Modificiation of Infrahyoid Neuromyocutaneous Flap with Radical Neck Dissection

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Introduction: Understanding technique of flap surgery allow uncompromising tumor resection and operation of tumors previously considered inoperable. Infrahyoid neuro-myocutaneous flap (IHNMCF) is pedicled flap harvested from the anterior part of the neck. IHNMCF is a good solution for the moderated sized defects of the head and neck below the zygomatic arch. The objective of this article was to describe modified infrahyoid neuromyocutaneous flap used for reconstruction of tongue and mouth floor defects, immediate after removing neoplasm.

Case report: A 63 year old patient were hospitalized with pathohistologically confirmed squamouscellular carcinoma. The tumor were in the region of the ventral part of the mouth. Magnetic resonance imaging (MRI) and ultrasound investigation of the head and neck showed detectable nodes in the right side of the neck and suspicious nodes in the left side of the neck. Through the transmandibular approach it was performed a wide local excision of the tumor. IHNMCF was harvested from the right side. It was performed meticulous microvascular procedure venous end-to-end anastomosis of the right superior thyroid vein to the left superior thyroid vein. Patient is during procedure subjected to the supraomohyoid neck dissection on the left side and radical neck dissection on the right side.

Discussion and conclusion: Disadvantage of this modified infrahyoid flap is the extremely limited arc of rotation. This seriously limits its applications to specific situations, where defects are located very close to the flap. Otherwise, advantage of this modified flap is that radical neck dissection is not contraindication anymore. In this case flap was successful, without flap necrosis or complications in the donor side. Speech and swallow were without significant decrease. After radiation therapy flap remained sufficiently soft, trophic and mobile. Key words: infrahyoid neuro-myocutaneous flap, end to end anastomosis, radical neck dissection.

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1. INTRODUCTION

After resection of oral cavity tumors often remains huge defects, which is not possible to close with available local tissue, and restore continuity of the upper digestive tract. Understanding technique of flap surgery allow uncompromising tumor resection and operation of tumors previously considered inoperable. Infrahyoid neuromyocutaneous flap (IHNMCF) is pedicled flap harvested from the anterior part of the neck. Muscles used for this flap are sternohyoid, sternothyroid and the inferior belly of the omohyoid. The major blood supply to the IHNMCF is derived from the superior thyroid artery. Venous drainage is through the superior thyroid vein, which drains directly into the internal jugular vein or through the anterior ipsilateral jugular vein. Motor innervation is by ansa cervicalis. Preserving the motor innervation provides greater symmetry, volume and mobility to the flap, thereby reducing atrophy and improving the functional results. In available literature contraindications for the use of IHMCF are: presence of pathologic nodes at level III or IV, N3, neck disease, previous irradiation to the anterior neck, radical neck dissection, thyroid surgery and hairy skin. The objective of this article was to describe our experience with patient who has intraoral neoplasm. Modified infrahyoid neuromyocutaneous flaps was used immediate after removing neoplasm for closure of defect of the tongue and mouth floor. Patient is dur-
ing procedure subjected to the radical neck dissection.

2. CASE REPORT

A 63-year-old male was referred to our department with intraoral tumor. Previously was done incisional biopsy by local anesthesia. Pathohistologically was confirmed squamocellular carcinoma (SCC). At physical examination, the patient presented with a cauliflower tumor mass in the region of the ventral part of the tongue, mouth floor, frontal alveolar process of the mandible. Regional lymph nodes were palpable. Magnetic resonance imaging (MRI) and ultrasound investigation of the head and neck showed detectable nodes in the right side of the neck and suspicious nodes in the left side of the neck. This patient has no previous cervical procedures in the area of the infrahyoid flap, no scar, skin was not excessively hairy, no previous irradiation of the neck. After careful preoperative preparation it was made operation plan: primary tumor excision, radical neck dissection on the right and functional neck dissection on the left side of the neck. Reconstruction of defect with modified neurovascular infrahyoid flap was done from the right side.

Through the transmandibular approach it was performed a wide local excision of the tumor. It was excised the ventral part of tongue, mouth floor and cranial splitting frontal part of lower jaw. The residual part of the tongue mucosa facilitates the reconstruction. IHNMCF was harvested from the right side. Medial border of the flap was at the midline, upper limit at the level of the hyoid bone, lower limit at the suprasternal notch, making rectangular flap. Dissection of the flap starts distally. The skin paddle has to be stitched to the underlying muscles. Identifying and preserving main trunk of the superior thyroid artery is very important. Elevation of the flap was raised above capsule of the thyroid gland, sternothyroid muscle was detached from the thyroid cartilage. Special care must be taken in preserving the external branch of the superior laryngeal nerve. Thyrohyoid muscle is often spared.

During harvesting of infrahyoid flap, it is important to identify and dissect superior thyroid vein to its end into internal jugular vein. Ansa cervicalis was identified and preserved. Incisions were extended for the radical neck dissection, and supraomohyoid neck dissection of the opposite side. After supraomohyoid neck dissection of the left side and identification of the internal jugular vein, circumferential dissection of the left superior thyroid vein was done. On the right side infrahyoid flap is completely dissected with visualised all anatomical structures: infrahyoid muscles, ansa cervicalis, superior thyroid vein, internal jugular vein, sternocleidomastoid muscle, common carotid artery, trachea. During neck dissection

Figure 1. Malignant tumor

Figure 2. Defect after removing a tumor

Figure 3. IHNMCF elevated, internal jugular vein

Figure 4. Visible superior thyroid artery, superior thyroid vein, and superior thyroid vein visualised. Internal jugular vein and both roots of cervical ansa.

Figure 5. Lower jaw prepared for osteosynthesis.

Figure 6. Trophic and size of tongue satisfactory.