RETROMOLAR TRIGONE – OROPHARYNX JUNCTION MALIGN TUMOR SURGERY: TRANSMANDIBULAR VERSUS ORAL APPROACH

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RETROMOLAR TRIGONE – OROPHARYNX JUNCTION MALIGN TUMOR SURGERY: TRANSMANDIBULAR VERSUS ORAL APPROACH (Abstract) 

Aim: This study proposes a new approach to a borderline pathology between Otorhinolaryngology (E.N.T.) and Oral and Maxillofacial Surgery (O.M.F.), the malignant tumors of the oropharyngeal and retromolar trigone junction. Material and Methods: 52 cases of retromolar trigone and oropharynx malignant tumors were solved in the ENT department of “St. Spiridon” University Hospital Iasi between 2012 and 2014. All patients were males, 35-64 years old, in different TNM stages. The novelty stands in the multidisciplinary approach, with an operating team consisting of both E.N.T. and O.M.F. surgeons, which joined their knowledge and expertise in order to offer a better treatment for the patient. 

Human Papilloma Virus (HPV) infection has been known as a trigger factor in head and neck cancers. The connection between HPV infection and malignant tumors of the oropharyngeal – retromolar trigone junction, together with the other traditional risk factors (smoking, alcohol, stress and sexual behavior) are involved in the therapeutic protocols, improving the life quality, the survival rate and reducing the treatment costs. Results and discussion: Excision of the malignant tumors at the level of the junction between the oropharynx and retromolar trigone often requires repairing the tissue defects that remain using different flaps. Postsurgical mecanotherapy (physiotherapy) under the surveillance of an experienced physiotherapist is also needed for a complete recovery. Conclusions: This therapeutical protocol aims to assure a better life quality for the patients, with a faster postsurgical recovery and social reinsertion by reducing the healing time of the areas affected by inflammation and necrosis generated by the neoplastic process. Keywords: MALIGNANT TUMORS OF THE OROPHARYNGEAL AND RETROMOLAR TRIGONE JUNCTION; ORAL APPROACH; TRANSMANDIBULAR APPROACH.

Access to bulky tumors of the oral cavity and most tumors of the oropharynx via the open mouth is often difficult and inadequate (1, 2, 3).

In the past, segmental mandibulectomy was routinely performed for resection of large primary tumors of the oral cavity or oropharynx. In many instances the mandible was neither clinically, nor radiographically involved in the tumor but was...
Division of the mandible instead of resection provides equally good exposure of the interior of the oral cavity and permits a satisfactory monobloc resection of the primary tumor, often in continuity with neck dissection if is indicated (3, 4, 5, 6).

A paramedian mandibulotomy would be ideal to gain access to the oral cavity as it offers all the advantages of a median mandibulotomy and avoids disruption of the genial muscles, the only muscle requiring division being the mylohyoid on one side. Covering the defects after the excision with different skin flaps is indicated for stage III tumors (6, 7, 8).

Establishing a direct connection between Human Papilloma Virus (HPV) infection associated with other external factors (alcohol, smoking, emotional stress) and oropharyngeal malignant tumors is important in setting the most suitable therapeutic plan for the patient. Finding the exact type of HPV that colonizes the oropharynx for our region could lead to a vaccine similar to that for the cervix cancer (10).

An early diagnosis and prophylactic measures (proper hygiene, advising against smoking and alcohol consumption, sexual education) can improve the survival rate and life quality of these patients and will reduce the treatment costs (11).

**MATERIAL AND METHODS**

Fifty-two cases of retromolar trigone and oropharynx malign tumors were solved in the Ear, Nose and Throat (E.N.T.) department of “St. Spiridon” University Hospital Iasi between 2012 and 2014. All of them were male patients between 35 and 64 years old with carcinomas in different TNM stages. The main surgical approaches were: 1. Transmandibular mandibulotomy, mandibulectomy; 2. Oral approach: classical surgery or CO₂ laser. In all cases we management of the neck lymph nodules and submandibular gland was considered.

The choice of approach depends on the size/location of the tumor, the chosen method of reconstruction and whether a concomitant neck dissection is being planned. Oral approach was performed in 46 cases and is indicated when the tumor is limited to the tonsilar pillars, one half of the soft palate, uvula, palatine tonsil, retromolar trigone (stage I–II tumors) and also for tumors located only at the base of the tongue. Oral approach is indicated when the tumor is limited to the tonsilar pillars, one half of the soft palate, uvula, palatine tonsil, retromolar trigone (stage I–II tumors) and also for tumors located only at the base of the tongue. Transmandibular approach is used if both anatomical segments are affected. It is indicated for stage III tumors that need ganglia extirpation and, if necessary, covering of the defect with skin flaps (6, 13, 14, 15).

Transmandibular approach was performed in 6 cases and is used if both anatomical segments are affected. It is indicated for stage III tumors that need lymph nodules extirpation and, if necessary, the defect is covered with skin flaps. Most surgeons agree that resection should be reserved for those oropharyngeal lesions with well-defined borders. When the margins of the primary tumor blend imperceptibly with the adjacent mucosa or when multifocal disease is present, radiotherapy is usually preferable. We also check the presence of HPV infection which has been known as a trigger factor in head and neck cancers. Establishing whether the patient is
infected with HPV and has other risk factors like smoking, alcohol, stress and abnormal sexual behavior is necessary for deciding the surgical protocol, improving the quality of life and the survival rate (10).

Patient selection for a mandibulotomy approach requires accurate assessment of the proximity of the tumor to the mandible. In some patients who had painful lesions or trismus, examination under general anesthesia was necessary. Ideally, there should be a rim of normal tissue between the tumor and the mandible, but the line of excision was occasionally carried to the alveolus or the anterior border of the ramus if the tumor involved the anterior tonsillar pillar and approached the periosteum (6, 8, 12, 16).

**CASE 1**

Male, 50 years old, hospitalized in the E.N.T. department of “Sf. Spiridon” Hospital Iasi for disphagia, trismus, pain and lymph nodules at the level of the neck which appeared a couple of months prior to the examination.

Local examination: well delimited right laterocervical tumefaction of about 5/4 cm, of hard consistency, mobile on the deep and superficial fascias, covered by normally colored skin. Oral cavity exam: infiltrative-proliferative process set at the level of the right tonsil with infiltration of the anterior tonsillar fold and inferior extension to the right one third of the tongue and the right glossotonsilar sulcus and retromolar trigone (fig. 1).

The CT exam shows tumoral appearance at the level of the right palatine tonsil of 33/24/33 mm with the following limits: 1. Lateral - the pterigoidian muscle; 2. Anteromedial - the base of the tongue; 3. Posterior - the pharyngeal constrictor muscle; 4. Superior - plane through the soft palate; 5. Inferior - plane through the epiglottis (fig. 2), right superior jugular adenopatic block of 38/32/47 mm with mass effect over the internal jugular vein and the common carotid artery and multiple small laterocervical adenopathies (fig. 3).

We performed right extended tonsillectomy and excision of the retromolar trigone by endoral approach, together with right radical lymph node dissection (fig.4, 5, 6).

Anatomopathological exam: moderately differentiated non-keratinizing squamous cell carcinoma, with infiltration of the striated muscle fascicles.

**Fig. 1. Tumor at the level of retromolar trigone and right tonsil**

**Fig. 2. The CT exam shows a tumor at the level of the right palatine tonsil.**
The surgical treatment was followed by chemo and radiotherapy. The 1 year follow-up showed quasi-normal deglutition and phonation, with no signs of local recurrence.

**CASE 2**

Male, 53 years old, hospitalized in our department for a tumor at the level of left retromolar trigone and palatine tonsils, with extension to the anterior palatine fold and left cervical lymph nodules in groups II and III.

Local exam: well delimited left laterocervical tumefaction, of 5/3 cm, of hard consistency, mobile on the deep and superficial fascias, covered by normally colored skin. Oral cavity exam: infiltrative-proliferative process set at the level of the left tonsil, with infiltration of the anterior and posterior tonsilar fold and inferior extension to the left one third of the tongue and the left glosso-tonsilar sulcus (fig. 7).

CT exam: oropharynx asymmetry with the thickening of the left lateral wall and left jugulo-carotidian adenopathy that has mass effect on the internal jugular vein (fig. 8).

Transmandibular approach was used, with inferior labial middle line incision which continued to the mental foramen form the opposite side of the osteotomy.
The left palatine tonsil and the retromolar trigone were excised and the defect was covered with a temporo-parietal fascial flap. Neck dissection was performed with resection of lymph nodules and submandibular gland. Anatomopathological exam: poorly differentiated non-keratinizing squamous cell carcinoma. The 6 months follow-up showed quasi-normal deglutition and local aspect, with no signs of local recurrence (fig. 9, 10, 11).

**DISCUSSION**

If the mandible is resected, the surgical approach is done through the lower lip, on the midline, all the way down to the labiomental groove and then curbing in the opposite direction of the osteotomy.

The osteotomy is done paramedially on the side of the lesion, between the canine and the premolar, in front of the mental foramen in order not to damage the inferior alveolar nerve. Patient selection for a mandibulotomy approach requires accurate assessment of the proximity of the tumor to the mandible. In some patients who had
painful lesions or trismus, examination under general anesthesia was necessary.

Ideally, there should be a rim of normal tissue between the tumor and the mandible, but the line of excision was occasionally carried to the alveolus or the anterior border of the ramus if the tumor that involved the anterior tonsillar pillar approached the periosteum.

The gingival and lingual mucosa is then dissected from the premolar all the way to the third molar tooth, followed by detaching the mylohyoid muscle from the bone. The mandibulotomy is never made in the middle because it produces functional and statical dysfunctions at the level of the tongue by denervation and displacement of the structures. This ensures the preservation of the inferior alveolar neurovascular bundle. The periosteal vasculature remains viable on the external side of the mandible. Osteosynthesis with plates is preferred.

For esthetical reasons, the inferior medial labial incision must be arched through the labiomental groove, opposite the mandibulotomy, so that the bone incision does not overlap with the soft tissue incision. In general, these defects are very complex, affecting both the aesthetics and the functionallity of the area (mastication, deglutition, phonation).

Different methods are available that range from primary closure and healing by secondary intention for the smaller defects to the use of local, myocutaneous and free microvascular tissue transfer flaps. The flaps must be thin and wide because the area that needs to be covered is large. Temporoparietal fascial flaps, Bichat’s lobule pedicle flaps and radial free flaps are preferred for covering the defects (6, 13, 14).

Neck dissection has been previously performed. Conventional unmodified radical neck dissection was employed in patients who were staged N1 on admission. At patients who had no evidence of cervical metastasis, we perform elective neck surgery, with conventional radical neck dissection, modified radical neck dissection, supraomohyoidian neck dissection or suprhyoidan neck dissection. We believe that paramedian mandibulotomy in combination with postoperative radiotherapy, when appropriate, offers an attractive alternative to high dose radiotherapy alone in patients with oropharyngeal and retromolar trigone junction carcinoma. Transmandibular approach gives the possibility of excising the lesion and covering the tissue defect with a temporoparietal flap (6).

Three main issues that result from curative surgical treatment appeared in our statistics: 1. Sequelae or complications of the treatment in 3 cases; 2. Functional deficits or interference of physiological functions in 5 cases; 3. Recurrent/persistent disease in 2 cases.

All of the patients were solved by surgical methods and were seen back 12-14 days after discharge and instructed on diet, swallowing therapy, physical therapy of the neck and shoulders and voice therapy.

CONCLUSIONS
All the patients included in our study, with tumours at the level of the oropharynx and retromolar trigone were early diagnosed. Otherwise the survival rate decreased significantly.

If the tumoral process is extended into the retromolar trigone, the middle of the tongue, the base of the tongue or valeculas we highly recommend to perform a computed tomography (CT scan) to precisely evaluate the extension of the lesions. A
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A mixed operating team formed by ENT and OMF surgeons should perform the surgery.

For stages I-II, either surgical treatment or radiotherapy can be applied, with similar results.

Antibiotic therapy prior surgery is essential for stopping tumoral infection, a problem in the pharyngeal area.

Oral approach is indicated when the tumor is limited to the tonsilar pillars, one half of the soft palate, uvula, palate tonsil, retromolar trigone (stage I–II tumors) and also for tumors located only at the base of the tongue, the transmandibular approach being indicated in advanced stages (stage III-IV tumors).

Patients infected with a high-risk type of HPV have better prognosis after surgery than those with different phenotypes or without HPV.

ACKNOWLEDGEMENTS
This work has been realized by means of the project “Program of Excellence in Doctoral and Postdoctoral Multidisciplinary Research in Chronic Diseases”, contract no. POSDRU/159/1.5/S/133377, beneficiary “Grigore T. Popa” University of Medicine and Pharmacy, Iași. This project is co-financed from the European Social Fund by Operational Sectorial Program for Human Resources Development 2007-2013.

REFERENCES


**STUDY OF AUTOPHAGY-RELATED PROTEIN LIGHT CHAIN 3 (LC3)-II EXPRESSION LEVELS IN THYROID DISEASES**

Thyroid cancers are the most common malignant tumors of the endocrine system. The survival-promoting role of autophagy in tumor cells has been received universally. The aim of the study was to explore autophagy-related protein light chain 3 (LC3)-II expression levels in thyroid diseases including papillary thyroid cancer. A total of 45 thyroid samples, including 19 samples of papillary thyroid cancer, 7 samples of nodular goiter, 8 samples of Hashimoto thyroiditis and 11 samples of normal thyroid tissue resected during surgery, were selected and divided into pathological groups using light microscope. Levels of autophagy-related protein LC3-II in four different types of thyroid tissue were tested through Western blot. SPSS19 software was utilized to analyze the research data statistically. LC3-II protein levels in papillary thyroid cancer tissues were lower than that in normal thyroid tissues significantly (P<0.05). Compared with normal thyroid tissue, expression levels of LC3-II protein were higher in samples of Hashimoto thyroiditis and nodular goiter (P<0.05). Multi-factor analysis of variance showed that there was no significant correlation between LC3-II protein levels and patients' gender of thyroid cancer, while there was significant variation between patients with and without lymph node metastasis. Compared with patients of thyroid cancer without lymph node metastasis, the level of LC3-II protein was lower in patients of thyroid cancer with lymph node metastasis (P<0.05). Detection of LC3-II protein expression levels in thyroid diseases may contribute to the clinical diagnosis and provide theoretic basis for the therapy. (Zhang N, Li L, Wang J, Cao M, Liu G, Xie G, Yang Z, Li Y. Study of autophagy-related protein light chain 3 (LC3)-II expression levels in thyroid diseases. *Biomed Pharmacother* 2015; 69:306-10. doi: 10.1016/j.biopha.2014.12.021).

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