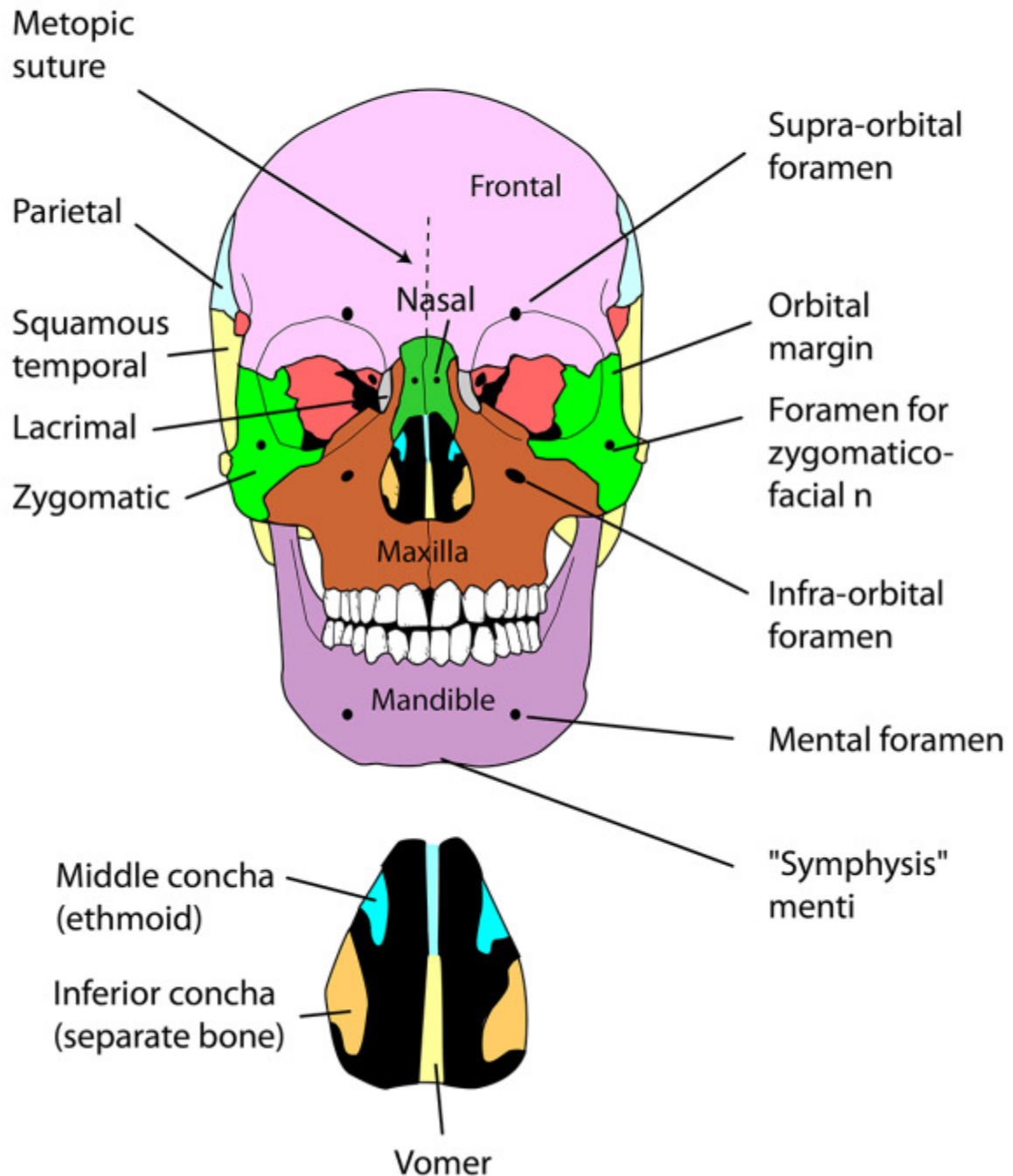
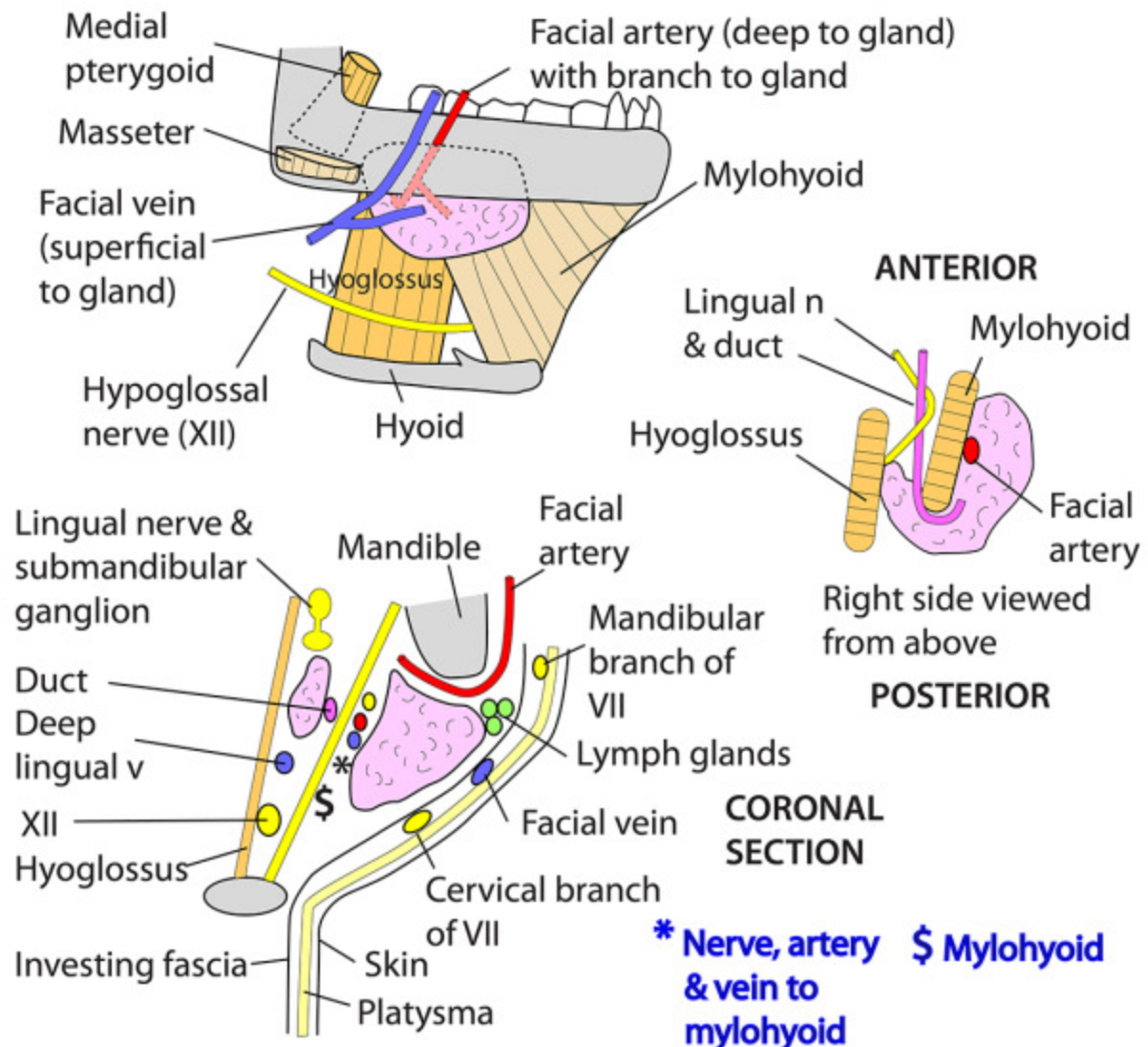


ANTERIOR VIEW OF SKULL TO SHOW BONES & OTHER FEATURES

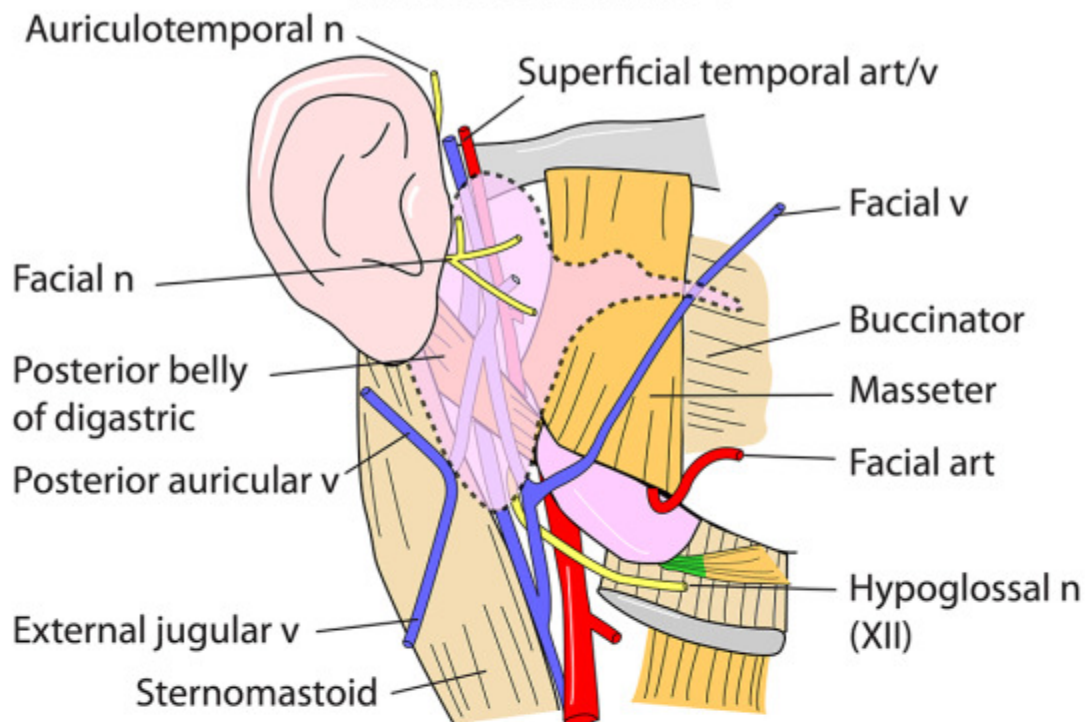


SUBMANDIBULAR GLAND

- Mixed - mucous and serous
- 2 parts - Superficial: larger. Deep: smaller. Join behind posterior edge of mylohyoid
- Duct: (Wharton's) 5cm long. First between mylohyoid & hyoglossus, then between sublingual gland and geniohyoid. Opens in floor of mouth beside frenulum. Develops in ectoderm from a groove in the floor of mouth
- Produces 70% of the saliva
- Lymph nodes in it and on it. Drain to submandibular glands
- Histology: See parotid



PAROTID GLAND 1



Lies between mastoid, styloid process, ramus of mandible.
Surrounded by parotid fascia (investing layer of deep fascia)

- Serous secretions
- Produces amylase, water, Ig factors (lubricates & oral hygiene)
- Has an upper & lower pole, lateral, anterior & deep surface

RELATIONS:

Posterior

Sternocleidomastoid
 Mastoid process

Above

External acoustic meatus
 Temporomandibular joint

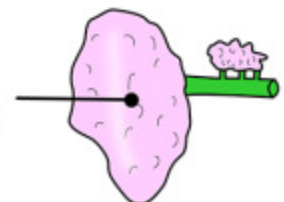
Anterior

Angle of mandible
 Medial pterygoid plate
 Masseter
 Stylomandibular ligament

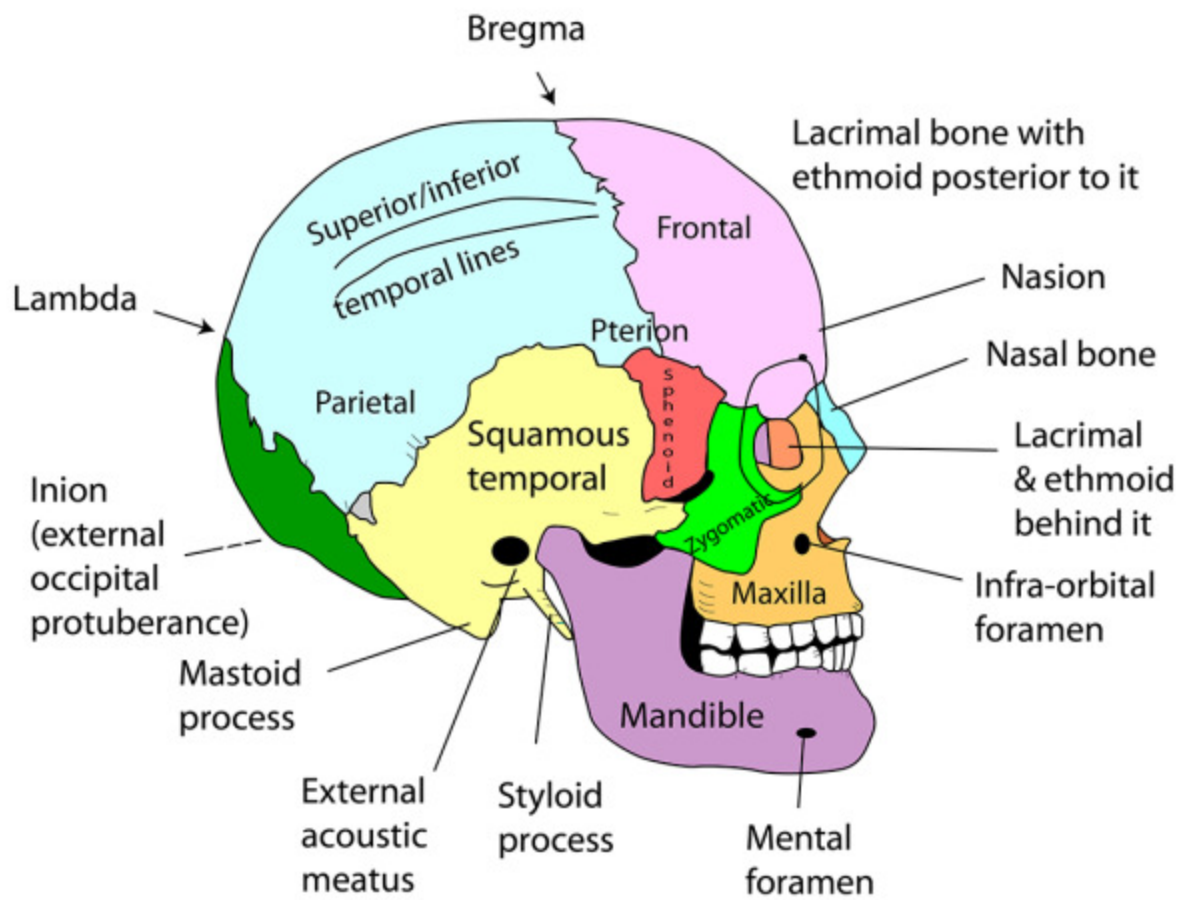
In gland: Facial nerve, retromandibular vein, external carotid artery, lymph nodes, fibres of auriculotemporal nerve

Deep to gland: Mastoid process, sternomastoid, posterior belly of digastric, styloid process, stylohyoid ligament & muscle, styloglossus, stylopharyngeus, temporomandibular joint

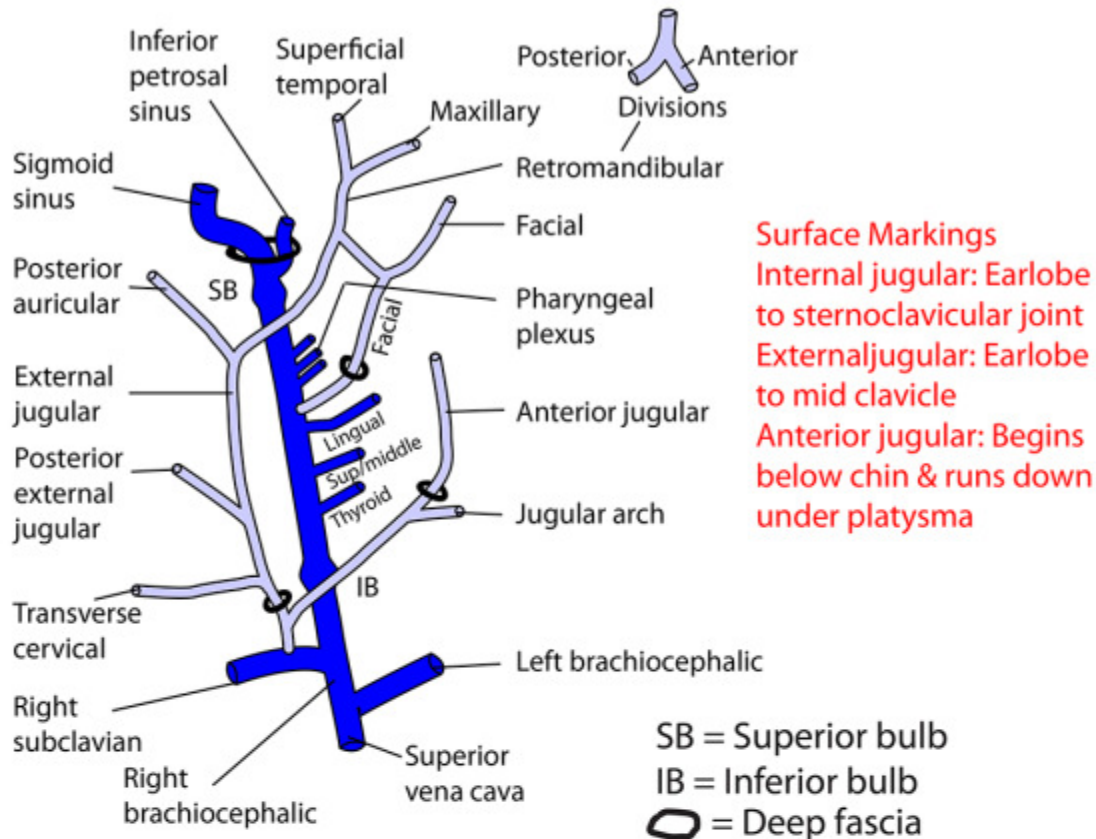
Lateral:
 subcutaneous surface



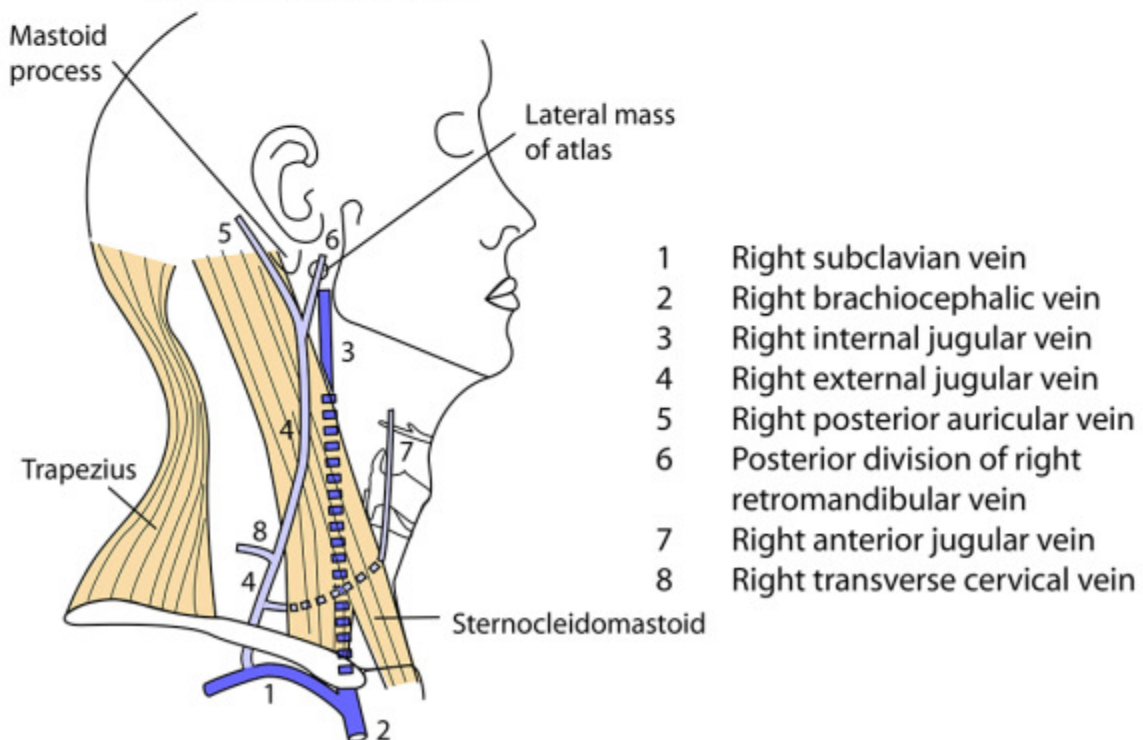
LATERAL VIEW OF SKULL TO SHOW BONES & OTHER FEATURES



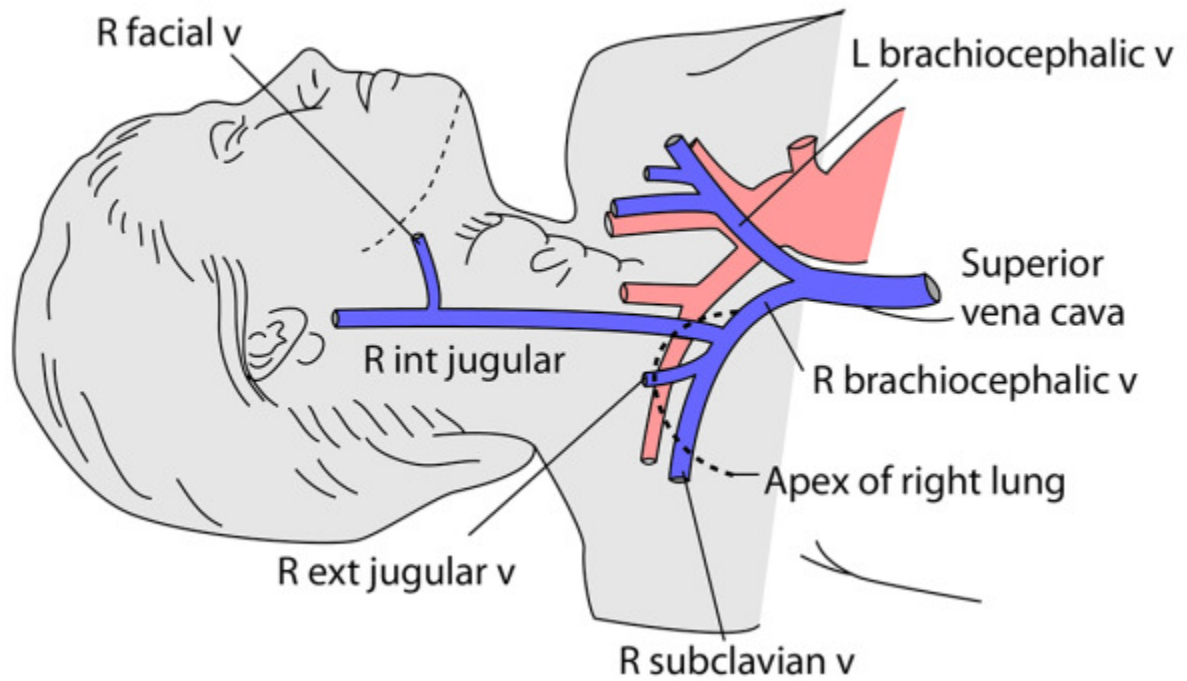
RIGHT INTERNAL & EXTERNAL JUGULAR VEINS



JUGULAR VEINS IN NECK

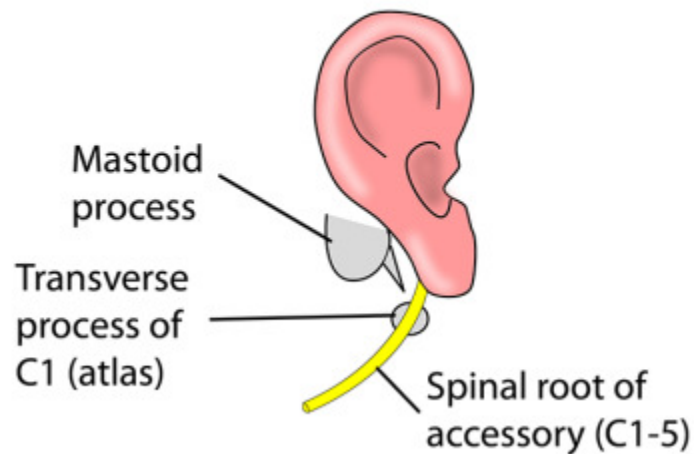


RIGHT NECK VEINS



SPINAL ROOT OF ACCESSORY NERVE

SURFACE MARKINGS



Method one

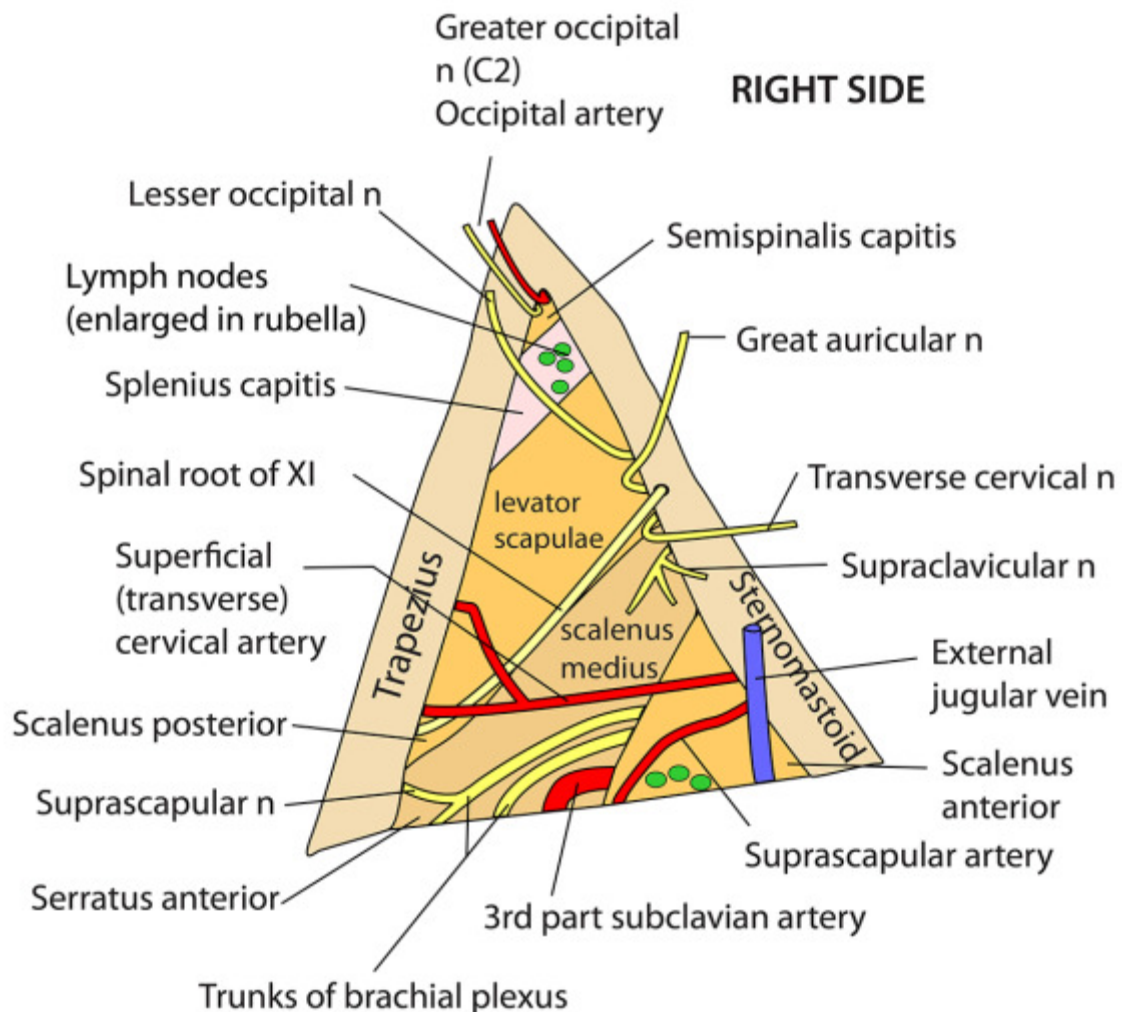
1. Find transverse process of atlas just anterior mastoid process
2. Draw a line to anterior border of trapezius, 5cm above the clavicle
3. This is the line of the nerve through sternocleidomastoid and posterior triangle

Method two

1. Draw a line from a third of the way down the posterior border of sternocleidomastoid to a point a third of the way up the anterior border of trapezius
2. This is the line of the nerve through sternocleidomastoid and posterior triangle

POSTERIOR TRIANGLE OF NECK

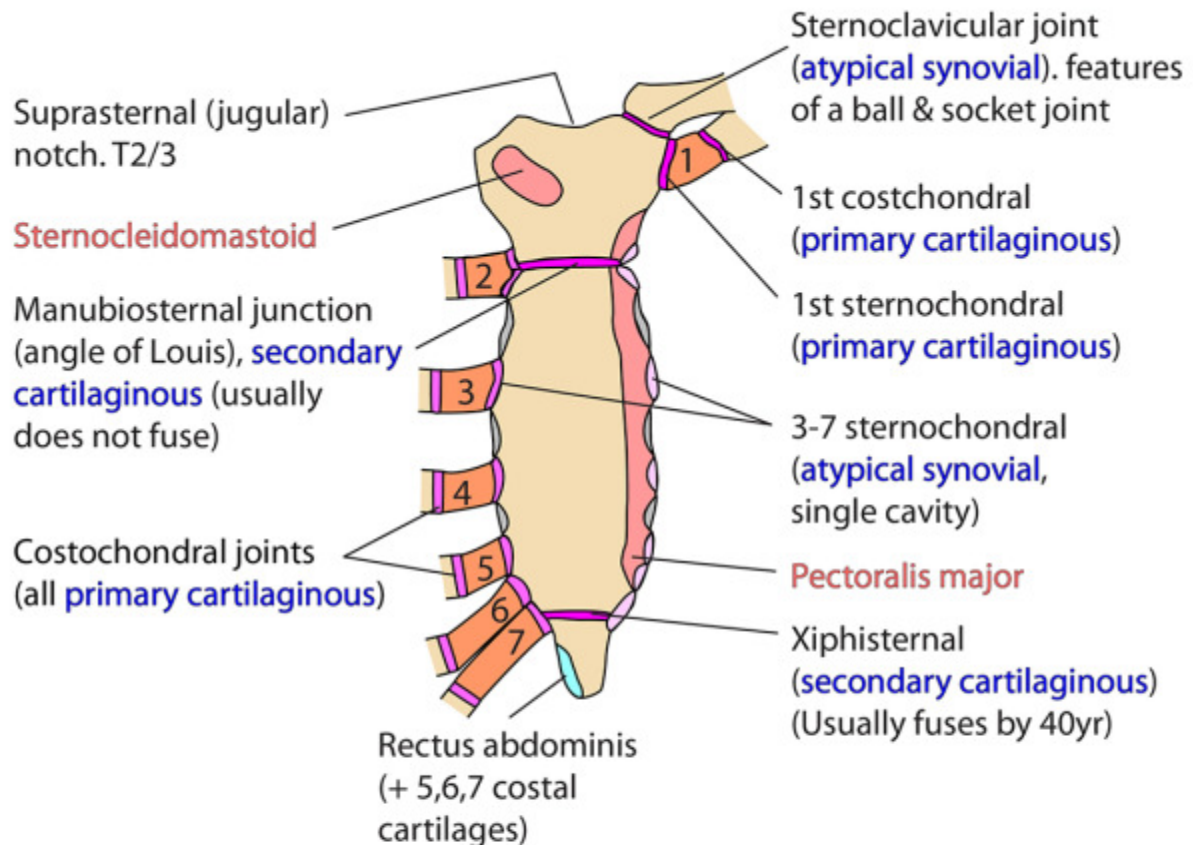
- Boundaries: Posterior border of sternocleidomastoid, anterior border of trapezius, mid 1/3 clavicle
- Shape: Spiral
- Roof: Investing fascia, platysma, external jugular vein
- Floor: Prevertebral fascia covering muscles, subclavian artery, trunks of brachial plexus & cervical plexus
- Contents:
 - Arteries: Occipital, superficial cervical, suprascapular
 - Veins: Transverse cervical, suprascapular, external jugular
 - Nerves: Branches of cervical plexus, spinal root of accessory
 - Muscle: Omohyoid with its sling
 - Lymph nodes: Occipital (rubella/scalp infections)
Supraclavicular (part of the deep chain)



Surface anatomy of spinal root of XI in posterior triangle:

1. Earlobe to 5cm up trapezius. OR 2. 1/3 down posterior border of sternocleidomastoid to 1/3 up anterior border of trapezius

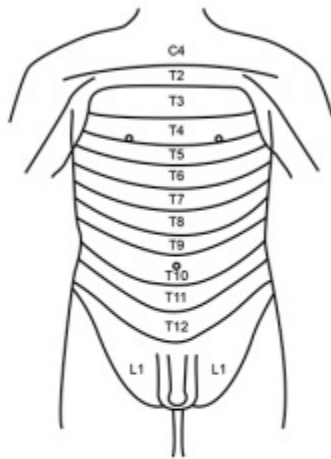
STERNUM & RELATED JOINTS



Ossification

| | |
|---------------|------------------------|
| Manubrium | 5 months intra-uterine |
| 1st sternebra | 6 months intra-uterine |
| 2nd sternebra | 7 months intra-uterine |
| 3rd sternebra | 8 months intra-uterine |
| 4th sternebra | 9 months intra-uterine |
| Xiphoid | 4th year |

POSITION OF THORACIC STRUCTURES ACCORDING TO VERTEBRAL LEVELS

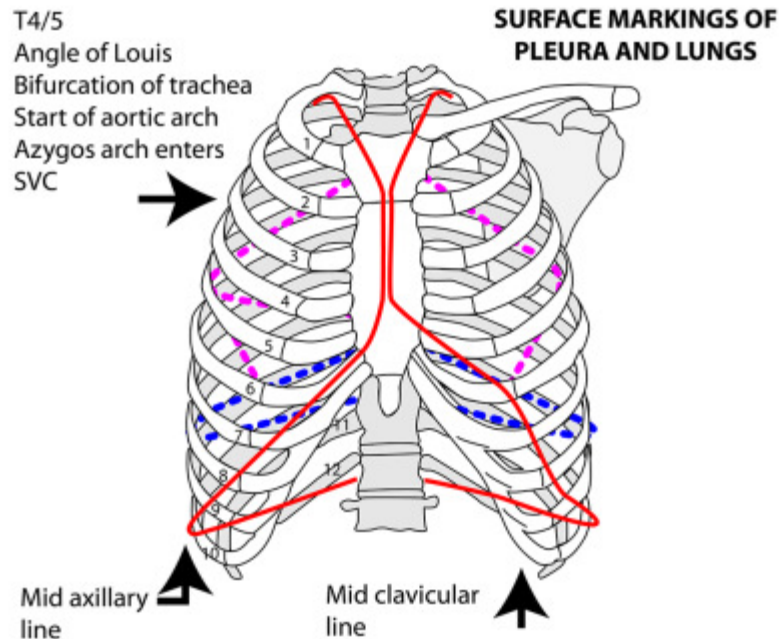


Dermatomes

Nipples in T4
dermatome

- T2** Superior border of scapula.
- T2/3** Suprasternal notch.
- T3** Medial end of spine of scapula.
Spine of T3 is posterior end of oblique fissure of lung.
- T4** End of arch of aorta.
Azygos vein enters SVC.
- T4/5** Manubriosternal junction, Angle of Louis.
Start and end of arch of aorta.
- T5** Thoracic duct crosses midline.
- T7** Inferior angle of scapula.
- T8** Caval opening in diaphragm (IVC & right phrenic n)
Left phrenic pierces diaphragm.
Hemi-azygos veins cross to left.
- T10** Oesophageal opening in diaphragm.
(oesophagus, branches of left gastric vessels, vagus n)
- T12** Aortic opening in diaphragm.
(Aorta, azygos v, hemi-azygos v, thoracic duct)
Coeliac axis.
Splanchnic nerves pierce crura.
Sympathetic trunk passes behind med arcuate ligament.
Subcostal bundle passes behind lat arcuate ligament.

THORAX - SURFACE MARKINGS



Pleura 2-4-6-8-10-12

Continuous Red line, starting 1" (2.5cm) above mid point of medial 1/3 of clavicle. Meet in midline at rib 2, left side then diverges at rib 4 to make room for the heart, whilst right continues parasternally to rib 6. Both cross rib 8 in the mid-clavicular line, then rib 10 in the mid-axillary line. Both reach posterior chest just below rib 12.

Lungs 2 less than pleura

Blue dotted lines indicate lower extension of lungs in expiration. Below ribs 6, the lungs extend to 2 rib spaces less than the pleura.

Fissures 3-6-4-5

(purple dotted lines)

Oblique: spine of T3 vertebra to rib 6 anteriorly along medial border scapula
Horizontal (on R only): rib/costal cartilage 4 to rib 5 in mid-axillary line.

HEART

BORDERS:

2cc - 3cc - 6cc - 5 1/2

VALVES:

P - A - M - T

AUSCULTATION:

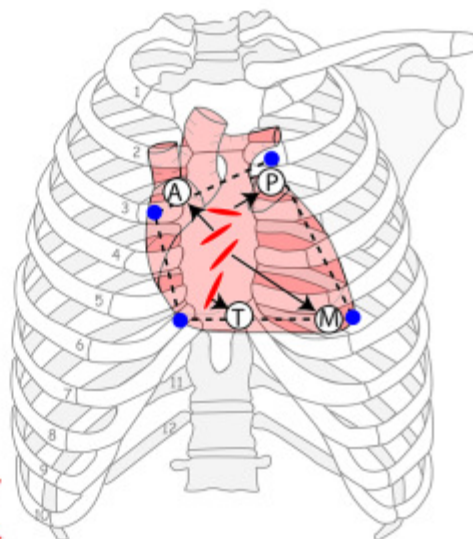
P - 2L (parasternal space)

A - 2R (parasternal space)

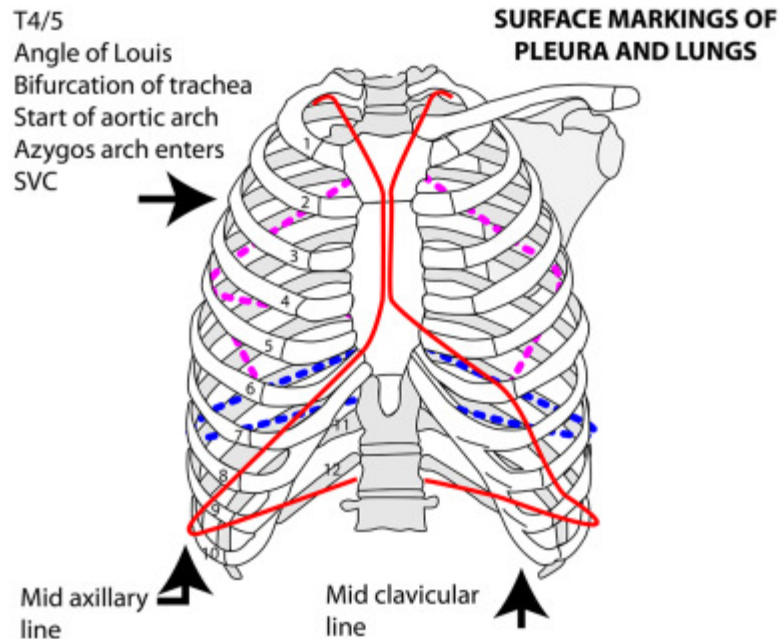
M - 5L (mid clavicular line)

T - Lower left sternal border

As the valves open and close they produce sounds that appear to be transmitted in the direction of the flow of blood. Thus, by picturing the heart and the positions of the four valves it is easy to work out the likely points for maximal audibility of the sounds.



THORAX - SURFACE MARKINGS



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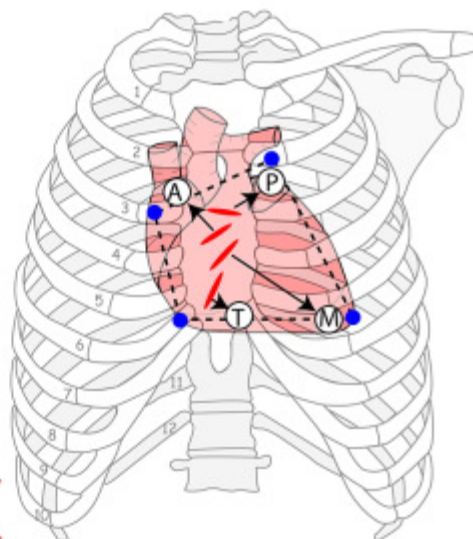
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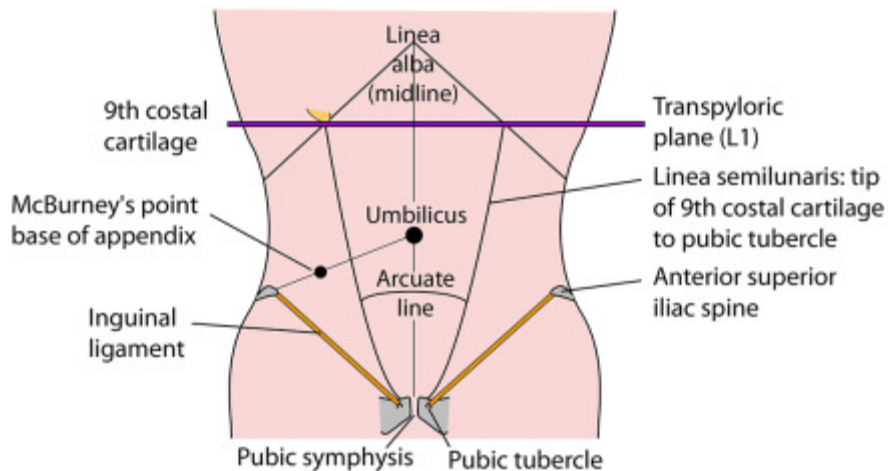
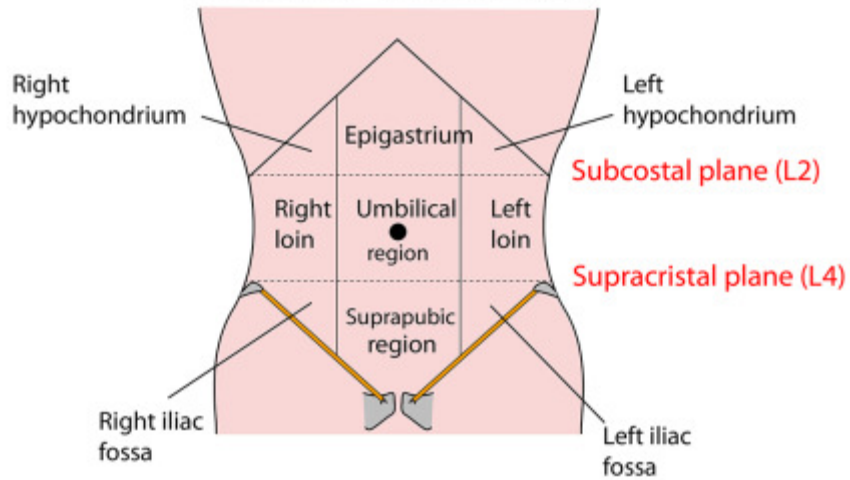
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SURFACE ANATOMY OF ABDOMINAL WALL

REGIONS OF THE ABDOMEN



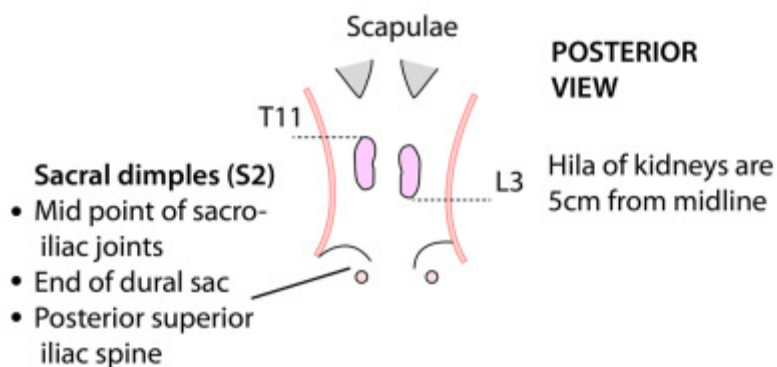
Transpyloric plane: half way between suprasternal notch & symphysis pubis

Inguinal ligament: anterior superior iliac spine to pubic tubercle

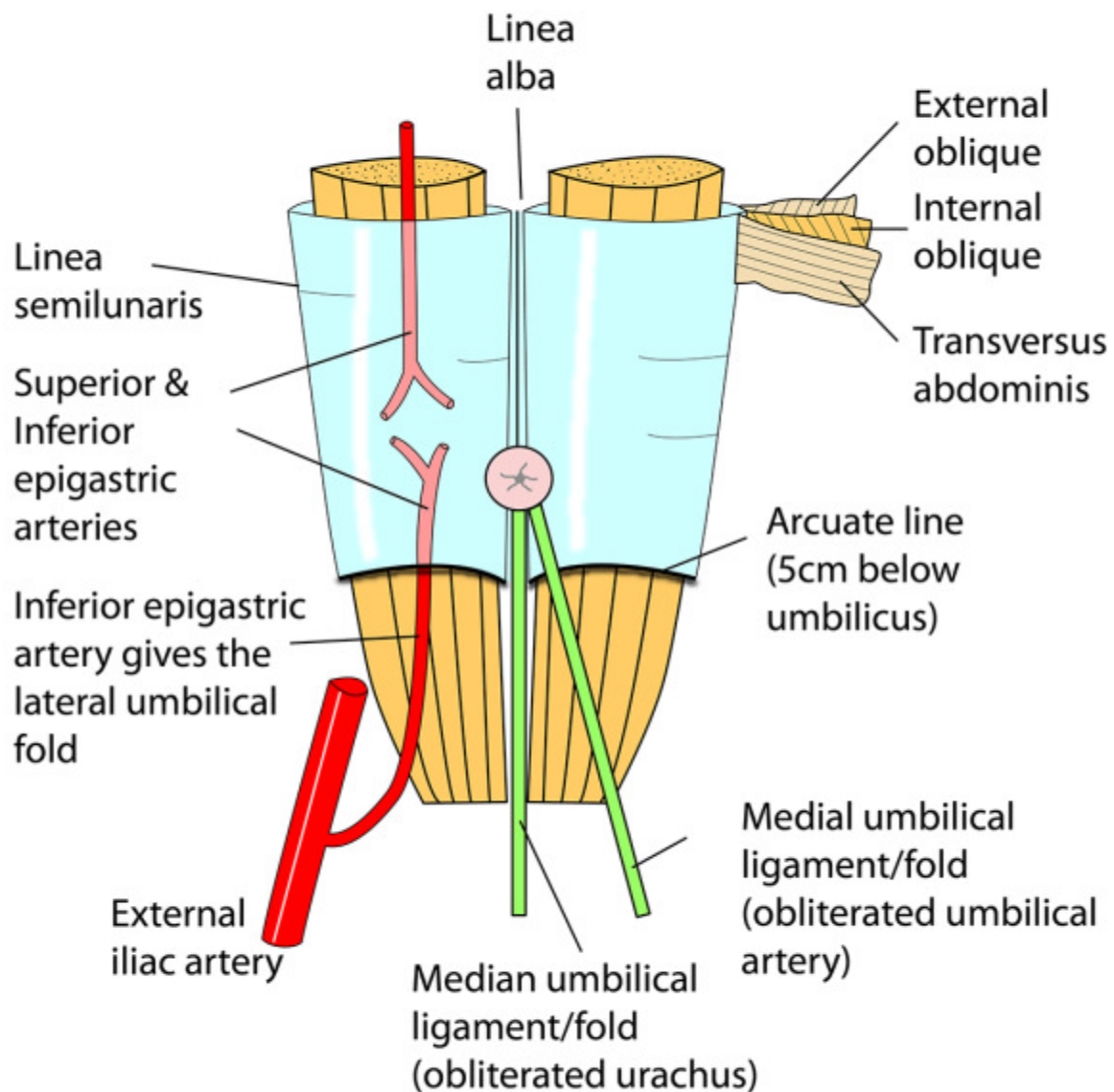
Arcuate line: 3-5cm inferior to umbilicus

Linea semilunaris: lateral edge of rectus sheath

McBurney's point: one third along a line from ASIS to umbilicus

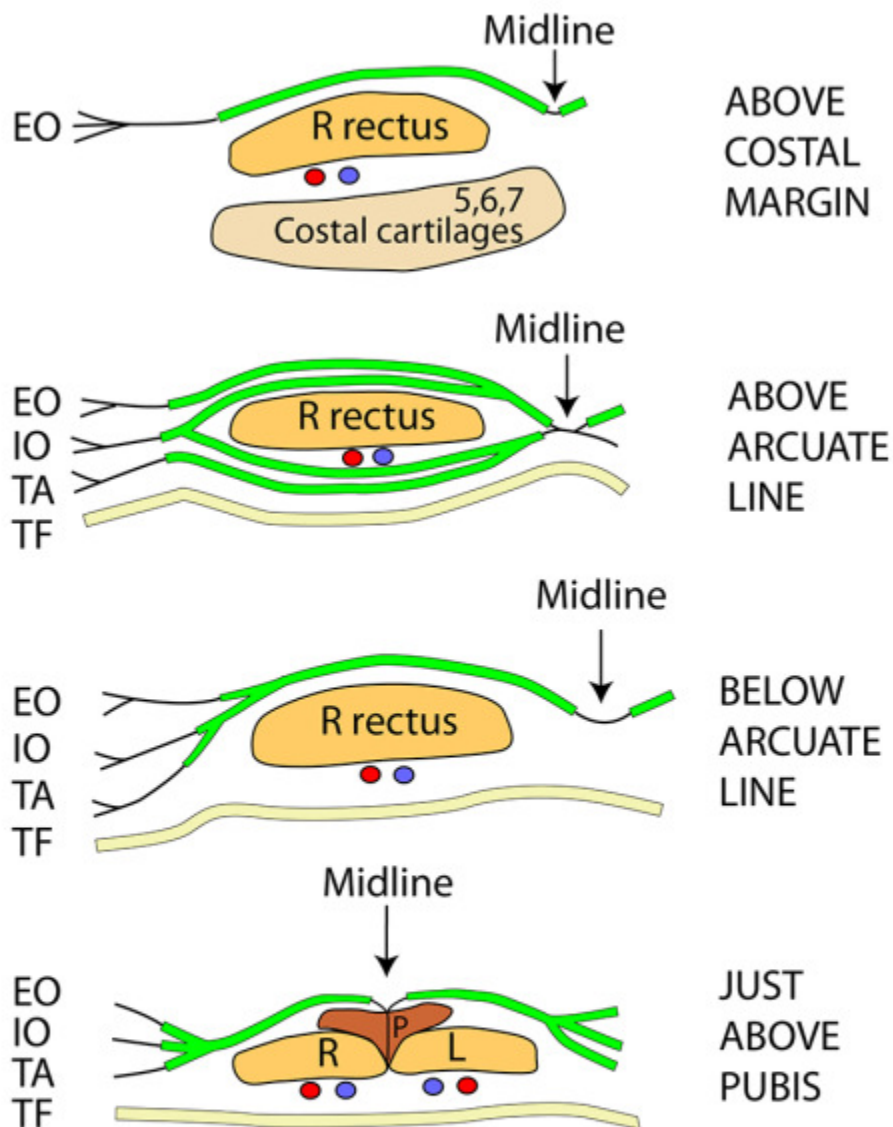


POSTERIOR RECTUS SHEATH & UMBILICAL FOLDS (Posterior view)



Note: There are three folds but only two ligaments.
The inferior epigastric artery raises a fold of peritoneum
but clearly is not a ligament

ABDOMINAL WALL MUSCLES & RECTUS SHEATH



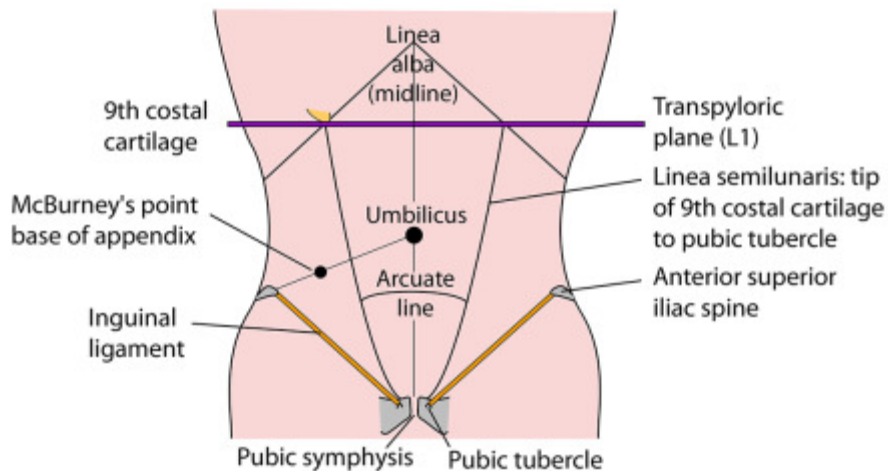
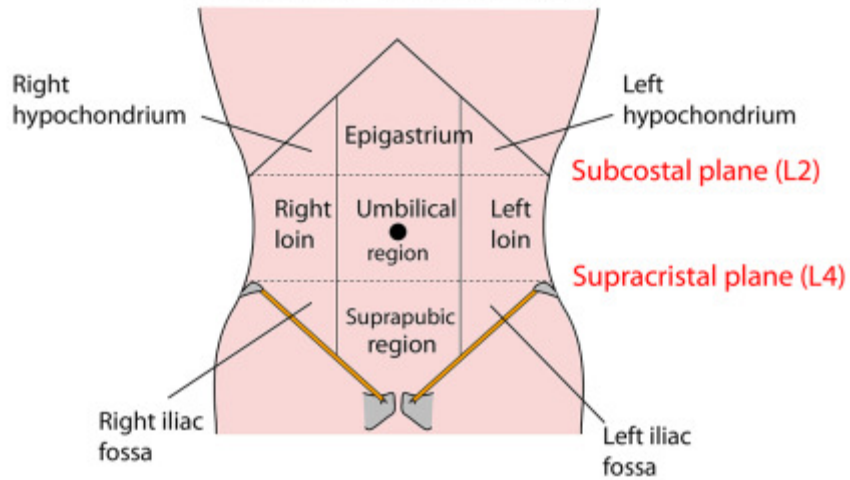
EO External oblique
IO Internal oblique
TA Transversus abdominis
TF Transversalis fascia

Actions of abdominal muscles:

- Truncal movements
- Rib depression
- Visceral support

SURFACE ANATOMY OF ABDOMINAL WALL

REGIONS OF THE ABDOMEN



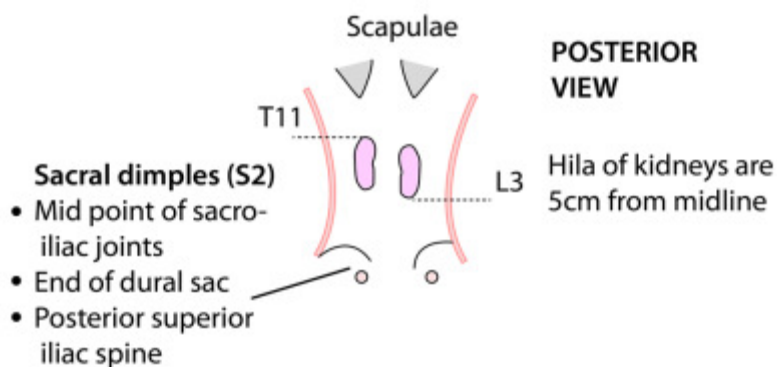
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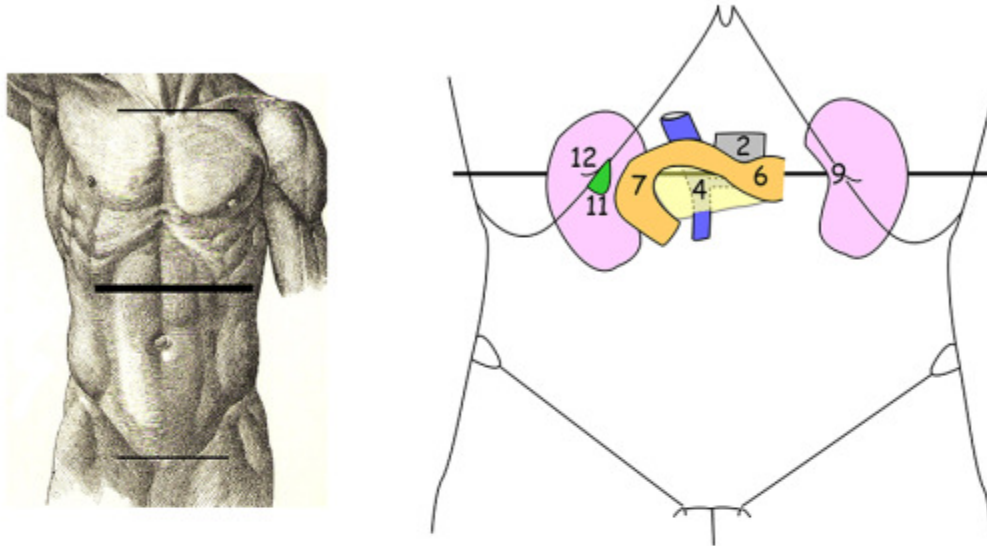
Linea semilunaris: lateral edge of rectus sheath

McBurney's point: one third along a line from ASIS to umbilicus



TRANSPYLORIC PLANE

(Horizontal line half way between suprasternal notch & pubic symphysis)

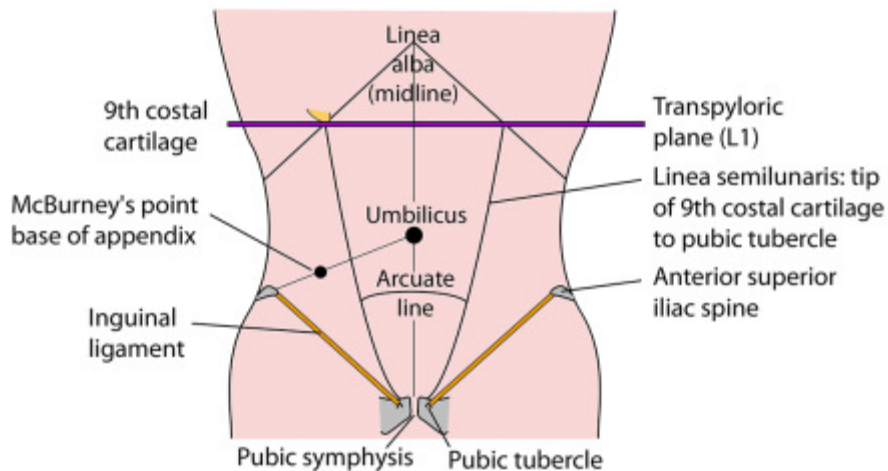
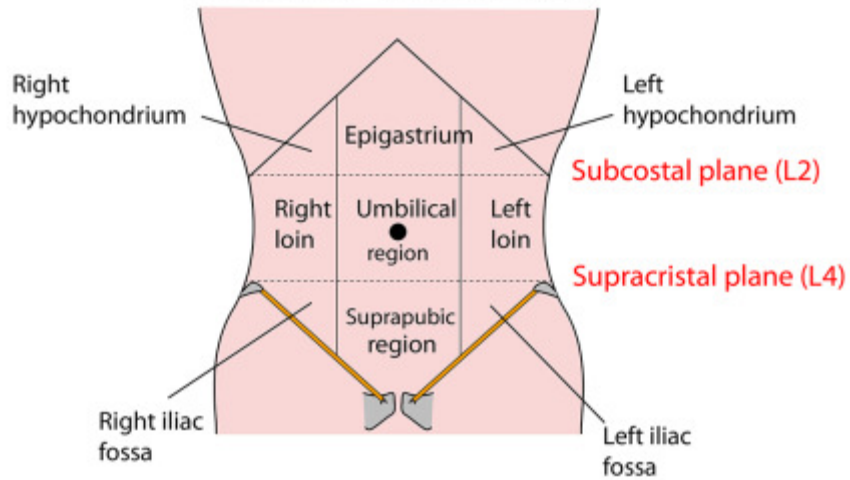


Structures approximately on this line:

- 1 End of spinal cord
- 2 L1 vertebral body
- 3 Origin of superior mesenteric art
- 4 Origin of portal vein
- 5 Neck of pancreas
- 6 Pylorus of the stomach
- 7 Second part of duodenum
- 8 Sphincter of Oddi
- 9 Hilum of each kidney
- 10 Duodenojejunal flexure
- 11 Fundus of gall bladder
- 12 Tips of ninth costal cartilages

SURFACE ANATOMY OF ABDOMINAL WALL

REGIONS OF THE ABDOMEN



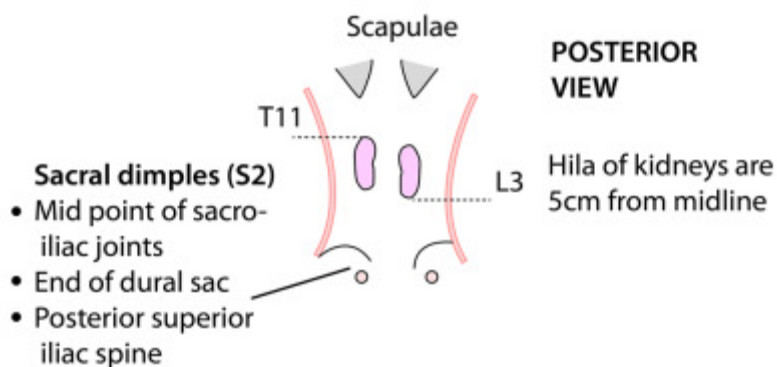
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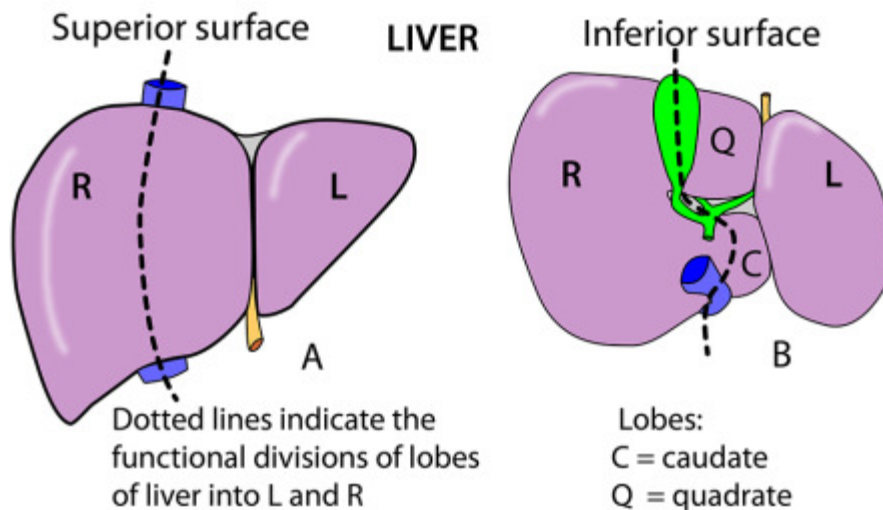
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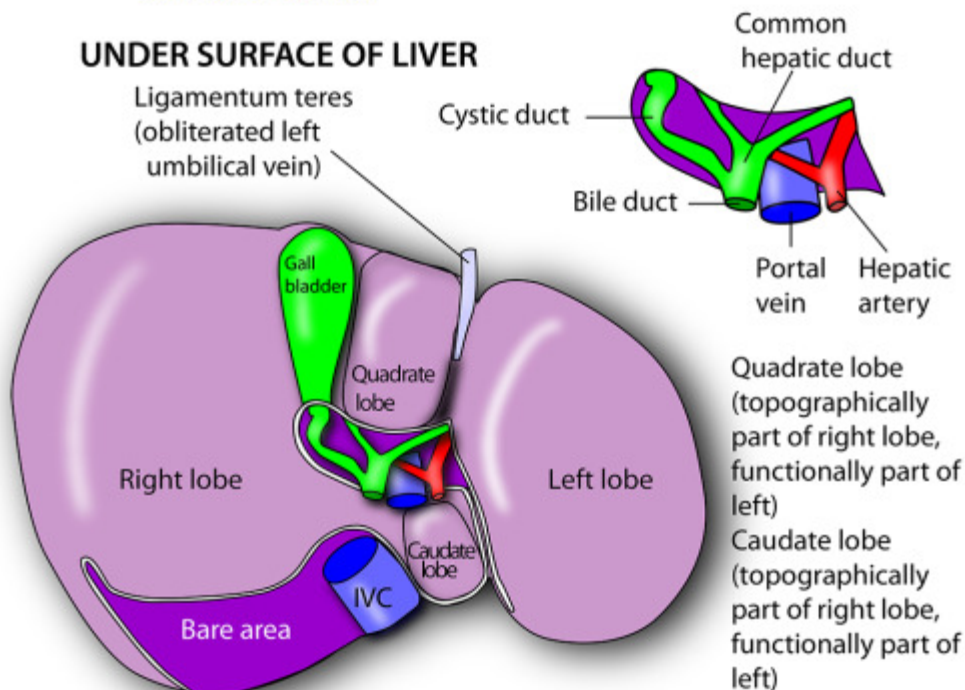
LIVER - GENERAL DESCRIPTION

- Wedge shaped • largest organ in body • Weight 1500g
- 1500ml blood flow per minute (30% of cardiac output)
- Lies: Right-6-10 ribs/costal cartilages; Left-6-7 costal cartilages
- Surfaces: Anterior, superior, posterior, right - all smooth/convex
Postero-inferior (visceral) concave & many features
- Supports: IVC & hepatic veins (+ ligamentum teres & peritoneum)
- Nerve supply: Right vagus via coeliac ganglia, left directly to porta hepatis.
Sympathetics on vessels
- Reaches: T5 vertebra, nipples (5th intercostal space), xiphisternal joint



- Left and right subphrenic & subhepatic spaces
- Main supports are hepatic veins & IVC
- Lymphatics to coeliac, para-aortic, post. mediastinal, axillary & inguinal

UNDER SURFACE OF LIVER

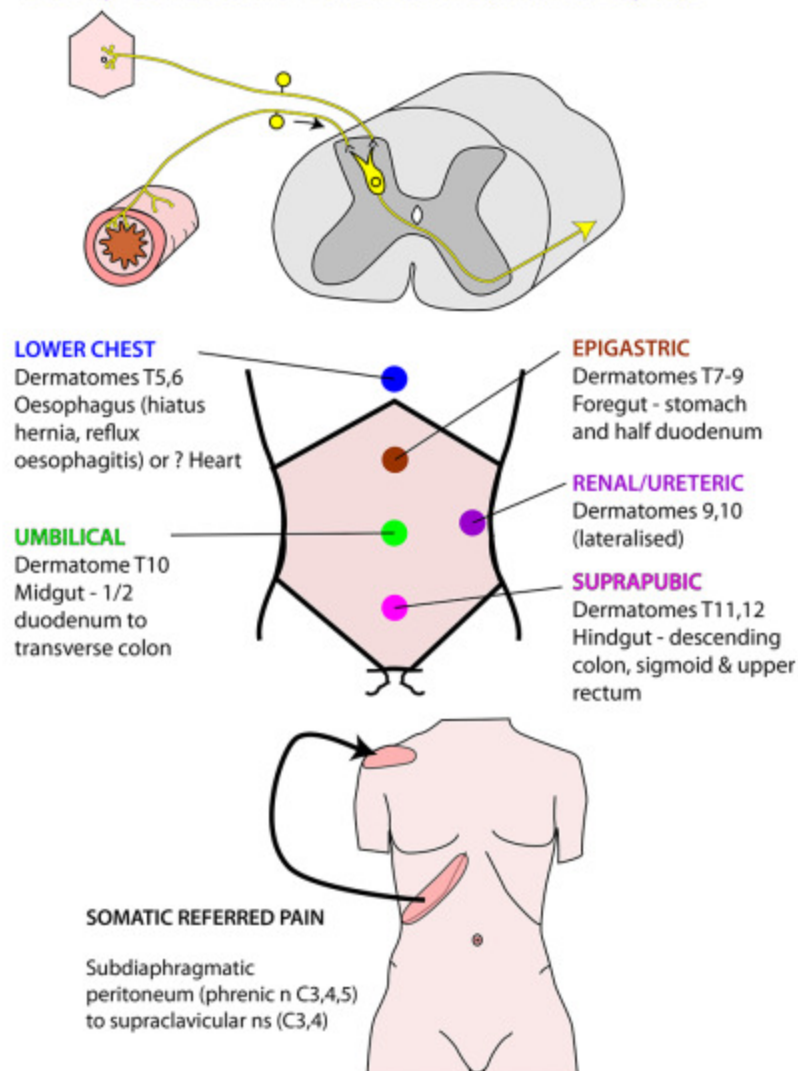


ABDOMINAL REFERRED PAIN

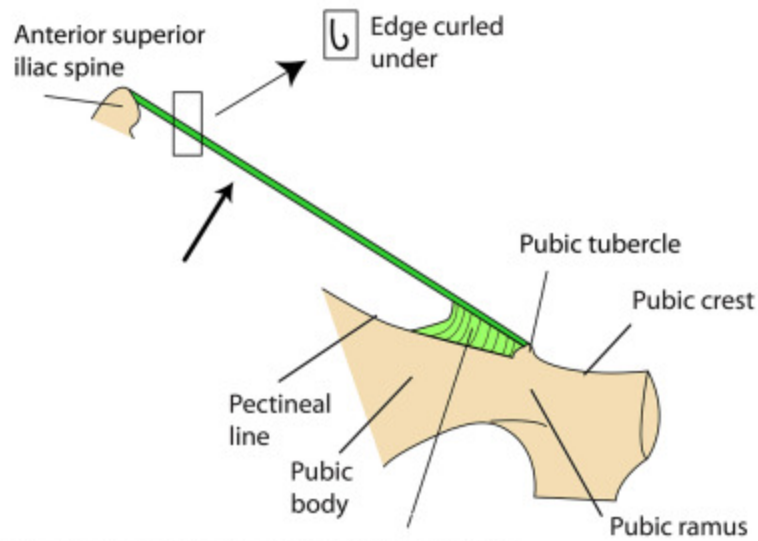
In the abdomen there are two types of referred pain. The first is detected by visceral sensory (general visceral afferent) fibres travelling with the sympathetics such as bowel irritation, distension or inflammation. This is carried back to the sympathetic chain & spinal cord at the relevant level & referred to the appropriate dermatome. For instance, pain from the foregut (e.g. stomach) is referred to T5-9 dermatome (epigastric) via the greater splanchnic nerves, small bowel problems to the peri-umbilical region via lesser splanchnic nerves & large bowel to suprapubic region via least splanchnic nerves. Pain is midline as gut is embryologically a midline structure. Kidneys (renal pain) can lateralise as they are not of midline origin. Note that pain from some pelvic organs (e.g. uterus) travels via the parasympathetics (S2,3,4) to give low backache.

A second type of referred pain involves the somatic system only. The best example is irritation of the infra-diaphragmatic peritoneum over an inflamed gall bladder which is detected by the phrenic nerve (C3,4,5). The pain is then referred to the shoulder tip via the C4 dermatome, also somatic. It is only because the C4 nerve has two areas of distribution so far away from each other that this type of referred pain occurs.

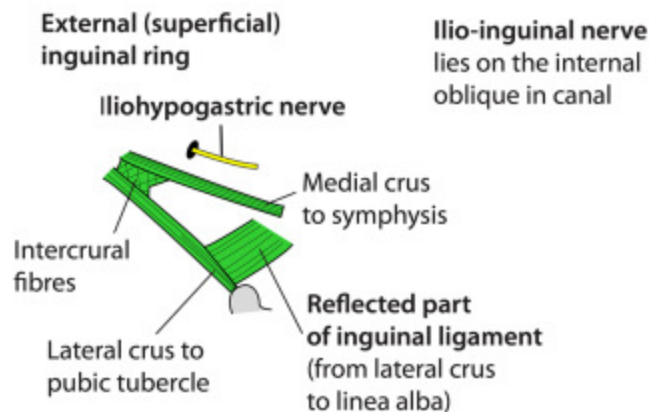
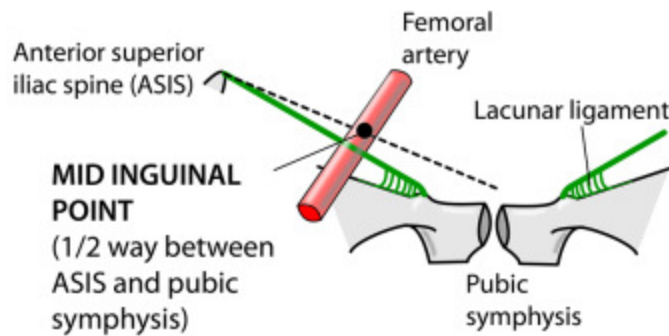
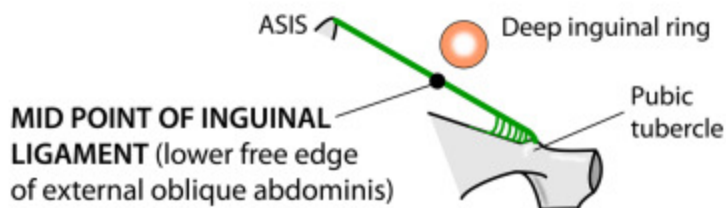
Here, for instance, the pain from the inflamed appendix is being referred to the T10 dermatome (umbilical region).



INGUINAL LIGAMENT



Lacunar ligament. Extends upwards/backwards onto pectineal line along which it extends to become the pectineal ligament (of Astley Cooper)



INGUINAL CANAL

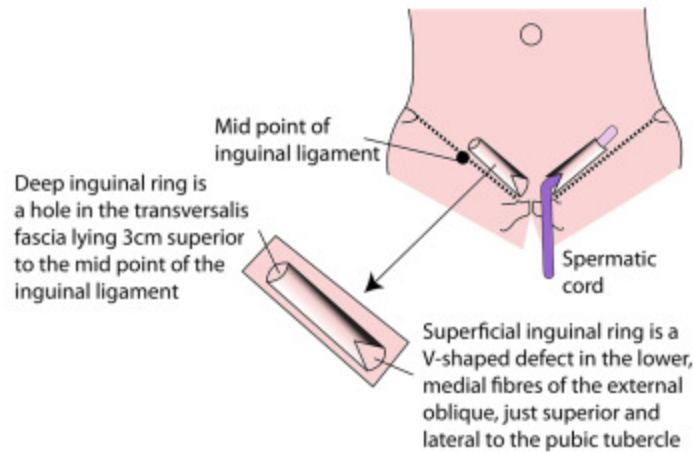
A 4cm tunnel in the lower, anterior abdominal muscles that runs downwards and medially between the deep and superficial inguinal rings

Anterior wall: external oblique, & internal oblique for lateral 1/3

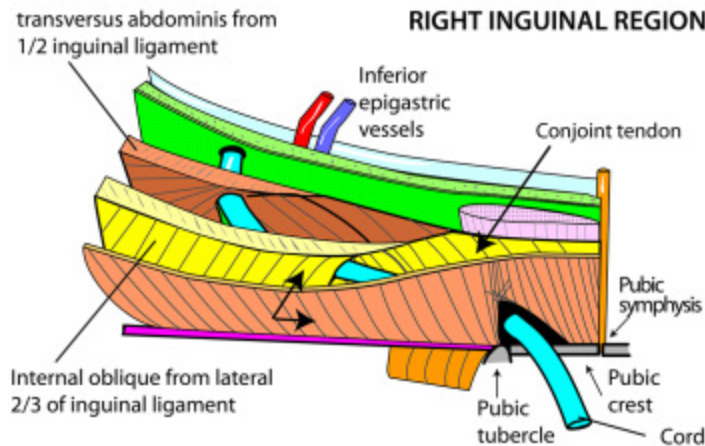
Roof: Arching fibres of internal oblique & transversus

Posterior wall: transversalis fascia & conjoint tendon

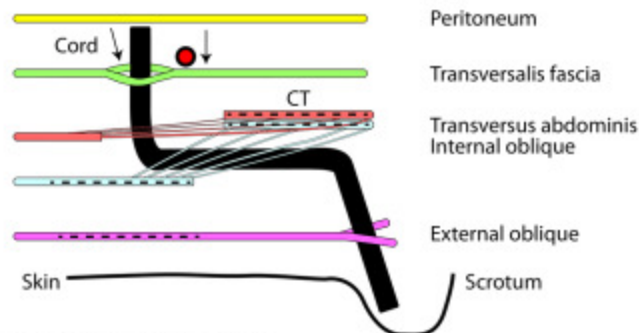
Floor: inguinal ligament



RIGHT INGUINAL REGION



Arrows show 2 areas of "reinforcement" for superficial and deep ring

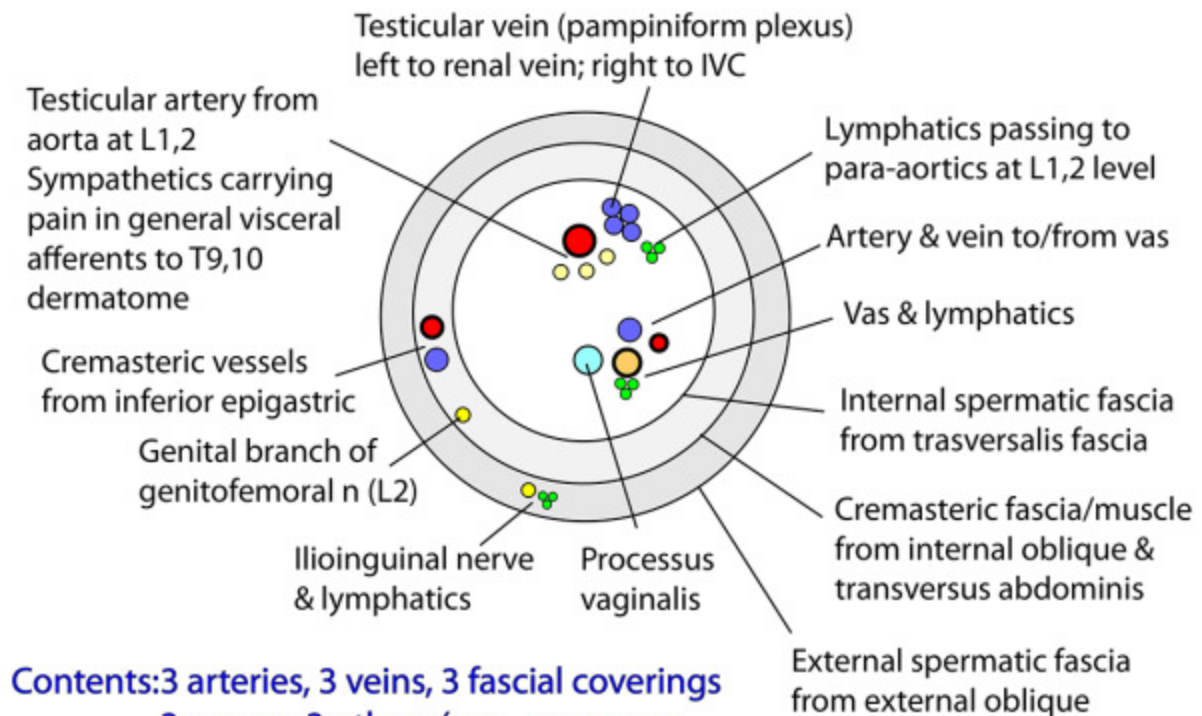


EXPLODED INGUINAL CANAL

- Arrows indicate sites of weakness at deep ring (indirect hernia) and at transversalis fascia lateral to conjoint tendon (direct hernia).
- Dotted lines indicate the 2 layers that support both the deep and superficial inguinal rings.

SPERMATIC CORD

(Cross section just beyond external inguinal ring)



Contents: 3 arteries, 3 veins, 3 fascial coverings
3 nerves, 3 others (vas, processus vaginalis, lymphatics)

VIA THE DEEP INGUINAL RING

- Vas
- Artery to vas (inferior vesical)
- Testicular artery (aorta)
- Cremasteric artery (inferior epigastric)
- Cremasteric vein (inferior epigastric)
- Testicular vein (IVC/left renal)
- Obliterated processus vaginalis
- Lymphatics
- Sympathetics
- Genital branch of genitofemoral n (L2)
Supplies motor to cremaster, sensory to fascia, tunica, scrotal skin, round ligament & labia majus

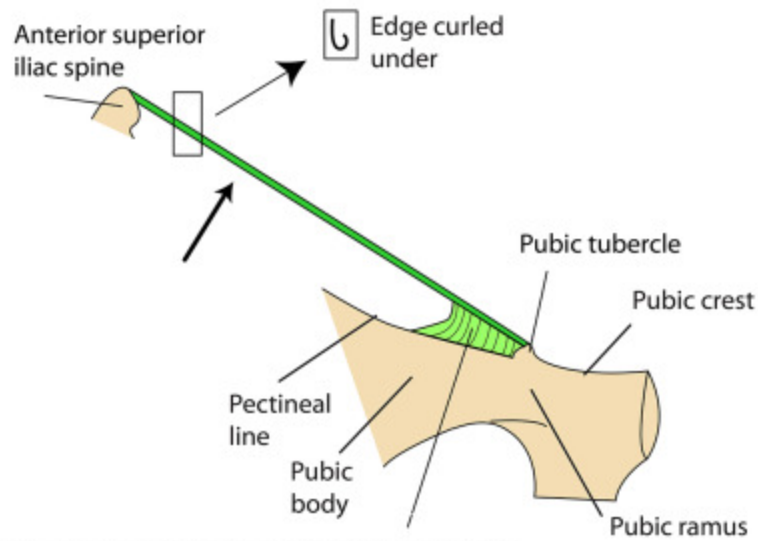
IN CANAL

- All these **plus**
- Internal spermatic fascia
- Cremasteric fascia
- Cremaster muscle
- Ilio-inguinal nerve

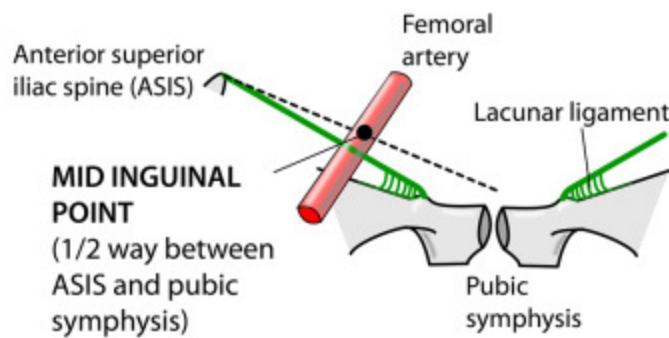
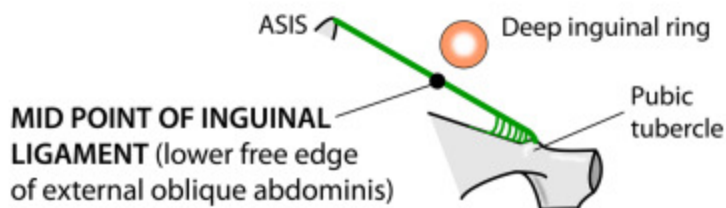
OUTSIDE SUPERFICIAL RING

- All these **plus**
- External spermatic fascia from external oblique

INGUINAL LIGAMENT



Lacunar ligament. Extends upwards/backwards onto pectineal line along which it extends to become the pectineal ligament (of Astley Cooper)



External (superficial) inguinal ring

Ilio-inguinal nerve lies on the internal oblique in canal

