

UDC: 616-089.844

Avetikov D.S. doctor of medicine, prof.; Stavickij S.O. PhD, assistant, Lokes K.P. PhD, docent; Yacenko I.V. PhD, docent.

Аветіков Д.С. д.мед.н., проф.; Ставицький С.О. к.мед.н., ас.; Локес К.П. к.мед.н., доц.; Яценко І.В., к.мед.н., доц.

Higher state educational establishment of Ukraine "Ukrainian medical stomatological academy", Poltava, Ukraine

Вищий державний навчальний заклад України «Українська медична стоматологічна академія», м. Полтава, Україна

OPTIMIZATION OF REPLACEMENT OF DEFECTS AND DEFORMATIONS OF HEAD AND NECK BY USING OF ANGIOSOME TEMPORAL FLAP

ОПТИМІЗАЦІЯ ЗАМІЩЕННЯ ДЕФЕКТІВ ТА ДЕФОРМАЦІЙ ГОЛОВИ ТА ШИЇ ШЛЯХОМ ВИКОРИСТАННЯ АНГІОСОМНОГО СКРОНЕВОГО КЛАПТЯ

**Summary.** One of serious problems, which arises up at getting up and mobilization of temporal shred is possibility of traumatization of frontal-temporal branches of facial nerve, heavy preparation of superficial and deep temporal fascia. Deep temporal fascia consists of superficial and deep layers along the whole length of temporal region that is not limited only to the place of accumulation of intermediate fatty tissues. Intermediate fatty tissue is important and useful, but not absolute landmark in clinical practice. The division of fascia can be executed even in default of fatty tissues.

**Keywords:** temporal fascia, angiosome temporal flap.

**Резюме.** Одна із найбільш серйозних проблем, яка виникає при підйомі та мобілізації скроневого клаптя – можливість травмування лобно-скроневих гілок лицьового нерву, складне препарування поверхневих та глибоких фасцій. Глибока скронева фасція складається з поверхневого та глибокого шарів на всій скроневій ділянці, що не обмежується лише місцем скупчення проміжної жирової тканини. Проміжна жирова тканина - важливий, але не абсолютний

орієнтир в клінічній практиці. Розділення фасцій може бути виконано навіть за відсутності жирової тканини.

**Ключові слова:** скронева фасція, ангіосомний скроневий клапоть.

**Introduction.** The problem of replacement of defects and deformations of soft tissue of head and neck by flaps and autografts from surrounding areas occupies a leading position in modern plastic and reconstructive surgery of the head and neck [2, 7].

One of the major problems that arises at lifting and mobilization of angiosomal temporal flap is the possibility of traumatization of fronto-temporal branch of the facial nerve, severe dissection of superficial and deep temporal fascias [1, 4, 6].

Today there is no consensus on methods of raising and mobilization of angiosomal temporal flaps according to data of topographo-anatomical studies [2, 5].

**The work is a fragment of the theme** "Development and improvement of methods of diagnosis, treatment, rehabilitation and prevention of congenital and acquired diseases, defects and deformities of the maxillofacial area" that is performed at the department of surgical stomatology and maxillofacial surgery with reconstructive surgery of the head and neck, state registration number – 0105V004081.

**The aim of the study** was focused topographo-anatomical justification of raising and mobilization of angiosomal temporal grafts, improving of preparing methods of surface and deep temporal fascias, minimizing the possibility of traumatization of fronto-temporal branch of the facial nerve.

**Material, object and methods of research.** Layer preparation of temporal area was made with a surgical microscope on 19 corpses from both sides. The plastic by angiosomal temporal flap modified by our technique was made to 24 patients.

**The results of the study and discussion.** The precise definition of structures of temporal area is possible during dissection. The difference is that the deep temporal fascia is divided into superficial and deep layers throughout the temporal area. This feature was noted in 98.4% of cases.

This manipulation is not limited by the intermediate fatty tissues. In 97% of cases, both layers were easily separated but in some areas they are very thin. In 3% of cases the intermediate accumulation of adipose tissue was absent.

Intermediate adipose tissue is important and useful but not absolute landmark in clinical practice. Complete separation of the fascia can be achieved even in its absence.

Fronto-temporal branch of the facial nerve passes through the temporal and the forehead areas, which increases the risk of its injury during dissection of tissue at surgery. Preservation of fronto-temporal branch of the facial nerve by using of intrafascial angiosomal temporal flap is necessary at replacement of defects of soft tissue in the head and neck.

Tissues of temporal areas that are suitable for transplantation include skin, subcutaneous fat, superficial temporal fascia, superficial temporal fatty tissue, deep temporal fascia and temporal muscle.

Our study confirms the opinion of many authors that superficial temporal fascia is a continuation of the surface muscles aponeurotic system of aponeurotic helmet of head and skull. It freely adjacents to the subcutaneous fatty tissue and closely associated with fronto-temporal branch of the facial nerve and superficial temporal vessels.

In 89.5% of cases the deep temporal fascia was determined by a separate layer located on top of the muscle, which is further subdivided into superficial and deep layers. The first is on the outside of the zygomatic arch and goes into parotid-masticatory fascia, while the second extends toward the deep part of the zygomatic arch and continues in the form of posterior masticatory fascia. Accumulation of fatty tissue fills the space between two layers of deep temporal fascia above the zygomatic arch.

Fronto-temporal branch of the facial nerve that is roughly along the line that connects a point 4-5 mm below the base of tragus, with the point that is at 1.4-1.6 cm above the lateral end of the eyebrow, almost out the surface of crossing the zygomatic arch.

The lack of clear intermediate accumulation of adipose tissue was founded in 11% of cases. This opportunity was kept dissection of two layers of deep temporal fascia during surgery.

In 89% of cases the intermediate temporal fat tissue is between two layers of deep temporal fascia above the zygomatic arch. However, our study found that deep temporal fascia is divided into two layers throughout the temporal area. The existence of these layers is not limited by places where the intermediate fat. Its dissection was conducted throughout the length of the temporal area. There is one more place of accumulation of fatty tissue beneath a deep layer of temporal transition in which fatty body of cheeks.

Plane of location of fronto-temporal branches of the facial nerve was constant. It goes along the lower surface of the superficial temporal fascia inside surface free fat and non-vascular areolar layer. In our study, fronto-temporal branch of the facial nerve had three branches: the anterior (for the circular orbital muscle), medium (for frontal-occipital muscle) - 1 cm above the zygomatic arch ahead superficial temporal artery; posterior (for the anterior and superior ear muscles and muscles of tragus). We found that during surgery is better to laminate the flap below the surface of the temporal fascia, thus preserving the fronto-temporal branch of the facial nerve.

In some cases branch fronto-temporal branch of the facial nerve that is inside the intermediate accumulation of adipose tissue in the distal direction goes to frontal-occipital muscle. The incision is made within the intermediate accumulation of adipose tissue or near the deep layer of the deep temporal fascia provides a great degree of conservation of fronto-temporal branch compared to the incision directly under the superficial temporal fascia and superficial fatty tissue or under the surface layer of the deep temporal fascia.

In our clinic we defoliate intrafascial layers along the bottom surface of accumulations of fatty tissues, but not on the surface layer of the deep temporal fascia. After, we lift the intermediate adipose tissue with the surface layer of the deep temporal fascia without affecting its deep layer to avoid damage to the fronto-temporal branch, which can go inside the intermediate accumulation of adipose

tissue. During crossing the zygomatic arch to provide communication between the temporal area and middle face area, the incision is possible to do in a subperiosteal plane, although this manipulation should be carried out very carefully.

### **Conclusions**

1. The deep temporal fascia consists of superficial and deep layers throughout the all temporal area, which is not limited by places of intermediate fatty tissues.

2. Intermediate adipose tissue is an important and useful but not absolute benchmark in clinical practice and intrafascial separation can be accomplished even in the absence of adipose tissue.

**In further studies**, we plan to conduct a focused study of topographic anatomical of frontal-parietal-occipital areas and give the morphological justification of angiosomal temporo-parietal flaps for closing of soft tissue defects of the head and neck.

### **Literature:**

1. . Скрипников Н.С. Особенности топографии сосудов сложных аутоотрансплантатов для замещения дефектов тканей головы и шеи / Н.С. Скрипников, В.Н. Соколов, В.И. Шепитько // В сб.: Функциональная морфология сердечно-сосудистой и нервной системы в норме, патологии, эксперименте. – Ростов-на-Дону. - 1991. – С. 12-26.

2. Ammirati M. An Anatomicosurgical Study of the Temporal Branch of the Facial / M. Ammirati, A. Spallone., J. Ma [et al.] // Plast. reconstr. Surg. - 2000.-Vol. 14, № 1. - P. 35-41.

3. Baker T.J. Surgical Rejuvenation of the Face / T.J. Baker, H.L. Gordon, J.M. Stuzin // Plast. reconstr. Surg. - 2002. - Vol. 16, № 1. - P. 41-44.

4. Bhupendra P. Forhead anatomy. Medicine Medical Textbooks - Otolaryngology and Facial Plastic Surgery - Free Physician Reference / P. Bhupendra, T. Simon // Plast. reconstr. Surg. - 2001.-Vol. 20, № 1. - P. 25-29.

5. Psillakis J.M. Subperiosteal Approach as an Improved Concept for Correction of the Aging Face Baker Stuzin J.M. Surgical Rejuvenation of the Face /

J.M. Psillakis, T.O. Rumley, A. Camargos // *Plast. reconstr. Surg.* - 2001.-Vol. 8, № 3.  
- P. 45-49.

6. Stuzin J.M. Anatomy of the frontal branch of the facial nerve: The Significance of the Temporal Fat Pad / J.M. Stuzin, L. Wagstrom, H.K. Kawamoto, S.A. Wolfe // *Plast. reconstr. Surg.* - 1998.-Vol. 5, № 1. - P. 31-36.

7. Yasargil M.G. Preservation of the frontotemporal branch of the facial nerve using the interfacial temporalis flap for pterional craniotomy / M.G. Yasargil, M.V. Reichman, S. Kubik // *Plast. reconstr. Surg.* - 1987. - Vol. 4, № 2. - P. 12-19.