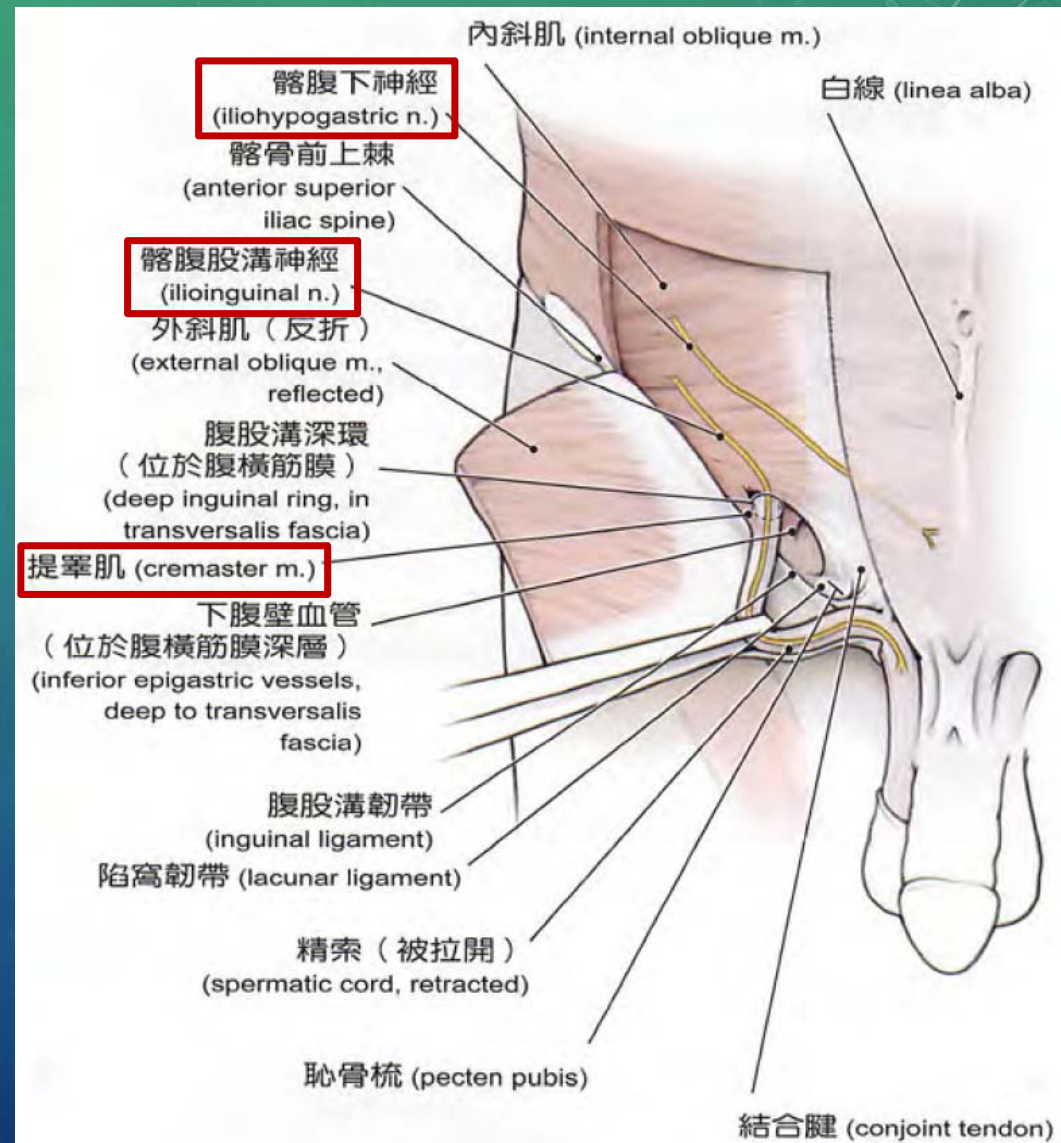
REFLECTION OF EXTERNAL OBLIQUE M.

- **Cut 1**
 - Use scalpel to make a vertical cut.
 - Insert your finger into cut 1 to separate the muscle layers.
- **Cut 2**
 - Use scissors to make a horizontal cut.
- **Cut 3**
 - Use scissors to make a vertical cut. Only the external oblique aponeurosis should be cut!



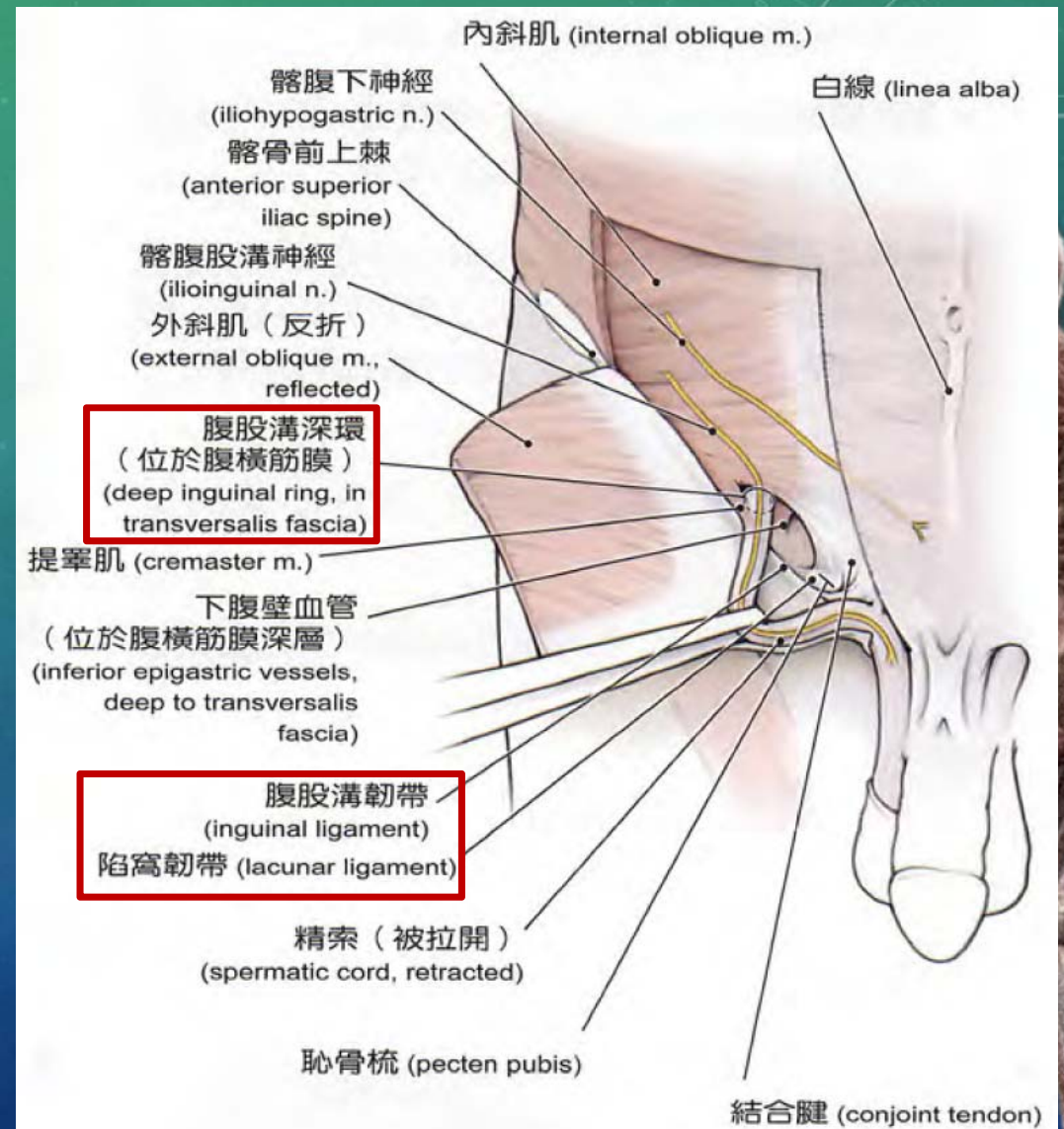
INGUINAL REGION

- Iliohypogastric nerve
- Ilioinguinal nerve
- Cremaster muscle and fascia
 - The small bundle of muscle fibers that connects the internal oblique muscle to the superficial side of the spermatic cord or round ligament.

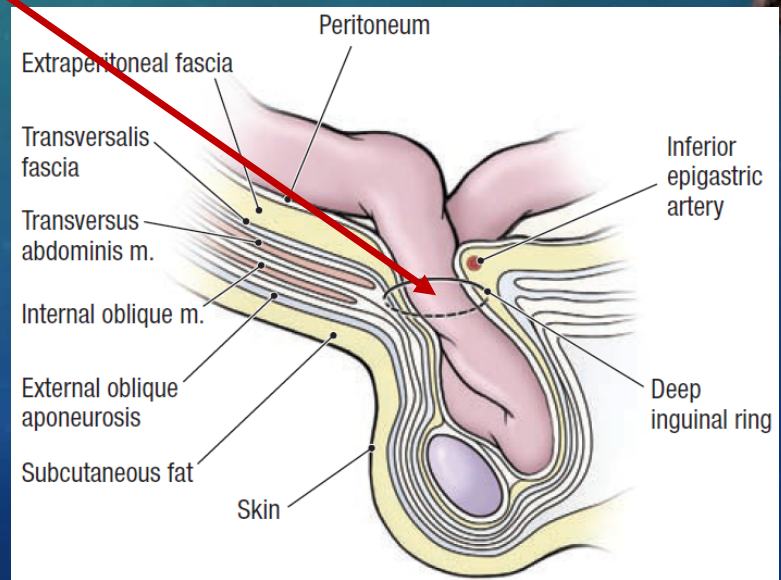
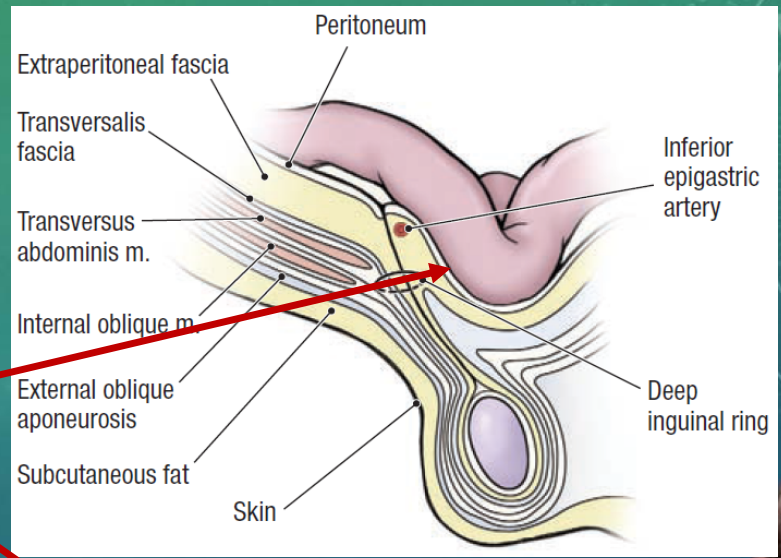
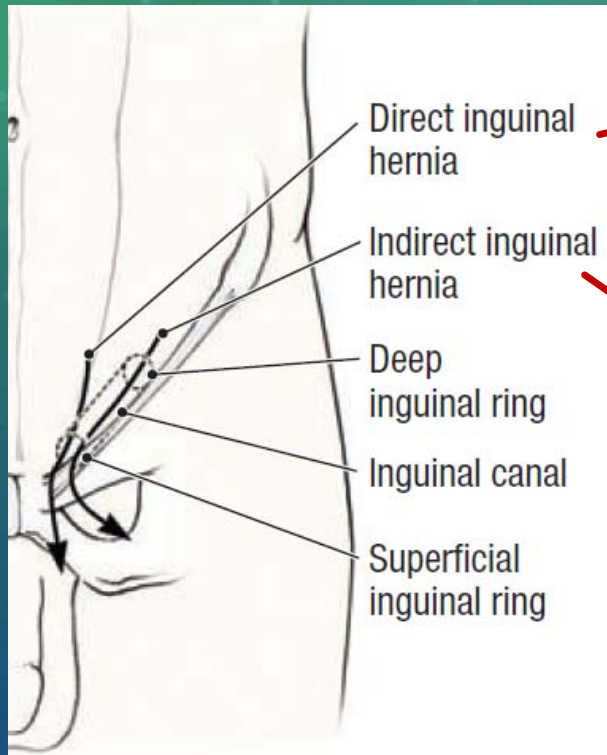


DEEP INGUINAL RING

- Retract spermatic cord
- Lift the arching fibers of the internal oblique and transversus abdominis muscles
- Observe **inferior epigastric vessels**
- Identify deep inguinal ring



INGUINAL HERNIAS

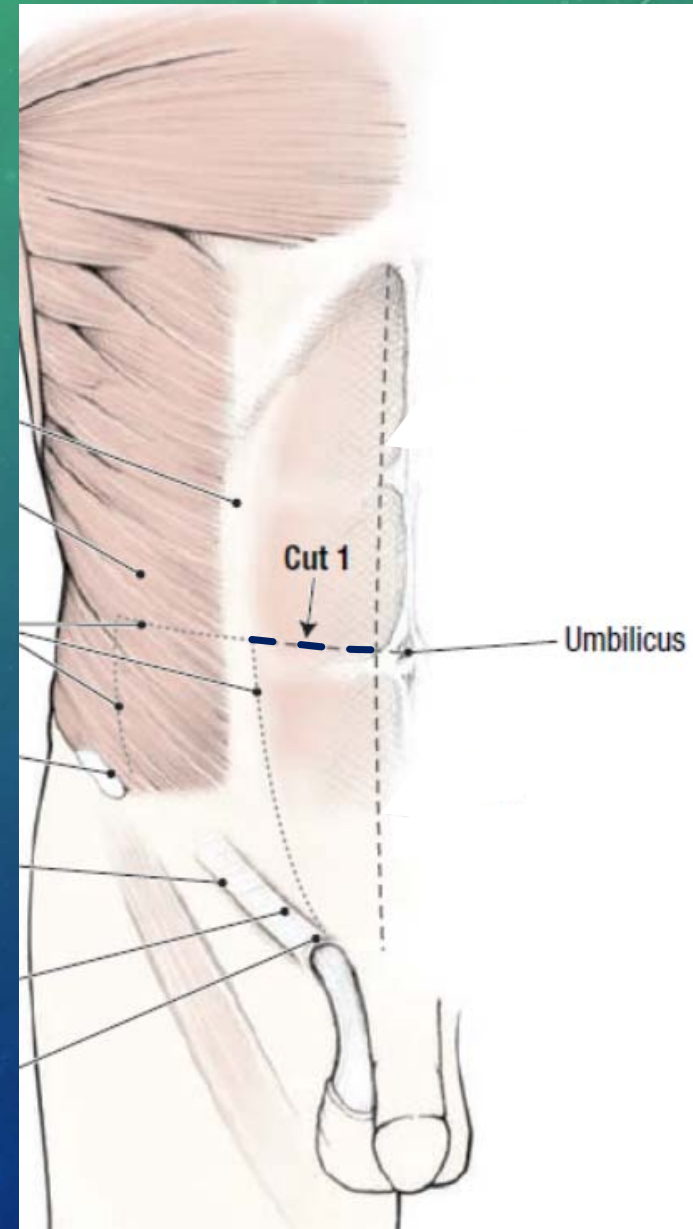


REFLECTION OF THE ABDOMINAL WALL

<http://www.ym.edu.tw/~cflu>

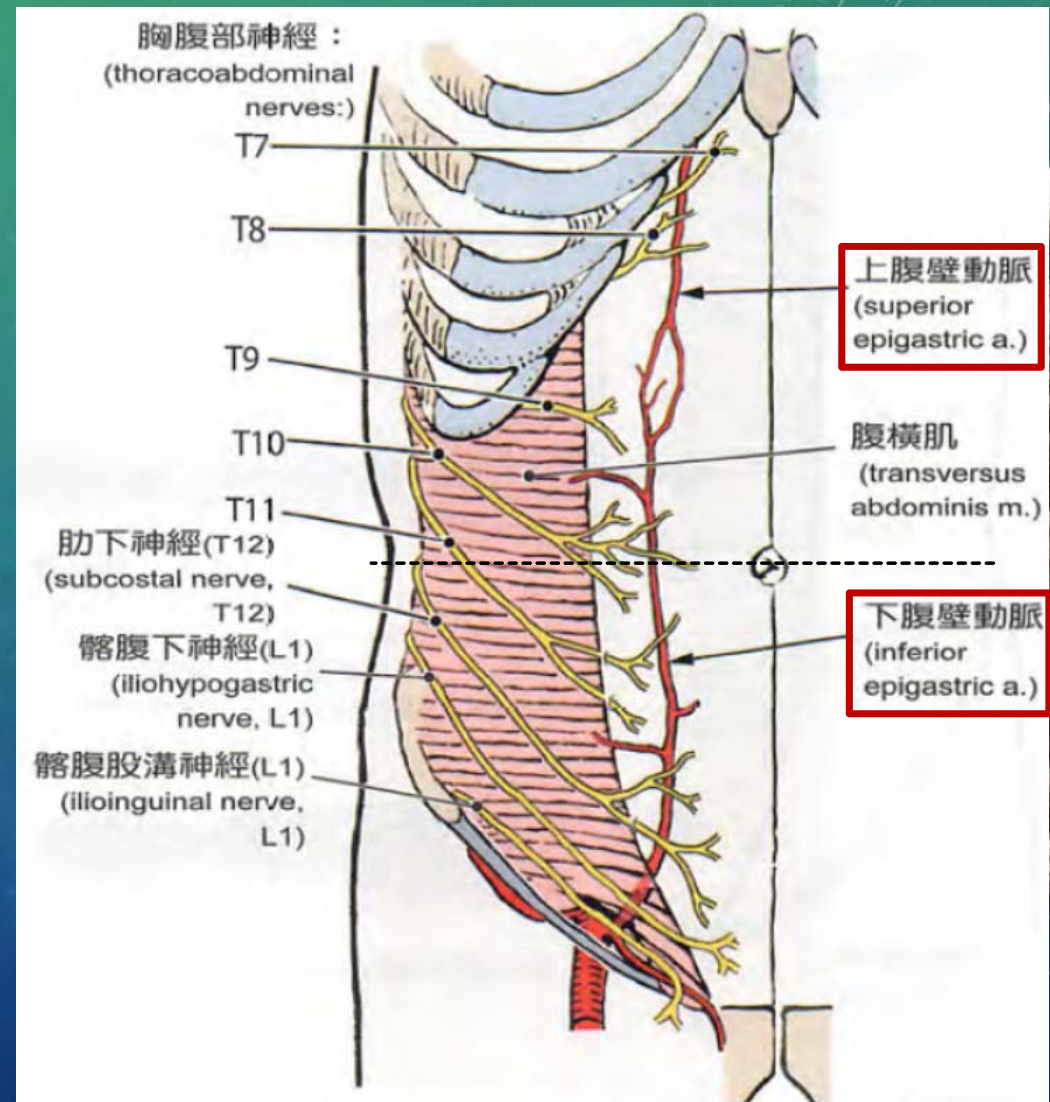
REFLECT RECTUS ABDOMINIS M.

- Use your fingers to mobilize the medial border of the rectus abdominis muscle.
- At the level of the umbilicus, transect the rectus abdominis muscle with scissors.
- Reflect the two halves superiorly and inferiorly, respectively.
- If the nerves prevent full reflection of the rectus abdominis muscle, cut them where they enter the muscle.

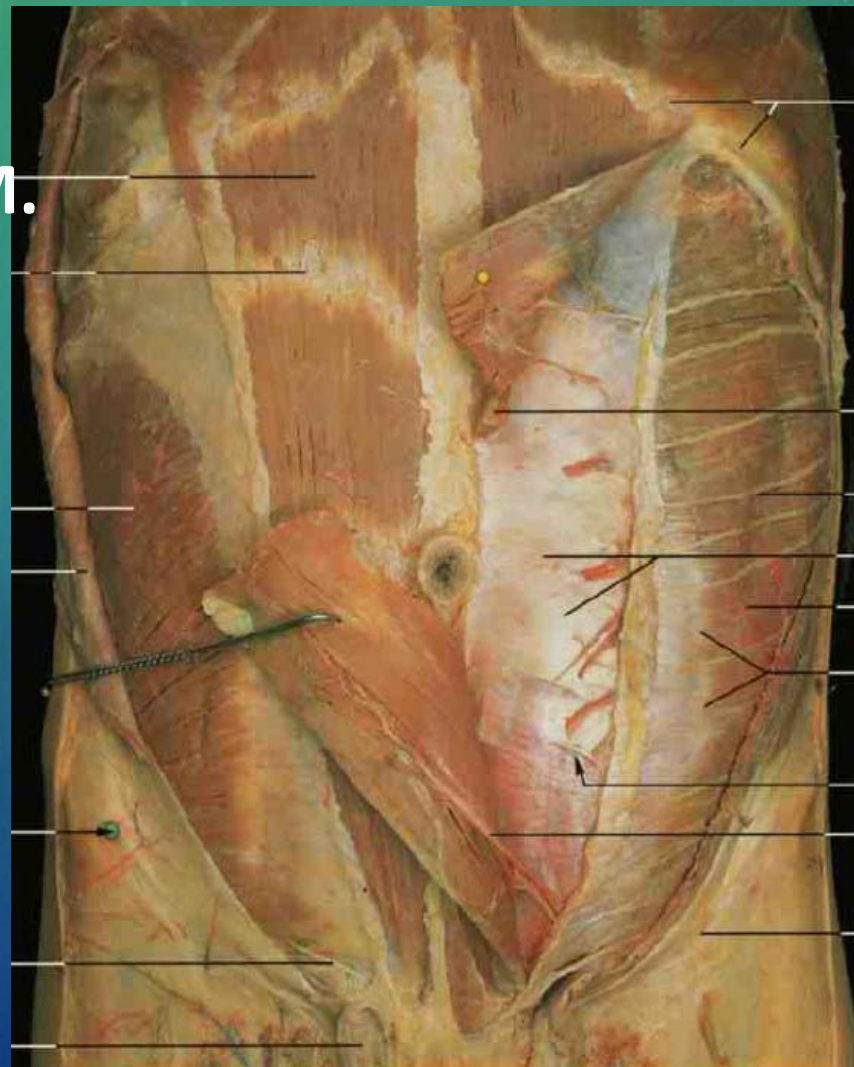


VESSELS & NERVES UNDER THE RECTUS ABDOMINIS M.

- Superior epigastric artery superior to the umbilicus, originated from internal thoracic a.
- Inferior epigastric artery inferior to the umbilicus, originate from femoral a.

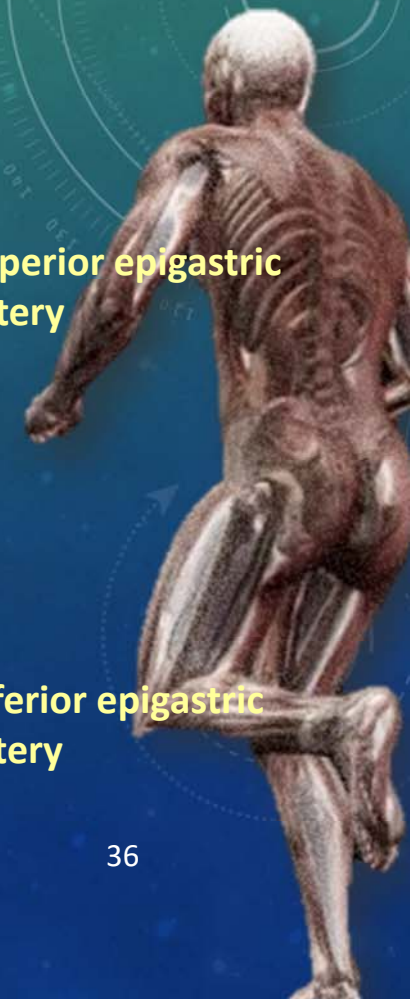


VESSELS & NERVES UNDER THE RECTUS ABDOMINIS M.



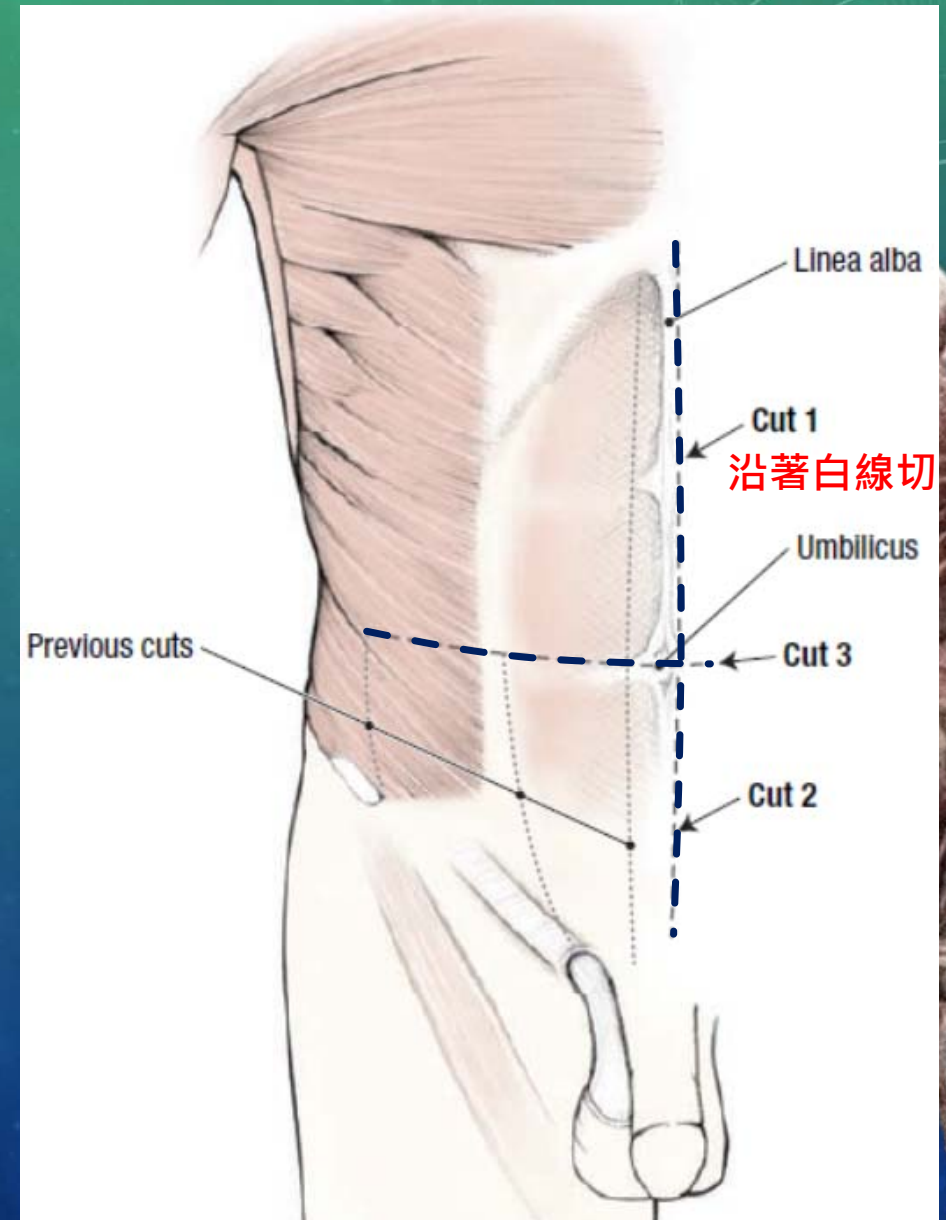
superior epigastric artery

Inferior epigastric artery



REFLECT ABDOMINAL WALL

- Cut 1
 - Use scissors to make a vertical cut through the linea alba to the xiphoid process.
 - Stay 1 cm to the left of the midline to preserve the falciform ligament 鐮狀韌帶.
- Cut 2
 - Stay 1 cm to the left of the midline to preserve the median umbilical fold 臍正中皺壁.
- Cut 3
 - Use scissors to cut the posterior wall of the rectus sheath, extraperitoneal fascia, and peritoneum in the transumbilical plane.



ANTERIOR ABDOMINAL WALL

Inferior epigastric a. and v.

Remnant of the umbilical a.

Urachus 臍尿管
(Remnant of the allantoic duct 尿囊管)

Lateral umbilical fold

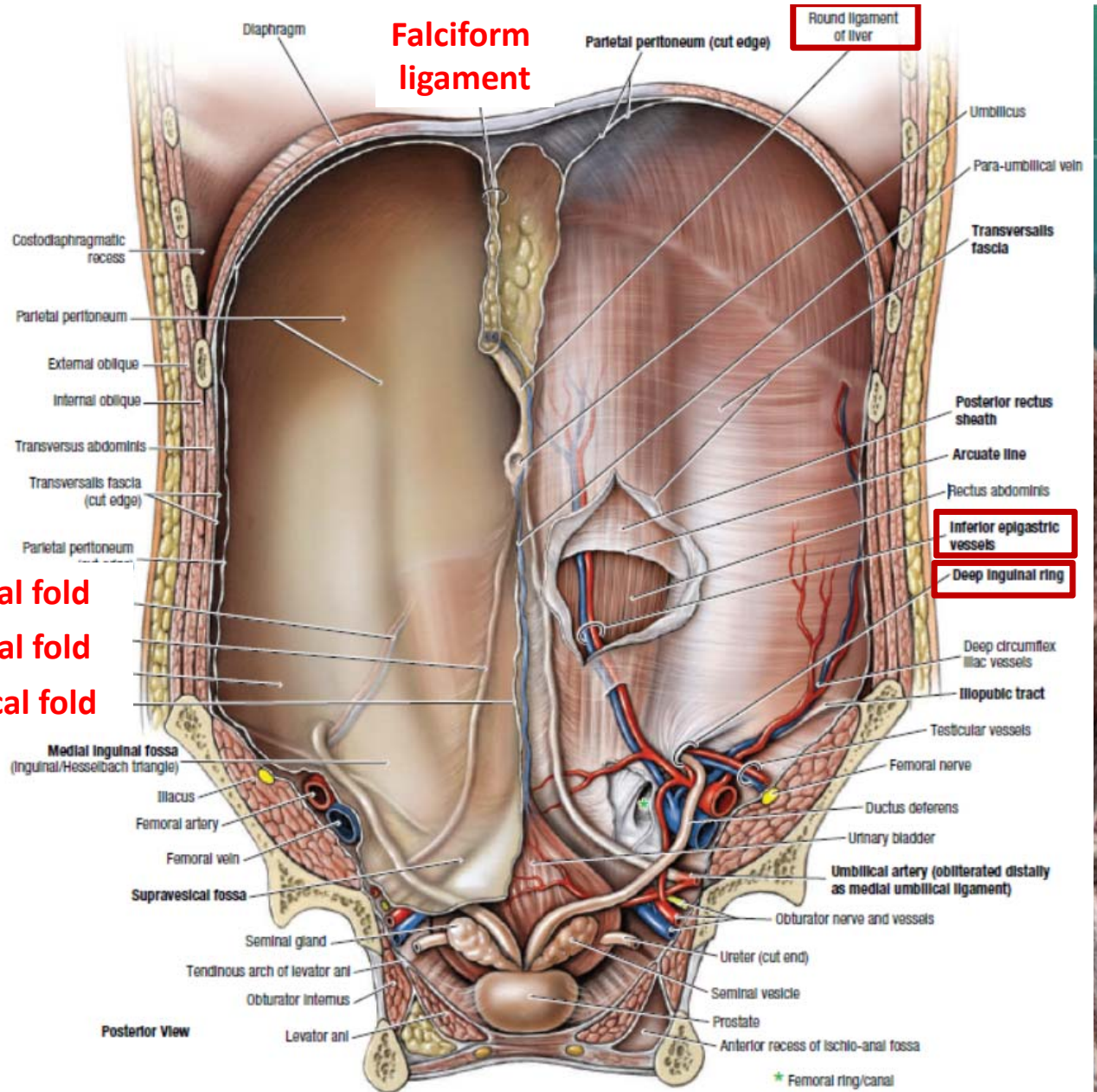
Medial umbilical fold

Median umbilical fold

Posterior view

Ref. [5], p. 122

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THE END

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