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Part I
Facial Nerves
James M. Stuzin

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1 Overview of Facial Tissue Anatomy

James M. Stuzin

Abstract

The key to safety in surgical dissection of the face is an accurate understanding of soft tissue anatomy. While two-dimensional branching patterns of the facial nerve are variable, the plane of the facial nerve is constant within the architecture of the facial soft tissue. Recognition of the plane of surgical dissection and its relationship to the plane of the facial nerve provides the surgeon with the ability to provide safe and consistent outcomes in both aesthetic and reconstructive facial procedures.

Keywords: facial soft tissue anatomy, facial nerve

The primary focus of this textbook is to assist physicians operating within the face to improve their understanding of the nuances of facial anatomy, increasing both consistency in result and patient safety. Understanding facial soft-tissue anatomy is pertinent to both reconstructive and aesthetic surgery, and a three-dimensional comprehension of the architectural arrangement of facial soft tissue is essential when dissecting facial flaps for reconstructive purposes or performing procedures to expose the craniofacial skeleton, and more specifically when performing aesthetic surgery procedures.

Preventing facial nerve injury is the most important aspect of both safety and preserving function when performing facial procedures. The critical element to avoid motor branch injury is an accurate understanding of the three-dimensional architecture of facial soft tissue.

While much has been written about facial nerve anatomy, many investigations have focused on two-dimensional branching patterns of the facial nerve. Unfortunately, two-dimensional facial nerve anatomy is not particularly relevant when dissecting within the face, as there is a great deal of variation in terms of branching patterns among patients as well as variations in branching patterns between the right and left side of the cheek. The key to avoiding facial nerve injury is to understand the three-dimensional architecture of the soft tissue planes of the face, as well as recognizing the plane of dissection in relation to the plane of the facial nerve. THINK THREE DIMENSIONALLY.

1.1 The Architectural Arrangement of Facial Soft Tissue

- Facial soft tissue is arranged in a series of concentric layers, similar to the concentric layers of an onion.

1.1.1 The Layers of Facial Soft Tissue from Superficial to Deep

- Skin
- Compartmentalized subcutaneous fat
- Superficial facial fascia (also termed SMAS; these terms will be used interchangeably)
- Mimetic muscles (superficial muscles invested by the SMAS)
- Subsmas fat
- Deep facial fascia (also regionally known as parotid capsule, masseteric fascia, or deep temporal fascia)
- The plane of the facial nerve, parotid duct, and buccal fat pad (► Fig. 1.1a,b).

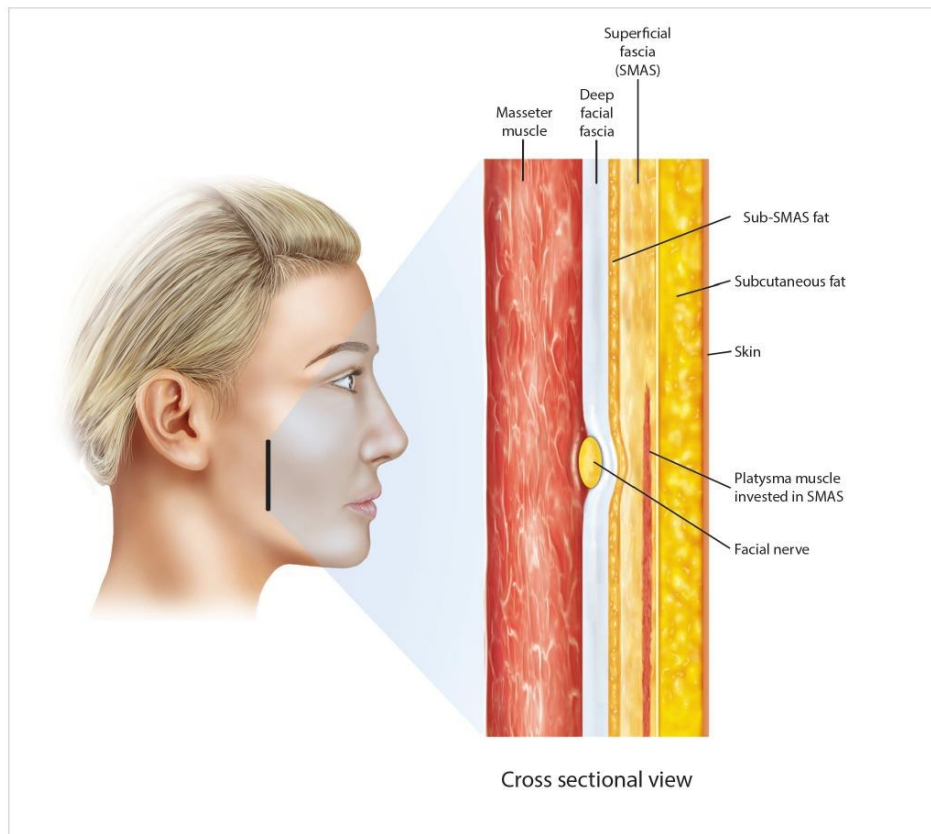


Fig. 1.1 (a) Cross section of the lateral cheek illustrated just anterior to the parotid gland. The architecture of the facial soft tissues of the cheek is three-dimensional and is arranged in a series of concentric layers. From superficial to deep, these layers are 1) skin 2) subcutaneous fat (which is compartmentalized) 3) superficial facial fascia-better known as SMAS 4) superficial mimetic muscles (invested by SMAS) 5) sub-SMAS fat 6) deep facial fascia (also regionally termed parotid capsule, masseteric fascia, or deep temporal fascia) 7) the plane of facial nerve, parotid duct, masseter, and buccal fat pad. The KEY to SAFETY when operating in the face is to recognize the plane of dissection and its relation to the plane of the facial nerve.

1.1.2 The Plane of the Facial Nerve

- While there is a good deal of variation in terms of two-dimensional facial nerve branching patterns, the plane of the facial nerve in relation to the other fascia layers of the face is anatomically constant.
- The critical step to avoid facial nerve injury is to accurately identify the plane of dissection as it is performed. If dissection is carried out either superficially or deeply to the plane of the facial nerve, motor branch injury will be prevented.