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THE METHOD OF SURGICAL ACCESS WHILE TREATMENT OF NONCLOSTRIDIAL ANAEROBIC INFECTIONS OF SOFT TISSUES OF TONGUE AND ORAL CAVITY FLOOR

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Abstract

The author analyzed the methods of operational interventions in the area of soft tissues of oral cavity floor and tongue while treatment of nonclostridial anaerobic infections. Twenty-nine of the forty-two analyzed patients were operated, using the authors' method of T-shaped incision. The number of lethal outcomes has decreased almost twice. Treatment results allow us to recommend the proposed method for wider use in clinical practice.

Keywords: non-clostridial infection, oral cavity floor, mortality.

Introduction

Anaerobic non-clostridial surgical infection of maxillofacial area and the neck is life-threatening and potentially fatal. Currently, this problem has become urgent, due to increased activity of the surgical interference in case of inflammatory processes [1, 2, 3]. Surgical infections of soft tissues of oral cavity floor (OCF) and the tongue, caused by non-clostridial anaerobes, accompanied by significant functional impairments, which causes severe pain in patients [4, 5]. According to the publications, from 67% to 86% of patients, older than 30 years, have tongue abscesses [6, 7]. The inflammatory process in the tongue occurs 2-3 times more frequently in men than in women [6, 8]. Despite the improvement of the surgical treatment techniques of tongue anaerobic infections, doctors do not always manage to receive constant functional results of treatment, and the complications of the disease are frequently observed, leading to the increase of treatment duration, and sometimes to the life-threatening condition.

In addition, there are discrepant data, regarding the effectiveness of traditional treatments of tongue base phlegmons, complicated by diffuse phlegmons of oral cavity floor, especially under the influence of adverse factors: background pathology, etc. [8, 9].

The aim of the work.

The aim of the work is the improvement of patients' treatment with dysfunctions of oral cavity floor and tongue, in the process of treatment of inflammatory diseases, with the development of competent principles of surgical treatment.

Materials and Methods

42 patients with inflammatory diseases of tongue and supra-hyoid area were in the Department of Oral and Maxillofacial Surgery of Belgorod Regional Clinical Hospital during the period from 2012 to 2016. The method of T-shaped surgical access to the tissues of tongue and supra-hyoid area was applied among 29 patients (69%).

Operation description. T-shaped incision is made in the supra-hyoid area, starting from the chin, by the midline of the neck to the middle of the hyoid bone body, and then the incision is continued to the front edge of the sternocleidomastoid muscle.

Layer-by-layer the skin, subcutaneous tissue and superficial fascia from subcutaneous muscle of the neck are dissected. After stripping of dissected tissues, two triangular musculocutaneous flaps, facing with the tops to the body of the hyoid bone are formed. Musculocutaneous flaps is folded upwards, the superficial fascia of the neck is dissected and exposed, and in case of sphacelation – the submandibular salivary glands are removed from the outer surface of m.mylohyoideus and m.hyoglossus, which makes it possible to conduct full operation exploration of cellular spaces of the lower section of oral cavity floor. Then, the neck fascia is dissected as by the tendon suture, as near the body of the hyoid bone. Similarly, the mylohyoid muscles are dissected and stripped upward, that provides broad opening of the upper section of oral cavity floor - the sublingual area and the base of the tongue. After that, the operation exploration of upper section of oral cavity floor is made for the whole area of infection spread.

Results and Discussion

Since 2012, our hospital has been applying T-shaped incisions in supra-hyoid area, while dissection of diffuse phlegmons of oral cavity floor with simultaneous involvement in the process of skeletal muscles of the tongue and located between them cellular tissue. The most phlegmons of tongue base (69%), combined with the involvement of neighboring cellular areas of oral cavity floor, in case of anaerobic non-clostridial infection, were widely dissected by outer access - T-shaped incision with dissection of two triangular flaps, when the tissues of oral cavity floor are as if "wide opened". Flaps dissection with wide upper base, allowed to reduce the probability of their abiotrophy in postoperative period, and the formation of extended skin defects. Treatment outcomes were assessed by such

indicators as the percentage of reoperations, postoperative complications, the time of secondary saturations, total duration of treatment and the level of mortality. Treatment outcomes are shown in Table 1.

Table 1. Comparative results of patients' treatment with pyoinflammatory diseases of tongue and oral cavity floor.

Groups of patients	Indicators (unit of measure)				
	Percentage of reoperations	Percentage of postoperative complications (acute respiratory failure, tracheostoma)	Time of secondary saturations, (twenty-four hours)	Duration of treatment, (patient-day)	Level of mortality, (%)
Control n=13	21.1	10.5	9.5±2.0	14.1±1.7	5.3
Standard n=29	12.5	5.0	8.8±1.6	12.6±1.2	2.5

As can be seen from the table, the result of applying of T-shaped incision method in the program of complex treatment was significant improvement of all analyzed parameters. Thus, the percentage of reoperations has decreased from 21.1% to 12.5%, the percentage of postoperative complications - from 10.5% to 5.0%, the time of secondary saturations decreased from 9.5 ± 2.0 to 8.8 ± 1.6 days, and the total duration of treatment - from 14.1 ± 1.7 to 12.6 ± 1.2 patient-days, the level of mortality reduced from 5.3% to 2.5%. Surgical interventions in the area of tongue base and oral cavity floor tissues and the neck, from the point of skin coverings, have characteristic features. This is, to a large extent, connected with the topographic and anatomic peculiarities of the neck, which has complex anatomical structure [8, 10]. Surgical accesses on the neck, in particular to the deep cellular areas of oral cavity floor, as in other areas of the body, should provide easy access to the organs, in particular, to the tongue. Clinical experience suggests, that in case of phlegmonous cellulitis of the mouth floor, the most promising and feasible is the method of early, broad incisions on the neck, especially in case of diffuse phlegmonas of oral cavity floor, peripharyngeal area [3, 11]. Phlegmons of these locations are characterized by massive necrosis of tissues, not only in the centers of primary inflammation localization, but also all over the space of infection spread. In these cases, the infection often spreads down, into the sublingual, submental and submandibular triangles, into peripharyngeal cellular tissue, by paratracheal, retropharyngeal, intermuscular, fascial-cellular areas or along the neurovascular fascicle of the neck, causing contact odontogenic mediastinitis [3].

At the present time for the lancing of oral cavity floor phlegmons, the extraoral access in suprahyoid area of the neck is mainly used in the form of two types of incisions. 1) "collar", made from one corner of the lower jaw bone to the other. 2) The combination of the vertical (by the midline of the neck) with two linear incisions, made in mandibular triangles, parallel to the body of the mandible. In our opinion, the shortcomings of "collar" incision in the acute period are the occurrence of purulent leakages on the perimeter of the wound and deep pus pocket near the sublingual fascial node. This, in our opinion, evidenced about bad conditions of evacuation of purulent exudate from the bottom of the surgical wound in case of collar incision. Later, after remitting of acute inflammations, it was observed long-standing lymphostasis and the existence of disfiguring scar. The access in the form of three linear incisions, in comparison with the "collar", allows to avoid the evident lymphostasis, but it is not without drawbacks, the main ones are the following. The operative exploration and drainage of deep intermuscular cellular area between mm. mylohyoideus and hyoglossus, located under usually edematous submandibular salivary gland is complicated through the linear incision in the submandibular triangle. As we know, just through this cellular area, the infection spreads into the sublingual area, and in the opposite direction. Dissection of the mouth diaphragm above the upper pole of the submandibular salivary gland, for the opening of the sublingual area, in our opinion not justified anatomically, because of the potential damage of the lingual and hypoglossal nerves.

If necessary, through the submandibular access, to make the additional opening of pterygopalatine-mandibular and peripharyngeal cellular areas (to prevent the spread of infection), is not difficult technically, but the operative exploration of neurovascular fascicle of the neck, requires additional incision [3].

In case of diffuse phlegmona, all cellular areas of the upper space of oral cavity floor (sublingual area, alveololingual grooves and intermuscular slits of tongue base) must be opened and drained through the virtually single midline incision in the submental triangle, that is not only technically difficult, but inevitably leads to unnecessary trauma the outer tongue muscles, in particular mm. genioglossus and hyoglossus.

The disadvantages of the median vertical incision should also include the fact, that the wound channel after the opening of cellular areas of the tongue, is deep and narrow, it passes between several pairs of oral cavity floor swollen muscles, that negatively affects the efficiency of the drainage. Furthermore, in case of inflammation spread to the neck, through the lower end of the vertical incision, it is practically impossible to provide complete operative exploration of pretracheal and especially paratracheal cellular tissues at the level of upper windpipe and fascial leaves in the surround of the hyoid bone.

Conclusions

1. The use of T-shaped incision in case of nonclostridial anaerobic infections of soft tissues of tongue base and oral cavity floor, allows to get the widest possible access to all cellular spaces and to prevent the possible spread of infection to neighboring areas, in particular to peripharyngeal area, and from it by the neurovascular fascicle of the neck into the mediastinum.
2. On the basis of foregoing, we think expedient to recommend the described surgical access for wider use in clinical practice, for the treatment of patients with diffuse and phlegmonous cellulitis of the floor of the mouth and tongue.

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