

The Anatomy of the Frontalis Muscle Revisited: A Detailed Anatomic, Clinical, and Physiologic Study

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Abstract

Background

There are differing opinions regarding the specific mechanical forces related to contraction of the frontalis muscle and how it exerts its effects on eyebrow motion.

Objectives

The goal of this study was to perform a detailed anatomic and clinical study of the frontalis muscle in cadavers and patients to better define the movement of the frontalis muscle.

Methods

This study consisted of 4 arms, which included: (1) dynamic ecography to evaluate movement of the frontalis muscle, (2) anatomical study of the relationship between the frontalis muscle and the deep fascia, (3) histological study to define the frontalis muscle attachments, and (4) clinical study to evaluate the action of the frontalis muscle in patients undergoing a temporal facelift.

Results

The frontalis muscle was attached, inserted, and adhered to the deep layer of the fascia in the superior cephalic and middle third of the forehead. In the

superior cephalic third of the forehead, loose areolar tissue was observed deep to the frontalis muscle and the deep layer of the fascia. Within the middle third of the forehead, the deep layer of the galea was fused with the periosteum and firmly adhered. In the inferior caudal third of the forehead, the frontalis muscle was separated from the deep galeal aponeurosis and interdigitated with the orbicularis muscle. When the frontal muscle end was dissected free from the deep fascia by approximately 1 cm and pulled upward, no movement of the eyebrows was observed. Eyebrow elevation was only achieved by pulling on the inferior part of the muscle.

Conclusions

Frontalis muscle movement occurs from the inferior caudal end toward the mid-part of the muscle as it contracts centripetally on its superficial layer, sliding over the deep part strongly attached to the deep fascia.

Level of Evidence: 4



Subject: [Facial Surgery](#)

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