



The New Understanding of Facial Anatomy and Facial Aging

Skin
Layers

Skin
Structure

Bone

Deep
Fatty Layer

Facial
Muscles

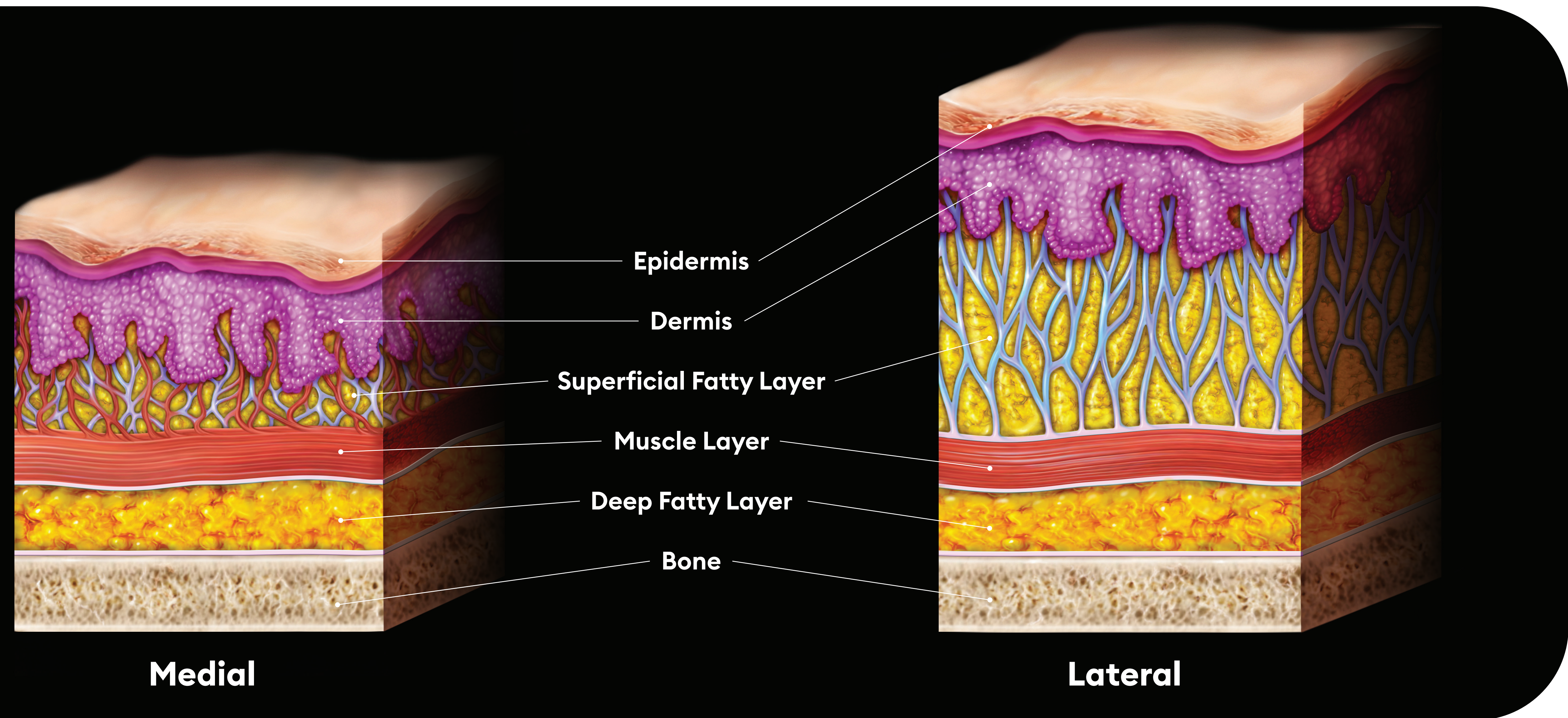
Superficial
Fatty Layer

Facial
Vasculature

Facial
Changes



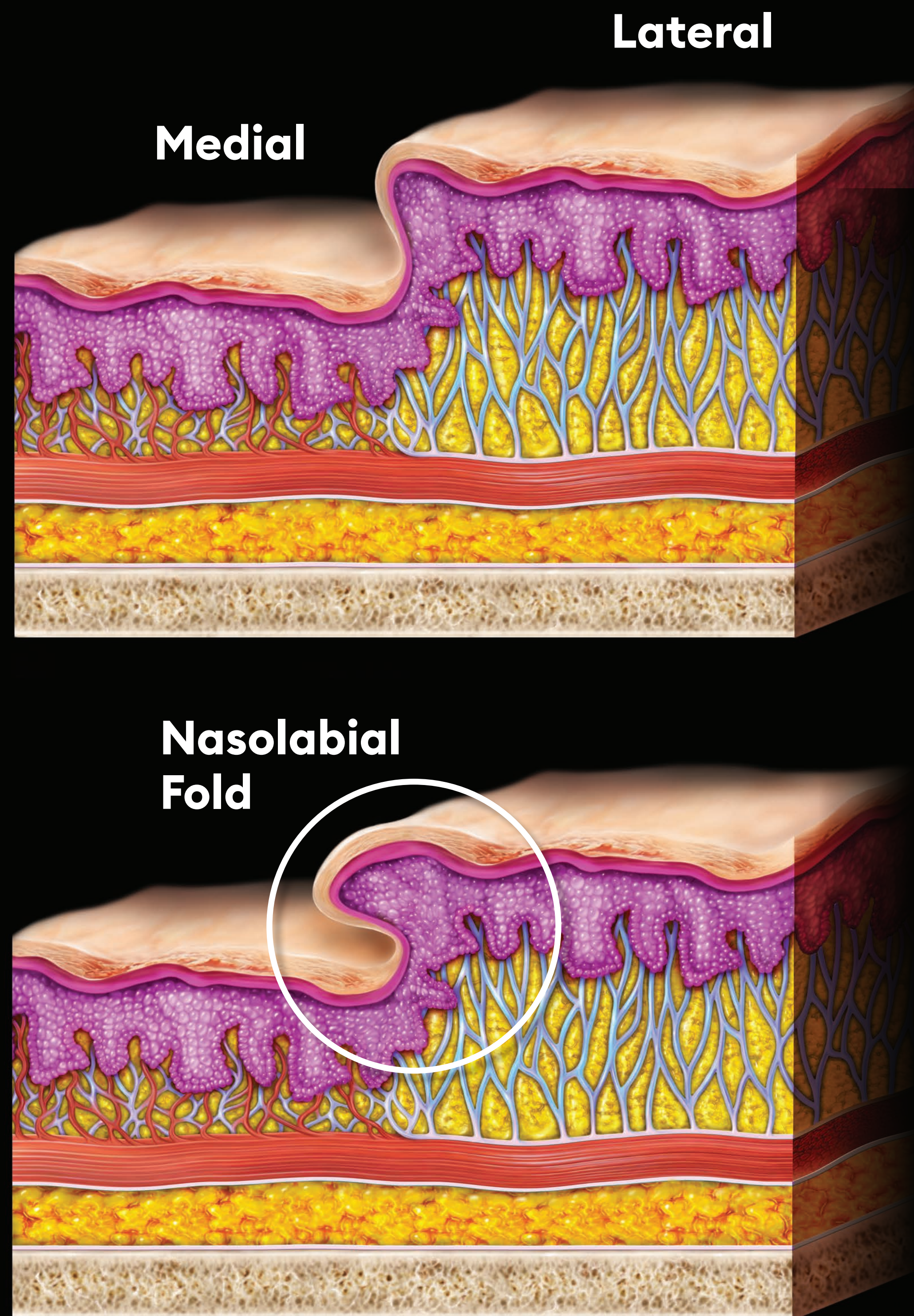
Facial Anatomy is 3-Dimensional



Each layer plays a role in the aging process and treatment outcomes

- A complete understanding of 3 dimensional facial anatomy is key
- The new understanding of anatomy encompasses not just which structure is where, but also how they interact with each other
- Knowledge about the interplay of each layer and each structure will influence patient assessment and treatment planning

The Facial Soft Tissue Arrangement



Medial:

- Skin is connected to the muscular layer via connective tissue fibers which are interspersed into the superficial fatty layer
- The above results in high connection between skin and muscles, enabling precise dermal movements

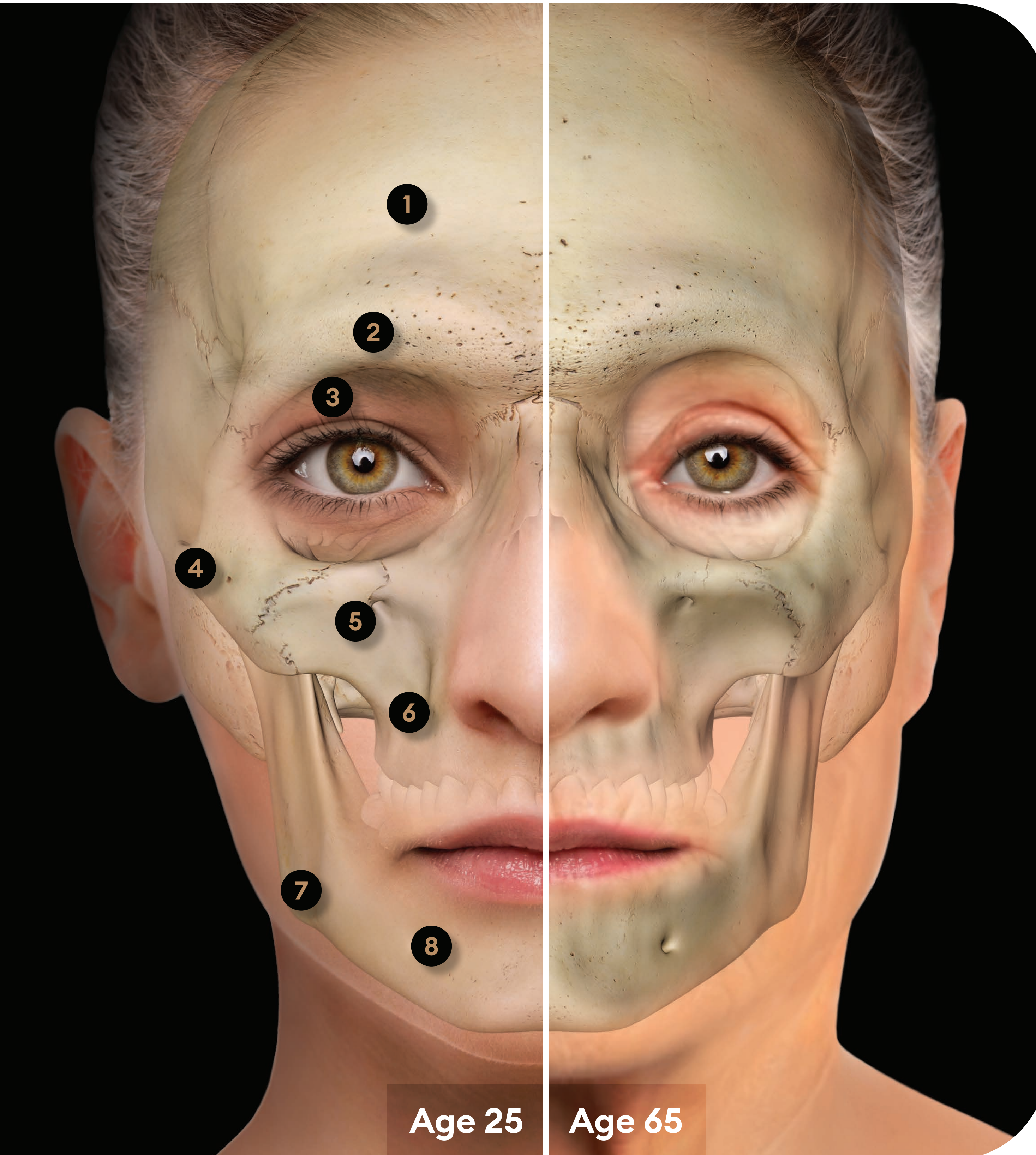
Lateral:

- Skin is separated from the muscular layer by a highly mobile superficial fatty layer
- This separated layered arrangement results in high soft tissue mobility and in the fact that muscular contractions will not result immediately in skin movements

Nasolabial Fold:

- Nasolabial fold is a zone of transition between medial and lateral
- This zone of transition is created by the change in the subdermal 3 dimensional architecture

Bone¹

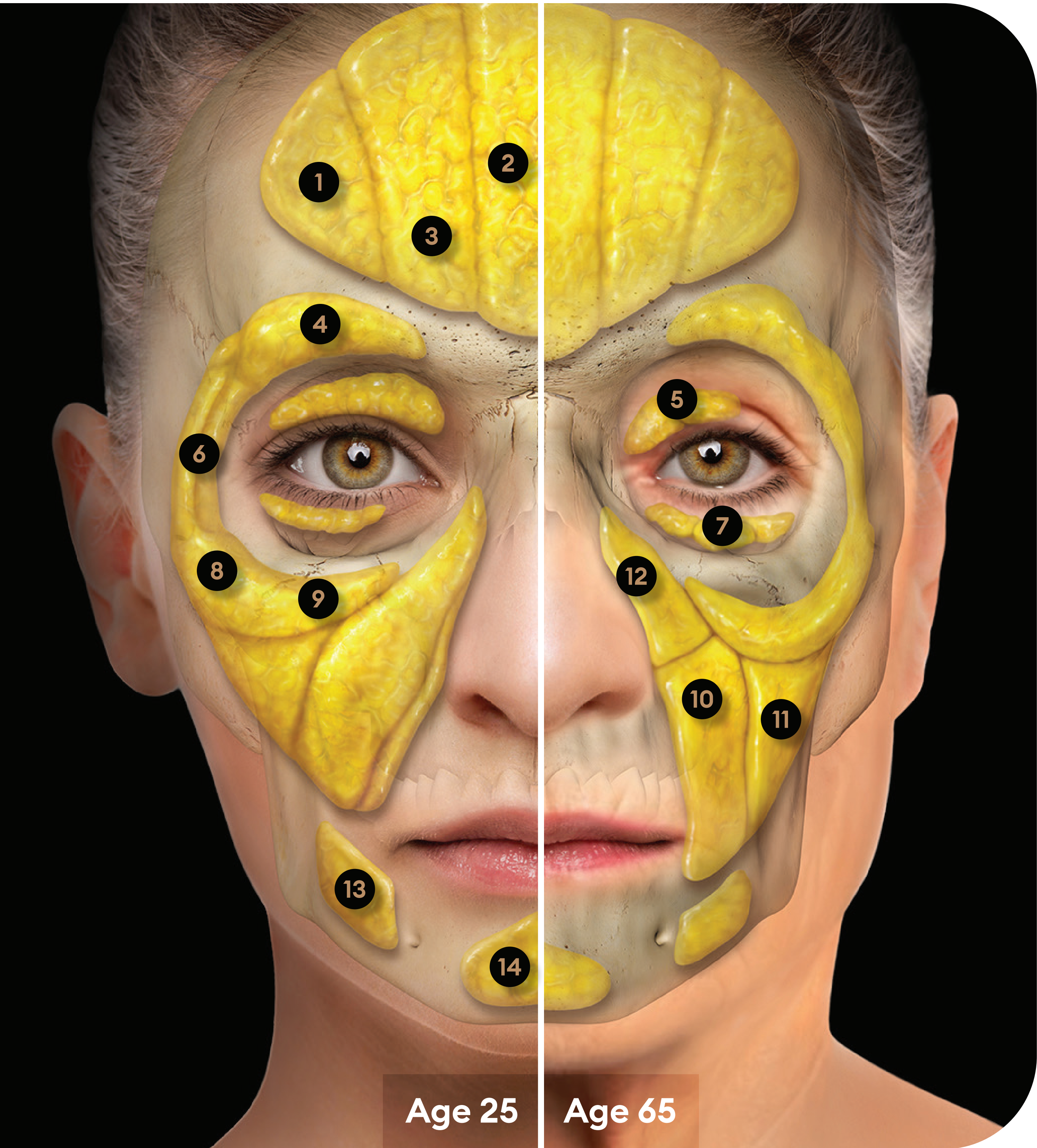


- Bones provide the foundation for the overlying soft tissues, lending stability, structure, and definition
- With age, bones recede and remodel causing the overlying soft tissues to descend and reposition
- As a result, fat pads and muscles realign both inferiorly and medially over the shifting bony platform

- 1 Frontal bone
- 2 Supraorbital ridge
- 3 Orbit
- 4 Zygomatic bone
- 5 Infraorbital foramen
- 6 Maxilla
- 7 Mandible
- 8 Mental foramen

1. Cotofana et al. *Plast Reconstr Surg*. 2018

Deep Fatty Layer^{1,2}

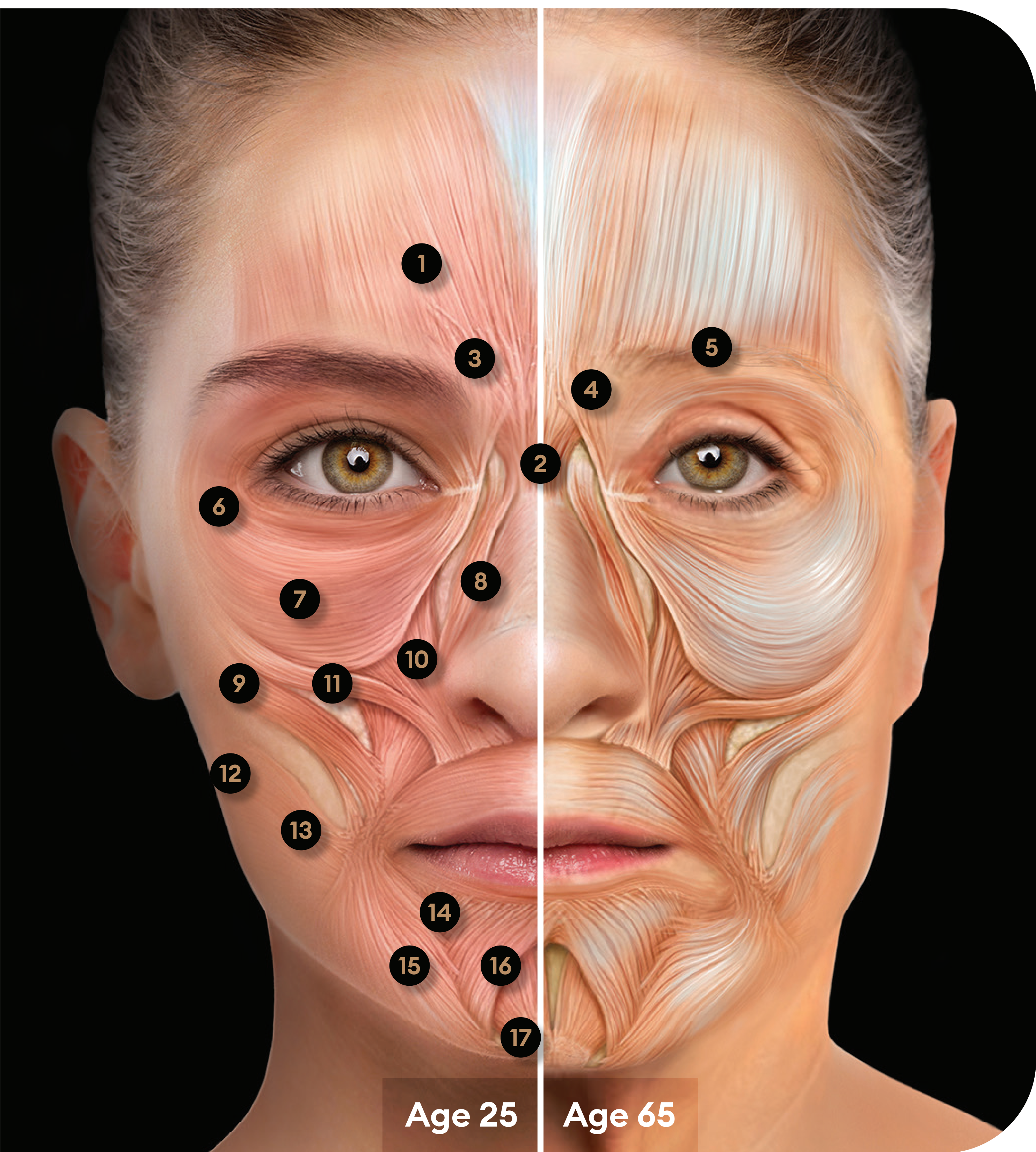


- The deep fatty layer is organized in compartments
- Deep fat compartments provide contour and support for more superficial fat as well as a smooth area over which muscles can move
- Atrophy and repositioning of deep fat pads are common with aging

- | | |
|-------------------------------|-----------------------------|
| 1 Deep lateral forehead fat | 8 Lateral SOOF |
| 2 Deep medial forehead fat | 9 Medial SOOF |
| 3 Deep middle forehead fat | 10 Deep medial cheek fat |
| 4 ROOF | 11 Deep lateral cheek fat |
| 5 Upper intraorbital fat pads | 12 Deep pyriform space |
| 6 Temporal fat | 13 Deep labiomental fat pad |
| 7 Lower intraorbital fat pads | 14 Deep mental fat pad |

1. Cotofana et al. *Plast Reconstr Surg*. 2019a
2. Schenck et al. *Plast Reconstr Surg*. 2018

Facial Muscles^{1,2}



- The insertion of facial mimetic muscles into the dermis contributes to both the suspension and structural integrity of soft tissues, particularly as the skin envelope ages
- During the facial aging process, muscles weaken resulting in less support for the surrounding soft tissues

- | | |
|---|-------------------------------|
| 1 Frontalis | 9 Zygomatic major |
| 2 Procerus | 10 Levator labii superioris |
| 3 Depressor supercilii | 11 Zygomaticus minor |
| 4 Corrugator supercilii (Medial part) | 12 Masseter |
| 5 Corrugator supercilii (Lateral part) | 13 Risorius |
| 6 Orbicularis oculi (Palpebral part) | 14 Orbicularis oris |
| 7 Orbicularis oculi (Orbital part) | 15 Depressor anguli oris |
| 8 Levator labii superioris alaeque nasi | 16 Depressor labii inferioris |
| | 17 Mentalis |

1. Cotofana et al. *Plast Reconstr Surg*. 2022
2. Alfertshofer et al. *Aesthet Surg J*. 2024

Superficial Fatty Layer^{1,2}

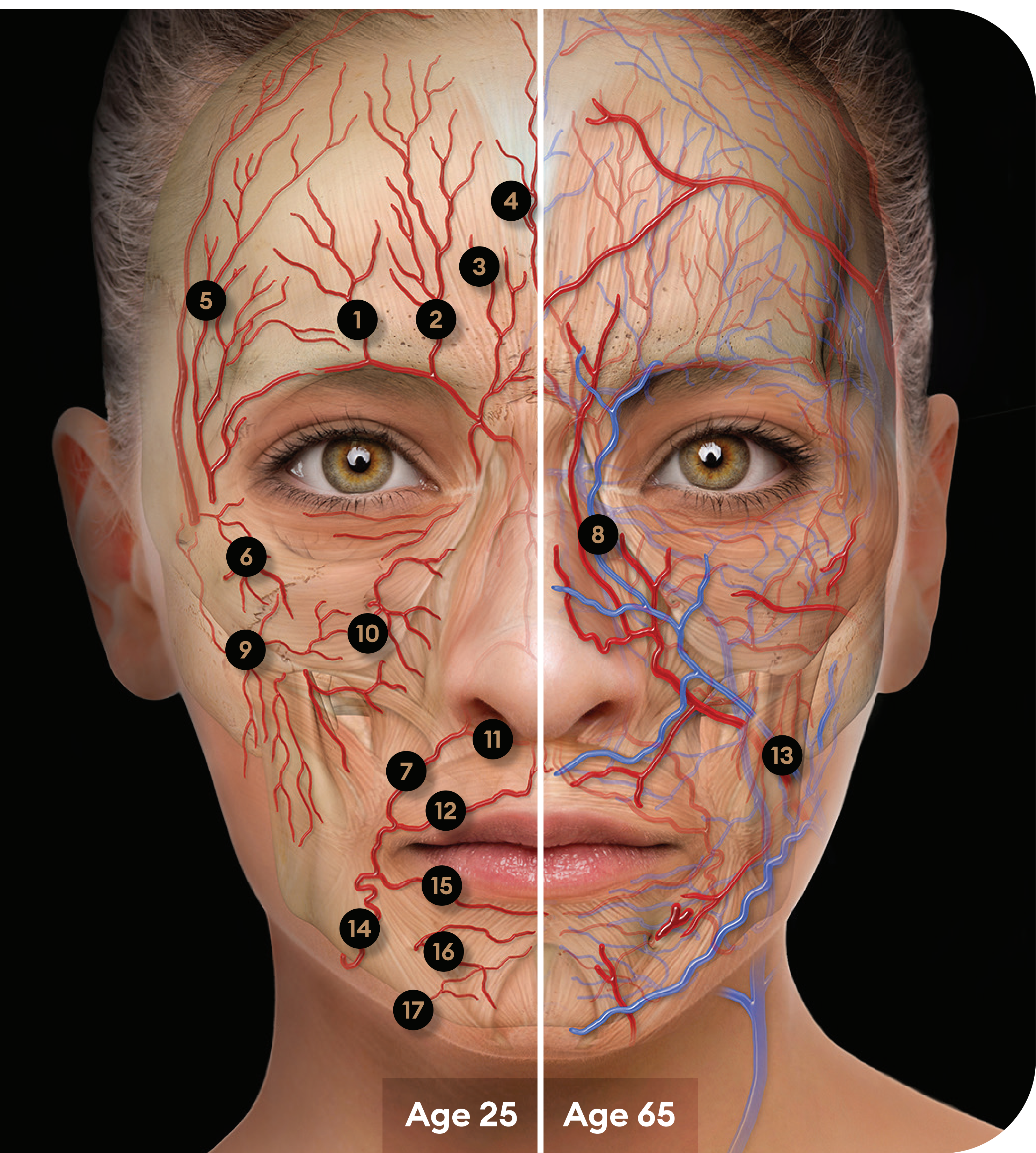


- The superficial fatty layer is located between the skin and the muscular layer and is arranged in compartments
- Compartments are highly mobile and responsible for dynamic facial expressions
- During aging the fat compartments descend causing the nasolabial fold, marionette lines and jowls to increase in severity

- | | |
|-------------------------------------|------------------------------|
| 1 Superficial lateral forehead | 5 Superficial nasolabial |
| 2 Superficial central forehead | 6 Superficial medial (malar) |
| 3 Superior superficial temporal fat | 7 Superficial middle |
| 4 Inferior superficial temporal fat | 8 Superficial lateral |
| | 9 Jowls fat |

1. Cotofana et al. *Plast Reconstr Surg.* 2019a
 2. Schenck et al. *Plast Reconstr Surg.* 2018

Facial Vasculature¹

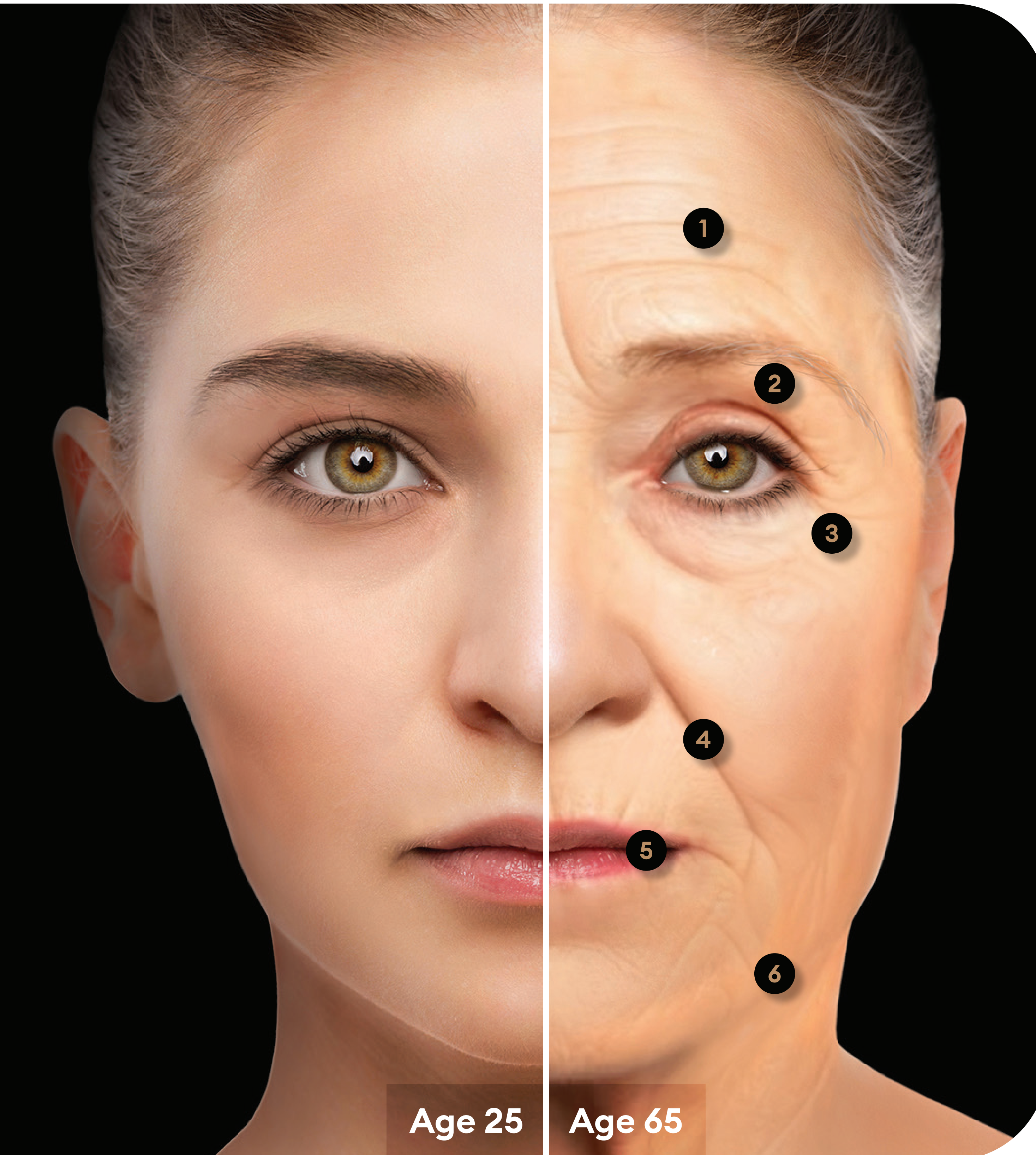


- The facial arteries and veins are highly variable and differ even between facial sides
- Course often runs both superficially and deep
- Carefully evaluate and use caution when injecting around vessels

- | | |
|-------------------------------|----------------------------|
| 1 Supraorbital artery | 9 Transverse facial artery |
| 2 Supratrochlear artery | 10 Infraorbital artery |
| 3 Paracentral artery | 11 Subnasal artery |
| 4 Central artery | 12 Superior labial artery |
| 5 Superficial temporal artery | 13 Facial vein |
| 6 Zygomaticofacial artery | 14 Facial artery |
| 7 Angular artery | 15 Inferior labial artery |
| 8 Angular vein | 16 Mental artery |
| | 17 Submental artery |

1. Cotofana et al. *Plast Reconstr Surg.* 2019a

Facial Changes Caused by the Aging Process



- 1 Increased forehead lines, lateral canthal lines, and glabellar lines (possibly even at rest)
- 2 Ptosis of the eyebrows
- 3 Deflation of the cheeks and of the anterior and lateral midfacial fat compartments, resulting in loss of Ogee curve
- 4 Development of nasolabial folds, marionette lines, and perioral rhytids
- 5 Thinning of the lips
- 6 Jowling

References

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