

RADICAL REMOVAL OF ADVANCED CANCER OF THE ORAL CAVITY AND OROPHARYNX

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ABSTRACT

Surgery for advanced cancer of the oral cavity and oropharynx are among the most difficult. This is due to the topographical and anatomical features that limit the operating field and the proximity of the internal carotid artery, which penetrates into the skull without branches. Her injury and bandaging are fraught with lethality. In the postoperative period, due to a violation of the function of swallowing, there is a stagnation of oral fluid in the oral cavity, which promotes healing by secondary tension. The functions of the oropharynx are impaired: swallowing, chewing, breathing and speech.

Purpose of the study. To develop an operation in patients with advanced cancer of the oral cavity and oropharynx, allowing to visualize the area of the tumor with it's radical removal and postoperative healing without suppuration.

Patients and methods. We've operated a patient with advanced cancer of the oral cavity and oropharynx with metastases to the cervical lymph nodes (T4 N1 M0 – IV st.). Cervical lymphodessection and removal of the tumor from the oral cavity and oropharynx was performed according to the method developed at the National Medical Research Centre for Oncology of the Ministry of Health of Russia: the tumor was removed after a preliminary modified mandibulotomy. Good visualization allowed for a radical operation, after which a urostoma was formed, which promotes the free flow of oral fluid from the oral cavity, without its stagnation and without suppuration of the tissues. The jaw was restored with two titanium mini-plates.

Results. The healing was carried out by primary tension. On the 7th day after the operation, breathing was restored-decanulated. On day 20, epithelialization of the wound surface of the oral cavity and oropharynx occurred. The naesoophageal probe was removed. Plastic orostoma was produced. By this time, the functions of the oropharyngeal region were partially restored: chewing, swallowing, and speech. Discharged home. Remission for more than 2 years.

Conclusions. Previously performed modified mandibulotomy in patients with advanced cancer of the oral cavity and oropharynx, allows you to expand the view of the operating field and provide a radical operation. The formed orostoma, preventing suppuration in the oral cavity, accelerates healing with the restoration of functions: chewing, swallowing, breathing and speech.

Keywords:

advanced cancer, oral cavity organs, oropharynx, mandibulotomy, osteonecrosis, orostoma.

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Information about funding: no funding of this work has been held.

Conflict of interest: authors report no conflict of interest.

For citation:

Svetitskiy P.V. Radical removal of advanced cancer of the oral cavity and oropharynx. South Russian Journal of Cancer. 2021; 2(2): 15-21.

<https://doi.org/10.37748/2686-9039-2021-2-2-2>

Received 25.01.2021, Review (1) 09.04.2021, Review (2) 26.04.2021, Published 18.06.2021

РАДИКАЛЬНОЕ УДАЛЕНИЕ РАСПРОСТРАНЕННОГО РАКА ПОЛОСТИ РТА И РОТОГЛОТКИ

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РЕЗЮМЕ

Операции при распространенном раке органов полости рта и ротоглотки относятся к категории наиболее сложных. Обусловлено это топографо-анатомическими особенностями, ограничивающими операционное поле, и близостью расположения внутренней сонной артерии, которая без ответвлений проникает в череп. Её травма и перевязка чреваты летальностью. В послеоперационном периоде, из-за нарушения функции глотания, возникает застой ротовой жидкости в полости рта, что способствует заживлению вторичным натяжением. Нарушаются функции рото-гортаноглотки: глотание, жевание, дыхание и речь.

Цель исследования. Разработать операцию у больных с распространенным раком органов полости рта и ротоглотки, позволяющую визуализировать зону ОП процесса с радикальным его удалением и послеоперационным заживлением без нагноения.

Пациенты и методы. Нами прооперирован больной с распространенным раком полости рта и ротоглотки с метастазами в шейные лимфатические узлы (T4 N1 M0 – IV ст.). Проведена шейная лимфодиссекция и удаление опухоли из полости рта и ротоглотки по методике, разработанной в ФГБУ «НМИЦ онкологии» Минздрава России: опухоль удалена после предварительной модифицированной мандибулотомии. Хорошая визуализация позволила радикально провести операцию, после которой сформирована оростома, способствующая свободному истечению ротовой жидкости из полости рта, без её застоя и без нагноения тканей. Челюсть восстановлена двумя титановыми мини-пластинами.

Результаты. Заживление прошло первичным натяжением. На 7-е сутки после операции дыхание восстановилось – деканулирован. На 20-е сутки произошла эпителизация раневой поверхности полости рта и ротоглотки. Удален носопищеводный зонд. Произведена пластика оростомы. К данному сроку частично восстановились функции орофарингеальной области: жевание, глотание и речь. Выписан домой. Ремиссия более 2-х лет.

Заключение. Предварительно проведенная модифицированная мандибулотомия у больных с распространенным раком полости рта и ротоглотки, позволяет расширить обзор операционного поля и обеспечить радикальное проведение операции. Сформированная оростома, предотвращая нагноение в полости рта, ускоряет заживление с восстановлением функций: жевания, глотания, дыхания и речи.

Ключевые слова:

распространенный рак, органы полости рта, ротоглотки, мандибулотомия, остеонекроз, оростомы.

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Информация о финансировании: финансирование данной работы не проводилось.

Конфликт интересов: авторы заявляют об отсутствии конфликта интересов.

Для цитирования:

Светицкий П.В. Радикальное удаление распространенного рака полости рта и ротоглотки. Южно-Российский онкологический журнал. 2021; 2(2): 15-21. <https://doi.org/10.37748/2686-9039-2021-2-2-2>

Получено 25.01.2021, Рецензия (1) 09.04.2021, Рецензия (2) 26.04.2021, Опубликовано 18.06.2021

RELEVANCE

Cancer of the oral cavity and oropharynx in the Russian Federation ranks first among head and neck tumors, accounting for 5.5 patients (per 100,000 US) for the oral cavity with an average annual increase of 2.41 %, and the pharynx – 3.28 with an increase of 1.80 % [1]. The number of these patients in 2019 was 29.7 (per 100,000 us). At the same time, 62.8 % already had a common, in the volume of III-IV art.process [2]. A similar situation is observed in the South of Russia, where up to 72.8 % of patients are admitted to an oncologist with an already common process [3]. Despite the treatment, the 5-year survival rate, taking into account all stages, is in the range of 15-35 % [4].

Treatment of patients with advanced cancer of the oral cavity and oropharynx is complex and complex, where surgery is given a leading role. The greatest difficulties arise with a widespread tumor process located in the posterior parts of the tongue and the bottom of the oral cavity, which often passes to the root of the tongue, anatomically related to the oropharynx. In this regard, such a common tumor process in practical work is treated as oropharyngeal cancer.

The anatomical features of the oral cavity and oropharynx are due to the limited space and the proximity of the passage of the internal carotid artery, which runs along the back wall of the pharynx without branches into the skull. Injury to the artery leads to lethality, and restoring its integrity is almost impossible. This makes

it difficult to determine the clear boundaries of the tumor and complicates the operation.

Access to the operating field in common processes is usually performed by intraoral, submandibular, and sublingual approaches. A pre-performed mandibulotomy is also used. Difficulties also arise in the post-operative period, especially with radical operations of a crippling nature that violate the functions of the tongue and oropharynx responsible for swallowing. When it is disturbed in the oral cavity, the stagnation of oral fluid occurs: saliva, sloughed epithelium from the salivary ducts, damaged tissues, microbes and their waste products, food residues [5]. This causes suppuration in the oral cavity, complicating the post-operative period. Suppuration is difficult to get rid of physically, and mouthwashes and mouthwashes are usually not used because of the danger of fluid aspiration into the larynx.

The purpose of the study: to create an operation in patients with advanced cancer of the oral cavity and oropharynx, allowing to visualize the area of the tumor process with its radical removal and postoperative healing without suppuration.

Clinical case description

Patient M. 66 years old-a resident of the Republic of Crimea was admitted to the Federal State Medical Institution "NMRC of Oncology" of the Ministry of Health of Russia with a diagnosis of tongue cancer. Complaints of pain in the mouth and throat that increase when swal-



Fig. 1. On the right half of the posterior parts of the tongue, a tumor with a diameter of up to 2.0–2.5 cm is detected descending into the oropharynx.



Fig. 2. The tumor spreads from the oral cavity to the right half of the oropharynx to the pear-shaped sinus.

lowing. The cause of the disease is associated with hypothermia. For about 4 months, he was treated by a dentist and an otorhinolaryngologist in Simferopol for pharyngopharyngitis. The pain progressed. There was a tumor in the posterior parts of the tongue. He was referred to an oncologist. A tumor biopsy revealed the presence of squamous cell carcinoma. The patient received a course of radiation therapy (60 Gr.) – without effect. Due to the deterioration of breathing, a tracheostomy was imposed on him at the place of residence and the patient was sent to the National Medical Research Centre for Oncology of the Ministry of Health of Russia, Rostov-on-Don.

The patient was examined in the polyclinic of the National Medical Research Centre for Oncology of the Ministry of Health of Russia. Has a tracheostomy. On the neck and in the submandibular region on the right, a weakly mobile conglomerate of lymph nodes of levels IB, IIA, and III is determined. The mouth, due to soreness, does not open well. When examining the oral cavity, in its posterior parts, a tumor of the tongue is detected with a spread to the oropharynx (fig. 1). Revision of histological preparations confirmed the presence of squamous cell carcinoma.

The endoscopic examination revealed a tumor of the posterior third of the back of the tongue, extend-



Fig. 3. Skin incisions on the neck and face. Formation of a skin flap for orostoma.

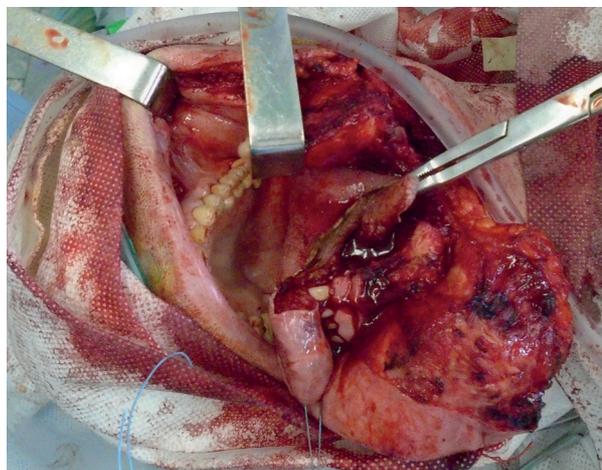


Fig. 4. After the mandibulotomy, the fragments of the lower jaw are separated. The affected part of the tongue, the floor of the oral cavity and the oropharynx are brought out and resected.



Fig. 5. Destruction of the soft tissues of the oral cavity (A) and osteonecrosis (B) of the attached fragments of the lower jaw subjected to mandibulotomy (observations of patients during the development of the operation).

ing from the oral cavity into the oropharynx to the pear-shaped sinus, covering the entire right half of the oropharynx (Fig. 2).

The diagnosis was established: advanced cancer of the tongue and oropharynx, metastases to the cervical lymph nodes: T4 N1 M0 (IV st.).

The patient was offered an operation, for which consent was obtained. The operation under general endotracheal anesthesia through a tracheostomy was performed according to the method developed in the National Medical Research Centre for Oncology of the Ministry of Health of Russia [6, 7].

Initially, the traditional method was performed by

cervical lymph node dissection of levels IB, II, III. The cutaneous incision is extended into the submandibular and buccal areas. At the level of the corner of the mouth along the line of incisions, a quadrilateral leather flap is cut out to form, after removal of the tumor and plastic surgery of the oral cavity, orostoma (Fig. 3).

The chin-submandibular skin-muscle flap was separated with the lower jaw exposed. The mandibulotomy was performed according to the developed method, which consists in the following. First, a median cut of the jaw body is carried out along a vertical line from its upper edge down by 1.0 cm (to preserve the roots of the front incisors), and then at an angle of 135° in the

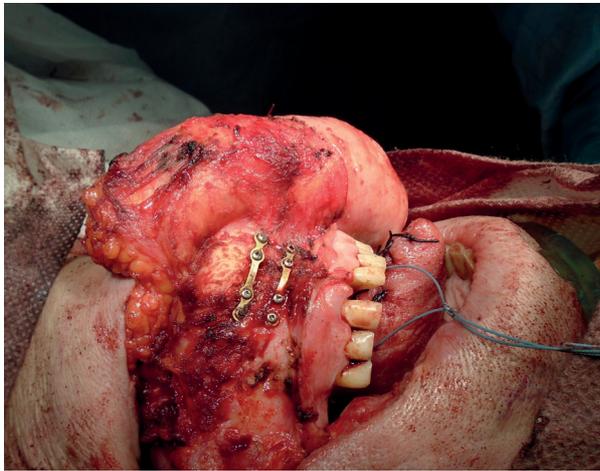


Fig. 6. Osteosynthesis of the lower jaw with 2 titanium mini-plates.



Fig. 7. The operation is finished.

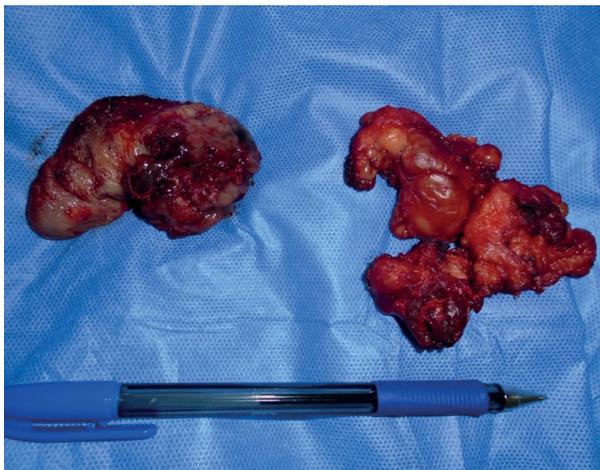


Fig. 8. Removed 2/3 of the tongue with the lateral wall of the oropharynx affected by the cancer process (left), cervical and submandibular metastases (right).



Fig. 9. Oropharyngeal area after surgery on day 20. Epithelization of the resected parts of the oral cavity and oropharynx was achieved.

direction opposite to the tumor process. Two triangular bone fragments are formed. Pushing them apart, on the side of the lesion, the mucosa of the bottom of the oral cavity is dissected, within the healthy tissues to the retromolar level. The tongue on the holder is brought out, which improves the view of the oral cavity and oropharynx, the boundaries of the tumor are clearly defined.

The area and edges of the tumor are evaluated, and the topography of the internal carotid artery passing along the posterolateral wall of the oropharynx is specified. The resection zone is determined, which includes the affected tumor tissues of the tongue (in this case, 2/3 of the tongue and half of its root) and the oropharynx. Resection and removal of the tumor is performed within healthy tissues (Fig. 4).

In the postoperative period, there are difficulties associated with a violation of the act of swallowing and depositing oral fluid in the oral cavity, which leads to suppuration of soft tissues and osteonecrosis of fragments of the lower jaw (Fig. 5).

For spontaneous evacuation of oral fluid from the oral cavity, an orostoma was formed. The most deepened part of the bottom of the oral cavity is chosen as the place of its localization. When creating it, we focused on the topography of the bottom of the oral cavity, the thickness and roughness of which is mainly determined by two muscles: the chin-hyoid (m. geniohyoideus) and maxillohyoid (m. mylohyoideus). The intersection of these two muscles in the anterolateral part of the floor of the oral cavity – its diaphragm, is the most deepened place where the liquid contents spontaneously accumulate. Therefore, this place, in our opinion, is the most suitable for creating an orostome [8]. The walls of the formed orostoma are a quadrilateral skin flap cut out from the submandibular region at the beginning of the operation (Fig. 3).

Osteosynthesis of the lower jaw was performed by bringing together and fastening its fragments with two titanium mini-plates (Fig. 6).

At the end of the operation, a nasoesophageal probe is inserted for nutrition. Layer-by-layer stitched muscles and skin, inserted rubber graduates. The orostoma is slightly tamponized (Fig. 7).

The tumor and metastases (Fig. 8) were sent for morphological examination, which confirmed the presence of squamous cell carcinoma in the removed tongue and cervical lymph nodes.

On the 7th day after the operation, breathing was restored-decanulated. On day 20, epithelialization of the wound surface of the oral cavity and oropharynx occurred (Fig. 9).

The nasoesophageal probe was removed. Plastic orostoma was produced. Discharged home. By the end of the 3rd month, the functions of the oropharyngeal region were restored: chewing, swallowing, and speech. Remission is predicted for more than 2 years.

DISCUSSION

Topographical and anatomical features of the posterior parts of the oral cavity and oropharynx cause difficulties in identifying, diagnosing and treating tumors of these localizations. The combination of vital organs: the root of the tongue, the entrance to the larynx and esophagus, as well as the limited view limit the activity of the surgeon. The use of endoscopic equipment does not always allow us to accurately determine the features of the tumor process and its boundaries. At the same time, caution is required when operating in the area of the passage of the internal carotid artery, the injury of which is fraught with death. This situation was the basis for the development of an operation that allows you to visualize the area of the tumor process, the safe conduct of radical surgery and postoperative primary healing. To do this, in some cases, a mandibulotomy is performed beforehand. It is carried out mainly in 2 versions: the incision of the jaw is carried out vertically along its center or < figuratively. However, vertical dissection does not provide stable stability of the bonded fragments in the postoperative period. This is due to the sliding of their smooth surfaces, and the < shaped cut injures the roots of the front incisors with their subsequent loss. With extended operations, the act of swallowing is disrupted, which causes accumulation of oral fluid in the oral cavity, followed by suppuration of soft and bone tissues, leading to tissue disintegration, bleeding, osteonecrosis of the lower jaw with a violation of its integrity. All this complicates the post-vaccination period [9]. Mechanical sanitation of the oral cavity during this period is painful, complex and ineffective. In this regard, the goal was set: to develop an operation that provides radicalism with postoperative healing without suppuration. For this purpose, the method of mandibulotomy was modified, in which triangular fragments of the lower jaw were formed, which reduced their mobility

when restoring its integrity. After radical removal of the tumor, an orostoma was formed to avoid stagnation and suppuration of the oral fluid in the oral cavity. The developed method of mandibulotomy provides visualization of all parts of the oral cavity and oropharynx, as well as the ability to control the topography of the internal carotid artery. This allows you to perform a radical removal of the tumor with maximum preservation of healthy tissues. At the end of the operation, the fragments of the jaw are matched and fastened with one or two titanium mini plates, restoring its integrity. The jaw, restored in this way, acquires a stable fixation, since its fragments, fastened in a triangular shape, reduce their mobility: the mobility of the upper fragment is limited to the lower one, and the lower one – to the upper one. The distribution of the load on the jaw, at the same time, is carried out more evenly. This eliminates the need for additional metal fasteners, the number of which is not indifferent if subsequent radiation therapy is necessary.

The formed orostoma accelerates and improves the postoperative period with almost no suppuration.

While eating, the orostoma is tamponed by the patient himself. By the end of the month, it usually scars on its own. If necessary, perform its plastic closure.

CONCLUSION

To improve the effectiveness of surgical treatment of patients with advanced cancer of the posterior parts of the oral cavity and oropharynx, a method of mandibulotomy in the form of a vertically oblique dissection of the jaw was developed. It provides a sufficient overview of the operating field, a radical operation when monitoring the topography of the internal carotid artery, reliable hemostasis and strong fixation of the attached fragments of the jaw. The developed method of orostoma formation allows avoiding the accumulation of oral fluid in the oral cavity and the possibility of suppuration in the postoperative period, which accelerates and improves the postoperative period and the rehabilitation of the functions of the resected organs of the oral cavity and oropharynx.

Authors contribution:

Svetitskiy P.V. – surgery concept and performing, data analysis, manuscript writing.

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