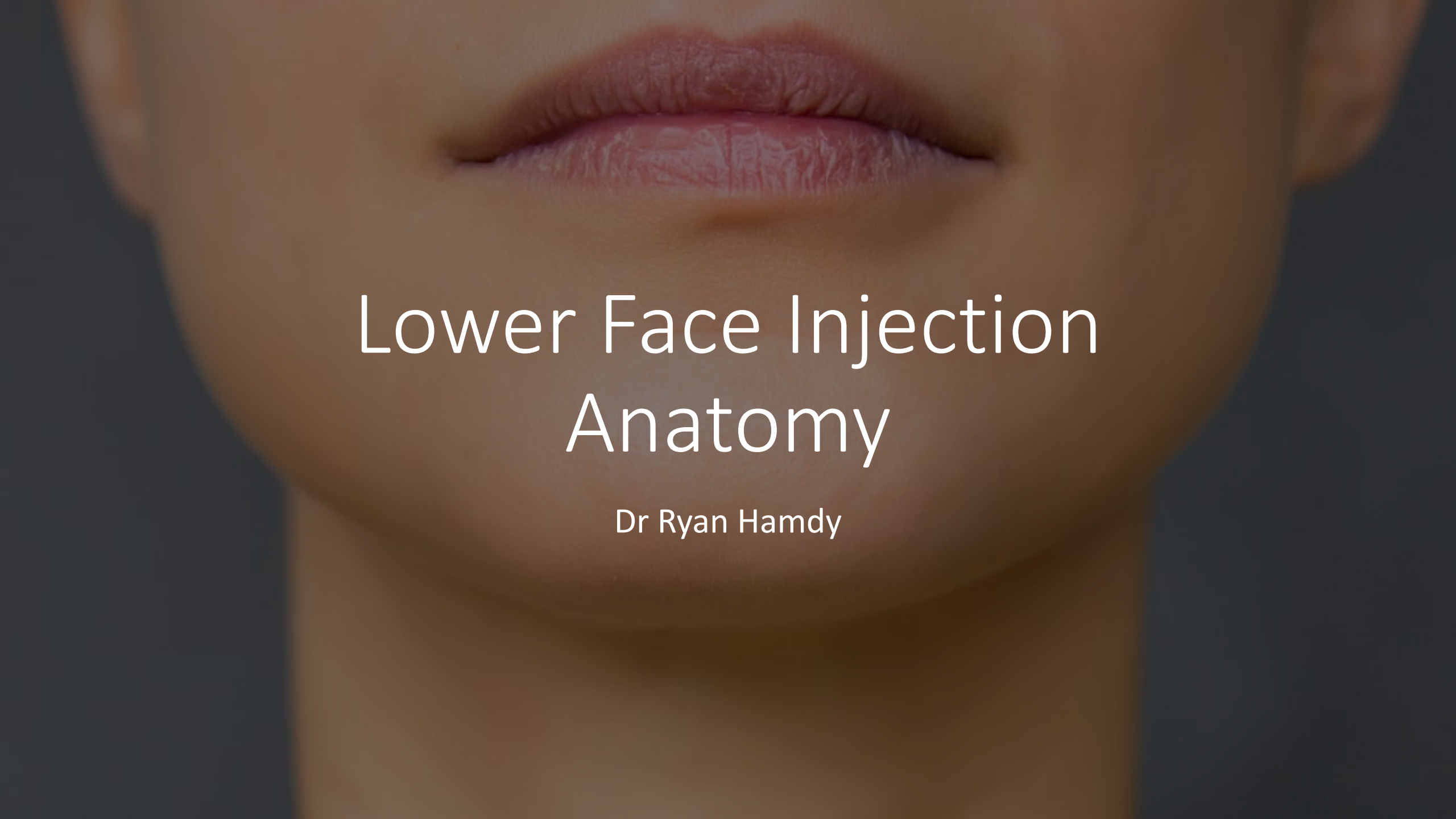


Lower Face Injection Anatomy

Dr Ryan Hamdy

For our Purposes, the Lower Face

- Lips
- Chin
- Jawline

Overview

Demand for non-surgical procedures is on the rise

In addition our procedures are becoming increasingly complex

HA fillers and neurotoxin have an excellent safety profile

We are becoming increasingly aware of the potential for serious and life changing complications

As a result we owe it to our patients to have a thorough understanding of facial anatomy

What is Injection Anatomy ?

Injection Anatomy can be defined as the anatomical study of regional surface landmarks and the underlying DEPTH of the target tissue or vital structures

Most anatomy books will illustrate a 2D picture. However we are aware of the vast variability in individual anatomy

What is much more predictable is the consistency in the depth at which vessels pass through tissue

The Face is full of blood vessels

So the important thing is to make sure that

We try and stay away from the vessels

Inject ABOVE

Inject BELOW

Be aware of the DEPTH of your needle tip

Vascular Occlusion

- Always the result of intravascular deposition of filler and subsequent embolization
- Arterial deposition can result in necrosis and blindness
- Venous deposition is usually filtered out by the pulmonary system
- Remember filler can travel significant distances which is why cases of blindness have been reported from primary injections anywhere on the face

Vascular Occlusion

Common misconception that filler around an artery can cause pressure occlusion

In every case histologically examined filler has been found in the lumen of the artery

Compartment syndrome does NOT occur on the face

Vascular Occlusion

- Remember filler can travel significant distances from the site of primary injection.
- Result of the product embolizing and travelling either upstream or downstream
- Any delayed complaint of a ’bruise’ or colour change away from the injection site should be reviewed
- Generally skin colour change at your needle tip will usually indicate a bruise

Tips to Avoid Intravascular Injection 1

- Understand your anatomy, in particular depth and know the danger areas
- Aspirate-remains controversial. False negatives occur as do false positives
- Inject slowly with minimum pressure
- Small aliquots
- Move the needle tip-controversial
- Small needle-controversial
- Use cannula

Tips To Avoid Intravascular Injection 2

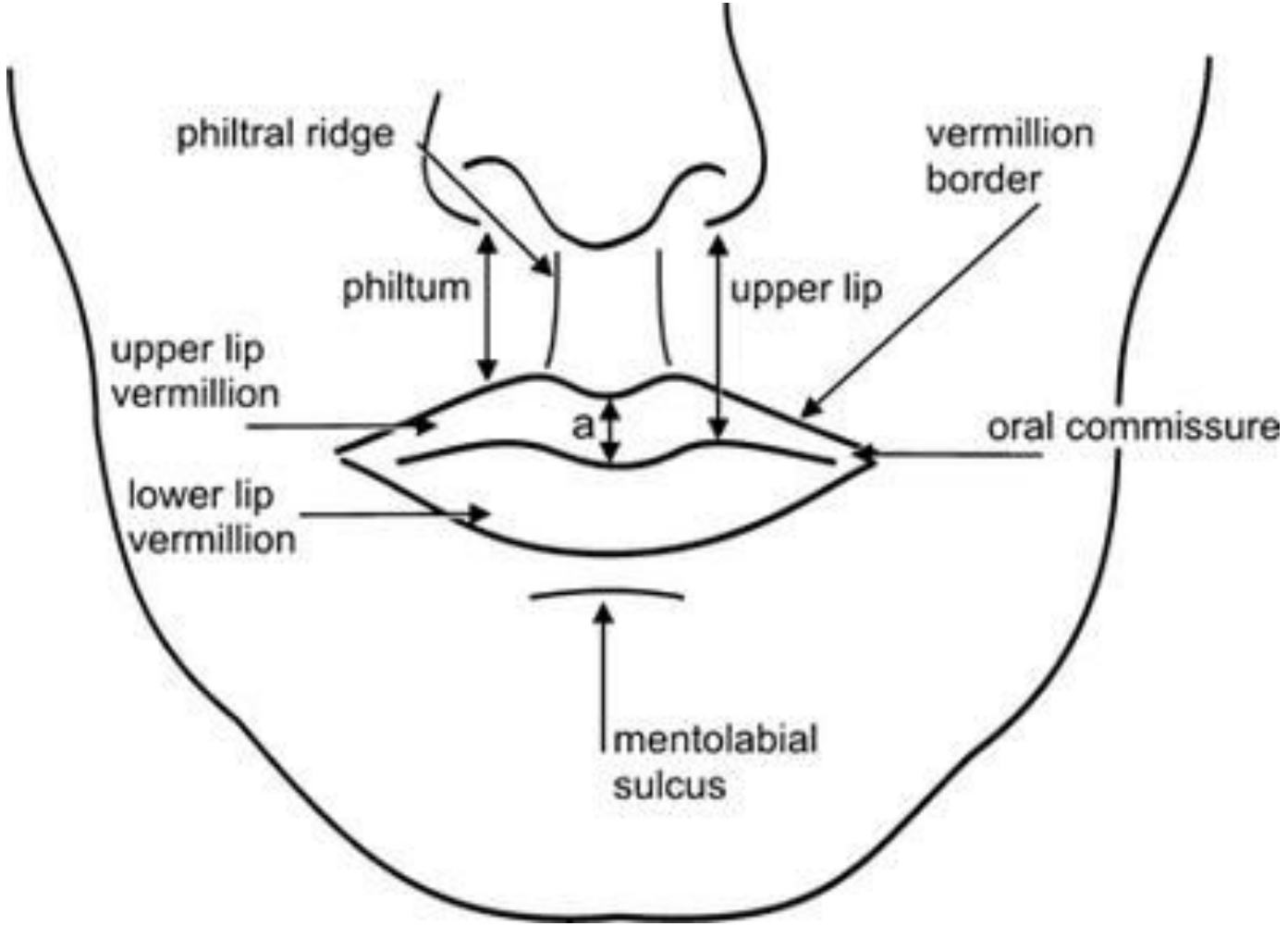
- Adding a vasoconstrictor in the product or before injection-controversial
- Maybe avoid filler with lidocaine (vasodilator)
- Be cautious with patients who have undergone previous surgery at the injection site
- Always watch the skin and not the syringe

Lips and Peri-oral Region

Anatomical Boundaries of Lips

- The upper lip extends from the base of the nose superiorly to the free edge of the upper vermillion inferiorly. Laterally it is bound by the naso-labial folds.
- The lower lip extends from the free edge of the lower vermillion superiorly to the labio-mental crease inferiorly. Laterally it is bound by the oral commissures.

Surface Landmarks of Lips



Anatomical Features of Vermillion

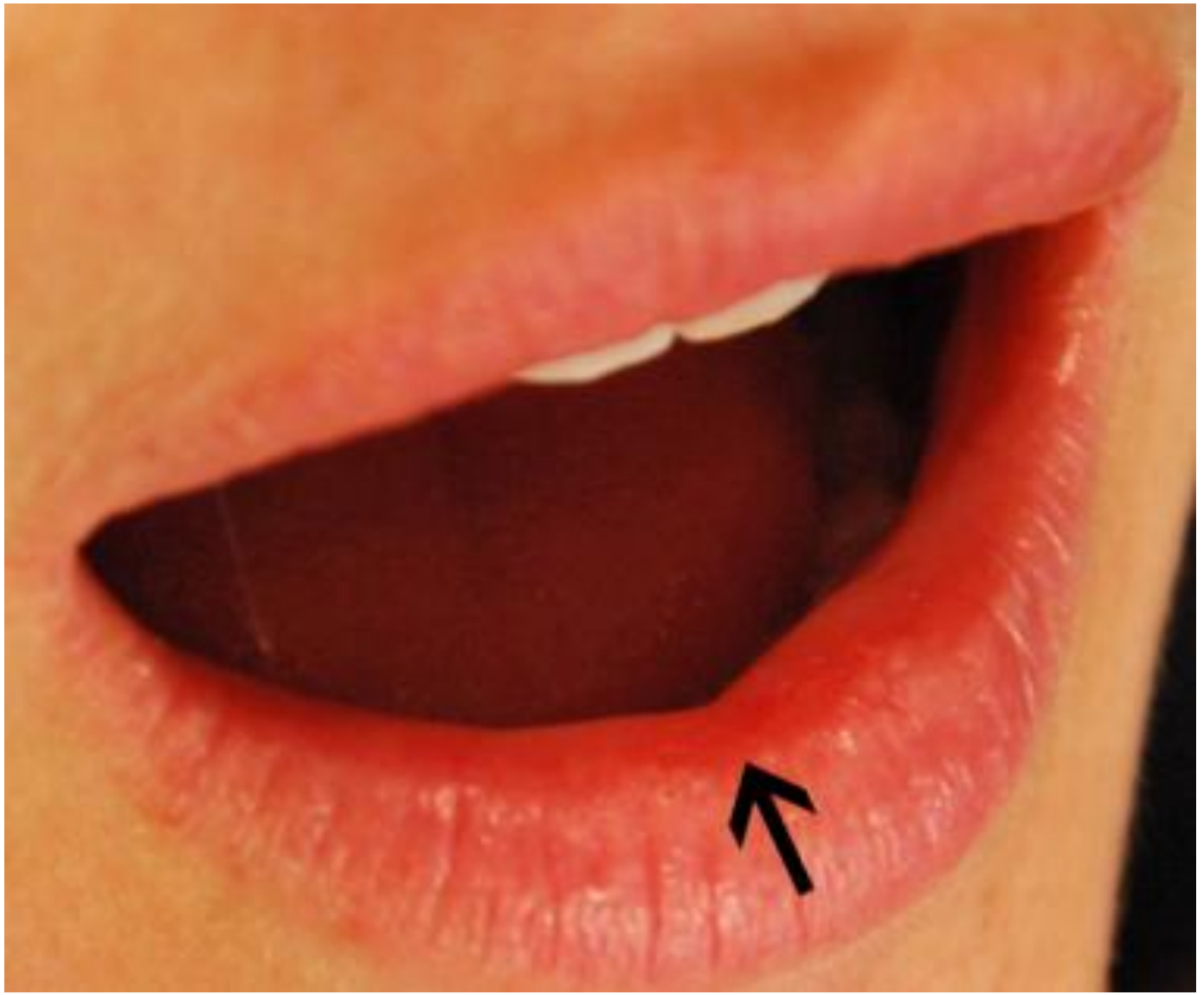
Outlining the upper and lower vermillion is a 2-3 mm pale convexity known as the white role. This is formed by bulging of the orbicularis oris muscle lying underneath.

The vermillion of the lips is modified mucous membrane composed of hairless, vascularized non keratinized epithelium.

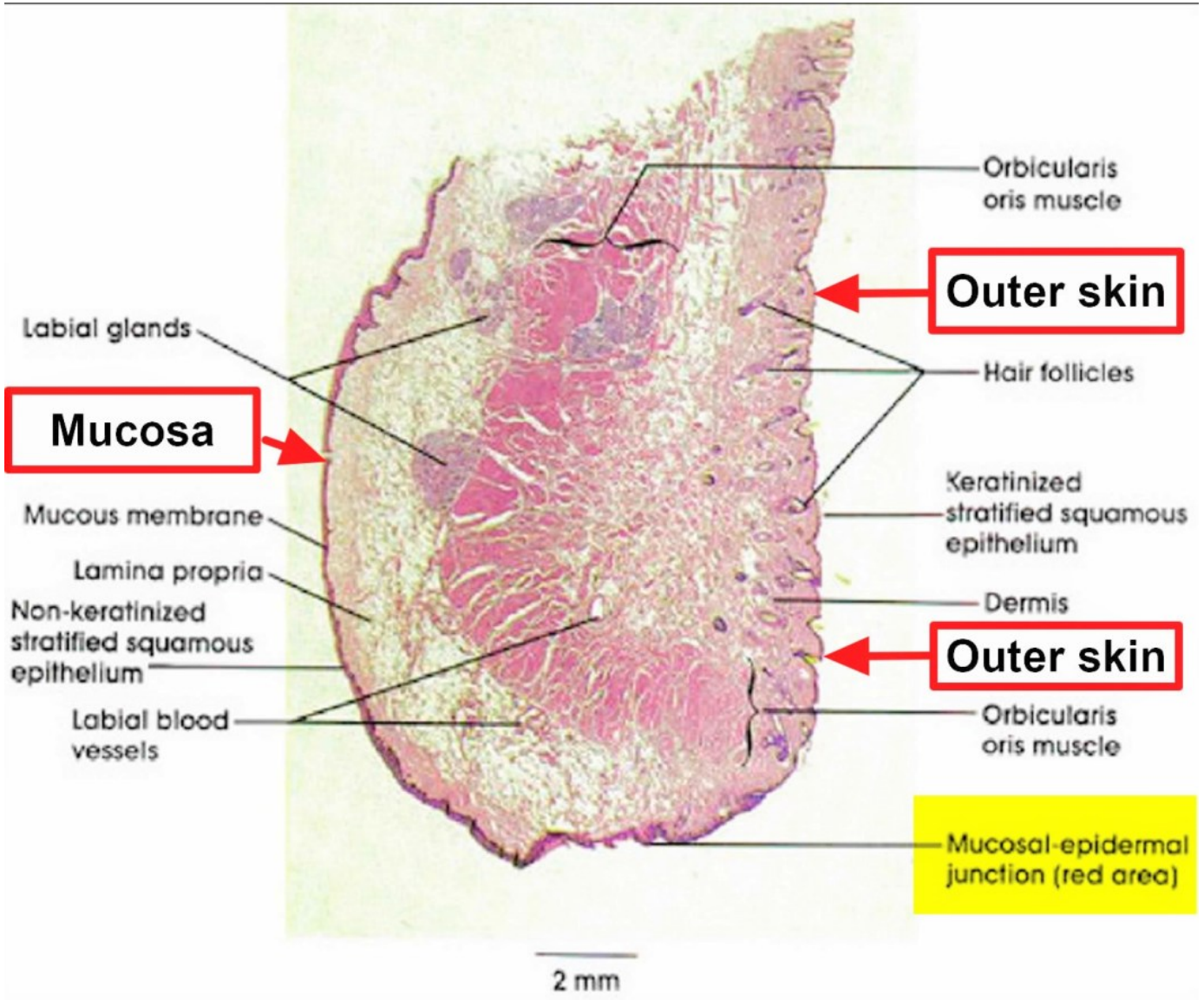
Additionally the vermillion lacks hair follicles, sweat, secretory, sebaceous glands.

The wet dry border is the transition from dry vermillion to labial mucosa marked by the presence of salivary glands and the cessation of skin lines

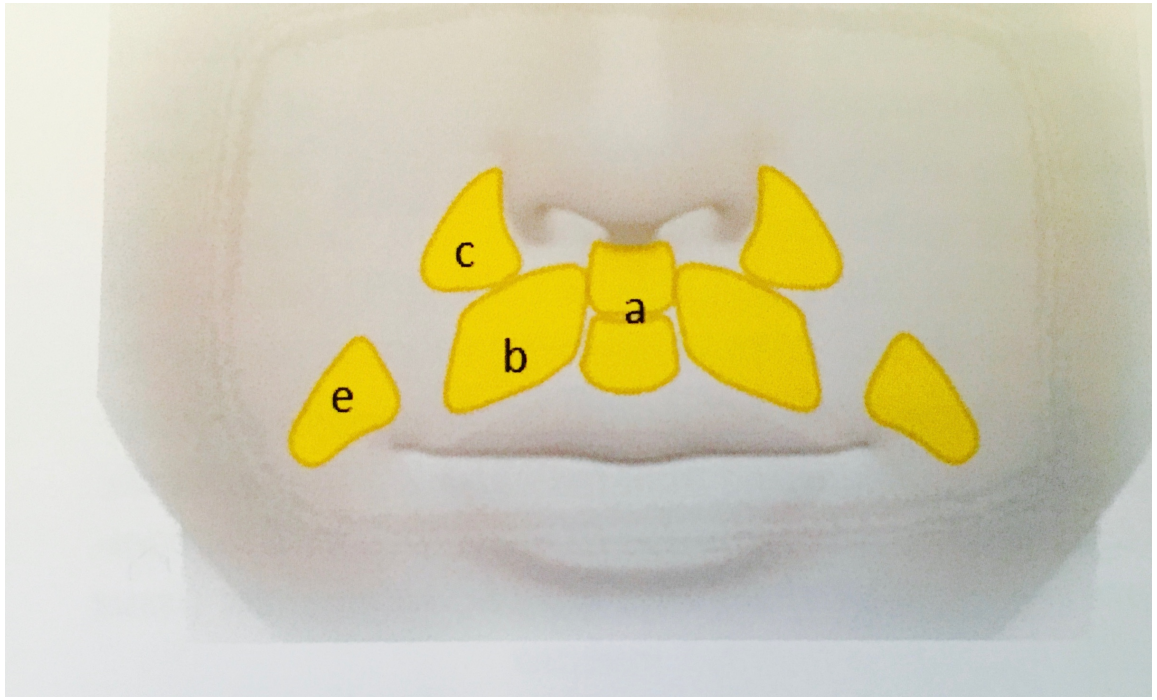
Wet Dry Border

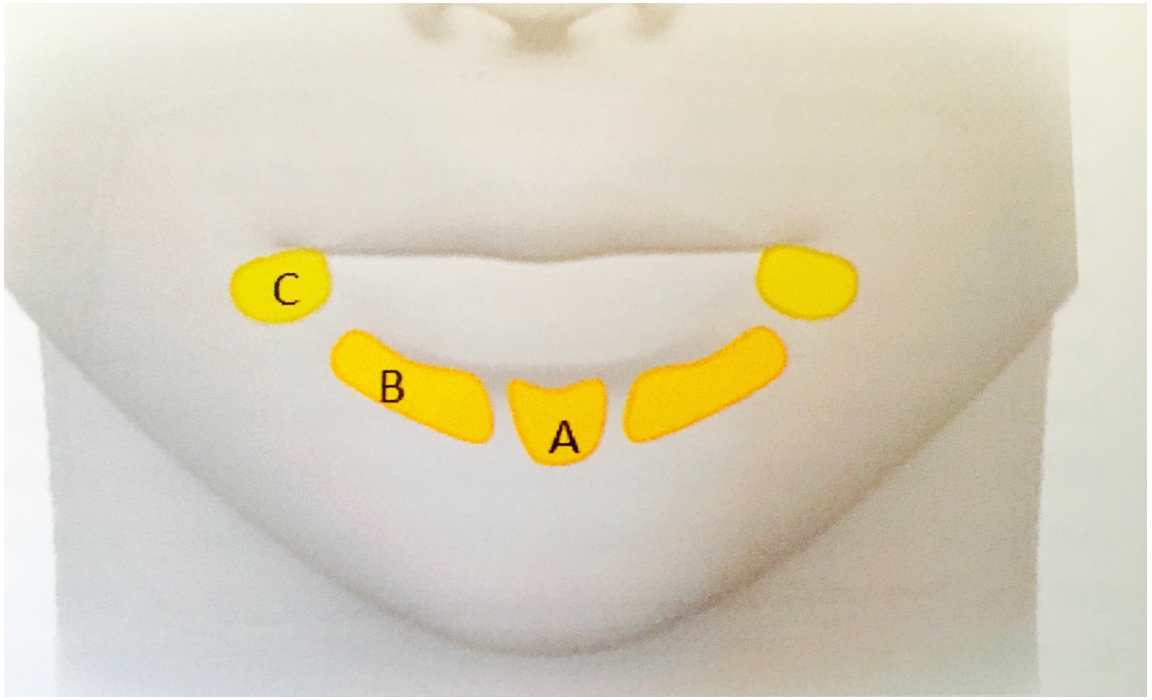


Anatomical Layers of Lips



Fat Pads of Lips





Muscles of Peri-oral Region

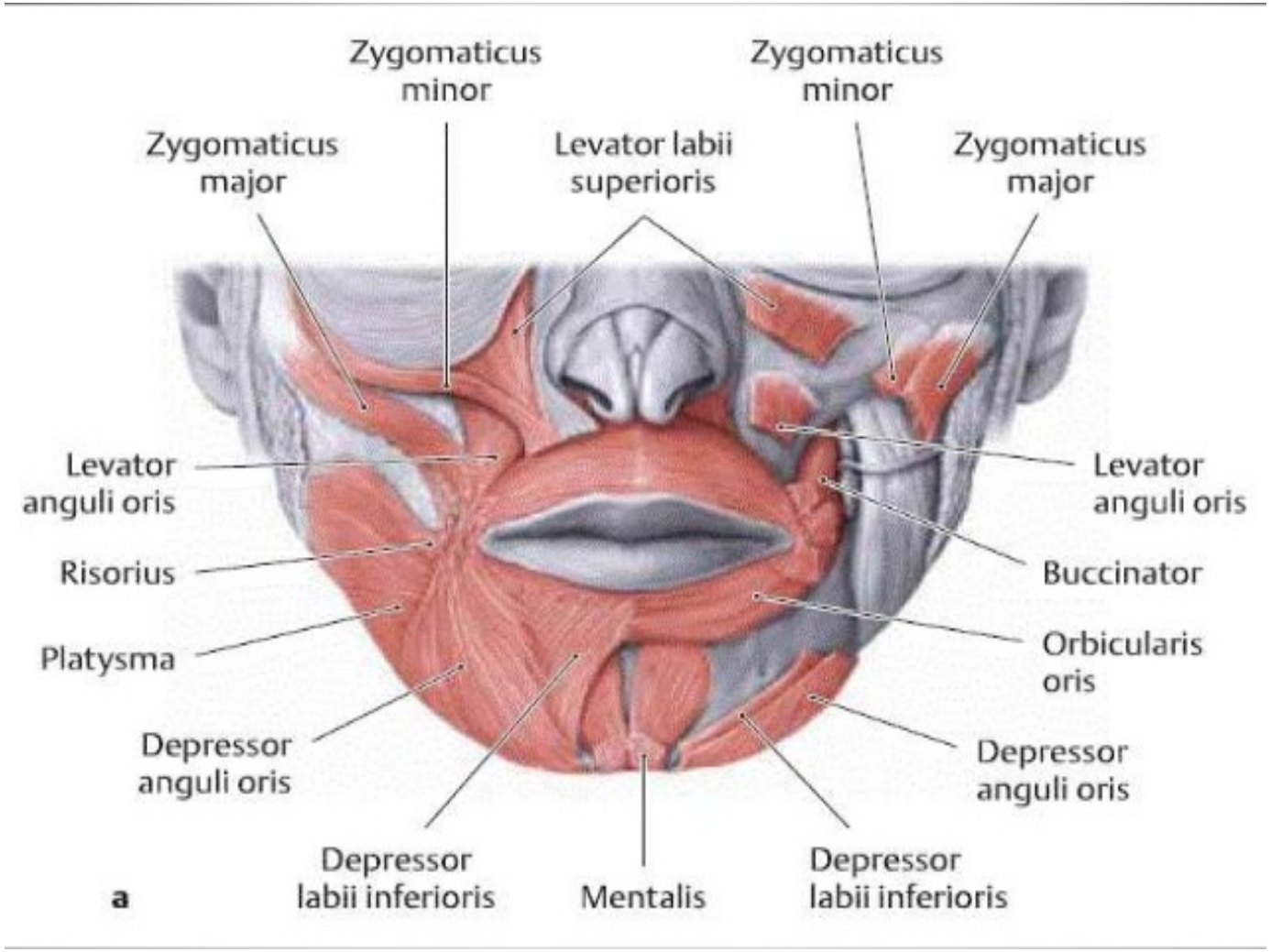
Principal muscle of lips id orbicularis Oris. Acts as a sphincter to the oral apertures and uniquely has no bony attachment.

It is however attached to other muscles by a fibromuscular structure know as the modiolus.

The modiolus plays a critical role in anchoring the various muscles, facilitating facial expression, phonation and mastication.

Additionally the modiolus is responsible for the formation of dimples in some individuals. It lies 10-12mm superiolaterally to the corner of the mouth

Peri-oral musculature



Blood Supply to the Lips

Derived from the superior and inferior labial arteries principally.

These are branches of the facial artery which is a branch of the external carotid artery.

Venous drainage is via the superior and inferior labial veins which drain into the facial veins and then into the jugular vein.

The labial arteries are generally deep to orbicularis oris.

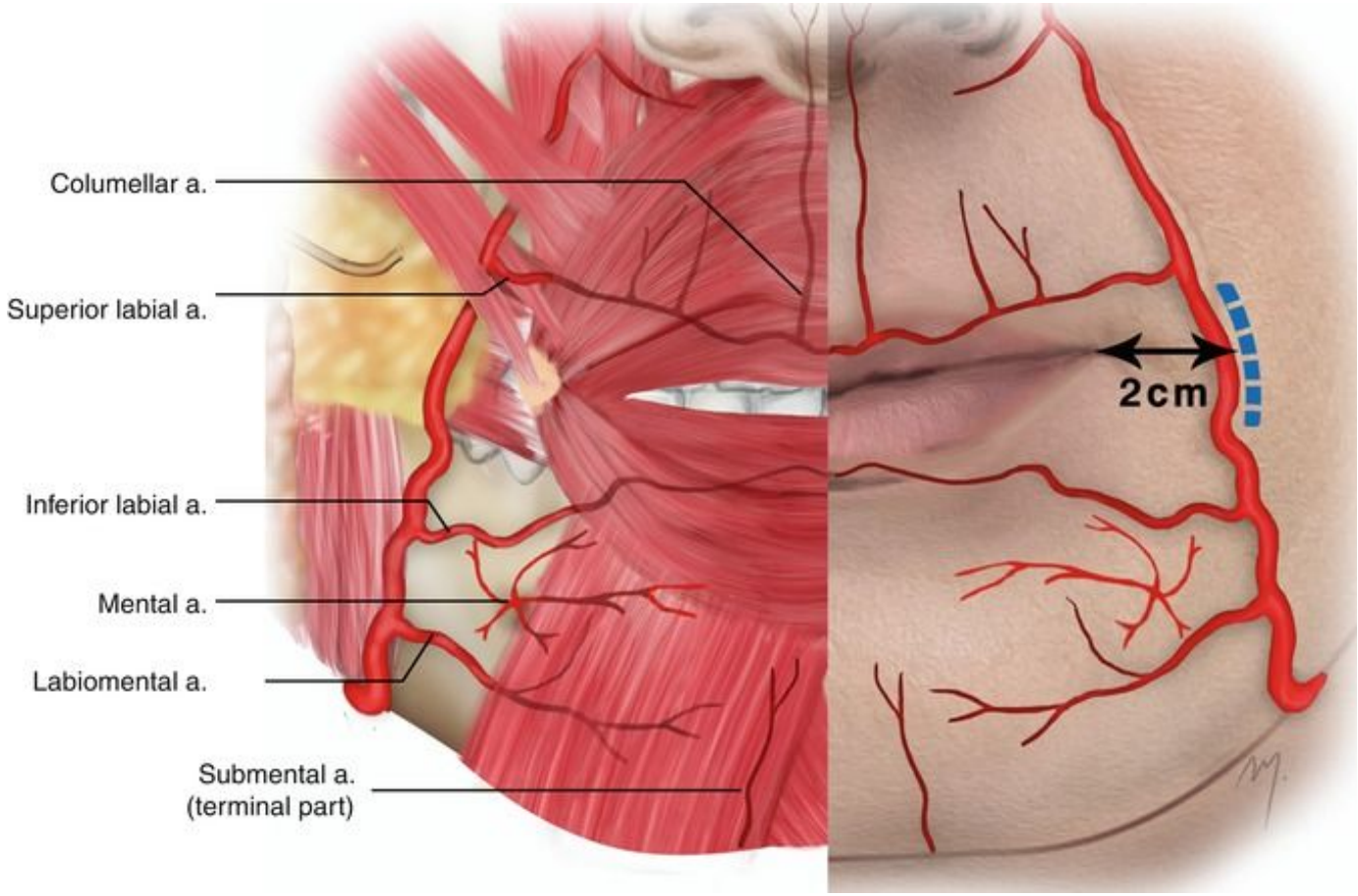
The overall thickness of the upper lips measures 9.4mm+/0.4mm.

The overall thickness of the bottom lip measures 10.9mm+/-0.7mm

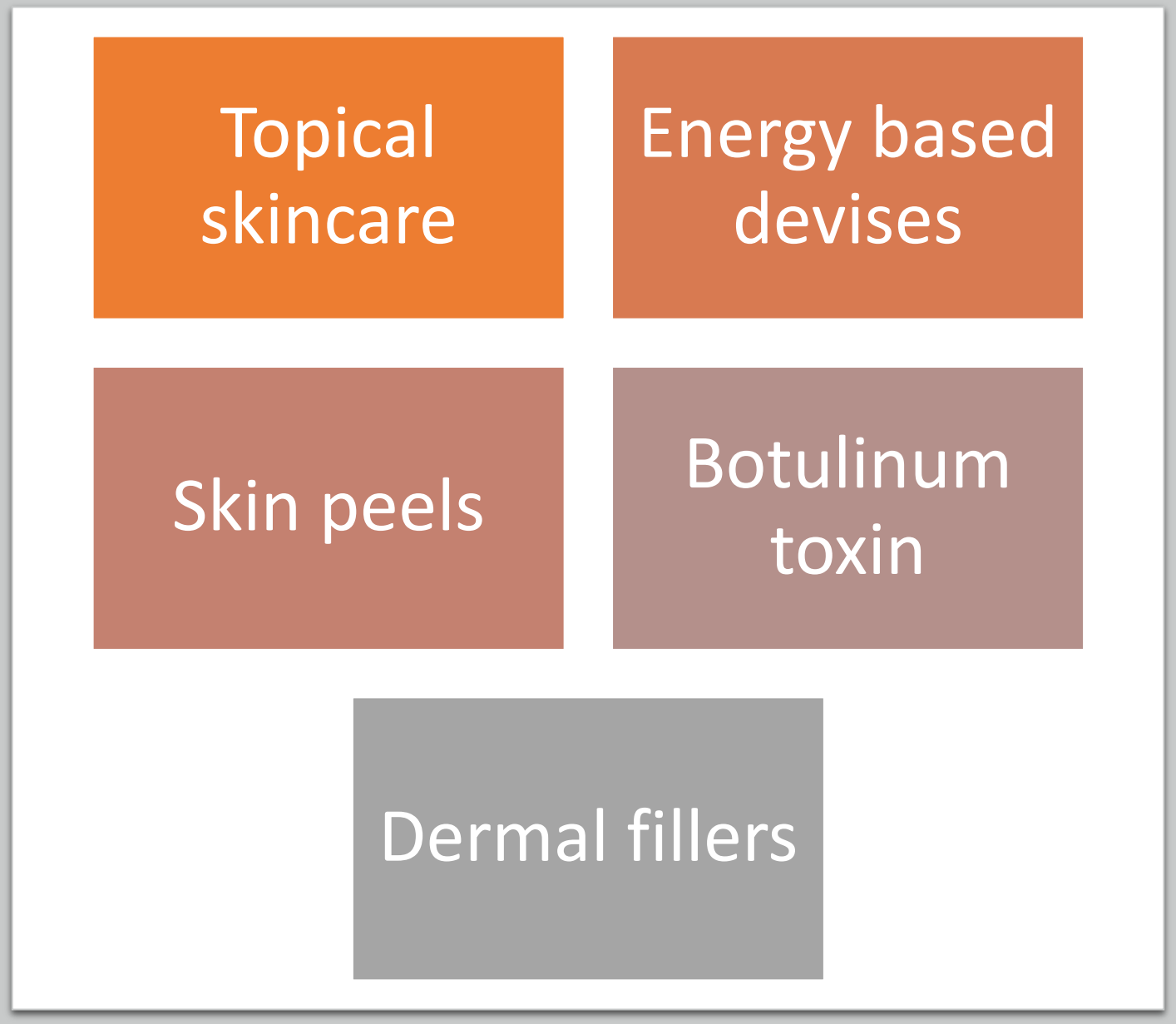
(Lee, Lee Youn March 2019)

Blood Supply to Lips Continued

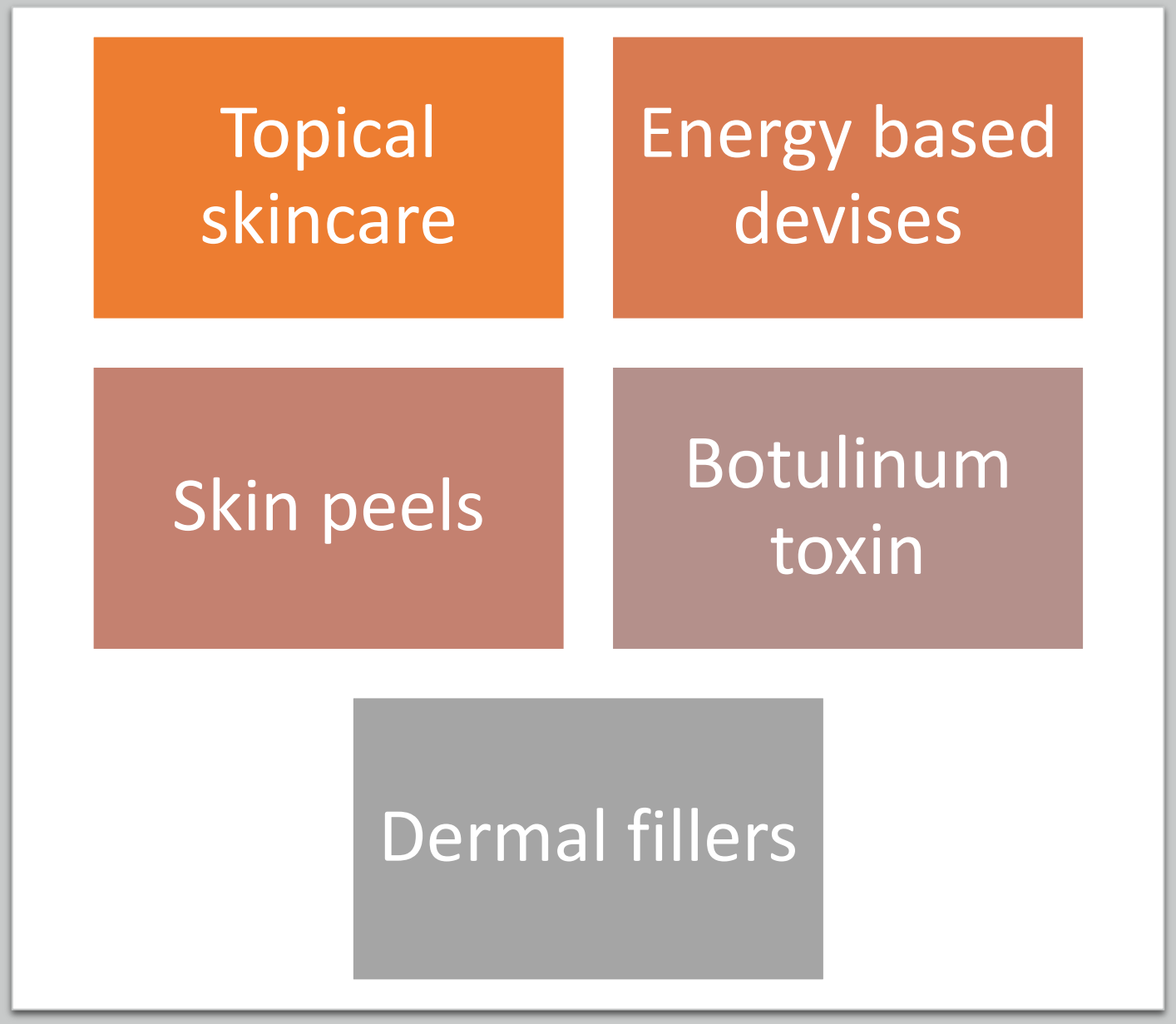
- The arterial depth of the SLA is 5.3mm+/- 0.3mm.
- The arterial depth of the ILA is 4.2mm+/- 0.4mm.



Treatment Options



Treatment Options



Botulinum Toxin

- We can influence the lips and perioral complex with neuromodulators.
- Orbicularis Oris-softening of barcode lines, lip lifting effect.
- DAO-reduces depression of the oral commissures.
- Platysma-reduced downward pull allowing elevators to act unopposed.
- Potentially contribute to longevity of fillers.

Botulinum Toxin Complications

1

Induce asymmetries.

2

Interfere with phonation and mastication.

3

Cause paralysis of muscles not intended to be treated.

Dermal Fillers

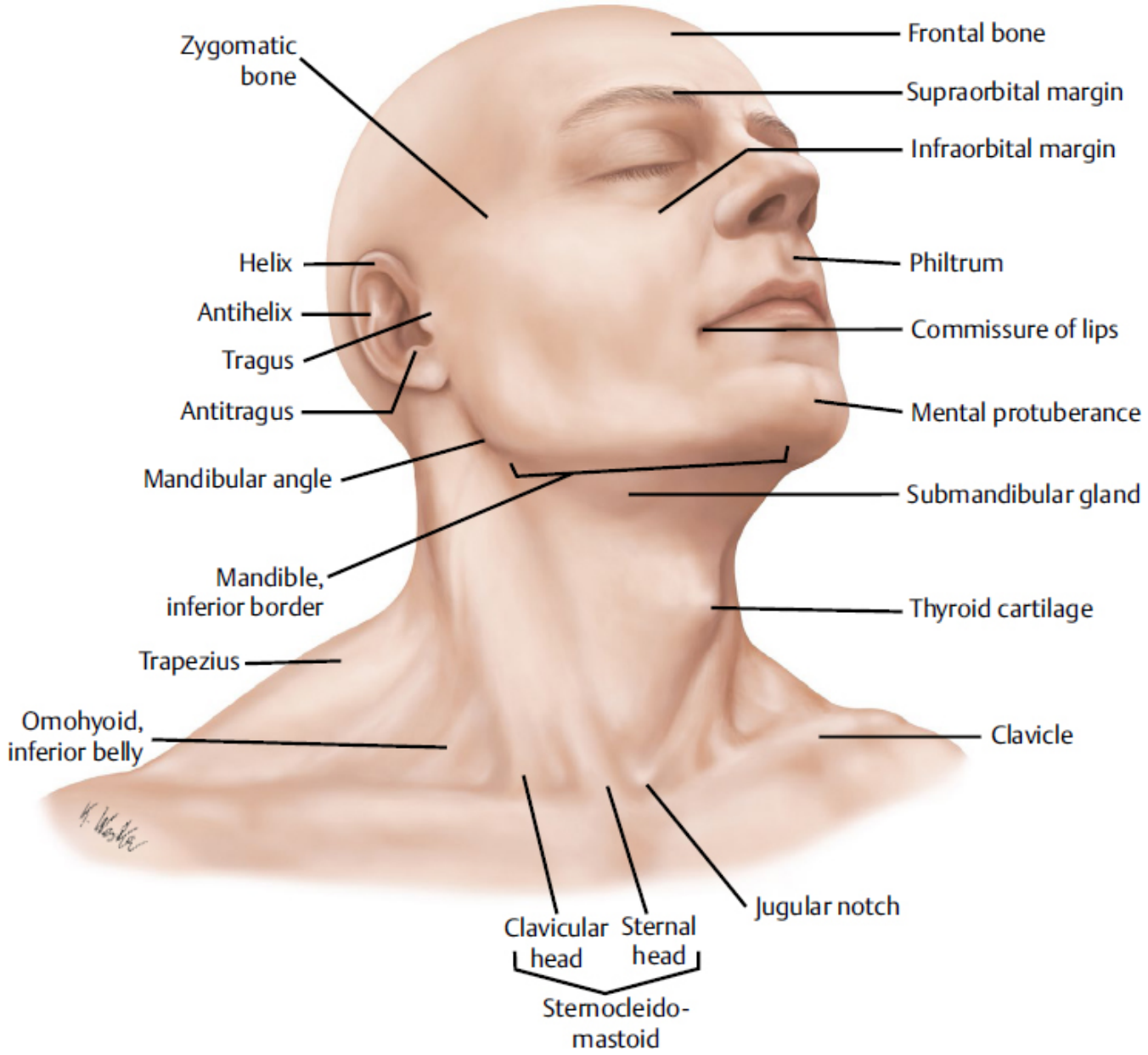
- Non-permanent dermal fillers are ideally placed to offer the most satisfactory results in the majority of cases.
- Choice of filler will depend on patient expectations, intended outcome and expected longevity.
- However they are not without significant risk of complications.
- An understanding of anatomy is clearly paramount as is correct patient selection.
- Using the most appropriate tools available to you is clearly sensible. Eg cannula

Dermal Filler Complications

- Bleeding and bruising.
- Swelling.
- Irregularities, clumping, nodules.
- Vascular Compromise.
- Perioral region is unforgiving area to treat and minor asymmetries often seem magnified.

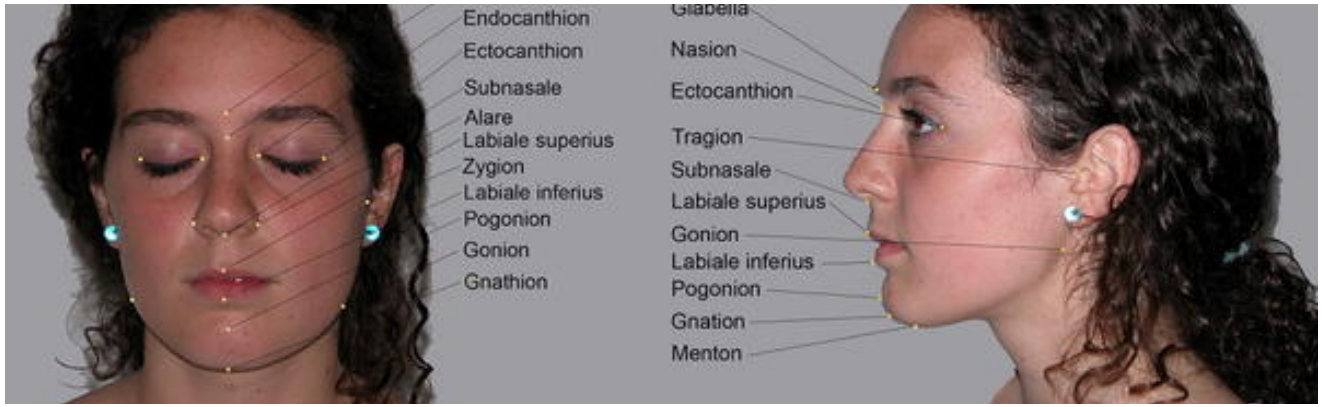
Chin and Jawline Region

Surface Landmarks



Chin Landmark Terminology

- Pogonion-Most anterior point on the chin
- Menton-Most inferior point on the chin
- Gnathion-Point located on the chin in between the above



Anatomical Considerations

The ageing face undergoes what appears to be a redistribution of volume from upper to lower part of face.

Midface resorption, atrophy and ptosis lead to widening of the lower face.

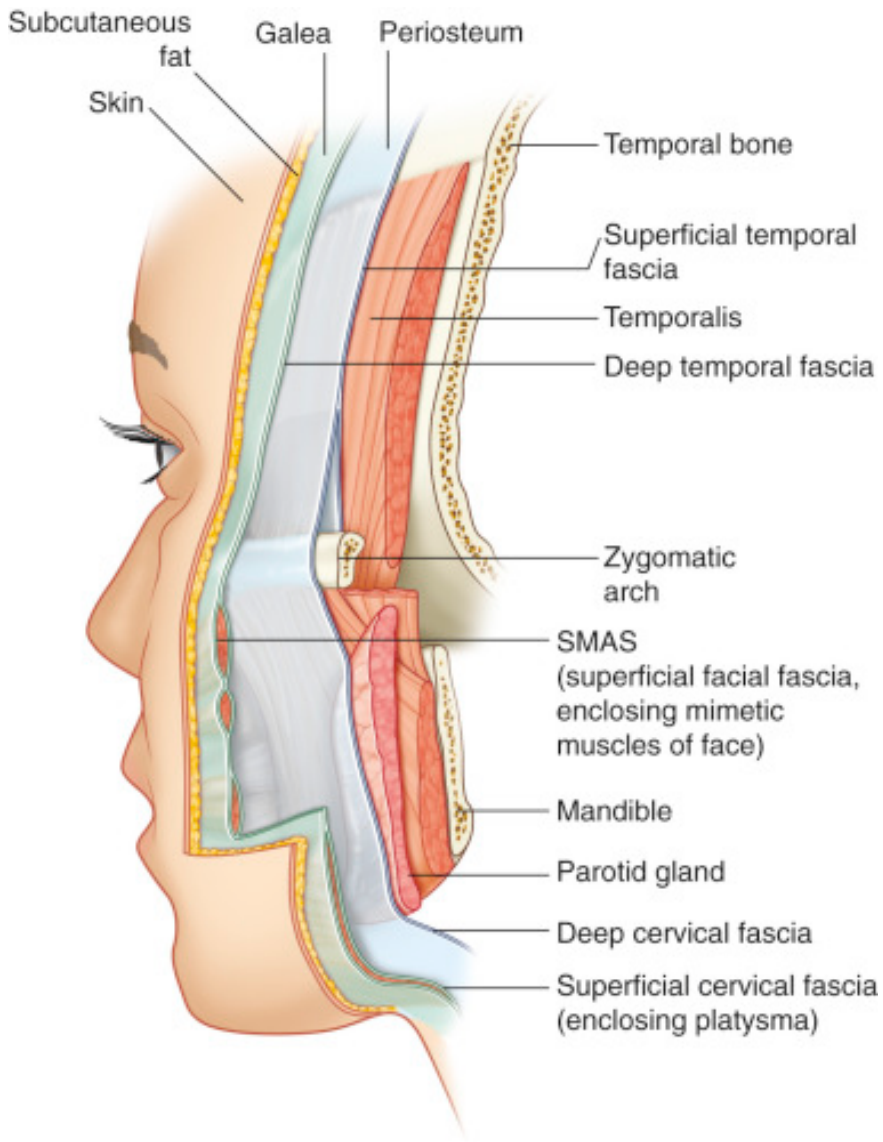
Often seen at relatively early age along the jawline.

In addition a strong jawline and chin expresses power, beauty and strength.

Whereas a weak chin represents weakness and submission.

Regional Anatomy

- At the angle of the mandible the key layers to consider are,
- Skin
- Subcutaneous fat,
- SMAS,
- Masseter,
- Bone.



Regional Anatomy Continued

- At the pre-jowl region the same 5 layers exist.
- Skin,
- Superficial Fat,
- Platysma (SMAS) fusing into DAO
- Deep Fat,
- Bone.
- More anteriorly the DAO overlaps DLI

Region Anatomy Continued

- At the chin we continue to have our 5 layers
- Skin,
- Subcutaneous fat,
- Muscle/SMAS layer (mentalis and DLI)
- Deep fat,
- Bone.

Blood Supply to Chin and Jawline Region

Principle blood supply is derived from the facial artery.

The facial artery is a branch of the external carotid artery and wind around the inferior border of the mandible about 1cm in front of the anterior border of masseter.

From there it runs a tortuous course towards the nose.

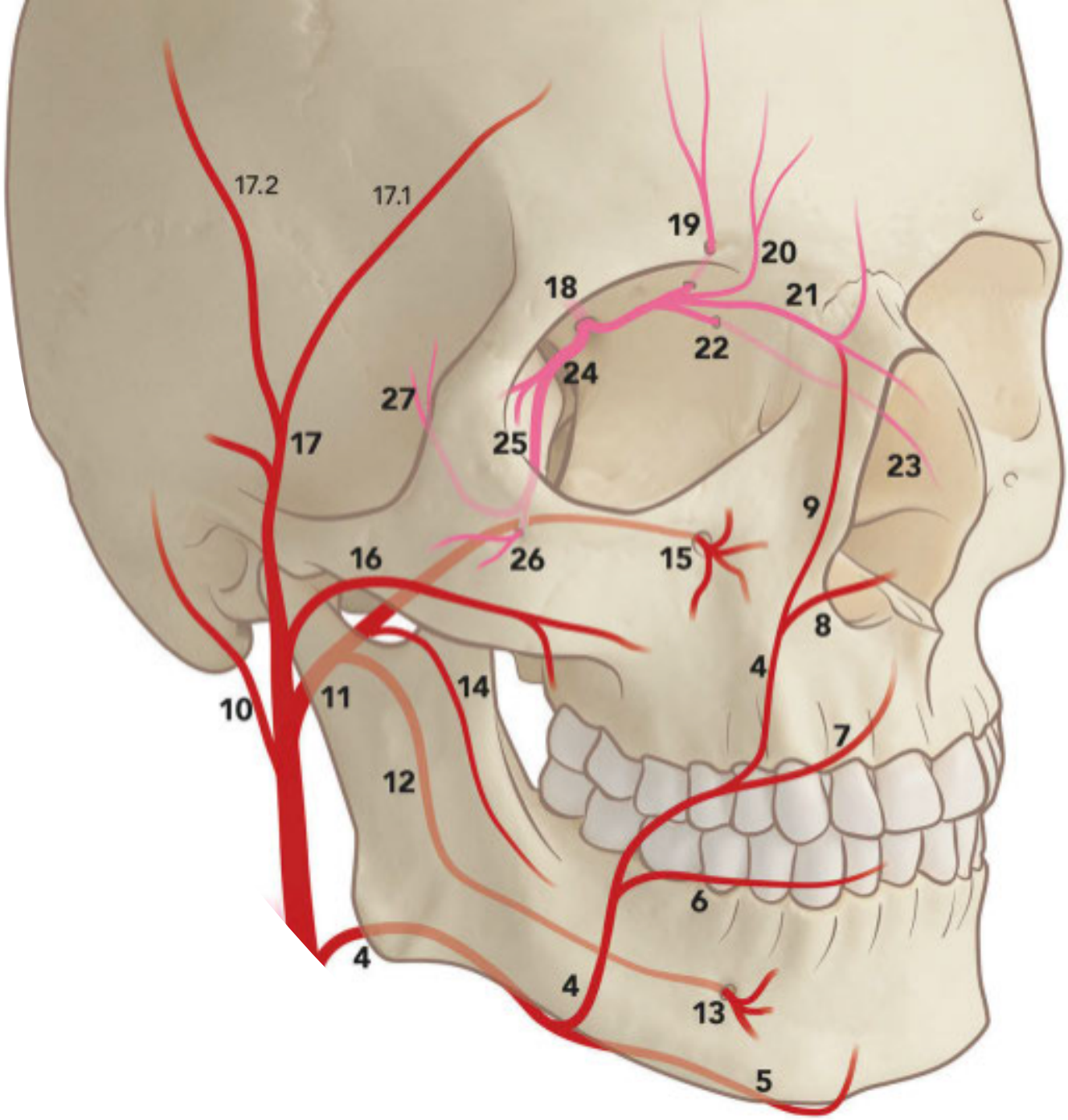
Initially deep to platysma and DAO and Zygomaticus it becomes more superficial as it ascends becoming superficial to the lip elevators.

The facial artery is highly variable.

In addition the chin receives a supply from the mental artery.

Blood Supply Continued

- Often overlooked is the submental artery. This is a branch of the facial artery.
- This artery runs below the mandibular margin anteriorly before turning superiorly at the chin.
- It anastomoses with branches of the mental artery and branches of the inferior labial artery.



Aesthetic Outcomes

Proper assessment of bony structure, soft tissue draping and skin quality.

Also an understanding of the key gender differences is important.

What treatment modality or combination of modalities is best for the patient.

Treatment Options

- Surgical and Non-surgical
- Lower face lift
- Chin implants
- Energy based skin tightening
- Dermal fillers

Anatomical Considerations For Dermal Filler Injections

When enhancing the angle of the jaw consider the overlying anatomy. This is relatively safe area to inject. Either deep on periosteum or superficial in the subdermal plane. Be mindful of the parotid gland in this area.

Jawline enhancement can be achieved by placement of product deep to periosteum or superficial in the subdermal plane. Knowledge of the depth of the facial artery is critical here.

Chin injections can be placed deep to periosteum or again superficial in the subdermal plane.

Potential Complications

- Considered a relatively safe area given the lack of significant adverse events reported.
- Swelling and bruising common.
- Asymmetries, irregularities and infection.
- Vascular compromise.

Submental Artery Occlusion

- Reported 2018-Case report from Fang, Rahman and Mohan
- Chin injected on the periosteal plane in midline and laterally on both sides.
- Immediate symptoms blanching R side of chin, excessive pain in the chin and gingival area.
- 10 mins later livedo reticularis was present, and she complained of pain on swallowing. This can be explained by vascular compromise to the mylohyoid, digastric and platysma muscles.

Submental Artery Occlusion

Fig. 1. Postinjection picture taken 15 minutes after filler injection in

Thank You