

Fascia Lata Graft of a Mucosa Disorder in Oral Cavity

Vladimíra Schwartzová*

Vladimíra Schwartzová, University P. J. Šafárik, Slovakia, Košice

Email: vladimira.schwartzova@upjs.sk

Abstract

The author describes the case of a patient with an excited cavernous hemangioma in the oral cavity. The defect on mucous membrane was covered with a fascia lata from Tissue Bank of University P. J. Šafárik Košice, Slovakia.

Keywords: hemangioma; fascia lata; transplantation.

1. Introduction

Wound healing is a complex process. Primary wound closing shall be carried out by direct suture, dental flap overlay, or with a graft. The most commonly used transplantation surgery, and an integral part of the basic surgery techniques, is a free skin graft. Transplantation is a transport of tissues or whole organs. Skin or mucous membrane transplantation is needed in treatment of lossy injuries or after radical tumor removals. Also, fascia are very suitable for free grafting. In 1894, Schnitzler and Ewald conducted the first skin transplantation in oral cavity, following Carl Thiersch's (1822 - 1895) method, trying to protect the surface of a wound suffered by the loss of buccal mucus with a skin graft [1].

Depending on the type of tissue used for transplantation, there exist:

- autotransplantation – tissue of the same individual, the only guaranteed permanent engraftment,
- allotransplantation – tissue from other individual of the same species,
- xenotransplantation – tissue from another species,
- isotransplantation – tissue from monozygotic, immunobiological twin, equal to autotransplantation,
- alloplasty – implementation of a foreign material [8].

* Corresponding author.

2. Haemangioma

Hemangiomas and vascular malformations are often present in childhood. They appear most frequently on head, neck and in oral cavity. The traditional procedure for their treatment is based on the assumption that the hemangiomas disappear spontaneously around the 5th year of life. A small percentage of cases require immediate medical intervention because they threaten the patient's life. There are several therapeutic options. It is very difficult to decide about the proper therapeutic intervention. Critical factors include patient's age, and extent and localization of the problem.

Hemangiomas are benign tumors of the blood vessels. They occur in all age groups and their area of emergence is endothelium – a single layer of cells, which lines all of the blood vessels, down to the smallest forking capillaries. Hemangiomas can therefore occur anywhere the blood vessels are, for example in skin, mucous membranes, muscles, or even bones. From the pathologically-anatomic point of view, hemangiomas can be divided into simple hemangioma, vascular hemangioma, cavernous hemangioma, arteriovenous hemangioma, or facial hemangiomatosis which is a condition with multiple hemangioma present at the same time [2]. They usually manifest themselves by a bluish or reddish coloration of the skin or mucosa. Hemangiomas are usually harmless, except for the disruptive cosmetic effect. Smaller hemangiomas are prone to spontaneous atrophy, therefore in most cases therapy is unnecessary. The exception are hemangiomas that undergo a change in size in a relatively short period of time. Such changes must be treated as soon as possible.

The most common forms of hemangioma are capillary hemangioma and cavernous hemangioma. From the clinical perspective, four forms can be identified: nevus flammeus, hemangioma simplex, hemangioma cavernosum and hemangiomatosis.

2.1. Nevus flammeus /vinosus, coeruleus, planus/

From the histological perspective, naevus flammeus is a capillary hemangioma. A number of fine capillaries infiltrate tissues, which leads to their destruction. Located on the face and neck, or in the oral cavity, it is red to purple color and either on the same level as its surroundings, or prominent with a rough and bumpy surface.

2.2. Haemangioma simplex capillare

Capillary hemangiomas consist of capillaries with a very small internal diameter (narrow lumen). They commonly occur on lips, tongue, or in other locations, such as skin or mucous membrane and appear as bounded, hemispherical or flat, irregularly lobey formations the size of a pea covered with regular mucosa. Approximately half of all capillary hemangiomas are located on head and neck. Capillary hemangiomas are red, because they are rich in blood vessels and they can grow from a few millimeters long, to a few inches.

2.3. Cavernous hemangioma

Cavernous hemangiomas consist of broad vascular spaces. They occur primarily on tongue, cheeks, palate and lips. Cavernous hemangiomas are not innate. When found on lips or tongue, they can cause macrocheilia or

macroglusia. Usually they have bluish to reddish color. Cavernous hemangioma can also be located in facial bones. It originates directly in the spongiosis, or spreads to the inside of the bones from periosteum. If the dental bed communicates with a tumor, the patient may be threatened by serious bleeding during an extraction or a spontaneous tooth elimination.

2.4. Hemangiomatosis

Hemangiomatosis is a condition when more than one hemangioma is present. These hemangiomas probably arise due to an embryonal developmental anomaly and together with other anomalies they are a part of a larger systemic disease. Such rare diseases include:

- Neurocutaneous angiomas, which is characterized by hemangiomas on face and pia mater, coupled with existing changes to the eyes, eg. glaucoma.
- Von Hippel–Lindau disease, with typical hemangiomas on retinas and cerebellum, eventually also coupled with cystic changes in internal organs, for example kidneys, lungs or liver.
- Klippel-Trenaunay syndrome with multiple hemangiomas, usually on one limb – arm or leg – associated with gigantism in the affected limb.
- Hemangiomatosis of the face is therapeutically and prognostically the most serious of all angiomas. The tumor affects soft tissues, as well as jaw bones. Treatment is seldom successful and the risk of bleeding out is almost 2% [7].

3. Epidemiology

Women are twice as likely to be affected by vascular anomalies than men [4]. Hemangiomas affect children in 65.3% of the cases. Children with positive family medical history are twice as likely to develop such tumor. Low birth weight, preterm birth, older woman in labor, preeclampsia, and placenta praevia are among the factors that increase the incidence. It is generally assumed that the incidence of hemangiomas is sporadic. Caucasians are affected by the anomaly more often compared to the other people. The prevalence in negroids is around 10-12 %, mongoloids are affected in 0.8 - 1.7 % of the cases [5, 6].

4. Therapy

The key factors for determining the appropriate therapy are patient's age, and extent and location of the tumor. Individual treatment options are often combined, therefore interdepartmental cooperation is much needed.

An overview of therapeutic methods in the treatment of hemangiomas [7]:

- Puncture of vascular varix or tumor.
- Electrocoagulation.
- Sclerotherapy of tumor /Aethoxysklerol/.
- Total excision and wound suture.
- Partial excision or extirpation of tumor /with ligature or preoperative embolization of nutrient artery/.

- Tumor cryobalation.
- Radiotherapy.
- Interlesional steroid application.
- Total application of interferons.
- Therapeutic selective or superselective embolization /inducted baloon or spiral coil, transcatheter coagulation.../.

Certain tumors, like hemangioma, can not be prevented. However, early diagnosis and an appropriate therapy are very important.

5. Fascia lata

Fascias are very suitable for free tissue transplant. They are also used most commonly. Fascia lata encloses all of the thigh muscles. It begins at ligamentum inguinale and on the adjacent side of crista iliaca, and transitions into fascia glutaea on the back side. Fascia lata is fortified in an elongated strip caled tractus iliotibialis, which is attached to m. tensor fasciae latae and a part of m. glutaeus maximus tendon. Osteofacial septa separating groups of thigh muscles connect with fascia lata [3]. In ophthalmology, fascia lata is used to correct congenial disorders of eyelashes, lacrimal apparatuses and eye sockets. It is further used in neurosurgery to overlap brain after skullcap removal due to decompression or defects of dura mater, in orthopedy for joint ligament replacement or reinforcement, and in plastic and maxillofacial surgeries, to treat skin and mucosa defects.



Figure 1: Collecting fascia lata from a cadaver /material provided by Associated Tissue Bank of UPJŠ FoM and UNLP, Košice)



Figure 2: Collecting fascia lata from a cadaver /material provided by Associated Tissue Bank of UPJŠ FoM and UNLP, Košice)



Figure 3: Fascia lata after mechanical processing, washing and sterilization /photo courtesy of I. Department of Stomatology UPJS/

Case report

A 35-year-old patient was sent to our clinic to undergo an examination of a formation in the lower right vestibule, which the patient observed for several years. The patient has not attended regular preventive examinations because they have been abroad for a long period of time. The painless formation bled occasionally when stimulated. Its size increased in the last month and thus, at the instigation of their dentist, the patient sought our help. Due to an uneven surface of the mucosa, the formation had to be excised together with mucosa, which created a sizeable defect on the mucous membrane of the oral cavity. Macroscopically, the tumor did not reach the muscle. Primary wound suture was not an option, since the mucous lobes would be under a lot of pull tension and it could lead to wound dehiscence. A more suitable solution was the fascia lata overlay, which was ruled out eventually, but formed a secure cover over the wound to allow mucous membrane to heal for the moment. Histopathological examination confirmed a cavernous hemangioma.



Figure 4: Clinical intraoral result at the initial examination.



Figure 5: Intraoral result at the initial examination.



Figure 6: Excised tumor.

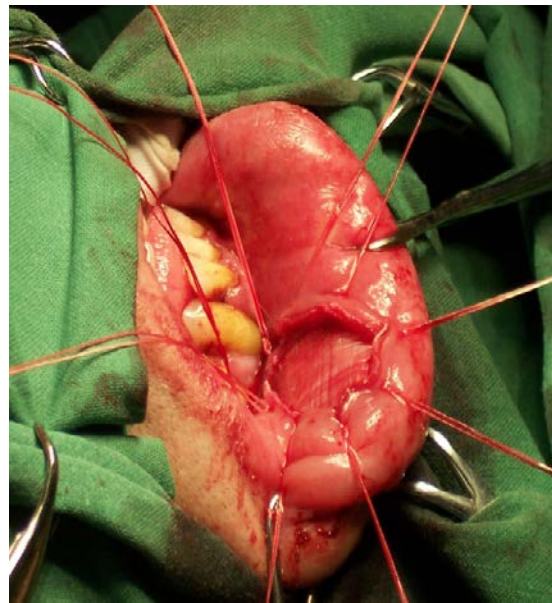


Figure 7: Intraoperative photo, after the extirpation of a tumor with adapted fascia lata.

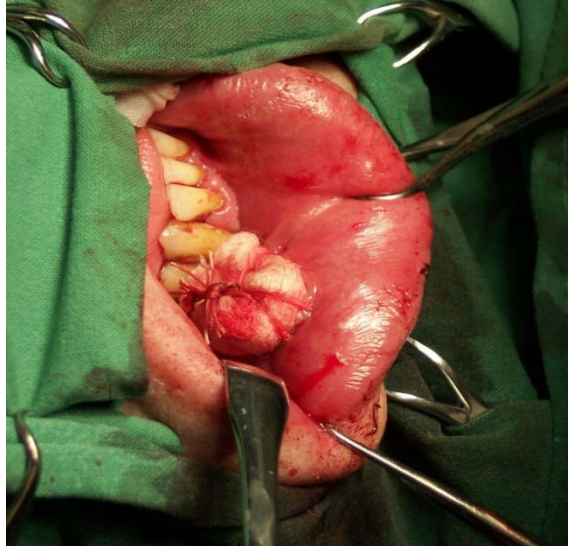


Figure 8: Intraoperative photo, fixation of fascia to the base with a tampon.



Figure 9: 5 days after the surgery – the fascia is starting to separate.



Figure 10: 5 days after the surgery – fascia separation /view from the inside/.



Figure 11: 10 days after the surgery – fascia completely separated, new mucosa overlaps the defect.

6. Conclusion

Alotransplantation is the best temporary bio-cover for open wound. Cooperation with Associated Tissue Bank of UPJŠ offers various options for compensation of lost tissue. One of them is a temporary overlay of a mucosa defect, created after the excision of a sizeable tumor in oral cavity, with a fascia lata.

References

- [1]. Andersson, L., Kahnberg, K., Pogrel, M. Oral and maxillofacial surgery. United Kingdom : Blackwell Publishing, 2011, 1312 p., ISBN 978-1-118-29256-3.
- [2]. Černý, J. et al. Špeciálna chirurgia. Chirurgia hlavy a krku, Martin : Osveta, 1995, 492 p., ISBN 80-217-0471-3.
- [3]. Čihák, R. Anatomie 1., Praha : Avicenum, 1987, 456 p., 08-102-87.
- [4]. Garzon, M. C., Drolet, B. A., Baselga, E., Chamlin, S. L., Haggstrom, A. N., Horii, K., et al. Comparison of infantile hemangiomas in preterm and term infants: A prospective study. Arch. Dermatol., vol. 44, 2008, issue. 9, pp. 1231–1232.
- [5]. Hidano, A., Purwoko, R., et al.: Statistical survey of skin changes of Japanese neonates. Pediatr. Dermatol., vol. 3, 1986, pp. 140–144.
- [6]. Cheung, D. S., Warman, M. L., et al.: Hemangioma in Twins. Ann. Plast. Surg., vol. 38, 1997, p. 269–274.
- [7]. Mazánek, J., Urban, F., et al.: Stomatologické repertorium, Praha : Grada Publishing, 2003, p. 209, ISBN 80-7169-824-5.
- [8]. Mešťák, J. et al. Úvod do plastickej chirurgie, Praha : Univerzita Karlova, 2005, 125 p., ISBN 80-246-1150-3.