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INDICATIONS FOR DENTAL EXAMINATION IN PATIENTS WITH ORAL PHLEGMON

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Abstract

The purpose of the study*. Methods of studying the results of the application and analysis of the drug jarrahlik for the treatment of oral phlegmon.*

Materials and methods*. Patients with oral phlegmon underwent an analysis of the dental, clinical and dental, papillary-marginal–alveolar index, oral hygiene index and statistical examination methods.*

Results. *In the main and control groups, the timing of secondary sutures, the duration of inpatient treatment, and the timing of changes in the cytological state of the wound process significantly differed (r<0.05. During the transition of the wound process to the regeneration stage, the result was analyzed in terms of the appearance of a regenerative or regenerative-inflammatory type of cytogram, which is an indication of a secondary disorder.*

Conclusion. *The recommended modified surgical approach increases the effectiveness of DPR treatment by improving the drainage conditions of soft tissue destruction zones located in the PSG area. It is especially important to reduce the cases of secondary spread of the purulent-inflammatory process to the deep cellular spaces of the pharynx, including the pharyngeal space.*

Keywords: *organs of the oral cavity, phlegmon, pharyngeal cavity, methods of dental examination.*

Аннотация

Цель исследования. *Методы изучения результатов применения и анализа препарата джаррахлик для лечения флегмоны полости рта.*

Материалы и методы. *Пациентам с флегмоной полости рта были проведены анализ стоматологического, клинико–стоматологического, папиллярно-маргинально–альвеолярного индекса, индекса гигиены полости рта и статистические методы обследования.*

Результаты. *В основной и контрольной группах сроки наложения вторичных швов, продолжительность стационарного лечения и сроки изменения цитологического состояния раневого процесса достоверно различались (r<0,05. При переходе раневого процесса в стадию регенерации был проанализирован результат по показателям появления регенеративного или регенеративно-воспалительного типа цитограммы, что является показанием к вторичному нарушению.*

Вывод. *Рекомендуемый модифицированный хирургический подход повышает эффективность лечения ДПР за счет улучшения условий дренирования зон деструкции мягких тканей, расположенных в области ПСЖ. Особенно важно уменьшить случаи вторичного распространения гнойно-воспалительного процесса на глубокие клеточные пространства глотки, в том числе и на межглотковое пространство.*

Ключевые слова: *органы полости рта, флегмона, фарингиальная полость, методы стоматологического обследования.*

Аннотация

Тадқиқот мақсади.*Оғиз бўшлиғи флегмонаси даволаш учун жаррохликка кўрсатма ва таҳлилий натижаларини ўрганиш усуллари.*

Материаллар ва усуллар. *Оғиз бўшлиғи флегмонаси билан касалланган беморларни стоматологик, клиник – стоматологик, папилияр-маргинал – альвеоляр индекс, оғиз бўшлиғи гигиеник индекси таҳлиллари ва статистик текширув усуллари ўтказилган.*

Натижалар. *Асосий ва назорат гуруҳларида иккиламчи чоклар вақти, стационар даволаниш муддати ва яра жараёнининг цитологик ҳолатнинг ўзгариши вақти сезиларли даражада фарқ қилди (p<0,05. Яра жараёнининг регенерация босқичига ўтиши иккиламчи бойлам учун кўрсатма бўлган цитограмманинг регенератив ёки регенератив-яллиғланиш турининг пайдо бўлиш* ***кўрсаткичлари натижаси таҳлил қилинди.***

Хулоса. *Тавсия етилган ўзгартирилган жарроҳлик ёндашув ПСЖ ҳудудида жойлашган юмшоқ тўқималарни йўқ қилиш зоналари учун дренаж шароитлари яхшиланганлиги сабабли ОФДПРНИ даволаш самарадорлигини оширади. Йирингли-яллиғланиш жараёнининг фарингеал бўшлиқнинг чуқур ҳужайрали бўшлиқларига, шу жумладан фарингеал бўшлиққа иккиламчи тарқалиш ҳолатларини камайтириш айниқса муҳимдир.*

Калит сўзлар: *оғиз бўшлиғи аъзолари, флегмона, фарингиал бўшлиқ, стоматологик текшириш усуллари.*

The relevance of research. Odontogenic phlegm of the floor of the oral cavity (OFDPR) is a common inflammatory process involving two or more cellular spaces located above and below the maxillohyoid muscle (m. mylohyoideus). These include the sublingual and submandibular spaces (spatium submandibulare) on the right and left sides [1, 2]. The submandibular salivary gland (PSG) is located inside a limited fascial sheath — the hyoid-submandibular sac (saccus hyomandibulare) — and adheres directly to the mandible [3], which causes the involvement of this area in the odontogenic inflammatory process. The sublingual maxillary sac is formed by a deep leaf of its own fascia of the neck (l. profunda fasciae colli propriae) and a superficial leaf of its own fascia of the neck (l. superficialis fasciae colli propriae) [1]. It has been proven that in patients with more than two cellular spaces involved in the odontogenic inflammatory process, the incidence of damage to the submandibular space is significantly higher [4], which indicates the unpredictability of the course of AFDPR, their tendency to spread with the development of life-threatening complications (mediastinitis, sepsis, multiple organ failure) [5, 6]. However, the existing methods of surgical treatment have significant disadvantages: difficult-to-drain areas of tissue destruction in the submandibular space and insufficient cosmetic properties of the postoperative scar remain [7, 8]. PSG prevents surgical revision and creates a mechanical obstacle to the outflow of wound discharge from the deep cellular spaces of the maxillofacial region [9, 10, 11, 12]. On the other hand, extirpation of the PSG is performed, as a rule, under conditions of endotracheal anesthesia, which is not always advisable to facilitate drainage of the cellular spaces of the CHL. Consequently, the development and implementation of a more effective modification of surgical access for the treatment of OFDPR is an urgent task.

The aim of the study was to improve the effectiveness of treatment outcomes for patients with OFDPR using modified surgical access.

Material and methods. The study is prospective, controlled, randomized, simple-blind, and clinical. Level of evidence II b. The study included 86 patients who were inpatient treatment at the Bukhara Regional Clinical Hospital in 2018-2020 for OFDPR. Criteria for inclusion in the study: damage to up to 4 cellular spaces of the floor of the oral cavity, compensated background pathology of internal organs, absence of sepsis. Exclusion criteria: the spread of the inflammatory process beyond the 4 cellular spaces that make up the bottom of the oral cavity, the presence of decompensated background pathology, sepsis, allergic reactions to beta-lactam antibiotics in the anamnesis of life. When using a modified surgical approach, the values of the incidence of purulent-inflammatory complications (from 26±7% to 9±4%), the duration of secondary sutures (from 7.9±1.4 to 5.7±1.6 days) and the total duration of inpatient treatment (from 9.4±1.8 to 8.3 days) decrease statistically significantly ($p<0.05$).± 1.7 days). On the 5th day of treatment, leukocytosis in patients of the main group was significantly ($p<0.05$) lower (7.2±1.1-109/l) than in patients of the main group (9.4±1.3-109/l), indicating accelerated relief of intoxication syndrome. The index of the reaction of adhesion of microorganisms to the oral epithelium in the main group on the 5th day of treatment was significantly ($p<0.05$) higher (77.1±6.9%) than in the control group (62.4±7.1%), which indicated a more successful correction of local nonspecific immunity in the main group. The main and control groups (40 and 46 patients, respectively) were formed using envelope randomization. The study groups were comparable in gender, age, prevalence and localization of the purulent-inflammatory process, structure and severity of concomitant pathology, and methods of conservative treatment ($p>0.05$). Surgical intervention to open the OFDPR was performed under local potentiated anesthesia.

In the control group, standard submandibular access was used to open and drain OFDPR [1]. With standard access, the PSG was removed from the bottom, the deep part of the submandibular space was revised by delamination of the fiber between the gland and the deep leaf of the neck's own fascia, and the purulent focus was drained. The disadvantages of standard access are the lack of revision of the submandibular space behind and down from the PSG, which prevents the full drainage of the submandibular space in the posterior region, slows down the cleaning of the postoperative wound. Computed tomography confirms the difficulty of outflow of wound exudate from the OFDPR cavity during standard treatment. The skin was dissected parallel and 3 cm below the edge of the lower jaw, along the entire length of the inflammatory infiltrate. By layer-by-layer dissection of the soft tissues, a partial dissection of the hyoid-submandibular sac was performed directly in the gap between the PSG and the upper part of the mandibular body at a distance necessary for a full revision of the PSG bed while preserving the facial artery and vein. Through this incision, the fibers of the maxillofacial muscle were pushed apart, and access was made to the sublingual space of the bottom of the oral cavity. After opening the affected cellular spaces, the postoperative wound was treated with aqueous solutions of 3% hydrogen peroxide and 0.05% chlorhexidine, perforated tubular drains and gauze wipes soaked in the above antiseptic solutions were left in the wound. Upon admission to the Department of Maxillofacial surgery, all patients underwent a standard clinical minimum of studies. Five patients were excluded from the study at the hospital admission stage due to sepsis.

Both groups underwent combined parenteral empirical antibacterial therapy with metronidazole and amoxicillin with clavulanic acid. The clinical effectiveness of the developed surgical access for the treatment of OFDPR compared with the control group of patients was assessed according to the following indicators: the development of complications (the spread of the purulent-inflammatory process to the pharyngeal space), the appearance of granulations, the timing of secondary sutures, and the total duration of inpatient treatment.

The number of peripheral blood leukocytes on the 1st and 5th days of hospitalization as an indicator of intoxication syndrome was studied. Cytological analysis of the wound discharge was performed on 1, 3, 5, 7, 10- 2nd and 13th days of hospitalization according to the generally accepted method. The state of local nonspecific resistance of the body of patients in the main and control groups was assessed using the index of the reaction of adhesion of microorganisms (iRAM) to the cells of the oral epithelium (%) on the 1st and 5th days of inpatient treatment, reflecting the nature of immunological processes at the local and systemic levels. Epithelial cells were obtained from the sediment of centrifuged samples of unstimulated oral fluid of patients collected in sterile tubes between 8 and 11 a.m. Cytological preparations were prepared and stained according to Leishman from the biopsy, and the iRAM was calculated using light microscopy. With iRAM <30%, the level of nonspecific resistance of the body was regarded as unsatisfactory (the patient's general condition deteriorated sharply); 31-69% — as satisfactory (the deterioration of the patient's general condition is moderate); >70% — the level of nonspecific resistance of an almost healthy person without acute diseases.

Statistical data processing was carried out in the Statistica 10.0 program (StatSoft Inc., USA). The normality of the distribution of variable values is determined using the Shapiro—Wilk criterion. The average values (M) and standard deviation (o) for quantitative features, percentages (P) and standard deviations of fractions (o%) for qualitative features were calculated. The significance of the differences between the values of nonparametric quantities was assessed using Fisher's exact criterion P. The differences between the parametric values were assessed using the Student's t-test for independent samples. The critical value of the significance level is a=0.05.

Results and discussion. In the main and control groups, the timing of secondary sutures, the duration of inpatient treatment, and the timing of a change in the cytological picture of the wound process significantly differed (p<0.05) (Table 1). The transition of the wound process to the regeneration phase was confirmed by the appearance of a regenerative or regenerative-inflammatory type of cytogram, which was an indication of secondary suture. The main and control groups significantly (p<0.05) differed in the number of inflammatory complications associated with the spread of phlegmon to the pharyngeal space. When a complication occurred, an additional surgical manual was performed: revision of the pharyngeal space on the affected side in the operating room.

The change in leukocytosis was studied as an indicator reflecting the dynamics of intoxication in OFDPR. In the main group, leukocytosis decreased statistically significantly (p<0.05) on the 5th day of inpatient treatment compared with the control group (Table 2).

Consequently, in the patients of the main group, the relief of intoxication syndrome was performed more successfully than in the control group. The results of the study of the indicator of local nonspecific immunological resistance of iRAM are presented in Table 3.

On the 5th day, a significant (p<0.05) increase in iRAM was found in the main group. In general, partial dissection of the sublingual submandibular sac was not accompanied by any complications during the access and in the postoperative period.

Table 1.

Clinical assessment of the effectiveness of surgical treatment of RFPR with various surgical approaches

Indicator	The main group,	Control group,n=46
The spread of HPV to the near-pharyngeal space, the number of cases (P+o%)	3 (9+4%)*	12 (26+7%)
The time of appearance of granulation tissue, day, M+o	5,2 ±2,0	6, 1+2,2
The change of the cytological picture of the wound process to M+o	5,0 +0,5*	6, 9 +0,6
Terms of secondary sutures, day, M+o	5,7 +1,6*	7, 9+1,4
Duration of inpatient treatment, day M+o	8,3 +1,7*	9, 4+1,8
Indicator	Main group, n=40	The control group n=46
The spread of HPV to the near-pharyngeal space, the number of cases (P+o%)	3 (9+4%)*	12 (26+7%)
The time of appearance of granulation tissue, day, M+o	5,2 ±2,0	6, 1+2,2
Change of the cytological picture of the wound process to regenerative and regenerative-inflammatory type, day, M+o	5,0 +0,5*	6, 9 +0,6
Terms of secondary sutures, day, M+o	5,7 +1,6*	7, 9+1,4
Duration of inpatient treatment, day M+o	8,3 +1,7*	9, 4+1,8

Table 2.

Dynamics of leukocytosis indices

Estimated indicator	Main group, n=40	Control group, n=46

Leukocytosis on day 1, 109/l, M+o	12,5+5,3	11,0+5,1
Leukocytosis on the 5th day, 109/l, M+o	7,2+1,1*	9,4+1,3

Table 3.

Immunological characteristics of patients with OFDPR

Estimated indicator	Main group, n=40	Control group, n=46
iRAM on the 1st day, %, M+o	35,3+15,4	34,3+16,1
iRAM on the 5th day, %, M+o	77,1+6,9*	62,4+7,1

Note. * — the differences between the groups are statistically significant, p<0.05.

Improving the surgical treatment of OFDPR remains an urgent problem to this day, which is confirmed by published domestic and foreign scientific papers. [2, 4, 5, 12]. The positive clinical results achieved as a result of the study (the timing of secondary sutures, the duration of inpatient treatment, and a decrease in leukocytosis) are confirmed by an improvement in the immunological and cytological parameters listed above, and do not contradict the results obtained by other authors in the study of OFDPR [1, 6, 7].

Conclusion.

The proposed modified surgical approach increases the effectiveness of OFDPR treatment due to improved drainage conditions for soft tissue destruction zones located in the PSG area. It is especially significant to reduce the number of cases of secondary spread of the purulent-inflammatory process to the deep cellular spaces of the pharyngeal space, which includes the near-pharyngeal space. Partial dissection of the sublingual submandibular sac on the affected side is not accompanied by any complications, and the technique can be performed under local anesthesia. Also, the use of modified access is accompanied by normalization of values and RAM as one of the indicators of nonspecific immunity of the oral cavity. The obtained clinical results allow us to recommend the use of such access in the practice of maxillofacial surgical hospitals.

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