THE ELITE ACADEMY

Foundation

BOTOX & DERMAL FILLERS

THE ELITE ACADEMY

Foundations

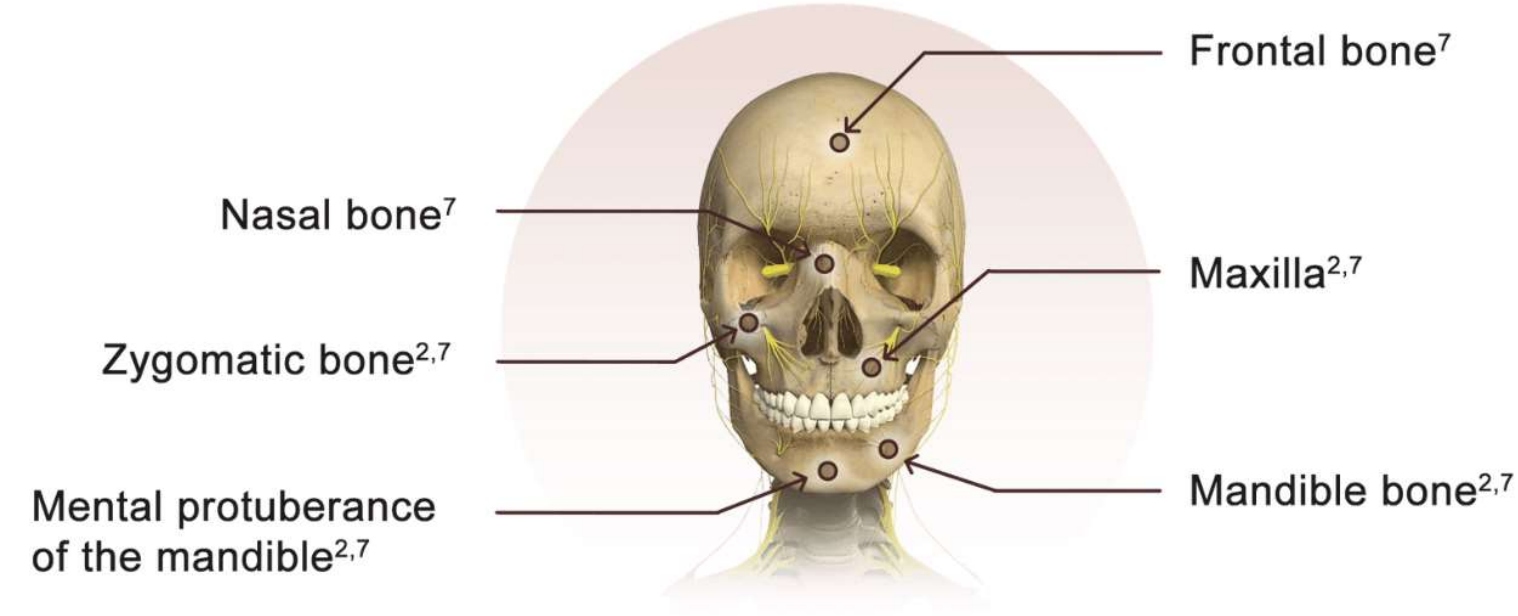
PRE COURSE READING

-Anatomy
-Complications
-The Science of Ageing

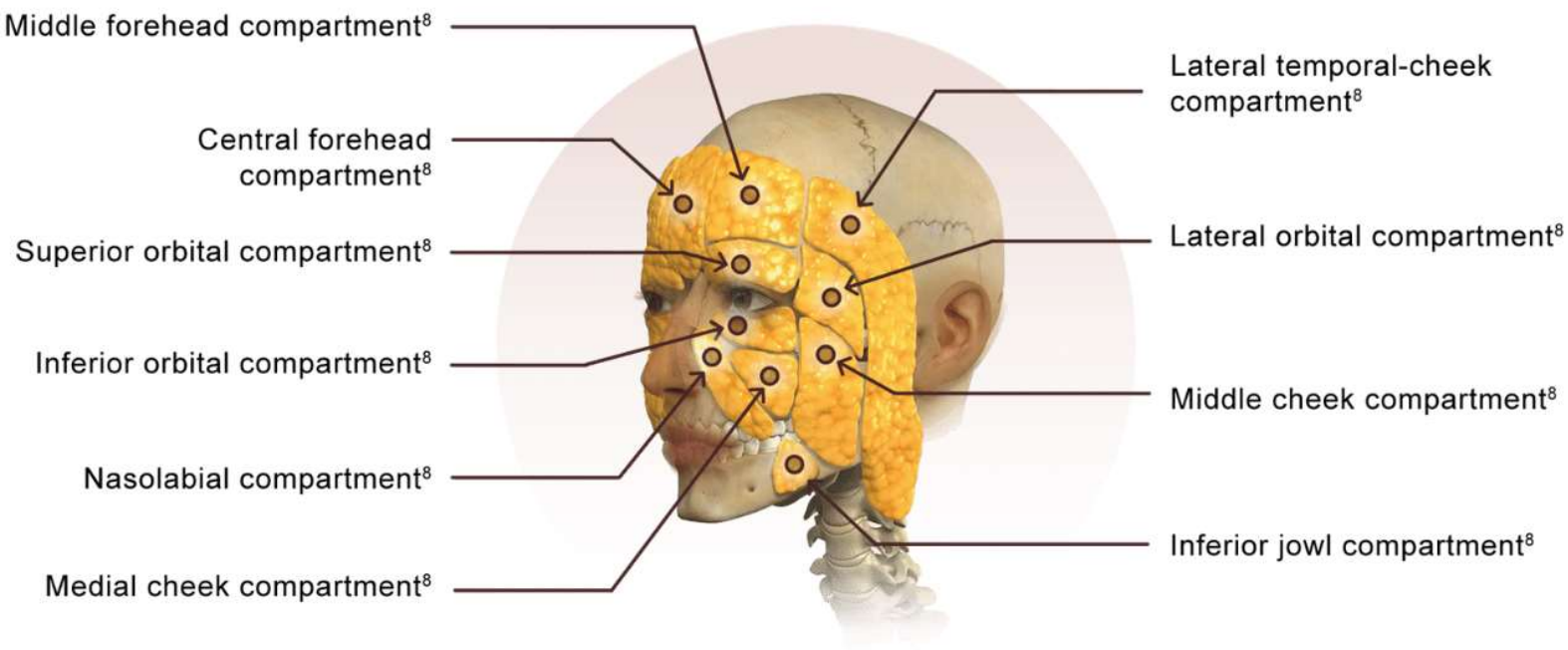
Anatomy

The facial anatomy, consist of four layers.

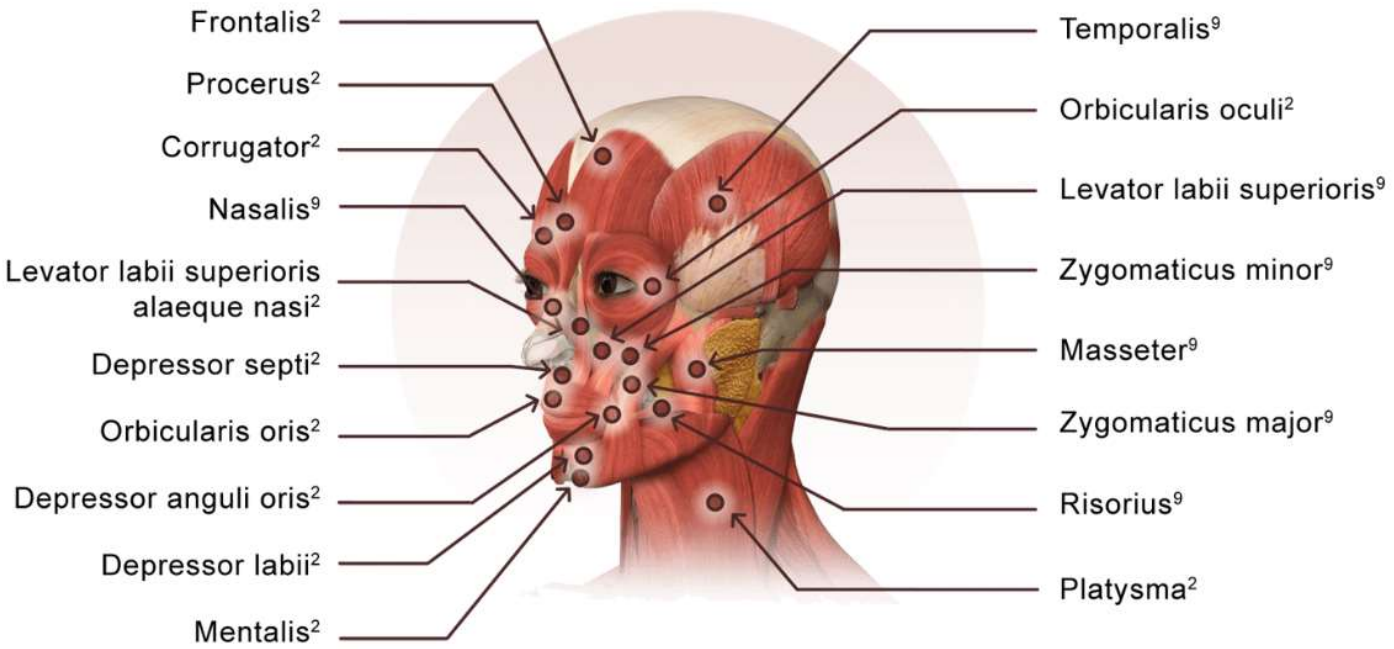
1- Bone structure



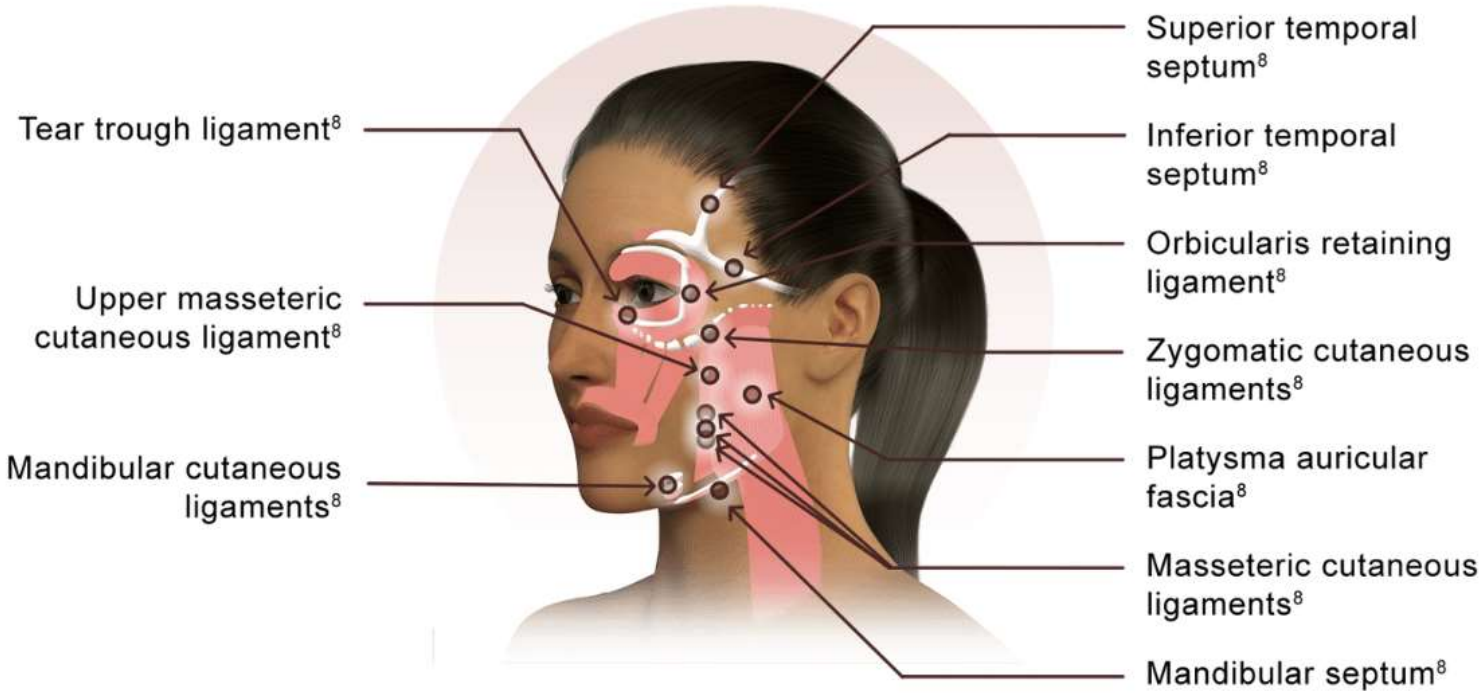
2- Fat Pads



3-Muscles



4-Skin



The Bone

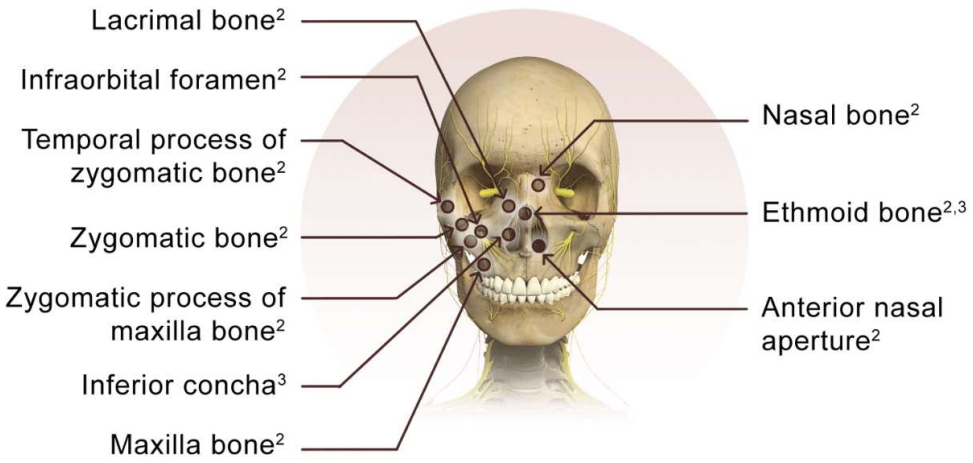
The frontal, nasal, zygomatic and maxilla bones provide support to the upper face.[2,3]

As well as providing structural support, projection and protection of sensory organs such as the eyes, the facial skeleton provides areas of attachment for the muscles of facial expression and the muscles of mastication.[2]

Gender differences exist in upper face bone structure.[1,3]

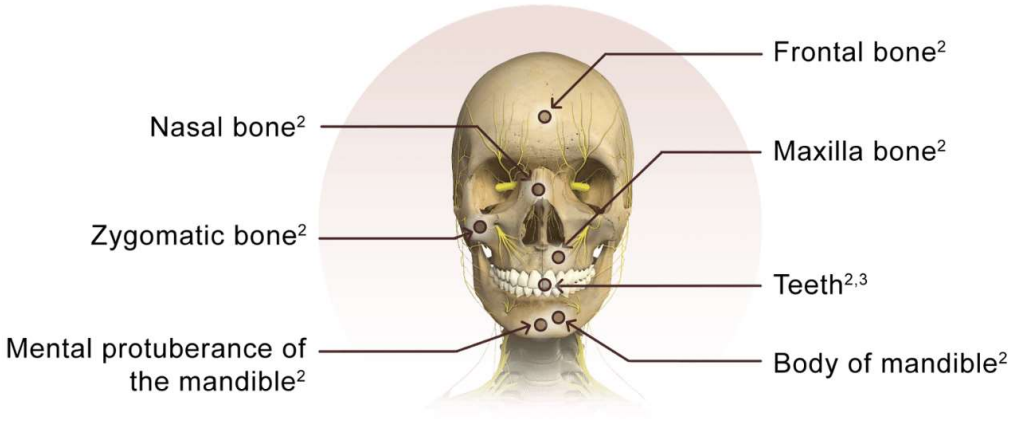
- Compared with the female facial structure, males have:[1]
  - More prominent brow ridges
  - Differentially shaped orbital rims

The zygomatic bone determines midface appearance.



The mandible, maxillary bone and teeth support the lower face.

As well as providing structural support, projection and protection of sensory organs such as the eyes, the facial skeleton provides areas of attachment for the muscles of facial expression and the muscles of mastication



The Fat Pads

Subcutaneous facial fat of the upper face.

1) Subcutaneous fat of the forehead comprises the **central compartment**, the **middle compartments** and the **lateral temporal compartments**
2) There are three periorbital fat compartments: the **superior orbital fat compartment**, the **inferior orbital fat compartment** and the **lateral orbital fat compartment**
3) The **medial cheek compartment** is also an important part of upper face anatomy, since loss of volume in this region leads to drooping of the lower eyelid
4) Ageing in the upper face is associated with loss of soft-tissue fullness in the periorbital, forehead, temporal and glabellar sites, and persistence or hypertrophy of fat in areas such as the infraorbital fat pouches

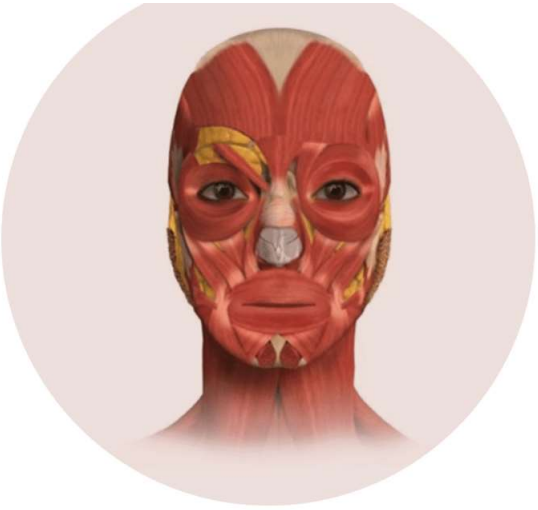
Subcutaneous facial fat of the midface.

1) The compartmentalised anatomy of the superficial subcutaneous fat of the face has implications in the ageing process
2) Volume loss appears to occur at different rates in different compartments, resulting in irregularities in facial contour and changes in the facial structure associated with youth and attractiveness

Subcutaneous facial fat of the lower face.

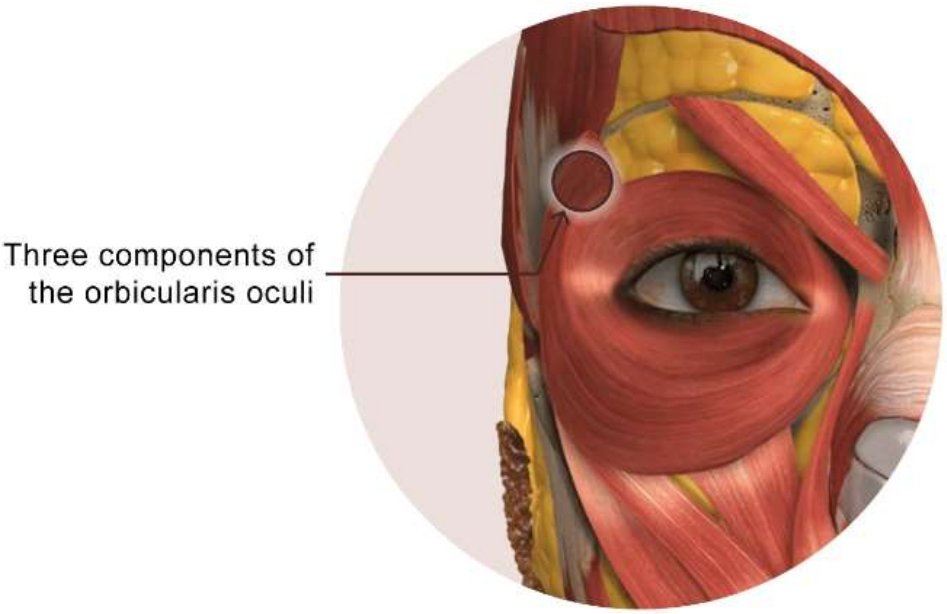
1) **Nasolabial fat** lies **anterior** to the medial cheek fat and **overlaps with jowl fat**
2) **Jowl fat** is the **most inferior** of the subcutaneous fat compartments
3) Jowl fat is **usually preserved** in patients with midface hollowing, suggesting that **facial fat regions behave differently** during ageing

The Muscles



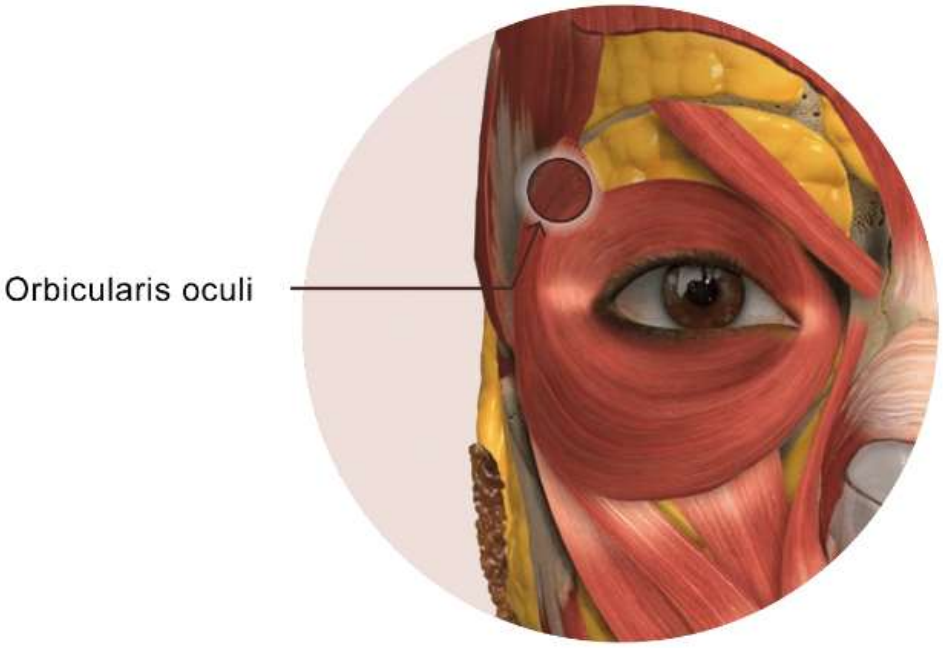
The orbicularis oculi muscle controls ocular reflexes and plays an important role in facial expression.

Three components of the orbicularis oculi:



Orbital	Closes eyelids firmly by voluntary action
Palpebral	Closes eyelids gently in involuntary or reflex blinking
Lacrimal	Compresses lacrimal sac, which receives tears from lacrimal ducts

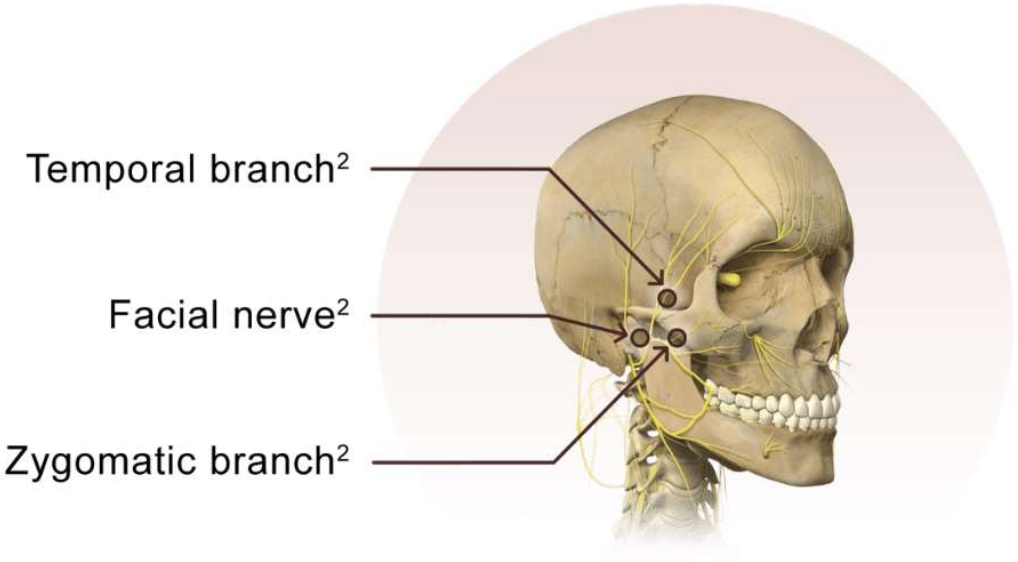
The orbicularis oculi muscle controls ocular reflexes and plays an important role in facial expression.



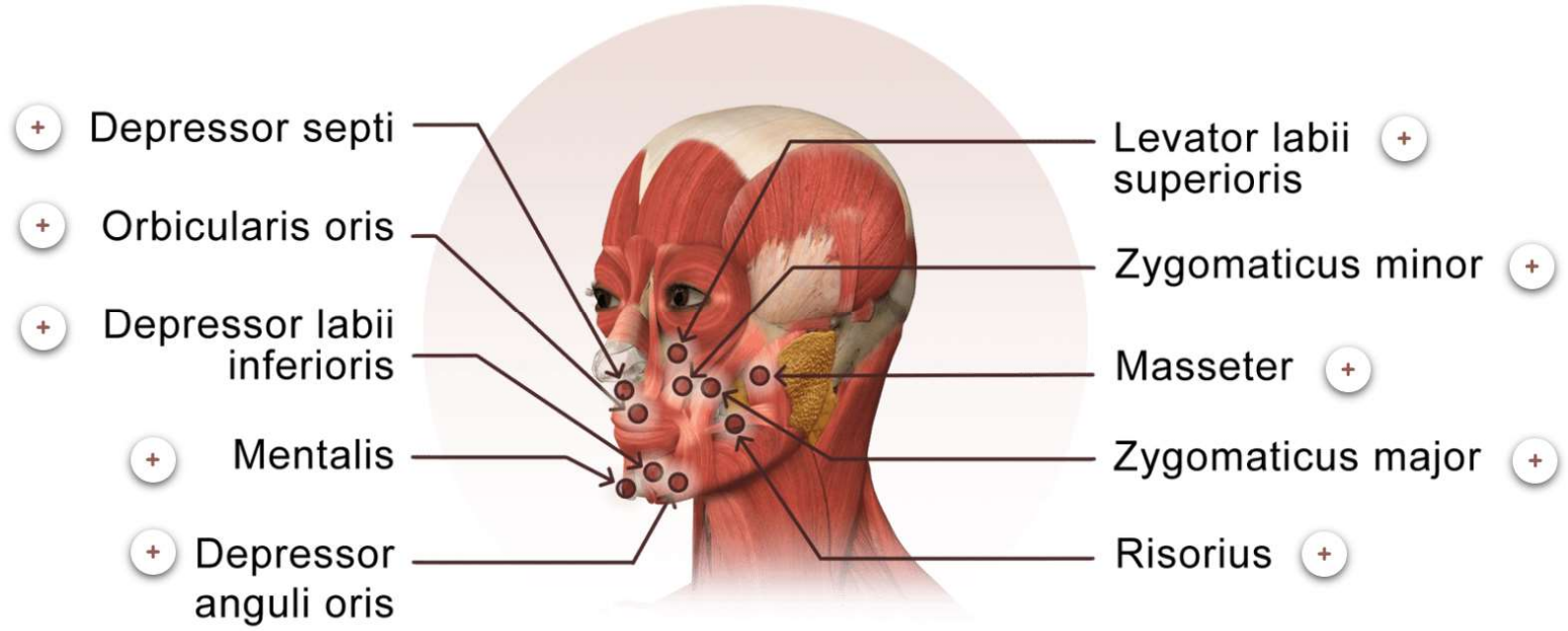
- During contraction of the orbicularis oculi, skin folds radiate from the lateral angle of the eyelids, forming dynamic 'crow's feet lines'[2]
- With ageing and thinning of the overlying dermis and fascia, static rhytids develop[3]

The orbicularis oculi is supplied by the branches of the facial nerve:[2]

- The temporal branch innervates the upper eyelid
- The zygomatic branch innervates the lower eyelid



There are several muscles of importance in the midface region.

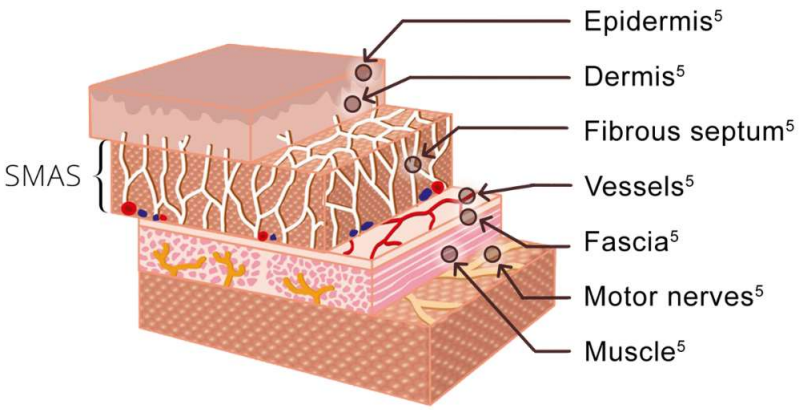


Depressor septi	Inserts into nasal septum cartilage and pulls nose tip inferiorly
Orbicularis oris	Closes the lips and protrudes them, compresses them against the teeth and shapes during speech
Depressor labii inferioris	Passes upward medially into mucosa of the lower lip and into fibres of orbicularis oris
Mentalis	Raises and protrudes lower lip, pebbles the chin pulling skin up
Depressor anguli oris	Draws angle of the mouth downwards and sideways
Risorius	Pulls corner of the mouth laterally
Zygomaticus major	Draws angle of the mouth upwards and sideways when smiling
Masseter	Elevates the mandible during mastication (chewing)
Zygomaticus minor	Draws the upper lip backwards, inwards and outwards
Levator labii superioris	Facial expressions involving lifting upper lip

The facial muscles are connected to the dermis via the SMAS.

The SMAS is a network of collagen fibres, elastic fibres and fat cells. The SMAS:

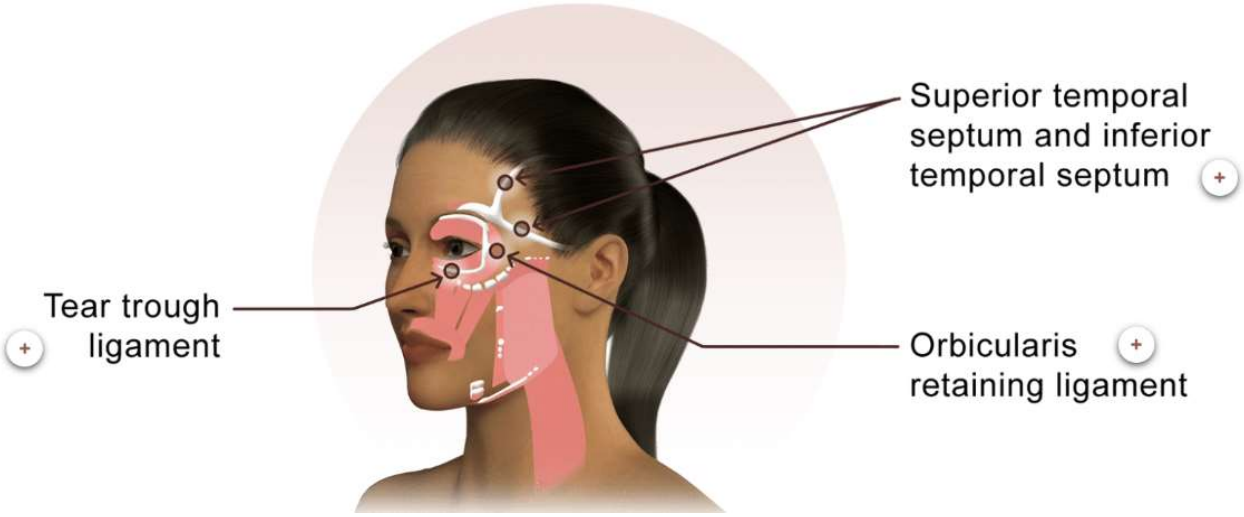
- Connects the mimetic muscles to the overlying dermis
- Plays an important role in facial expression
- Extends from the neck into the face, temporal area and into the forehead



The skin

Retaining ligaments of importance in the upper face area.

The **retaining ligaments** of the face are strong and deep fibrous attachments.[3]

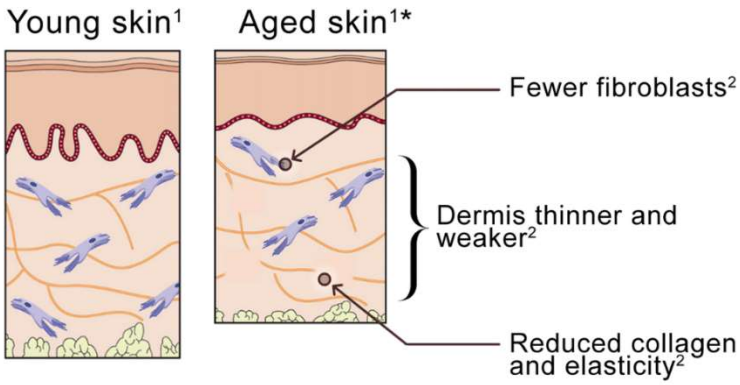


Fibroblasts in the dermis synthesise HA, collagen and elastin.
HA is a glycosaminoglycan within the dermis with several functions:

- Retains water within the dermis
- Provides volume to the skin
- Acts as a lubricant between collagen and elastic fibre networks during skin movement

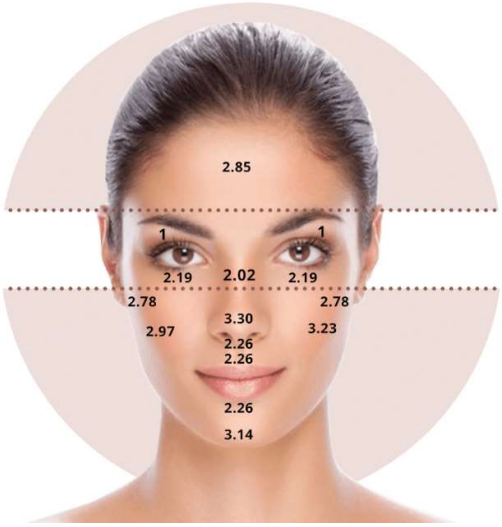
Characteristics of aged dermis include:

- Thinner dermis
- Slower wound healing
- Decrease in fibroblasts
- Reduced elasticity
- Reduced collagen production



The skin around the orbit is the thinnest of the face.

1) In general, facial skin is thinner in the upper face compared with the lower face region
2) During ageing, skin thickness increases on the forehead and cheeks but decreases in infraorbital areas

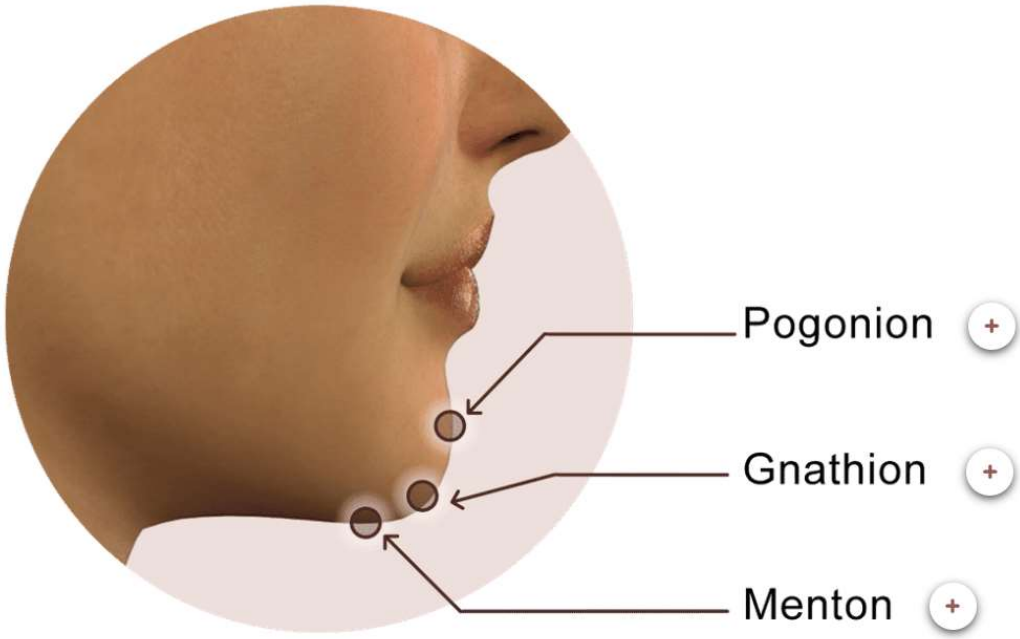


Skin thickness measurements relative to the upper eyelid.[4]*

*A 'map' of facial relative skin thickness index values is depicted in the figure. A cadaver study was designed to examine skin thickness in multiple anatomical sites from the same subject.
By examining relative values of skin thickness, using each subject as his or her own control, the authors demonstrated consistent ratios of dermal and epidermal thickness from one facial site to another.[4] Skin thickness measurements were taken from two females and one male cadaver, aged 51–82 years. Skin biopsy specimens were obtained at 15 facial sites that were identified as clinically relevant locations. Histometric measurements were obtained at each location. In all subjects, the upper eyelid had the thinnest skin and was used as the denominator to calculate relative ratios of skin thickness with respect to other sites of the face. The relative thickness index was developed by averaging the relative ratios between cadavers/readers and determining standard deviations.

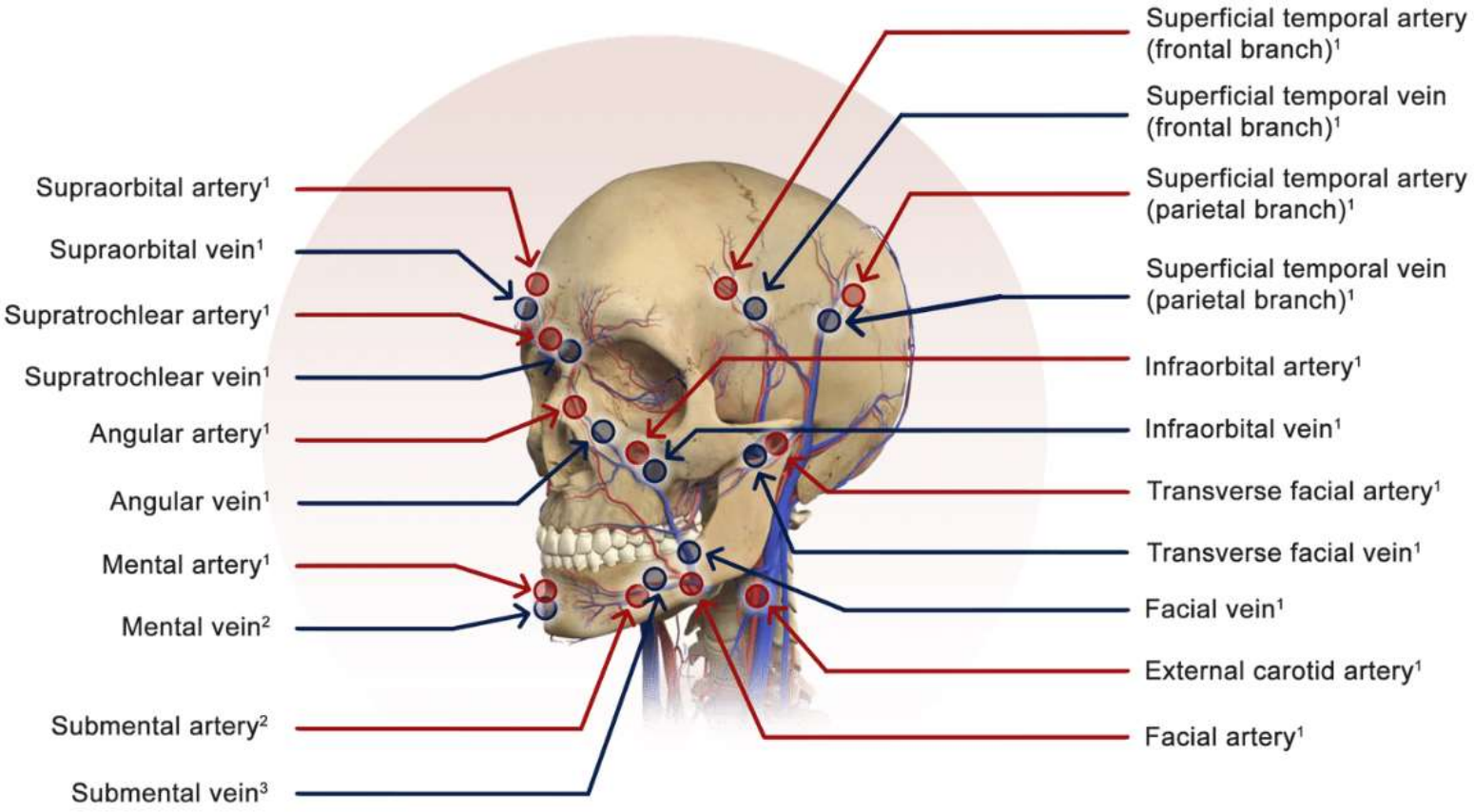
The chin exists as a well-defined compartment distinct from the jowl and submental compartments.

The chin can be described using the following surface landmarks:

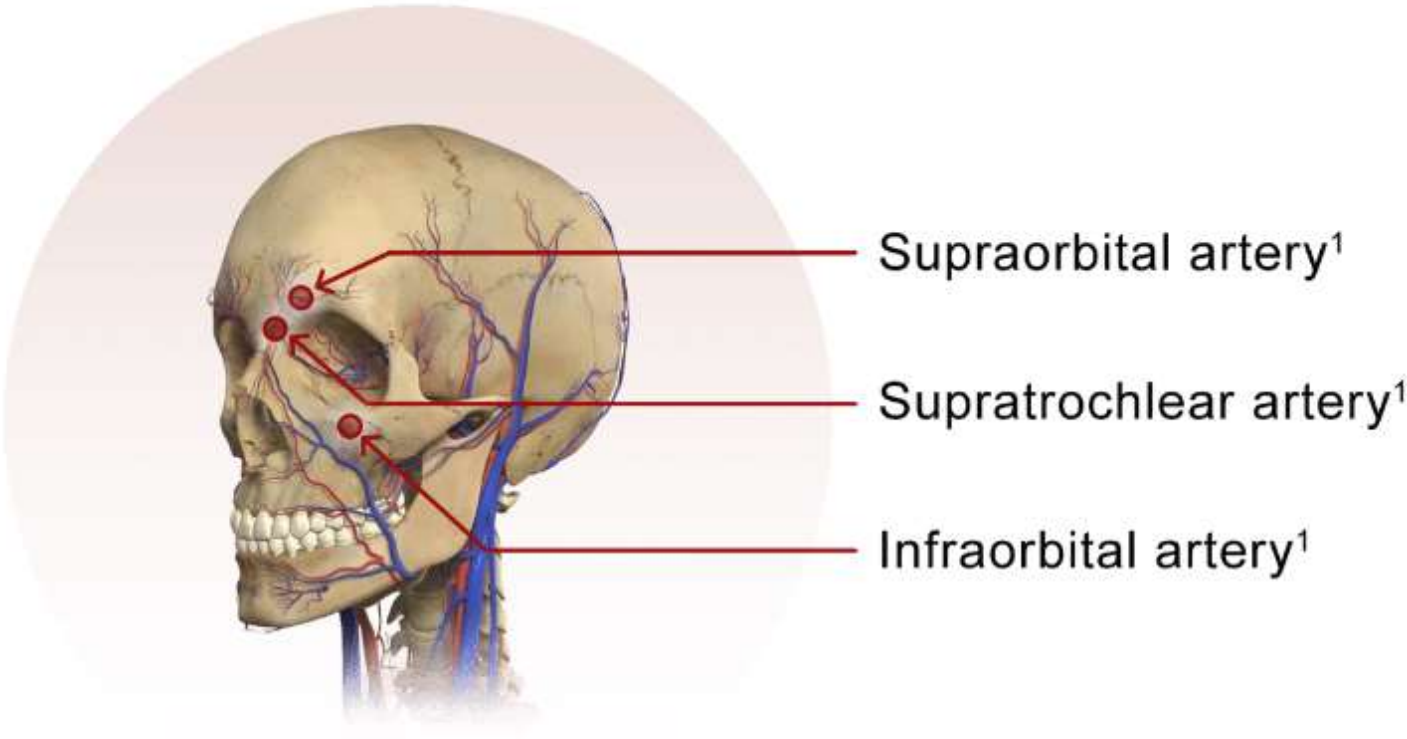


Facial anatomy: Danger zones

Inspect the vascular structures prior to injecting



Blood supply of the periorbital region.



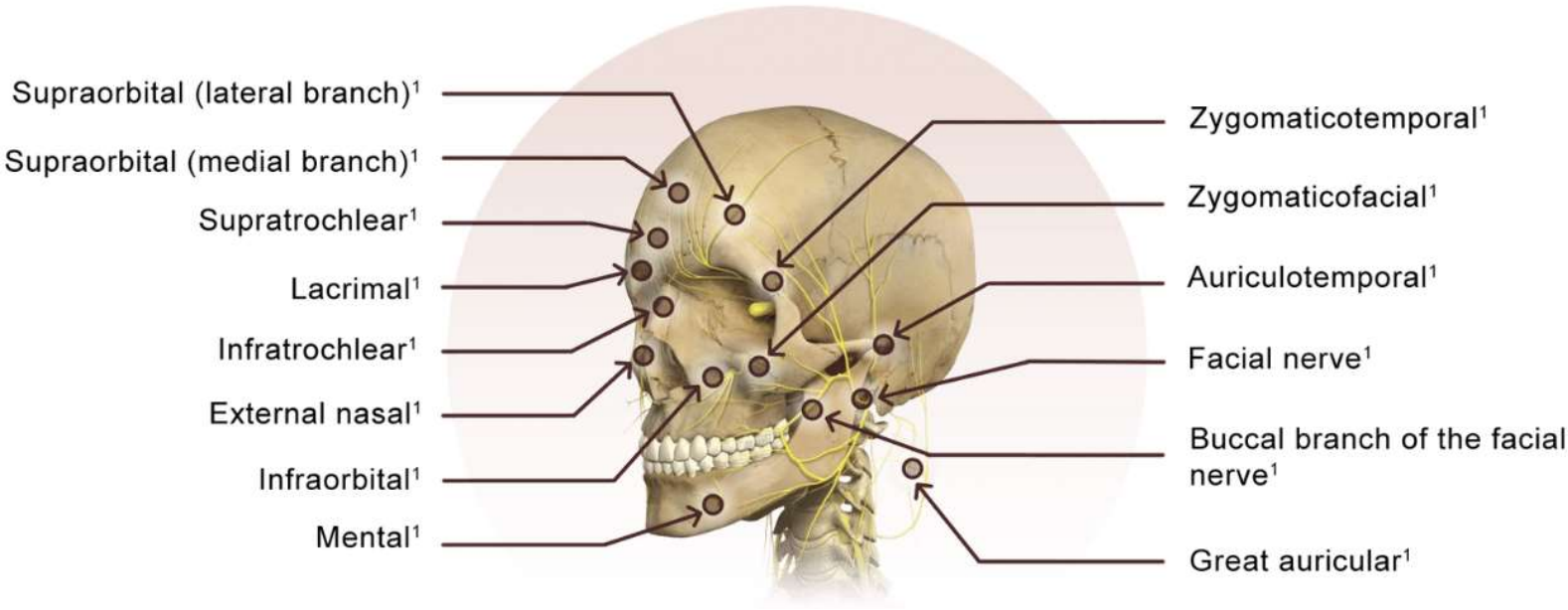
- The orbicularis oculi muscle is supplied by branches of the **facial**, **superficial temporal**, **maxillary** and **ophthalmic arteries**
- The **supratrochlear artery** supplies the upper eyelid, as well as the forehead and scalp
- The **supraorbital artery** leaves the orbit through the supraorbital notch, and branches to supply the skin and muscle of the upper eyelid, forehead and scalp
- The **infraorbital artery** supplies the lower eyelid
-

Vascular considerations in the upper face.

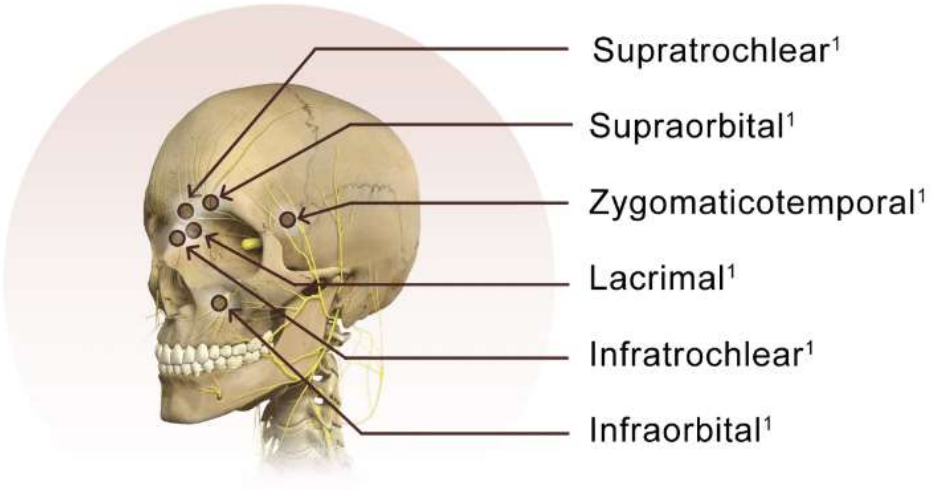
- The periocular area is prone to significant bruising, due to the high density of blood vessels
- Haematomas are a common undesirable side effect when treating dropping and receding brows because of the larger vessels in the area
- The glabellar area is very sensitive to occlusion of blood vessels; therefore, fillers must be applied superficially to minimise the risk of cutaneous necrosis

Nerve branches and parotid gland

Locate the important nerve branches of the face prior to injecting

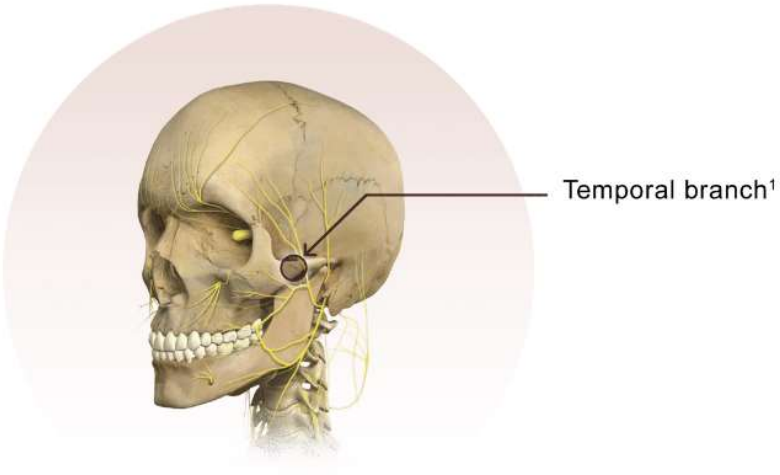


Sensory innervation of the eyelids.

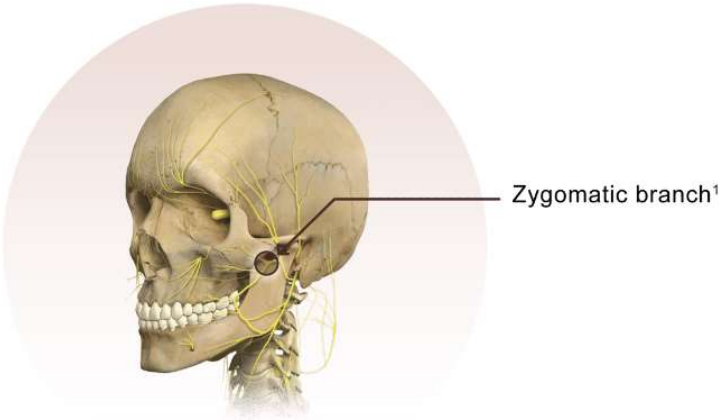


- The upper eyelid is innervated by the **supraorbital**, **supratrochlear** and **lacrimal** branches of the ophthalmic nerve
    - The medial aspect of the upper and lower eyelids is supplied by the **infratrochlear nerve**
- The lower eyelid is innervated by the **infraorbital** branch of the maxillary nerve
    - The lacrimal gland is innervated by the **zygomaticotemporal** branch of the maxillary nerv

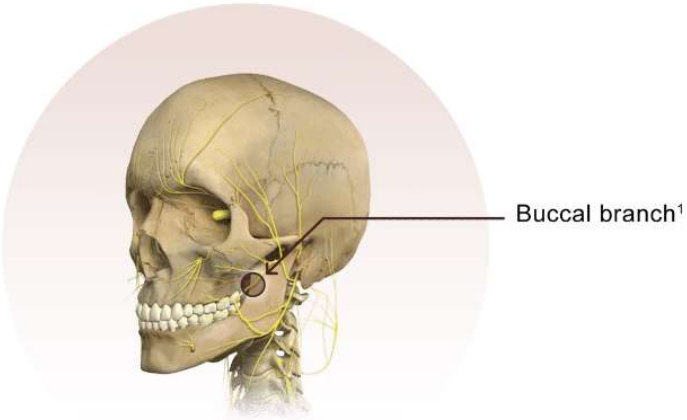
Within the parotid gland, the facial nerve splits into its five branches.



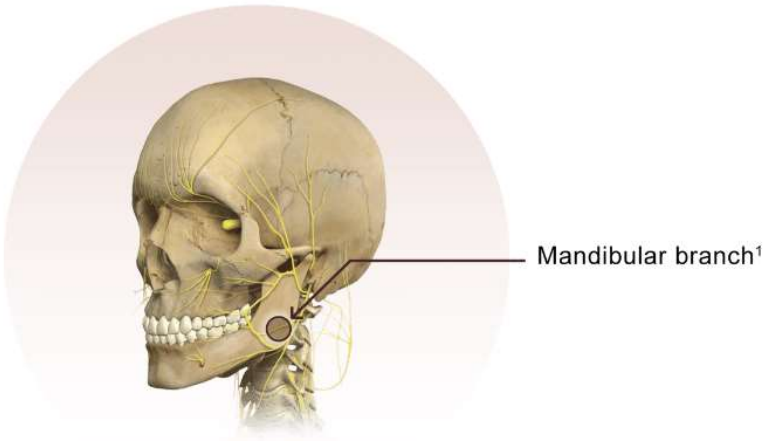
1-Temporal branch: Enters the frontalis about 2 cm above the brow, just below the anterior branch of the superficial temporal artery.



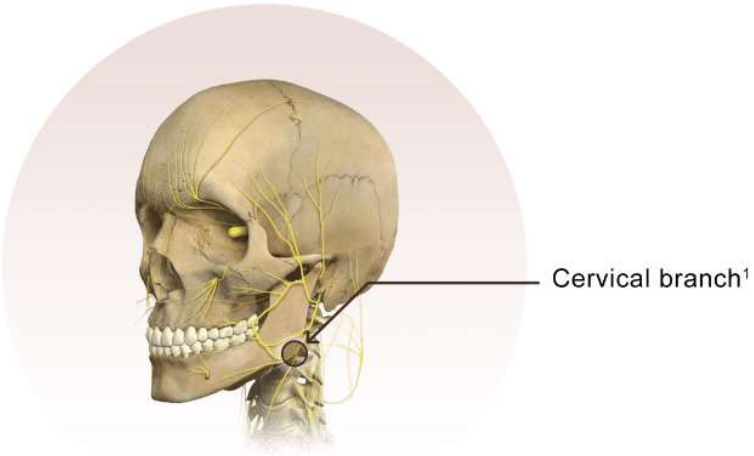
2-Zygomatic branches of the facial nerve: The upper branch passes above the eye to supply frontalis and orbicularis oculi. The lower branch always passes under the origin of zygomaticus major, and supplies this muscle, other lip elevators and the lower orbicularis oculi.



3-Buccal branch: Exits the parotid and is tightly bound to the anterior surface of the masseter muscle. It continues anteriorly over the buccal fat pad, below and parallel to the parotid duct, to supply the buccinators and muscles of the upper lip and nose.

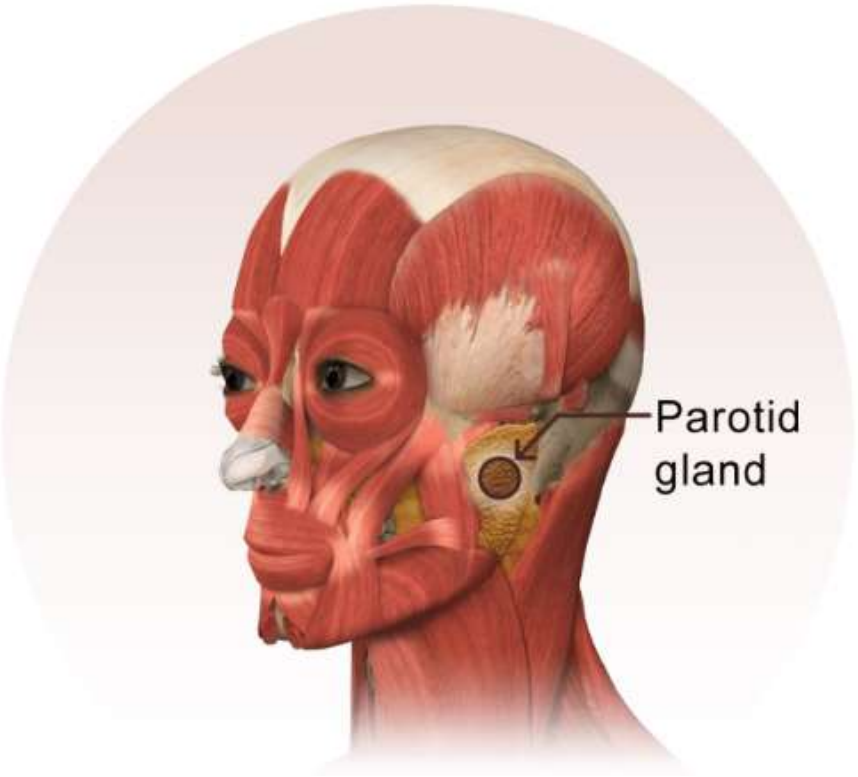


4-Mandibular branch: Exits the lower part of the parotid gland. It usually runs above the inferior border of the mandible, but may drop up to 4 cm below it. About 2 cm posterior to the angle of the mouth, the nerve passes upwards and more superficially to innervate the lip depressors.



5-Cervical branch: Passes into the neck at the level of the hyoid bone to innervate the platysma muscle.[2]

Identify the parotid gland, the lymphatic node on the lateral part of the cheek, prior to injecting

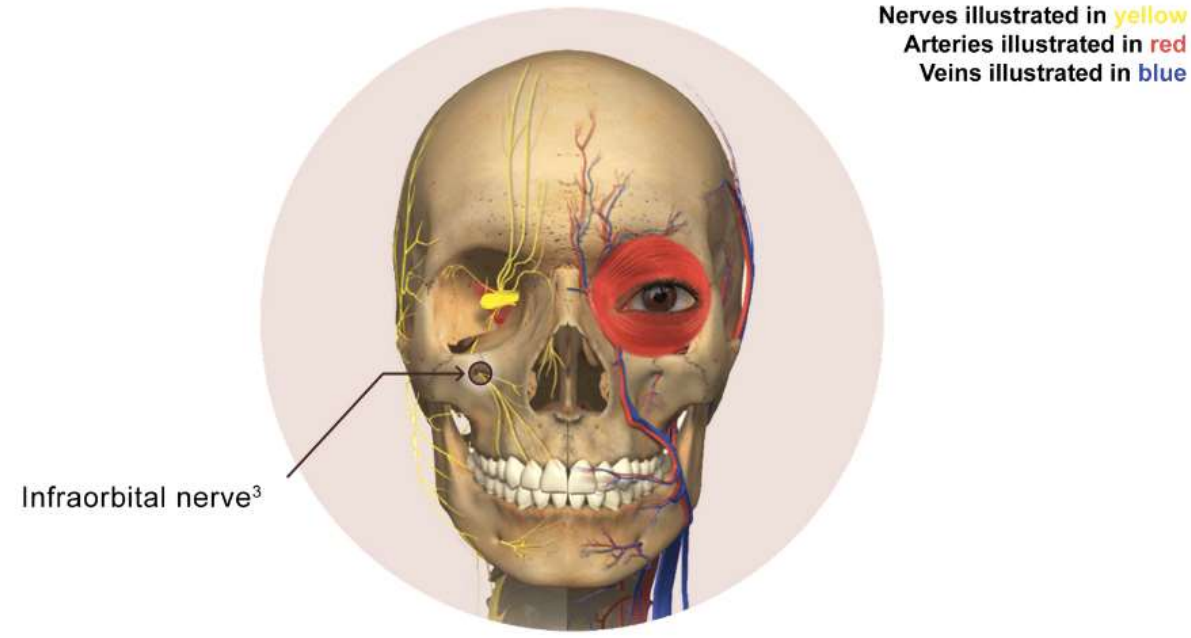


Parotid gland.

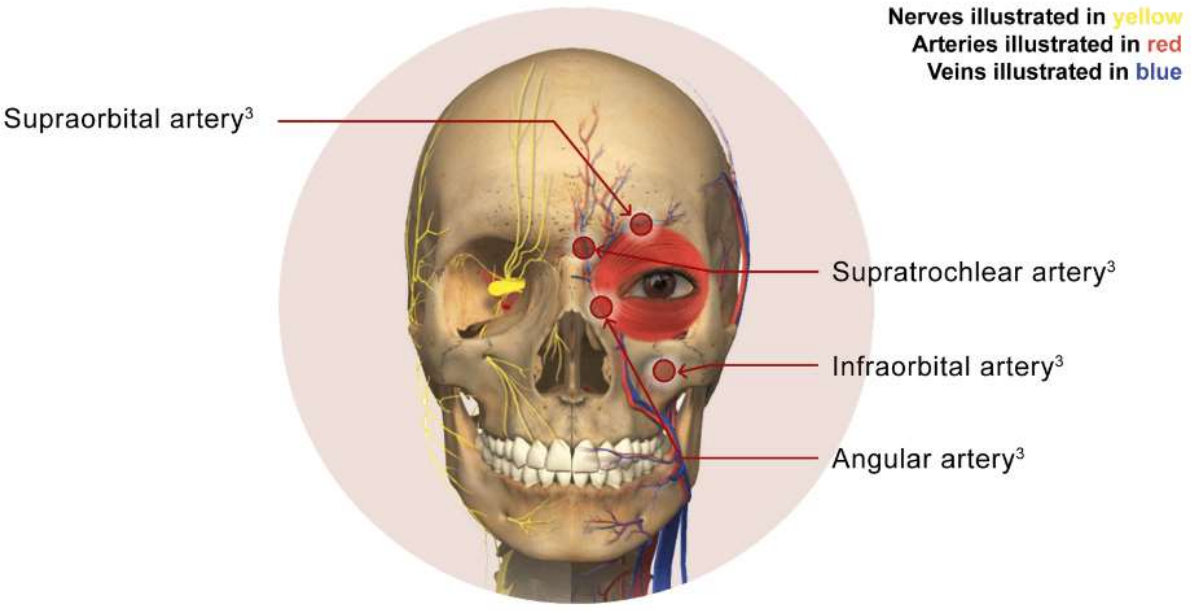
- Pre-auricular lymph nodes occur in the skin overlying the parotid gland
- There are usually ten nodes in the gland itself. The majority lie in the superficial part of the gland above the plane in which the facial nerve sits
- The lateral part of the cheek drains to the parotid gland
- Lymph from the parotid gland drains to the upper-deep cervical lymph nodes
- The parotid gland receives its arterial supply from the external carotid artery, and its branches within and near to the gland

Danger zones in the infraorbital region

Nerves- Infraorbital

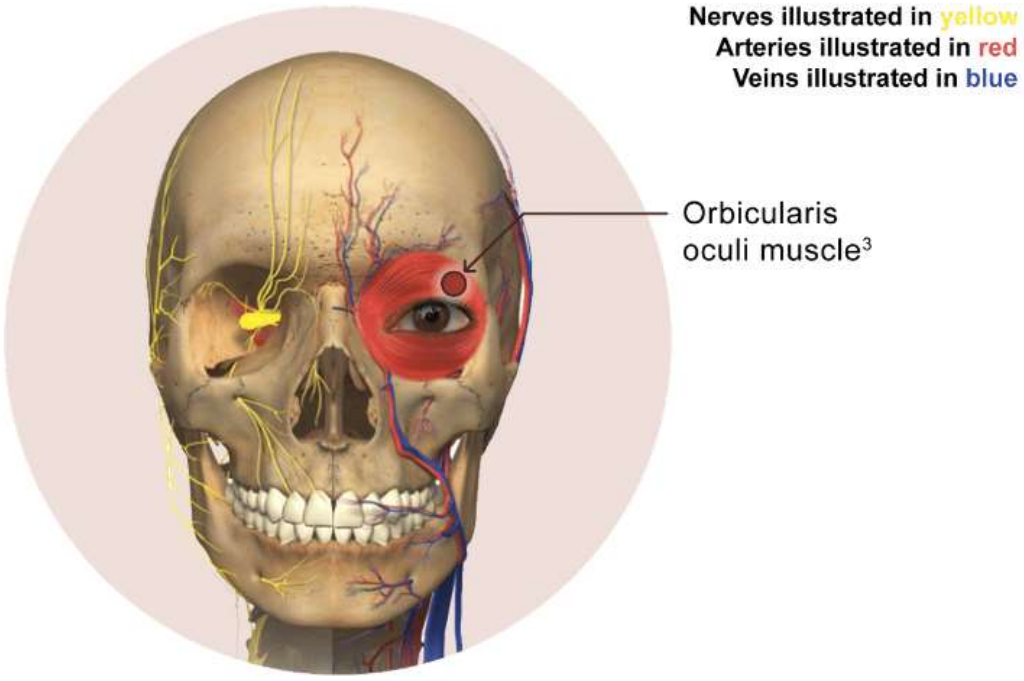


Vessels: Supraorbital artery, Supratrochlear artery, Infraorbital artery and Angular artery



Muscles

- It is not recommended to infiltrate the inner portion of orbicularis oculi muscle during periorbital injection. The HA could rise even during administration of a submuscular injection and may compromise the lymphatic drainage of the region
- The 'snap test' is a useful tool in evaluating the grade of eyelid hyperlaxity in any patient who receives periorbital injections



Avoiding non-ischaemic complications

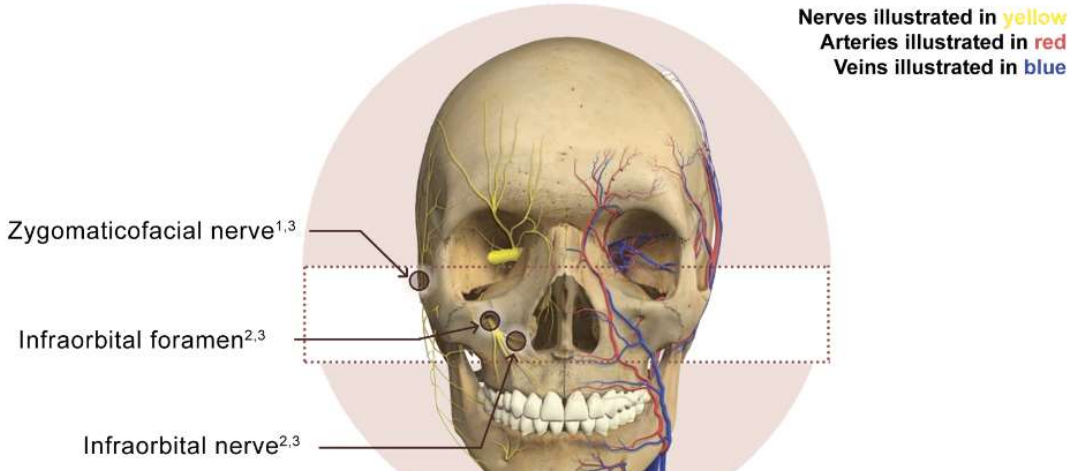
- Non-ischaemic complications include: contour irregularities, bluish discolouration (Tyndall effect), inflammatory reactions and infection/biofilm formation
- To help avoid contour irregularities, injections below the orbicularis or in the pre-periosteal plane will help to allow more coverage of the filler product
- The bluish hue, or Tyndall effect, is commonly seen in lighter and thinner skinned patients. Sometimes, this bluish hue cannot be avoided and should be discussed with patients prior to injection
- In patients presenting with inflammatory signs after periorbital filler injection, infection should be highly suspected
- In patients with possible infections, treatment with systemic antibiotics should be initiated

Avoiding Ischaemic complications

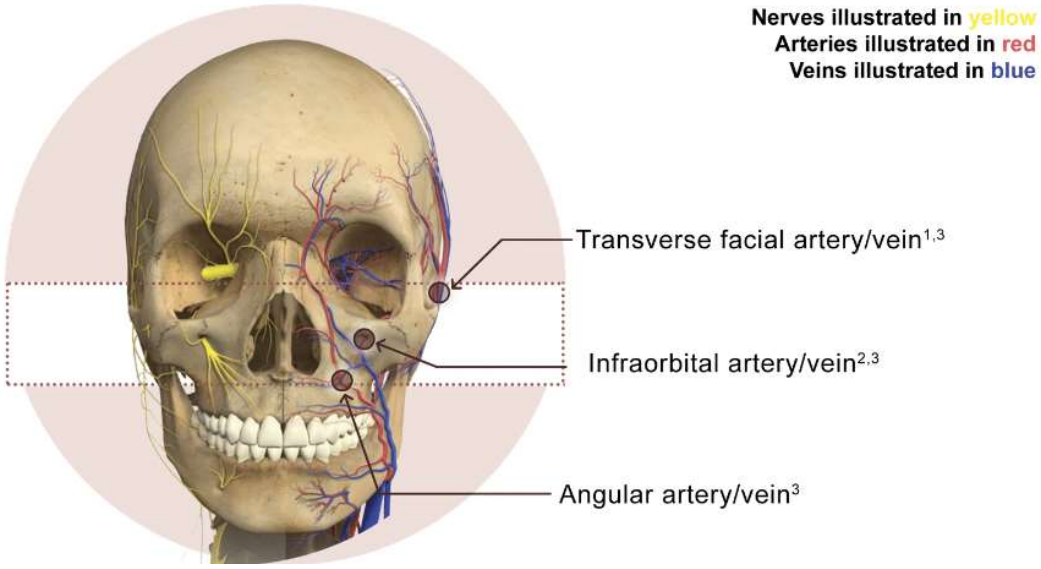
- Ischaemic complications related to filler injections include soft-tissue necrosis and visual compromise[1]
- The techniques that can be useful in preventing such complications include; injecting small volumes per pass, aspiration prior to injection, using low injection pressure, avoiding scarred areas and considering the use of blunt cannulas1

Danger zones in the upper midface region

Nerves

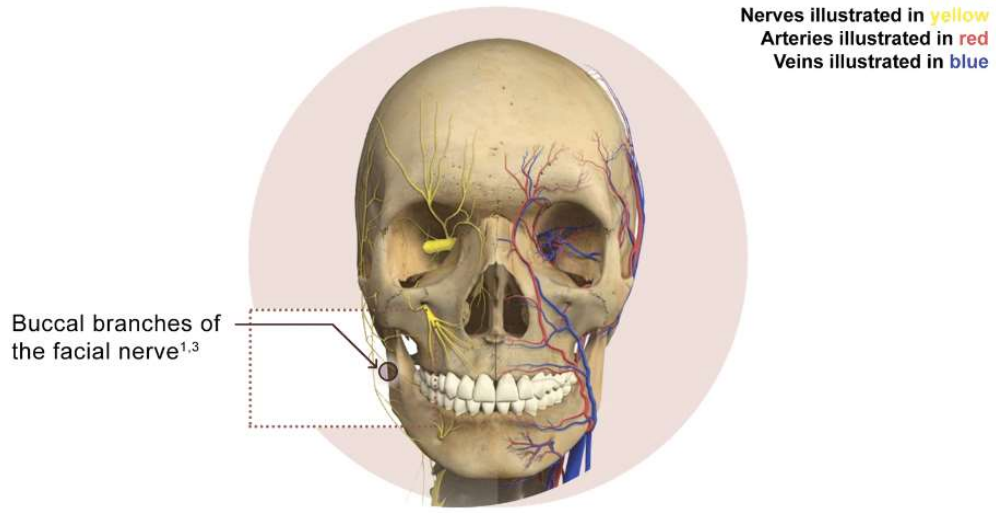


Blood vessels

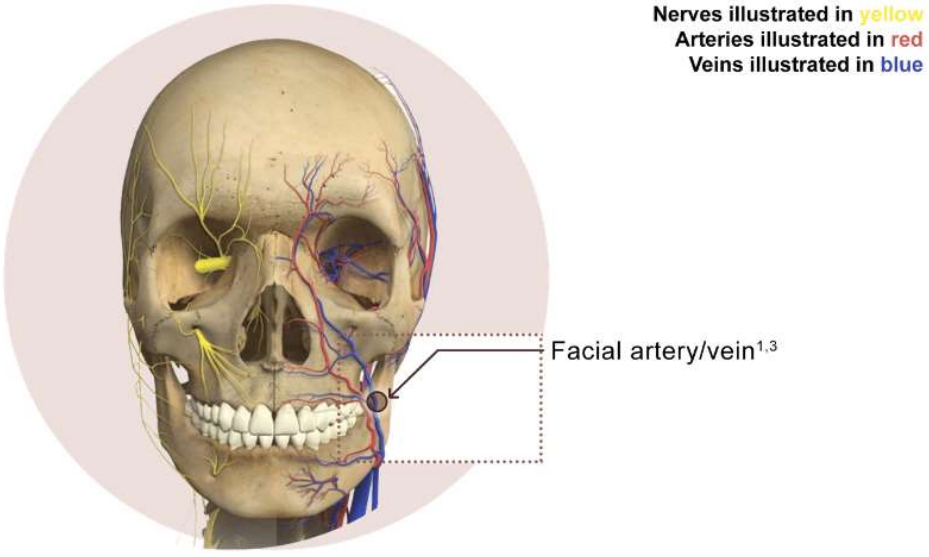


Danger zones in the lateral midface region

Nerves

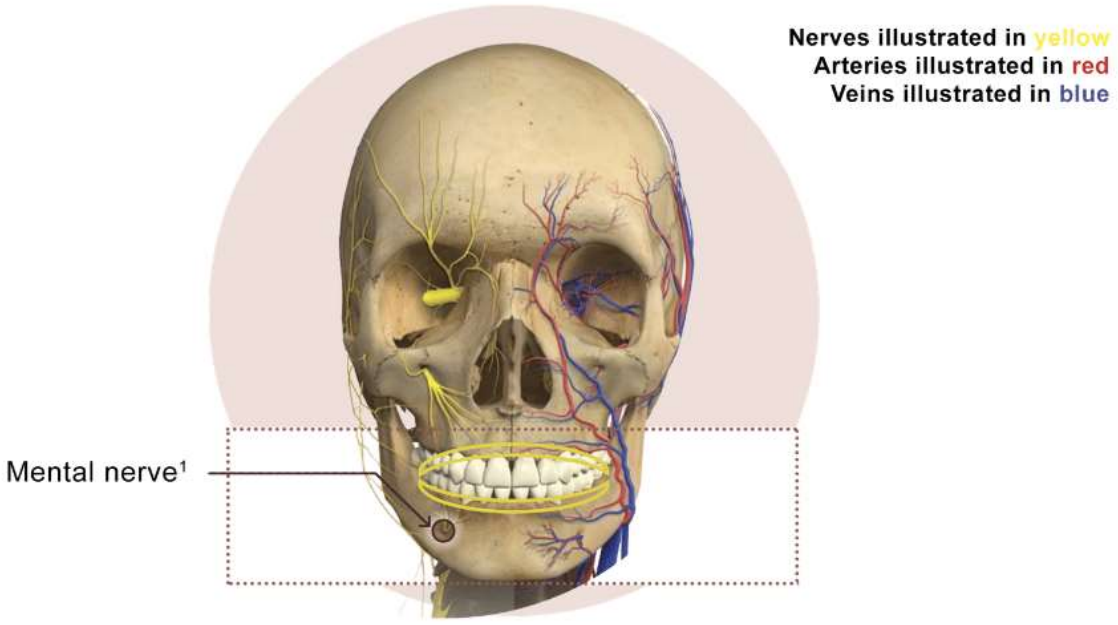


Blood vessels

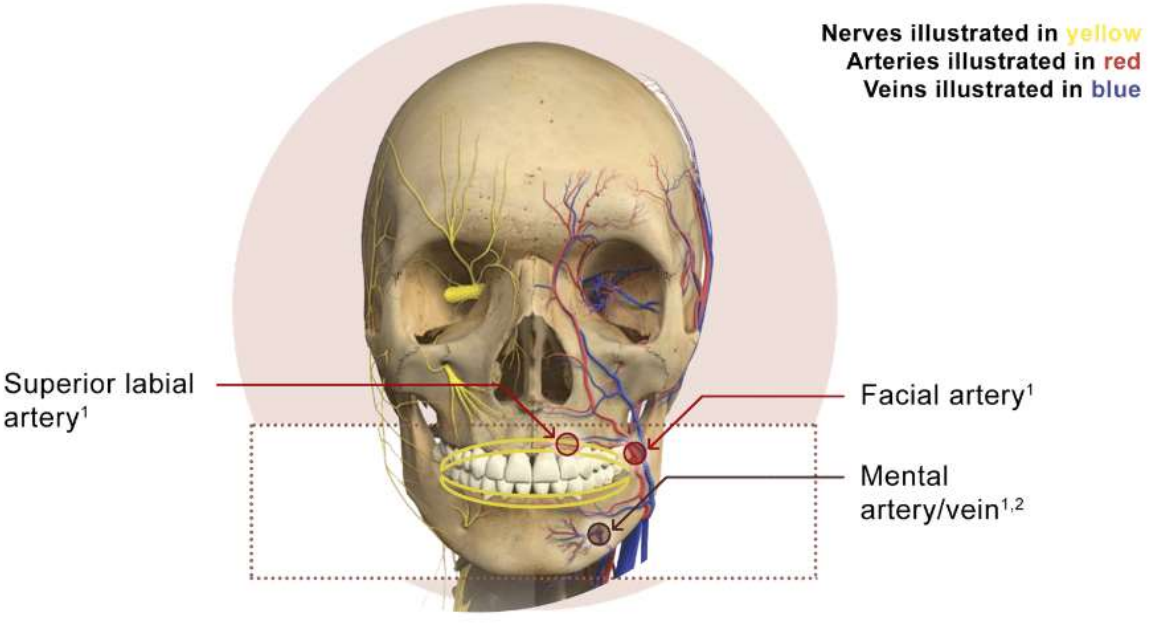


Danger zones in the lower face region

Nerves



Blood vessels



Complications

Factors contributing to complications

Patient-related factors

Patient medical history may affect their susceptibility to complications

Some treatment areas are more prone to certain types of complications

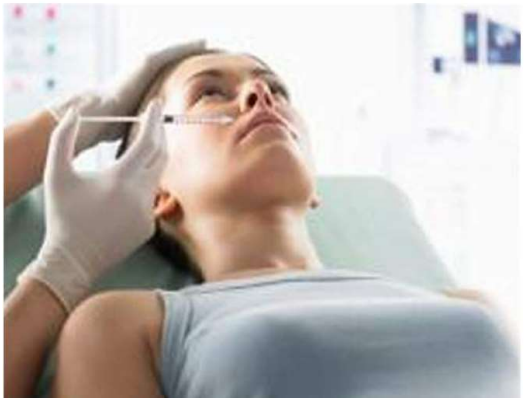
Product-related factors

Concentration

Rheologic properties

Manufacturing process (e.g. purification)

Technique-related factors



Depth

Volume

Speed

Accuracy

Asepsis of treatment area

Minimising filler complications

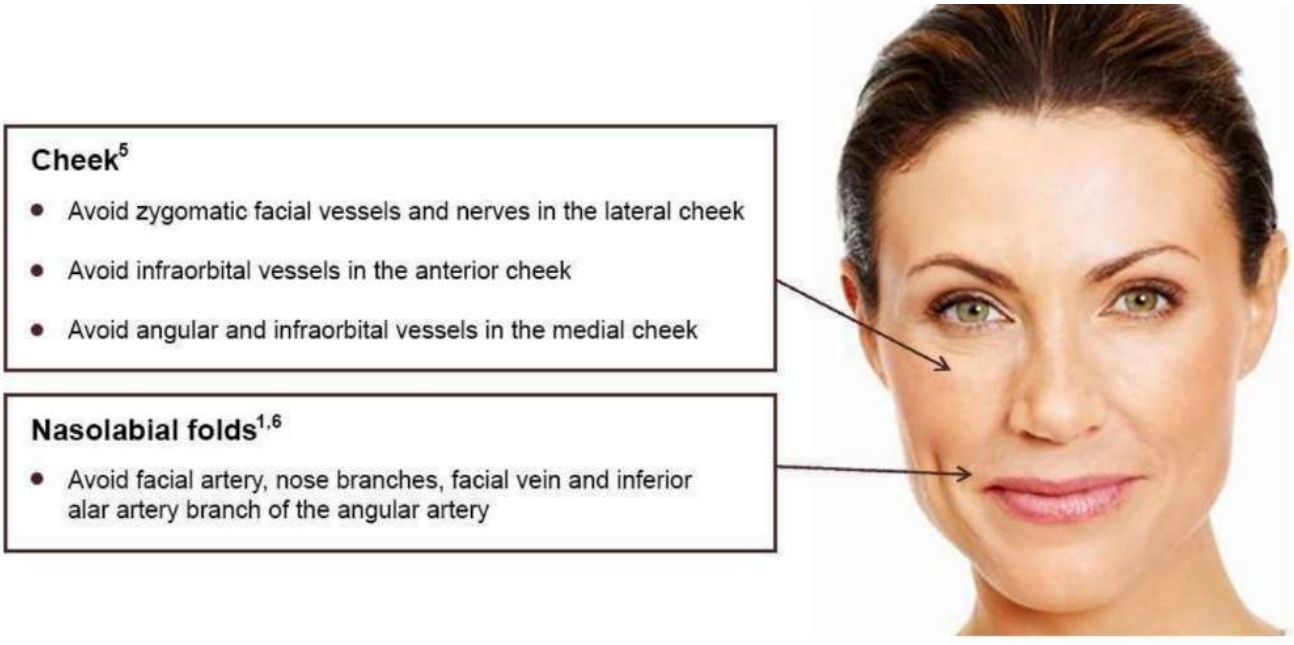
Patient considerations
Carefully consider the patient's medical history:

1) Prior treatment with dermal fillers
2) Any contraindications
3) Current and previous medical conditions
4) Current and previous medication
5) Recent dental procedures

General precautions:

1) Remove makeup and avoid application the next day
2) Use effective skin antisepsis, surgical gloves and sterile dressing trays
3) Stop injecting if patient experiences discomfort

Anatomical danger zones



Product considerations

- **Higher elastic modulus (G')** products are not recommended in delicate areas
- In general, the **greater the G' value** of a product, the **deeper** it should be injected
- The **hydrophilic nature** of hyaluronic acid means that **more concentrated** and/or **large-particle** products will tend to absorb more water, resulting in **more tissue swelling** after injection
- **Non-biodegradable** fillers are permanent, which can result in **long-lasting complications**

Injection and aseptic technique[1,2]

- Know the anatomy of the **injection treatment area**
- When possible, **aspirate** before injecting, especially in high-risk areas
- **Slowly** inject with the **least amount of pressure** possible
- **Move tip** with delivery to avoid large deposit in one spot
- **Incrementally inject** the filler
- Use an **appropriate** needle to deliver **precise** aliquots
- **Blunt microcannulas** may minimise risks in areas prone to **vascular complications**
- **Stop injecting** if you encounter **resistance**, or if the patient experiences any **pain or discomfort**

Contraindications and conditions warranting caution

Cautions for contraindications[1]

Condition	Examples or comment	CI	PD	NAC
Active skin infection	Impetigo, herpes simplex, massive demodex folliculorum, pityrosporum, *Propionibacterium acnes*, viral warts	X		
Inflammatory conditions of the skin	Atopic patients, allergic dermatitis, "status cosmeticus" i.e. sensitive skin syndrome, seborrheic dermatitis, active lichen planus, active acne rosacea		X	
Other inflammatory diseases	Pyoderma, osteoarthritis		X	
Active localised infection	Ear, nose or throat infections, dental abscess, periodontitis	X		
Active generalised infection	Gastroenteritis, urinary bladder infection	X		
Non-infectious GI conditions	Crohn's disease, ulcerative colitis		X	
Allergy/hypersensitivity	Hypersensitivity to filler components including lidocaine, chronic urticaria and Quincke's oedema	X		
Active psoriasis arthropatic	If condition is more arthropatic, caution warranted; if condition is more psoriatic than arthropatic, treatment is possible		X	X
Systemic infections: Viral	HIV		X	
Conditions potentially causing a Koebner response	Lichen planus, lichen nitidus or lichen sclerosus, psoriasis, viral warts		X	
Active collagenoses	Mixed connective tissue disease, morphea, active systemic lupus	X		
Other collagenoses	Marfan syndrome, Ehlers–Danlos syndrome, Stabilised morphea		X	X
Immune compromise	Graft versus host disease	X		
Immune compromise	Bullous diseases		X	
Autoimmune conditions	Active Hashimoto's disease, mixed connective tissue disease	X		
Autoimmune conditions	Dermatomyositis/polymyositis, lupus erythematosus, RA		X	
Transplant patients Immunosuppressive therapy	Heart, kidney, liver, bone marrow transplant; beware of increased risks of infections		X	
Thyroid dysfuntion	Does not contraindicate treatment, but physician needs to be aware that eyelid swelling is common (unrelated/unprovoked by filler use)		X	
Metabolic disorders	Diabetes, porphyria			X
Catabolic status	N/A	X		

Condition	Examples or comment	CI	PD	NAC
Cachexic state	Does not contraindicate treatment, but product may be more visible in patients who lack subcutaneous fat and thin tissue coverage		X	
Conditions affecting skin pigmentation	Melasma and post-inflammatory hyperpigmentation		X	
Skin pigmentation/depigmentation	Fitzpatrick Types 5 and 6 skin, vitiligo, and albinism			X
Systemic infections: Bacterial	Tuberculosis	X		
Active anticoagulants	Thrombolytics	X		
Haemostatic or coagulation disorders	Haemophilia, haemoglobin pathology, thalassaemia	X		
Cutaneous collagenoses	Chronic discoid lupus erythematosus, active but not end-stage scleroderma		X	
Food intolerance	N/A		X	
Bariatric gastric sleeve surgery	Potentially reduced time of aesthetic effect			X

Table adapted from De Boulle et al. 2015.[1]

Abbreviations

CI, contraindicated; GI, gastrointestinal; NAC, no apparent contraindication; PD, treat at physician's discretion; RA, rheumatoid arthritis.

Risk minimisation guidance

Lumps, nodules and infections

- **Avoid treatment** if patient shows signs of an **active infection**
- Treatment of patients with an **inflammatory skin condition** is at the physician's discretion
- Avoid treating patients with **planned dental procedure**s for 2 weeks before and after treatment
- Obtain a thorough **medical history** for presence of relevant **comorbidities**, including previous complications and allergies[1,3-5]
- Ensure **proper placement** of filler
    - Avoid injecting over **previously** injected fillers
- **Before treatment:**
    - Remove all makeup[1,4]
    - Cleanse treatment area with appropriate antiseptic
    - Ensure proper aseptic **technique** in a clean environment
- Avoid applying **makeup** within **12 hours** post-treatment

Injection-related reactions

- **Mild oedema** and **bruising** are common, often self-limiting within 1 week
- **Use appropriate injection techniques:**
    - Slow-injection of small aliquots
    - Use smallest needles/cannulas
    - Avoid re-injectioning the same areas
- **Apply pressure** immediately after treatment[1,5]
- The patient should avoid **strenuous exercise** for **24 hours**[4,7]
- Use clinical judgement in advising patients to temporarily discontinue **immune modulators and anticoagulants** prior to treatment[1,4*]

***Anticoagulants should not be discontinued without consulting the treating physician.**

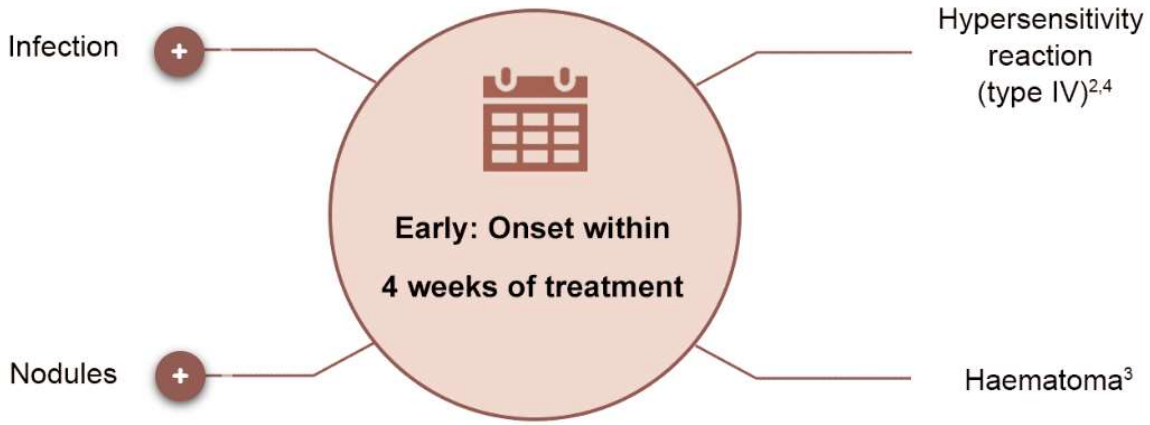
Vascular occlusions

- Intravascular injections may cause **tissue necrosis** and **vision loss**[2,4,5,7]
- Knowledge of **vascular anatomy** and **appropriate technique** is key[2,4,7]
- Anatomical **danger zones** in the midface include the **alar groove**
- **If local pain, discoloration, blanching, or bruising is observed**
    - Stop injection and monitor closely

Complications management

Complications by time of onset

Injection related reactions	Bruising, swelling, erythema, pain
Nodules	Non inflammatory nodules immediately post treatment are usually due to improper filler placement or underlying deep haematoma
Haematoma	
Vascular Complications	
Inflammatory reactions	Allergy reaction/Hypersensitivity



Infection	Herpes reactivation/bacterial
Nodules- Inflammatory	Inflammatory concomitant infection usually red, painful.
Nodules- Non inflammatory	Non-inflammatory painless nodules present at 4 weeks are usually due to sub optimal placement

*A histologic diagnosis; cannot be diagnosed clinically. Potential causes include inflammatory or post-infection processes or delayed hypersensitivity.[2]

Infection chronic inflammation	Atypical mycobacteria, late on-set bacterial, biofilm
Nodules- Inflammatory	Inflammatory/ and or infection related nodules can occur after 4 weeks
Nodules- Non inflammatory	Non-inflammatory painless nodules may persist for more than 4 weeks/ multifocal granuloma

Recognition and minimisation

Injection-related reactions[1]

Image source: Funt D, *et al.* 2013.[1]

Bruising

May be immediate or worsen over the course of 3 days

Image source: Funt D, *et al.* 2013.[1]

Erythema at injection site

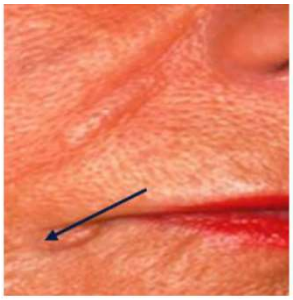
Some redness immediately after injection can be normal; if erythema persists for more than

a few days, a hypersensitivity reaction is likely

Image source: Lemperle G, *et al.* 2009.[2]

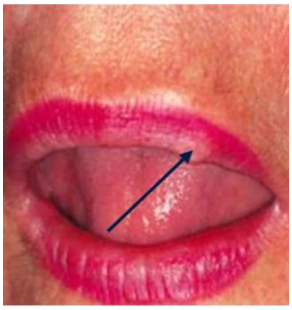
Nodules[2]

Nodules resulting from subdermal injection of filler instead of correct epiperiosteal injection for the treatment of shadowed eyelids



Nodule in the corner of the mouth resulting from incorrectly deposited filler – superficial implantation may cause a long-lasting ridge or nodule

Image source: Lemperle G, *et al.* 2009.[2]



Nodule in the lips resulting from incorrectly deposited filler

Image source: Lemperle G, *et al.* 2009.[2]

Nodules

Non-inflammatory	Inflammatory
• Palpable; may be visible • May be seen immediately post-implantation,[3] within 4 weeks or persist for over 4 weeks post-implantation • Can result from suboptimal technique[4] or underlying haematoma • Management strategies may include removing the causative agent, e.g. with hyaluronidase treatment	• More likely to have a delayed onset (4 weeks to years after treatment) • Can result from immune responses to filler material, i.e. hypersensitivity • Can be infection-related • Infection-related nodules may be treated with antibiotics, or incision and drainage if necessary

Biofilms – inflammatory nodules

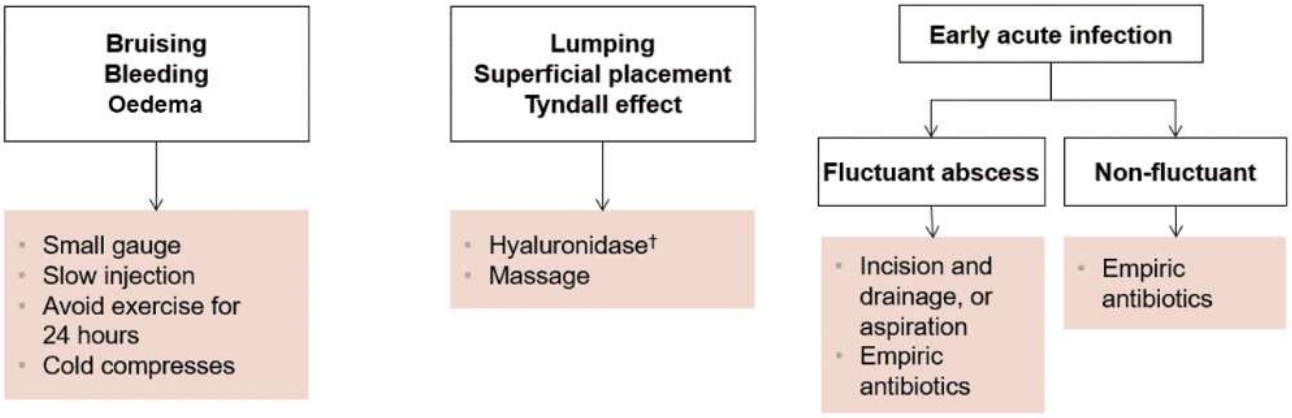
Pathology	Management
• Biofilms are densely packed **communities of bacteria** • They are formed when material injected into the skin becomes **coated with bacteria** • These bacteria can secrete a **protective and adhesive matrix**, allowing them to irreversibly adhere to a living structure or inert surface • This can create a low-grade chronic infection that is **antibiotic-resistant** • Biofilm formation can be activated by trauma, e.g. a dermal filler procedure, causing **a local infection, a systemic infection**, or **a granulomatous** or **inflammatory response**	• If a biofilm is suspected, this may be managed with a **broad-spectrum antibiotic** • Successful removal of a **biofilm requires complete removal of the foreign body** by **excision** or via the **administration of hyaluronidase**

Allergic reactions and hypersensitivity

Pathology	Management

• An **immune response** may be triggered by the injected filler or the injection procedure
  ◦ **Type I hypersensitivity reaction**
  ◦ IgE-mediated
  ◦ Early onset: Typically within minutes to hours
  ◦ **Type IV hypersensitivity reaction**
  ◦ T-cell mediated
  ◦ Delayed onset: Typically days to weeks
• Symptoms of hypersensitivity reactions include **oedema, erythema, pruritus, pain, tenderness, rash and induration**
  ◦ Type IV reactions may also present with painful erythematous nodules
	• These reactions are often **self-limiting**, resolving spontaneously within hours or days
	• May respond to **antihistamines** or **oral steroids**
	• **Angioedema-like swelling** should be considered a **medical emergency** due to risk of airway obstruction[5]

Early complications[1*]



Late complications[1*]

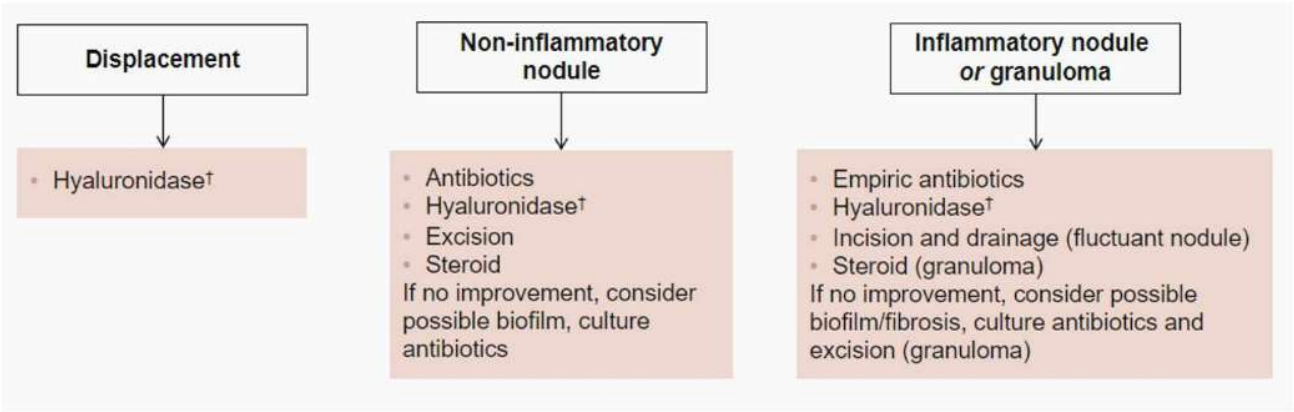
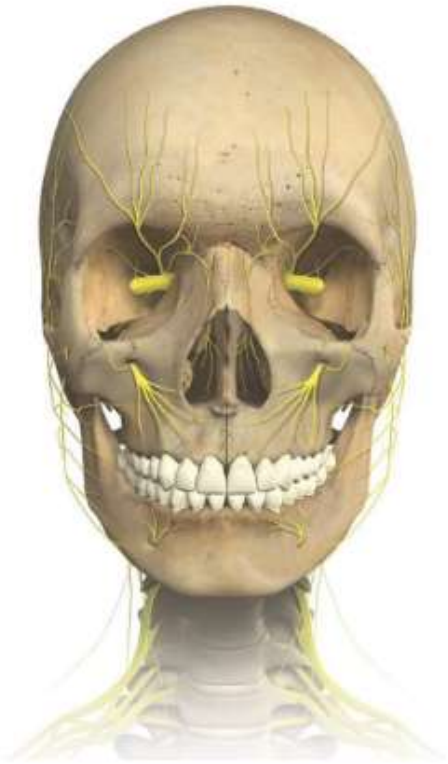


Figure adapted from Signorini M, *et al.* 2016.[1]

The science of ageing

An Overview of Facial Ageing

Structural Changes[1]



Structural changes include:
• Resorption of bone with ageing[1] • Remodeling of the orbital rim[1] • Loss of projection of the maxilla[1] • Recession of nasal bones[1]

Structural changes cause:
• Reduced support for the overlying soft tissue structures[1] • Recognisable pattern of changes to brow position[1] • Infraorbital alterations[1] • Less prominent maxilla[1]

Muscular and Dermal Changes[3,5]

Muscular and dermal changes include:
• Loss of skin elasticity (elastin)[3,5] • Weakening of ligamentous support and subsequent ptosis of the facial soft tissues[3]

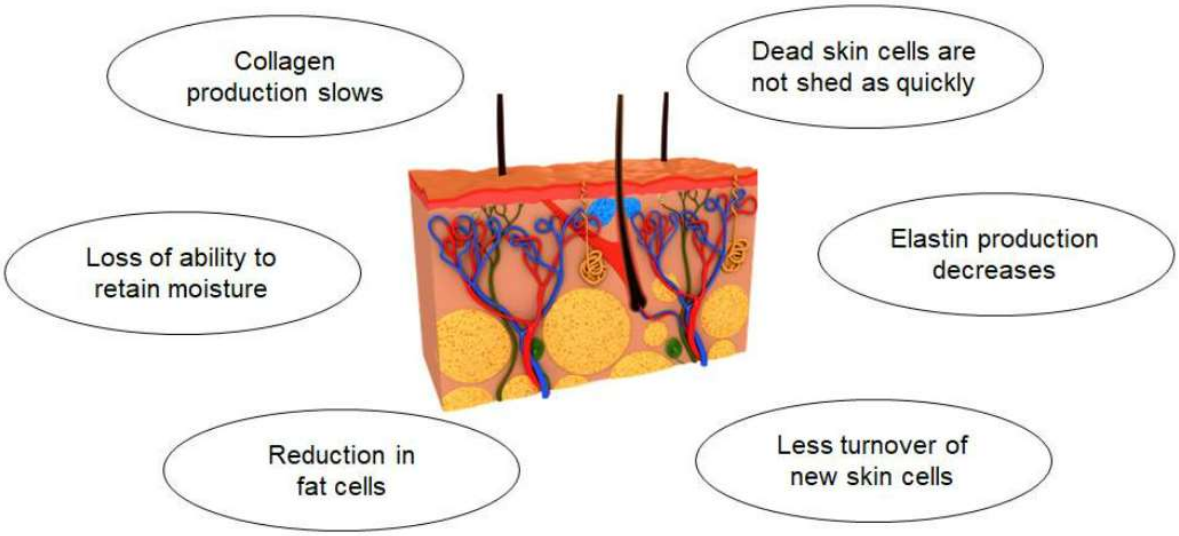
Muscular and dermal changes cause:
• Deepening of the nasolabial and nasojugal ('tear trough') folds[3,5] • Fine lines and wrinkles[4]

The 'Triangle of Youth'[1]

Midface ptosis and lower-face jowls invert the 'triangle of youth'[1]

- Atrophy of the maxillary bone below the orbit is a major contributor to laxity and descent of the medial soft tissue

Ageing alters the skin in several ways[1]



Sagging of soft tissues with ageing deepens NLFs

- Loss of skin elasticity, weakness of fibrous connective tissue, and volume loss of the deep medial cheek fat deepens the NLFs, hollows the cheeks, and reduces prominence of the malar eminences[3]
- The downward and forward descent of the skin and malar fat pad bulges against the fixed NLFs, causing them to deepen[3]

The lower face exhibits varied signs of ageing

Ageing of the lower face

- Loss of volume and elasticity within subcutaneous soft tissue[2]
- Formation of jowls[3]
- Wrinkle development:
    - Perioral fine lines[2]
    - Marionette lines[2]
- Changes to the lips:
    - Loss of volume[2]
    - Droop and recede[4]
    - Change in orientation of lip aperture
    - Loss of definition in the philtral columns
    - Lengthening of the vermillion border
- Dimpled chin[3].

Intrinsic and extrinsic factors contribute to ageing of the lower face

Intrinsic factors

- Genetics[5]
- Bone changes[6]
- Repetitive facial expressions[7]
- Atrophy of the dermis and soft tissue[5]

Intrinsic ageing produces dry and atrophic skin, with fine wrinkles and increased laxity

Extrinsic factors

- Photo-ageing/sunexposure[5]
- Smoking[2]
- Exposure to irritants[2]

Extrinsic ageing produces coarse, deeply wrinkled and leathery skin with cutaneous pre-malignancies and telangiectasias

Jowling occurs gradually and can be a distinct sign of ageing

- Jowl fat is separated from neck fat by the mandibular septum
- The adherent properties of the mandibular septum allow for elevation of soft tissues yet retard mobilisation of tissue over the mandible:

    - These properties are important for reshaping the normal mandible border
- Changes to the location of the mandibular septum may impact jowling in ageing through:
    - Laxity of the mandibular septum
    - Deflation of soft tissue altering the position of the mandibular septum