Subfascial Temporalis Dissection Preserving the Facial Nerve in Pterional Craniotomy

—Technical Note—

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Abstract

The subfascial temporalis dissection and reconstruction of the temporalis muscle for pterional craniotomy are described. These procedures preserve the frontotemporal branch of the facial nerve and increase exposure along the sphenoid ridge. A good cosmetic appearance and good temporalis muscle function are achieved postoperatively.

Key words: pterional craniotomy, facial nerve, subfascial temporalis dissection, reconstruction

Introduction

Pterional craniotomy is the usual approach to intracranial aneurysms of the anterior circle of Willis. However, this technique may damage the frontotemporal branch of the facial nerve, resulting in weakness of the frontal muscles and/or impairment of eye closing. Subgaleal dissection of the skin flap is the main cause of injury to the frontotemporal branch of the facial nerve. Various methods for incision and retraction of the temporalis muscle during pterional craniotomy have been used to preserve the frontotemporal nerve and widen exposure along the sphenoid ridge.

We have developed subfascial temporalis dissection and reconstruction of the temporalis muscle, which preserve the facial nerve and increase exposure along the sphenoid ridge. A good cosmetic appearance and good temporalis muscle function are achieved postoperatively.

Operative Technique

The skin incision begins 1 cm anterior to the tragus of the ear at the level of the zygomatic arch, and extends superiorly just behind the hairline to 1 cm before the midline (Fig. 1A). The pericranium and the superficial temporalis fascia are incised along the same line (Fig. 1B), and dissected from the skull and the temporalis muscle without subgaleal dissection of the skin flap. This preserves the frontotemporal branch of the facial nerve. The skin flap with the pericranium and the superficial temporalis fascia is reflected anteriorly toward the orbit. The inferior layer of the superficial temporalis fascia is simultaneously dissected anteriorly at the attachment to the medial surfaces of the zygoma and frontal zygomatic process (Fig. 1C). The temporalis muscle is dissected from the temporal fossa near the floor of the middle cranial fossa to achieve good visualization along the sphenoid ridge, and then reflected inferoposteriorly (Fig. 1D). Frontotemporal craniotomy is performed with a free bone flap. At closure, the free bone flap is replaced, and secured with No. 0 silk sutures. The temporalis muscle is secured to the temporal fossa by suturing with six drill holes along the linea temporalis (Fig. 1E). The pericranium in the frontal region and the superficial temporalis fascia in the temporal region are sutured in layers. The skin is closed with No. 3-0 nylon sutures.

Discussion

Yasargil2) recommended interfascial dissection reflecting the scalp flap anteriorly with the attached superior layer of the superficial temporalis fascia to

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preserve the frontotemporal branch of the facial nerve. However, it is difficult to achieve complete preservation of the nerve, and the middle temporal artery and vein between the superior and the inferior layers of the superficial temporalis fascia are sometimes injured causing troublesome bleeding. Coagulation using a bipolar coagulator may also damage the facial nerve.

Spetzler and Lee\(^1\) described the modified incision and reconstruction of the temporalis muscle. The temporalis muscle and fascia remain attached to the scalp flap in the region of the frontotemporal branch of the facial nerve, preventing nerve injury. However, the temporalis muscle is reflected with the skin flap anteriorly, and exposure along the sphenoid ridge is limited by the bulky muscle.

Our subfascial temporalis dissection and retraction of the dissected temporalis muscle inferoposteriorly during pterional craniotomy achieve both preservation of the frontotemporal branch of the facial nerve and increased visualization along the sphenoid ridge. Moreover, reattachment of the dissected temporalis muscle to the temporal fossa results in a good cosmetic appearance and good temporalis muscle function, because the deep temporal artery is preserved by not incising the temporalis muscle.

**References**


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