

Dry Erase Pen FPO

# ANATOMY OF THE Facial Aging PROCESS



**Patient Education Tool**

ANATOMY OF  
FACIAL AGING

SKIN

COLLAGEN

FAT

BONE

SIGNS OF  
FACIAL AGING

MAPPING

PROCEDURE OPTIONS

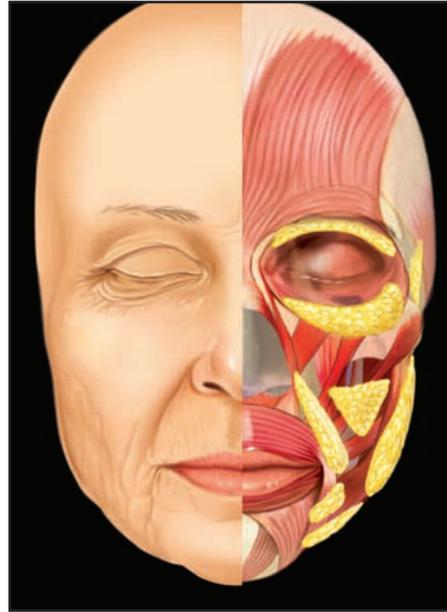
INJECTABLES

TREATMENT  
RECOMMENDATIONS

## CHANGES IN SKIN AND FAT

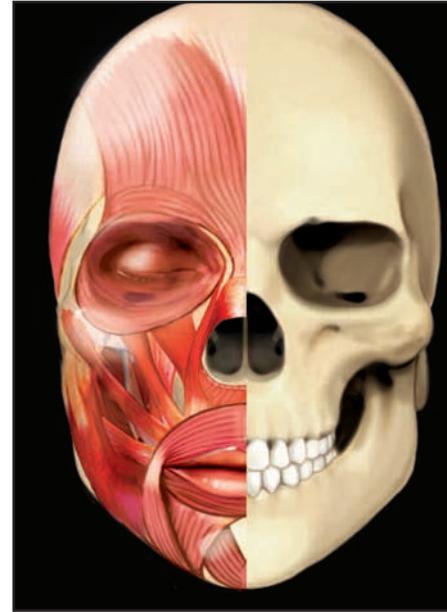


YOUTHFUL FACE

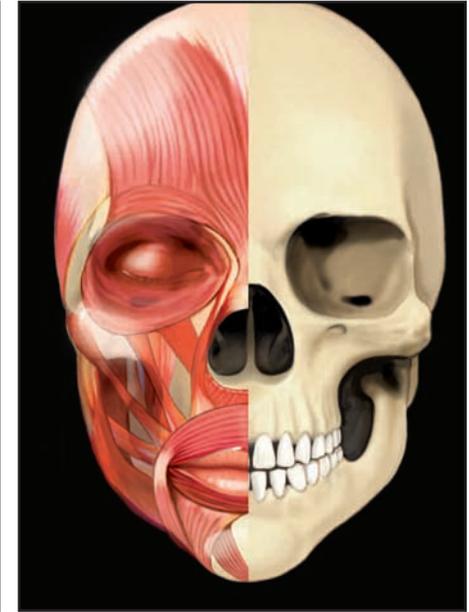


AGING FACE

## CHANGES IN MUSCLE AND BONE



YOUTHFUL FACE



AGING FACE

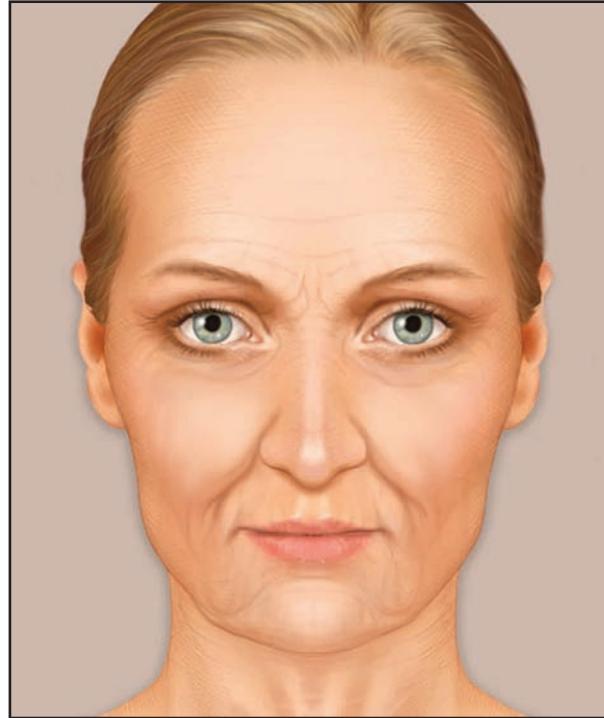
### Anatomy of Facial Aging

- Facial aging process begins with surface and subsurface structural changes in multiple facial tissue layers, including skin, fat, muscle and bone.<sup>1-5</sup>
- Facial tissue layers age interdependently, contributing to the overall facial appearance.<sup>24</sup>

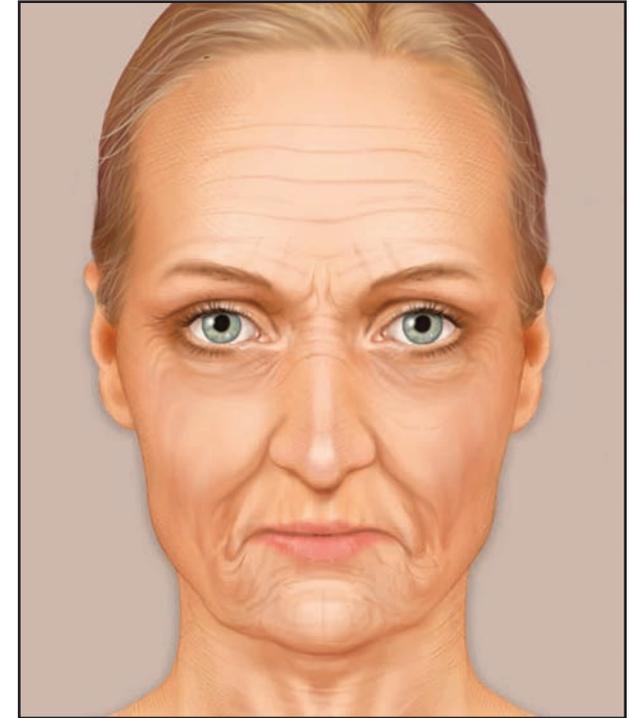
AGE: 35



AGE: 45



AGE: 55



Facial aging is due to changes in several types of tissue, including skin, fat, muscle, and bone.<sup>1-5</sup>

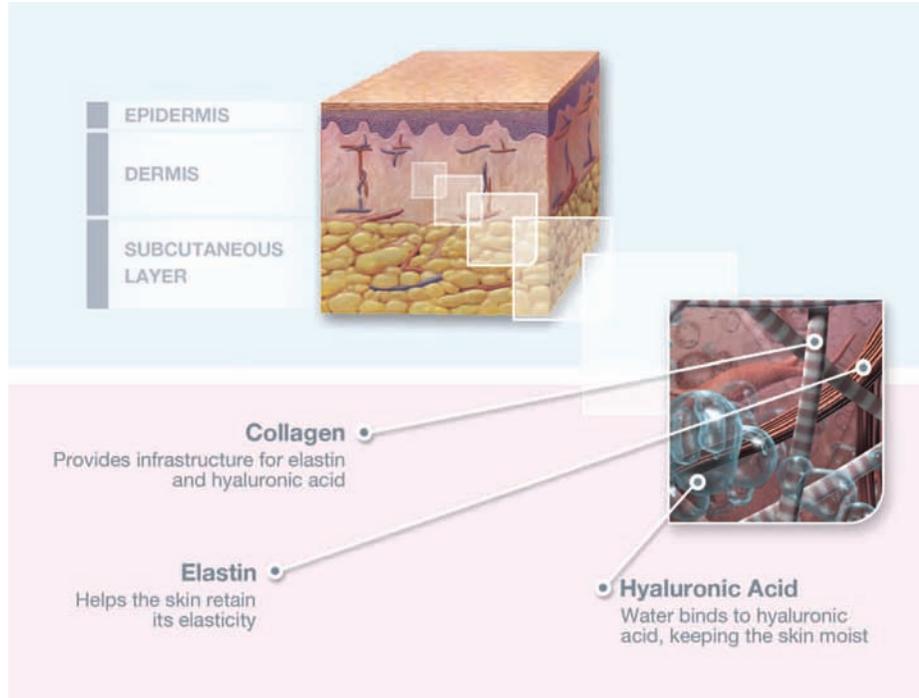
Changes in one tissue layer have an effect on the other layers.

### Skin

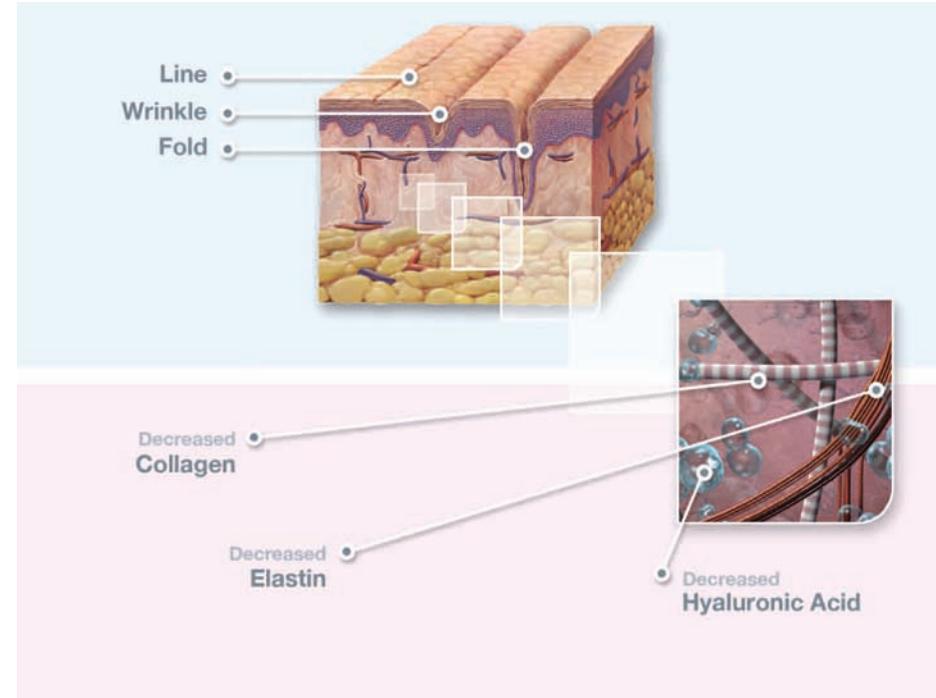
With age, skin undergoes several changes. Changes include<sup>4</sup>:

- Thinner skin
- Drier skin
- Less elastic skin
- Skin more likely to wrinkle or sag
- Reduction in collagen

## COLLAGEN IN YOUTHFUL SKIN



## COLLAGEN LOSS IN AGING SKIN



### Collagen

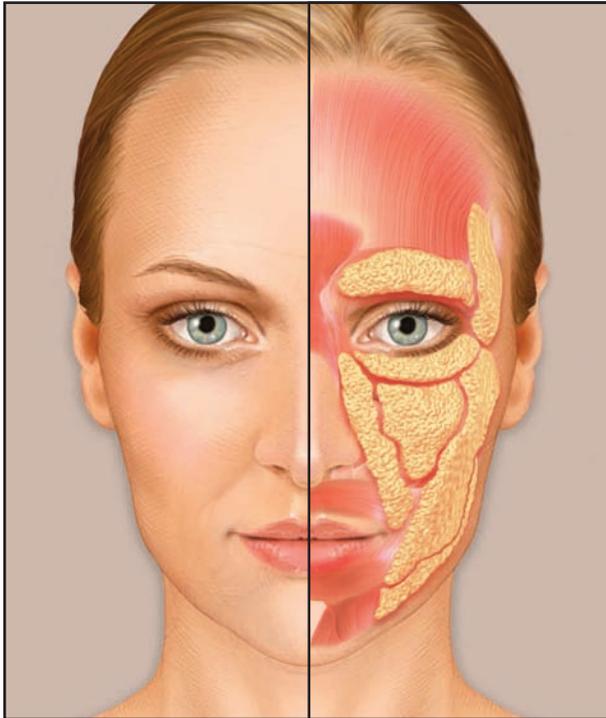
Collagen loss is a key factor in the aging process.

As skin ages, the middle layer of skin (dermis) thins due to collagen loss. This reduces the skin's ability to retain elasticity (from elastin) and moisture (from hyaluronic acid).

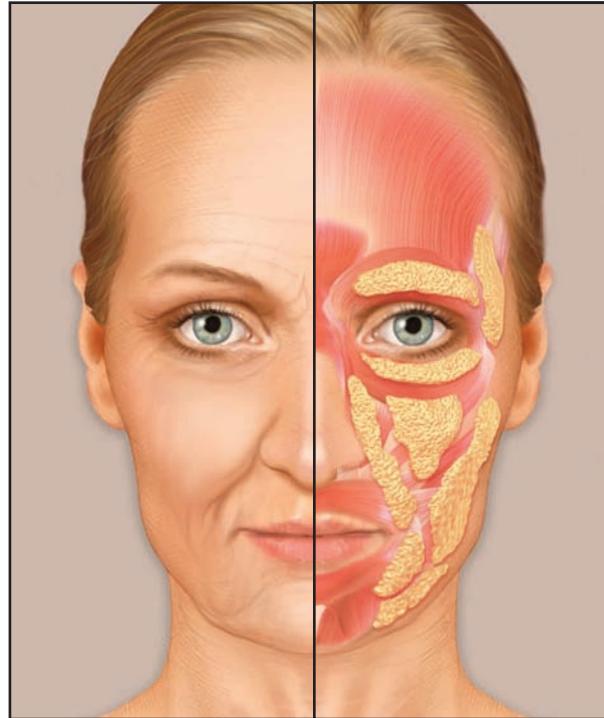
Due to this loss of elastin and hyaluronic acid, the skin becomes:

- Drier
- Less elastic
- Less supple
- Thinner (volume loss)

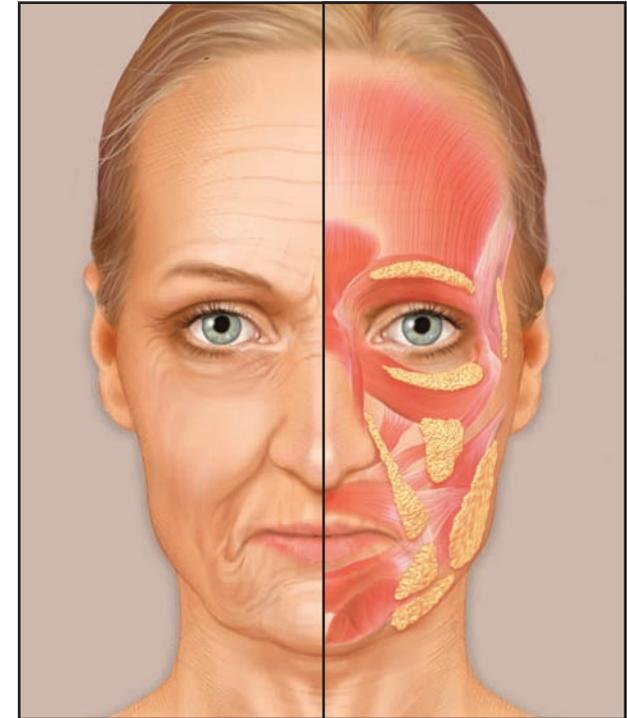
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## Fat

A youthful look depends on having the right amount of facial fat in the right places. Redistribution, accumulation, and atrophy of fat lead to facial volume loss.<sup>1,2,4,5</sup>

- Some areas lose fat. Examples are the forehead and cheeks.

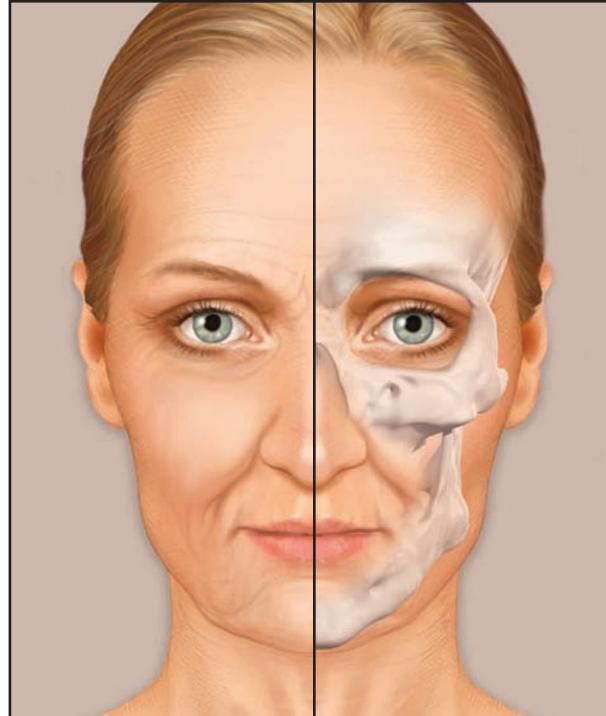
- Other areas gain fat. Examples are the mouth and jaw.
- Modification of the fat pads leads to contour deficiencies.<sup>2-5</sup>

In addition, the areas of fat tend to become farther apart. Instead of a smooth, almost continuous layer, the fat pads appear as separate structures.<sup>4</sup>

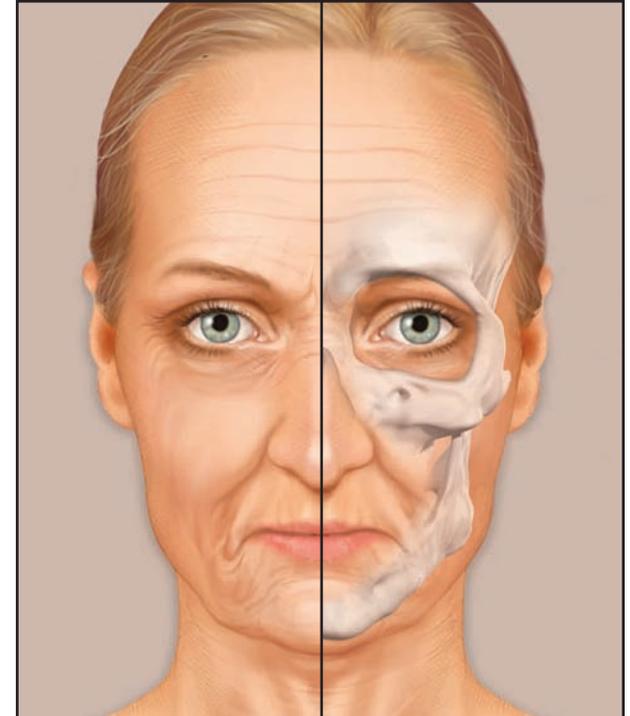
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## Bone

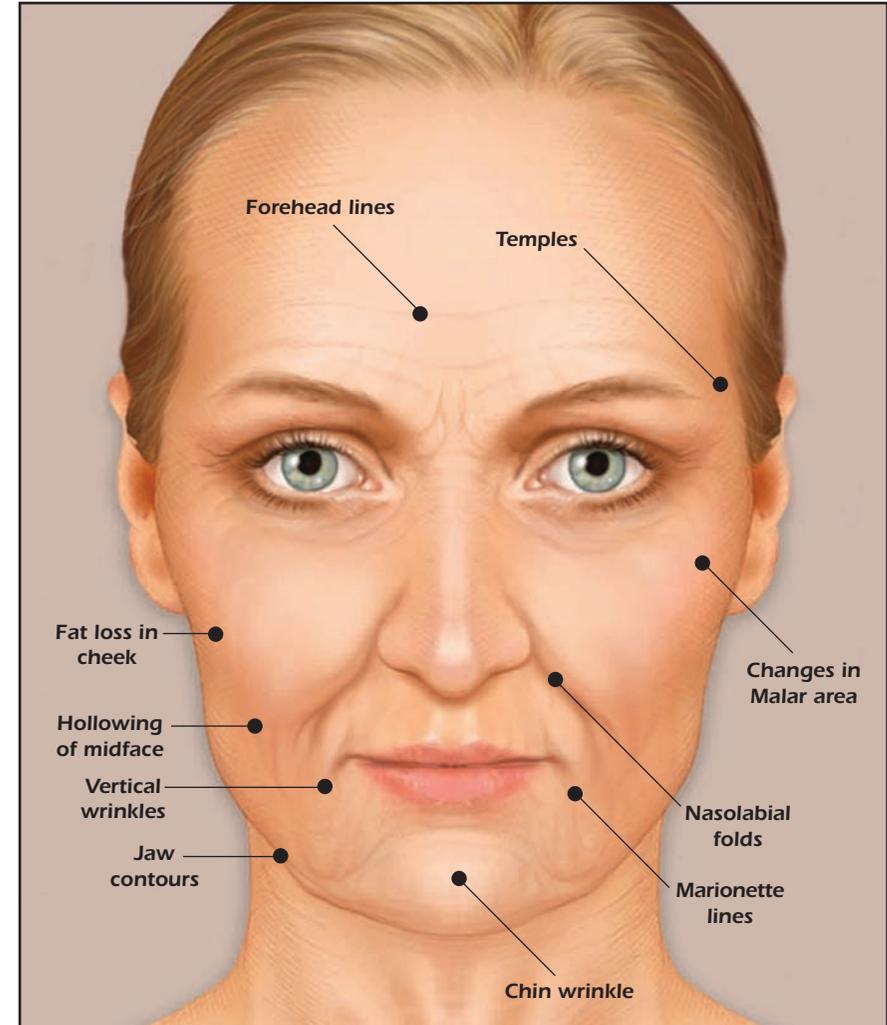
There is a significant loss of facial bone with age.<sup>4</sup> Aging of the craniofacial skeleton may be due to changes in the relative dynamics of bone expansion and bone resorption. Bone resorption leads to biometric volume loss.<sup>2,4</sup>

Without the structural support of bone, there are noticeable changes in the other layers of overlying soft tissue and skin.<sup>3,4</sup>

## VISIBLE SIGNS OF AGING

### Signs of Facial Aging<sup>6</sup>

- Greater visibility of bony landmarks, lines and wrinkles
- Prominence of transverse forehead lines
- Nasolabial folds become more prominent
- Hollowing of the mid-face (loose skin)
- Changes in the area around the mouth (vertical wrinkles, lip thinning and flattening)
- Development of prejowl depression (marionette lines)



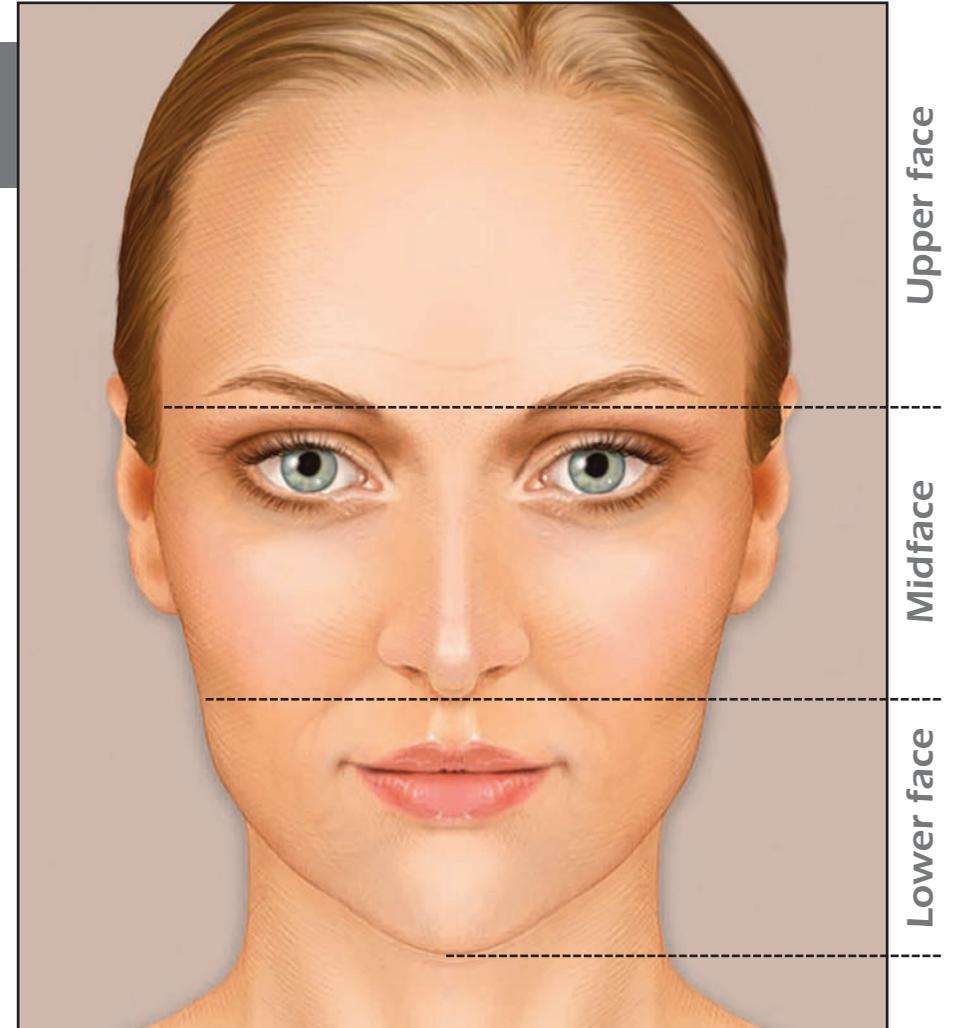
## When Developing a Treatment Plan, First Begin With a Facial Assessment

### Facial Mapping

With aging, the balance, proportions and symmetry of the face change. For example<sup>4</sup>:

- The lower face widens as the jowls form
- The lower face shortens as bone is remodeled in the maxilla and mandible
- The young face shows 1/3:2/3 ratio of upper lip to nose and lower lip to chin. With age, this ratio approaches 1:1

Each of the facial sections show different changes with age and are unique to each patient.



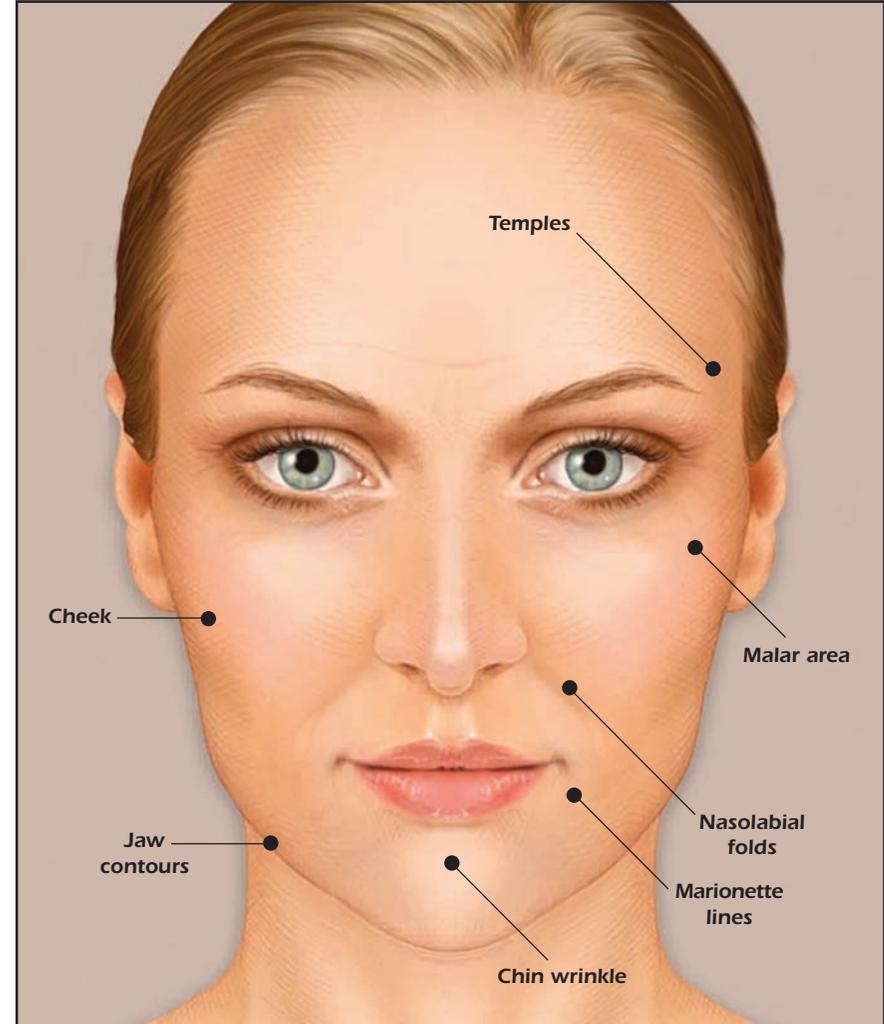
## Facial Mapping

The goal is to achieve:

- Symmetry on both sides of the face
- Smooth convex contours
- Homogeneous skin tone and texture

The transition between the anatomical regions of the face should be subtle and harmonious.

## POTENTIAL AREAS FOR TREATMENT



## Procedure Options

Facial rejuvenation treatments can be classified in three categories:

- **Resurfacing Options**—Resurfacing techniques are used to modify the surface of the skin. They correct the effects of photoaging, including fine lines, irregular pigmentation and blemishes. Common resurfacing techniques include:
  - Chemical peels
  - Microdermabrasion
  - Laser resurfacing
- **Injectables**—Injectables include a broad range of substances which are administered by injection. Their main usage is for the treatment of lines, wrinkles and folds, as well as hollowing and volume loss. Three of the most common types include:
  - Neurotoxins
  - Traditional fillers
  - Collagen stimulators
- **Surgery**—Surgery includes a wide range of procedures from lifts to liposuction to fat transfer. The treatments address a range of desired outcomes. Three of the most popular surgeries are:
  - Liposuction
  - Facelift
  - Fat transfer

## Injectables

Three of the most common injectables are described below. Selection and results depend on age, category, and on the substance being injected.

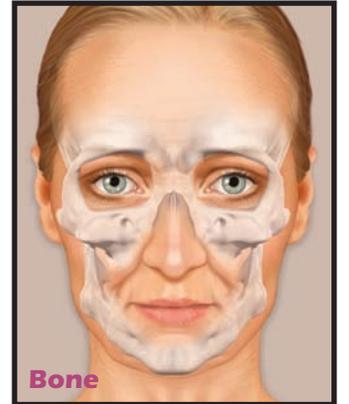
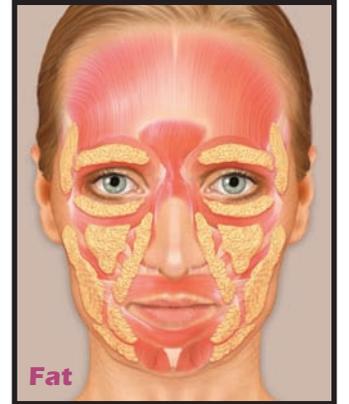
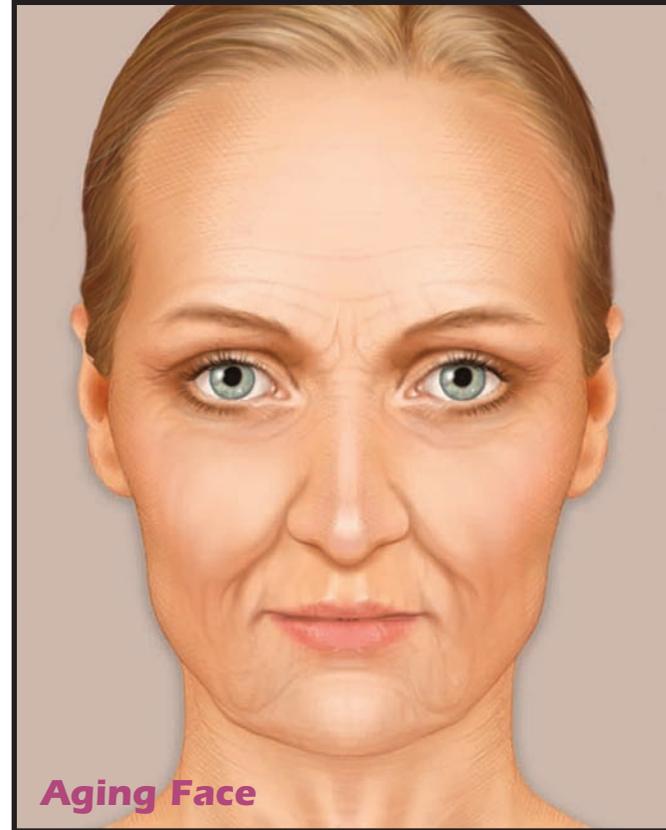
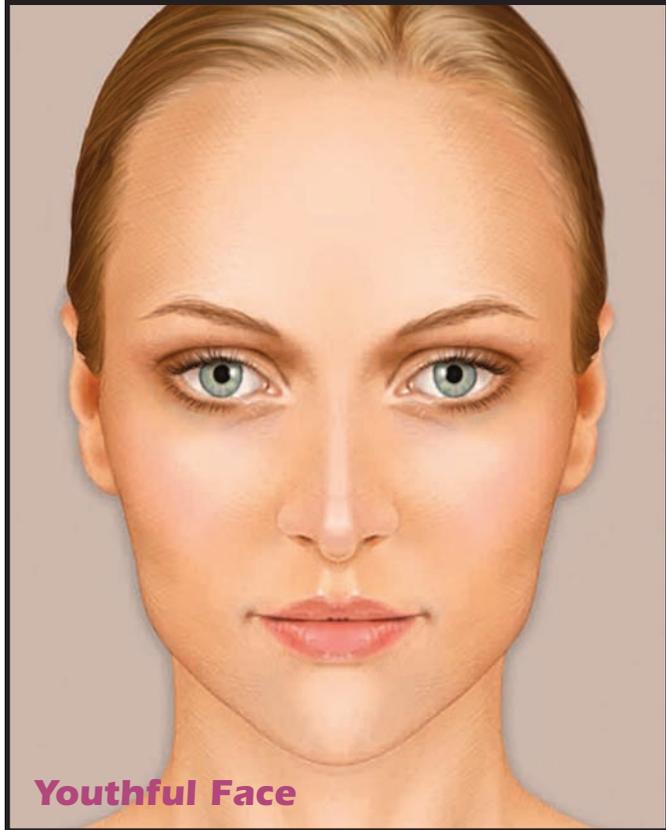
- **Neurotoxins**—Botulinum toxin is used to weaken muscles and minimize dynamic lines. It is injected directly into the muscle. Only lines caused by muscle contractions will be affected by botulinum toxin injections. The most common locations for treatment are in the upper third of the face — on the frown line, crows' feet, and on the forehead lines.
- **Traditional Fillers**—These are soft substances, liquids or gels, which can be injected into the skin to improve the appearance of fine lines and wrinkles, plump lips, fill out cheek hollows, and repair other facial imperfections. They work by filling out the space below the wrinkles, replacing lost fat. They can be injected into the dermis or subcutaneous layer of the skin, depending on the filler and treatment goal.
- **Collagen Stimulators**—As you age, it is important to replace the collagen your body loses. Collagen stimulators are injected into the dermis or subcutaneous layer, filling the spaces where collagen has been lost. The newly-produced collagen provides a structural framework to hold hyaluronic acid and elastin and helps restore the dermis. Hyaluronic acid attracts water molecules to the dermis and restores skin moisture. Elastin provides elasticity and helps the skin stretch.

## Treatment Recommendations



**References:** **1.** Murphy MR, Johnson CM Jr, Azzizadeh B. The aging face consultation. In: *Master Techniques in Facial Rejuvenation*. Elsevier;2006:1-16. **2.** Coleman SR, Grover R. The anatomy of the aging face: volume loss and changes in 3-dimensional topography. *Aesthet Surg J*. 2006;26[suppl 1]:S4-S9. **3.** Zimble MS, Kokoska MS, Thomas JR. Anatomy and pathophysiology of facial aging. *Facial Plast Surg Clin North Am*. 2001;9:179-187. **4.** Vleggaar D, Fitzgerald R. Dermatological implications of skeletal aging: a focus on suprapariosteal volumization for perioral rejuvenation. *J Drugs Dermatol*. 2008;7:209-220. **5.** Donofrio LM. Fat distribution: a morphologic study of the aging face. *Dermatol Surg*. 2000;26:1107-1112. **6.** Ascher B, Coleman S, Alster T, et al. Full scope of effect of facial lipoatrophy: a framework of disease understanding. *Dermatol Surg*. 2006;32(8):1058-1069.





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