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RESEARCH ARTICLE

CLINICAL FEATURES OF OROANTRAL COMMUNICATION MANAGEMENT USING BUCCAL FAT PAD BY TUNNEL METHOD

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Abstract

Background: Today, there is a wide variety of techniques for eliminating oroantral communication. One of them is the tunnel technique using a flap of the buccal fat pad. The introduction of this technique into clinical practice and the determination of the characteristics of the clinical course of the postoperative period in patients with the elimination of the oroantral communication using the tunnel method with the buccal fat pad determined the purpose of this work.

Objectives: To determine the features of the clinical course of the postoperative period in patients with elimination of the oroantral communication using the tunnel method with the buccal fat pad.

Materials and methods: In 30 patients aged from 35 to 72 years at the Department of Surgical Dentistry of ROSUNIMED was carried out the management of oroantral communication arising during the extraction of maxillary molars using the buccal fat pad by tunnel method.

Results: In all cases of elimination of the oroantral communication after maxillary molars removal, the tunnel technique was used without completely covering the flap of the buccal fat pad with a vestibular flap. There was a general tendency for the severity of pain and swelling to increase on the 3rd day after treatment and decrease by the 7th day. During control examinations, no cases of recurrence of oroantral communication were detected. Complete epithelization of the postoperative area was observed in 29 patients (96.7%) on day 30.

Conclusions: The emerging specific features of the postoperative period allow us to recommend the tunnel method of the oroantral communication management using the buccal fat pad.

Keywords: *buccal fat pad; tunnel technique; oroantral anastomosis; tooth extraction; CBCT.*

Introduction

The oroantral communication (OCA), an open connection between the oral cavity and the maxillary sinus (MS), can occur during maxillary tooth extraction. The main risk factors are clinical, defined on radiographs as areas of periapical inflammation, and anatomical, representing the proximity of the roots of maxillary teeth or their penetration into the MS.[1,2]

Most often, OAC occurs intraoperatively during extraction of maxillary molars and premolars[3]. There are many surgical techniques for management of OAC, which can be divided into several groups depending on the type of material used (autogenous, allogeneic, or xenogeneic).[4,5]

Surgical protocols using autogenous tissues include the use of both local tissues in the form of flaps, the so-called non-free plasty, and grafts - free plasty. The techniques of non-free plasty using flaps include the classic mobilized vestibular trapezoidal flap and lingual flap from the palate.[3,6]

Soft tissue grafts retained third molars can be used as a graft to treat OAC.[7]

There is also a combined method using autogenous bone graft and mobilized trapezoidal flap from the vestibular surface of the alveolar process.[8,9]

The main advantage of flap techniques is the preservation of flap blood supply and, consequently, a high probability of its rapid revascularization in the receiving area. The limitation of using an advancement buccal flap is the need for a sufficiently large mobilization of the flap, which makes it possible to cover the defect - the socket of the extracted tooth in the area of which the oroantral communication occurred, but it leads to deformation of the oral vestibule, changes in its anatomy, reduction of its depth, and scarring changes in the mucosa.

At the same time, if the flap tension is maintained, there is a probability of wound dehiscence and recurrence of oroantral communication with the development of perforative form of maxillary sinusitis. A number of limitations of using a lingual flap from the palate are the risk of bleeding in case of damage to the palatine artery, which is a part of the flap, and probable necrosis of the flap, which develops as a result of ischemia at the area of flap rotation, as well as painful healing by secondary intension of the actually exposed area of the hard palate, where the flap was cut out.[10]

Accordingly, the methods of free grafting with the use of grafts have a positive side. There is no necessity to mobilize the flap for a long distance, but higher risk of graft necrosis due to the graft blood supply only at the expense of the receiving area, as well as the need to open a second surgical field, which leads to additional discomfort of the patient. One of the alternative techniques is the method of OAC management using the buccal fat pad (BFP).[11]

The BFP is a cluster of specialized adipose tissue with a lobular structure. It has a body and 4 extensions: cheek, pterygoid, pterygo-palatine, and temporal. Taking into account its rich blood supply, the BFP can be used as an autogenous donor material for the treatment of OAC both with its covering with a mobilized vestibular trapezoidal flap and exposed with no covering.[12] In scientific studies on OAC management, access to the BFP is usually obtained by peeling off a wide full-layer trapezoidal flap in the distal maxillary region and dissecting the periosteum at its base.[11,13]

At the same time, it seems possible to use the tunnel technique, which implies the treatment of OAC with the BFP, which is carried out under a full-layer tunnel from the vestibule, where access to the BFP was obtained, to the socket of the tooth where OAC was detected.[14]

Implementation of this technique into clinical practice and determination of specific features of the postoperative period in patients with OAC treatment using the tunnel method with the BFP have determined the relevance of this work.

Purpose of the study

To determine the clinical specific features of OAC management in patients using the tunnel method with the BFP.

Materials and Methods

After obtaining voluntary informed consent, thirty patients aged 29 to 72 years were treated for OAC that occurred directly during tooth extraction using a tunnel technique with BFP [14] at the Department of Surgical Dentistry of the ROSUNIMED. The study was conducted for 3 years from September 2021 to

September 2023. Patients were informed about the technique of surgical intervention using BFP, possible complications and alternative treatment options, their advantages, and disadvantages (ethics committee report – 01-22 from 20.01.2022).

Each patient underwent cone beam computed tomography (CBCT) prior to tooth extraction to determine the potential risk of intraoperative OAC (KAVO OP 3D Vision (FOV 160 x 100 mm to 160 x 130 mm; voxel size, 0.3 mm; scan time, 8.9 s; exposure time, 3.7 s; voltage, 120 kV; current, 5 mA).

The method of assessing the potential risk of oroantral communication during maxillary tooth extraction consists of measuring on the patient's CBCT in a viewer program the distance from the root surface of the canine, first premolar, second premolar, first molar, second molar, third molar of the maxilla to the floor of the MS and correlating the data obtained with the potential risk of oroantral communication, where the risk is considered high if the tooth root protrudes into the maxillary sinus cavity, moderate if the tooth root contacts the borders of the maxillary sinus without protruding into the maxillary sinus cavity, the cortical plate of the floor of the maxillary sinus is interrupted, a low risk is considered if the tooth root is located at a distance to the floor of the maxillary sinus of more than 2 mm or less than 2 mm without interrupting the cortical plate.

Control examinations were performed on the 1st, 3rd, 7th, 7th, 14th, and 30th days. Clinical specific features of the postoperative period in the form of pain, edema, epithelialization of the postoperative wound and individual complaints of the patients were assessed. One month after tooth extraction and OAC treatment, all patients underwent control CBCT to assess the dynamics of the periapical inflammatory process and control the effectiveness of OAC treatment (Figures 1-22).

The severity of the pain syndrome was assessed individually using the visual analog scale (VAS) of pain, which is a 10 cm ruler with 10 divisions of 1 cm each. Each division of the ruler corresponded to one VAS score. At each control examination the patient was asked to indicate the maximum degree of pain syndrome severity according to VAS in points, where 0 - no pain, 1-3 - mild pain, 4-5 - moderate pain, 6-7 - severe pain, 8-9 - very severe pain, 10 - intolerable pain.

The degree of edema severity was assessed visually at control examinations using the scale of edema severity in points, where 0 points - edema is not visualized, 1 point - edema is insignificantly expressed, 2 points - pronounced edema.

Wound epithelialization was evaluated on control examinations using peroxide test. A 3% hydrogen peroxide solution was drip-fed to the postoperative area from a syringe. If there was a reaction in bubbling, epithelialization was considered incomplete, the absence of reaction indicated the complete epithelialization of the postoperative area.[15]

Inclusion criteria: patients over 18 years of age who were scheduled for maxillary molar extraction.

Exclusion criteria: patients who did not comply with postoperative recommendations, missed follow-up examinations

Surgical protocol

Thirty patients were included in the study, and they underwent OAC treatment that occurred directly during tooth extraction of the maxillary molar group using a BFP (Figures 1-10).[14]

After antiseptic treatment of the operative area with 0.05% Chlorhexidine solution under local anesthesia Sol. Articaini 4% -1.7 ml 1:100000 a circular intrasulcular incision was made in the area of the extracted tooth. The tooth was extracted using an elevator and forceps after root separation using a straight handpiece with carbide cutters under water cooling with sterile saline solution.

After tooth extraction, we performed curettage of the socket, its visual examination, and probing with a periodontal probe (Figure 4). If OAC was detected during probing of the socket floor with a periodontal probe, a 1.5 cm long horizontal incision was made in the area of the vestibule at the level of the extracted tooth (Figure 5). Bluntly, using a Holstead clamp, we moved in the direction under the zygomatic arch, pulling apart the soft tissues, and thus visualized the BFP (Figure 6). Using a rasp, a full-layer subgingival tunnel was formed along the vestibular surface of the alveolar process from the socket of the extracted tooth to the site of the BFP. Mobilization of the BFP was performed: one Halstead clamp was used to pull the BFP toward the socket of the extracted tooth, taking care to avoid excessive tension; the second Halstead clamp was used to bluntly separate the ligaments of the BFP from the surrounding tissues.

Next, the BFP was placed over the alveolar process in the direction of the socket of the extracted tooth to ensure sufficient mobilization and integrity of the BFP (Figure 7). The suture material was threaded through the tunnel, and the end of the mobilized BFP was captured with a horizontal mattress suture without tightening the knot. The BFP was guided through the tunnel to the socket and the OAC was closed with it (Figure 8). In the area of the tooth socket, the BFP was fixed with sutures to the surrounding mucosa around the perimeter of the socket. The vestibular incision was also sutured with knotted sutures (Figure 9).

Figure 1. *Teeth 2.5, 2.6, 2.7 and retention tooth 2.8 in a 40-year-old patient to be extracted*

Figure 2. *CBCT fragment. A- sagittal slice; B- frontal slice. Tooth 2.7 indications of potential high risk of OAC*

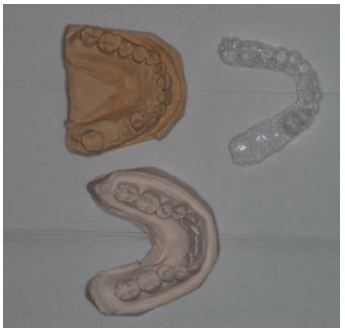


Figure 3. *Prefabricated immediate plastic mouth guard*

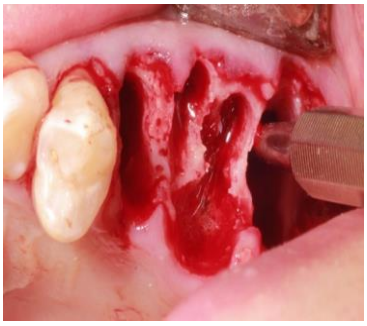


Figure 4. *Sockets of extracted teeth 2.5, 2.6, 2.7 and 2.8. OAC detected in the socket area of tooth 2.7 after the socket curettage stage*

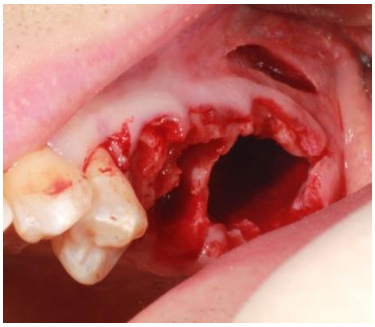


Figure 5. *Vestibular horizontal incision in the region of the extracted tooth*

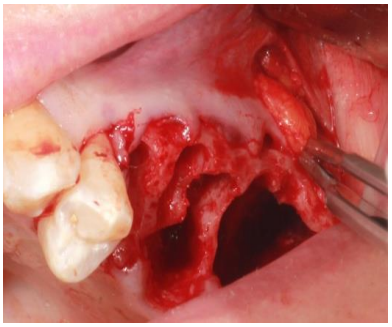


Figure 6. *Visualization of the BFP*

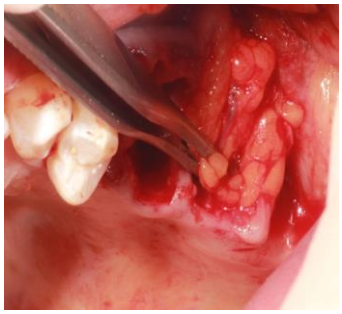


Figure 7. *Mobilization of the BFP over the maxillary alveolar process*

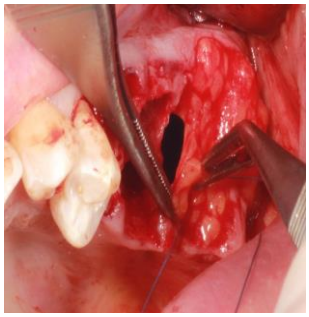


Figure 8. *The BFP is tunneled with a suture thread*

Figure 9. *The BFP is fixed with sutures in the socket of tooth 2.7 Sutures are placed in the area of the vestibule. Iodoform gauze was placed in the sockets of extracted teeth 2.5, 2.6*

Figure 10. *Trying on the mouth guard in the oral cavity*

To protect the postoperative area from mechanical impact each patient had a thermoplastic immediate mouthguard made by a vacuum-former. To reduce the pressure of the plastic on the wound surface, additional protection of the postoperative area and antiseptic action, Metrogyl-Denta gel and an iodoform gauze swab were applied. The mouthguard was allowed to be removed during follow-up examinations to assess the condition of the postoperative area, as well as before brushing teeth and antiseptic treatment of the oral cavity after eating (Figures 3,10).

Patients were prescribed Amoxicillin 500 mg with Clavulanic acid 125 mg, 2 times a day for 7 days, in case of pain Nimesulide 100 mg 1 tablet 1-2 times a day for up to 5 days. Antiseptic treatment of the oral cavity with 0.05% Chlorhexidine solution 3 times a day for 2 weeks, dry cold compress locally for 24 hours for 20 minutes with a break of 20 minutes. Mometasone furoate nasal spray 50 mcg/dose (Nazonex) 2 inhalations into each nasal passage once daily for up to 7 days [16]. Sneezing with the mouth closed and blowing the nose were prohibited for 2 weeks. Control examinations were performed on the 1st, 3rd, 7th, 14th, and 30th day. Suture removal was performed on the 7th and/or 14th day depending on the condition of the wound and sutures at the time of examination (Figure 16). One month after the surgical intervention a repeated CBCT study was scheduled to control the dynamics of the inflammatory process (Figure 21).

Figure 11. *Patient's appearance. Control examination on 1 day after surgery. Edema is insignificantly expressed*

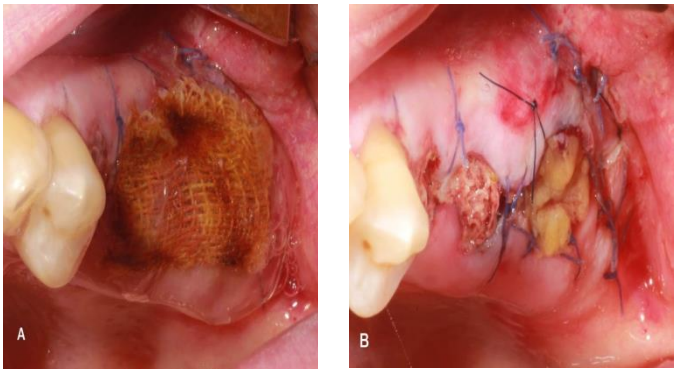
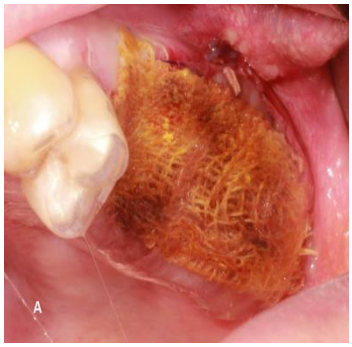


Figure 12. *Clinical picture in the oral cavity, 1 day after surgical intervention. A - with mouth guard; B - without mouth guard*

Figure 13. *Patient's appearance. Control examination on the 3rd day after surgery. The edema is insignificantly expressed*



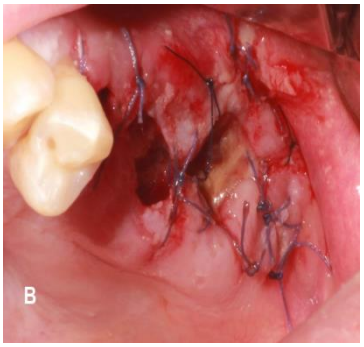
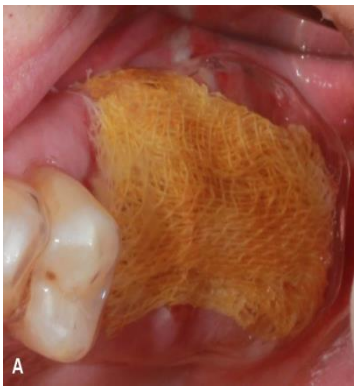


Figure 14. *Clinical picture in the oral cavity, 3 days after surgery. A - with a mouth guard; B - without a mouth guard*

Figure 15. *Patient's appearance. Control examination on the 7th day after surgery. The edema is insignificantly expressed*



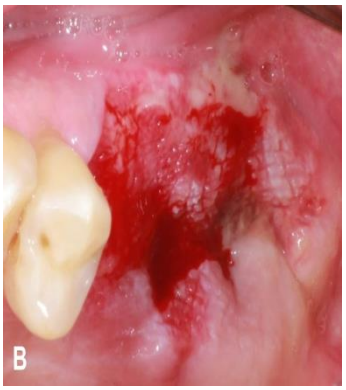


Figure 16 a, b. *Clinical picture in the oral cavity, 7 days after surgery. A - with a mouth guard; B - without a mouth guard. Suture removal*

Figure 17. *Patient's appearance. Control examination on 14 days after surgery. The edema is insignificantly expressed*

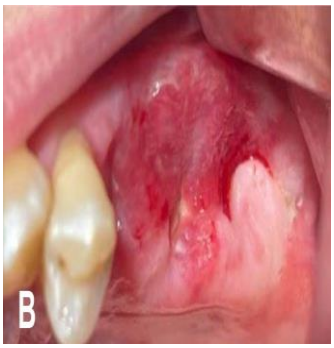


Figure 18 a, b. *Clinical picture in the oral cavity, 14 days after surgery. A - with a mouth guard; B - without a mouth guard*

Figure 19. *Patient's appearance. Control examination on the 30th day after surgery. There is no edema*

Figure 20. *Clinical picture in the oral cavity, 30 days after surgery. Signs of complete epithelialization*

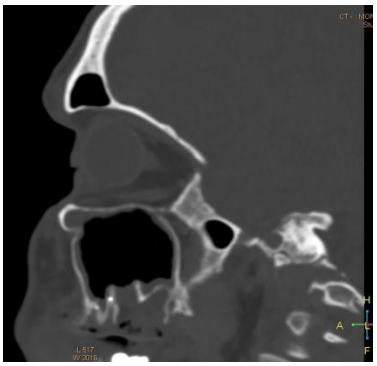


Figure 21. *CBCT fragment one month after surgical treatment. There are signs of decreased intensity of the MS shadowing areas*

Results

Thirty patients participated in the study: 13 males and 17 females. The age ranged from 29 to 72 years (median 45.5 years). OAC occurred during extraction of first molars in 15 patients (50% of cases), second molars in 10 patients (33.3% of cases), including one 35-year-old female patient during extraction of tooth 1.7 and retined tooth 1.8 located apically to the tooth 1.7, and third molars in 5 patients (16.7% of cases). In all cases of OAC treatment, the tunnel technique was used without complete overlap of the BFP with a vestibular flap.

Pain syndrome at 1 day after surgical treatment according to VAS was in the range from 2 to 5 points, mean value 3.4 ±1.2. Of these, 7 patients (23.3% of patients) reported pain intensity at the maximum level of 5 points, and 9 patients (30%) - at

the minimum level of 2 points. On day 3, the pain syndrome ranged from 2 to 6 points, with a mean of 3.8±1.1. Of these, 1 patient (3.3%) reported a maximum level of pain and 3 patients (10%) a minimum level of pain. On day 7, the pain syndrome on VAS was in the range of 1 to 4 points, mean 1.8±0.89. Of these, 1 patient (3.3%) noted the maximum level of pain intensity, and 14 patients (46.7%) - the minimum level. On 14 days, the scores ranged from 0 to 2, with a mean value of 0.43±0.63. Of these, 2 patients (6.7%) reported pain intensity at the maximum level, and 19 patients (63.3%) had no pain. On the 30th day no patient noted the occurrence of signs of spontaneous pain in the postoperative area. There was a general tendency for the pain syndrome to increase by 3 days after surgical treatment with a further decrease in pain intensity (Figure 22).

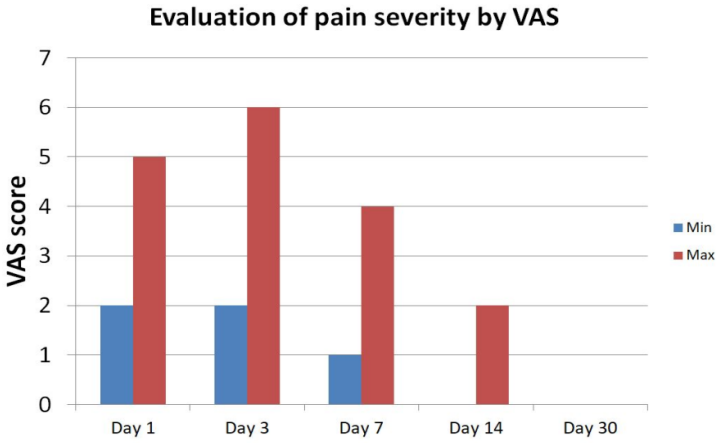


Figure 22. *Diagram of pain syndrome severity assessment by VAS scale*

In all patients after surgical intervention, edema persisted up to and including 3 days. An increase in collateral edema (2 points) was observed in 13 patients (43.3%) up to 3 days with a further tendency to decrease up to 7 days. One week after surgery, no signs of edema were detected in any patient (Figure 23).

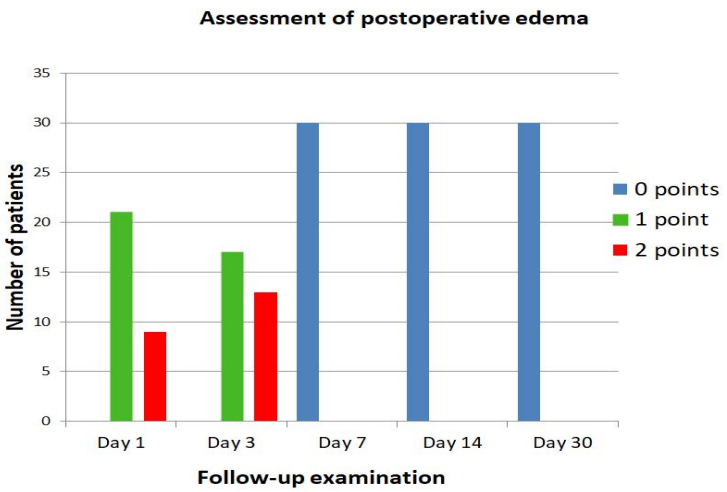


Figure 23. *Diagram of postoperative edema assessment in patients*

In all clinical cases, the postoperative area healed by secondary tension. At visual examination in cases of incomplete epithelialization of the postoperative area, expressed in the presence of a wound surface with fibrin layer, the peroxide test was positive. On control examinations 1, 3, 7, 14 days after OAC treatment all patients had positive peroxide test. In 29 patients on the 30th day the peroxide test was negative, indicating complete epithelialization of the postoperative area. One 35-year-old female patient (3.3% of cases) had a positive peroxide test on day 30 and a negative test on follow-up examination after 2 months (Figure 24). No signs of complications in the form of wound edge dehiscence, recurrence of OAC, and necrosis of the BFP were detected throughout the entire period of patient follow-up.

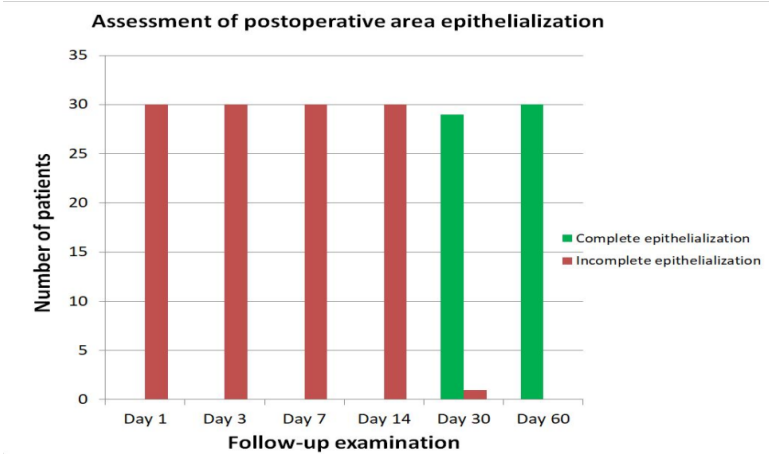


Figure 24. *Diagram of epithelialization assessment of the postoperative area*

A 40-year-old patient underwent a CBCT examination before orthopedic treatment with dental implants six months after OAC treatment. The slices show signs of reduction in the size of the bone defect and signs of increase in the bone height of the alveolar ridge (Figure 25).

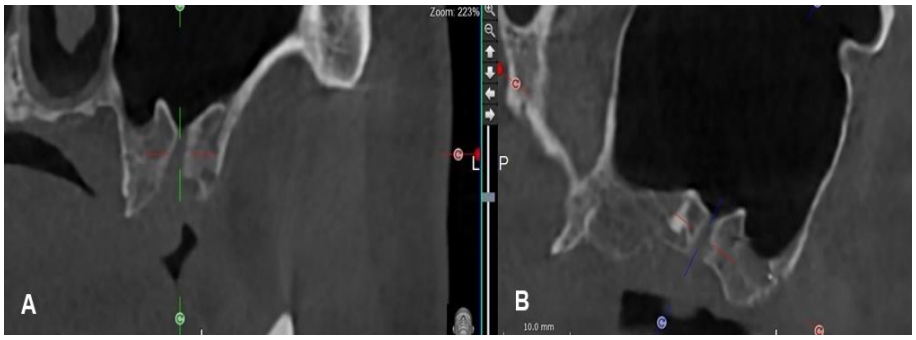


Figure 25. *CBCT fragment 6 months after surgical treatment.*
A - frontal slice; B - sagittal slice.
There are signs of reduction in the size of the bone defect and signs of increased height of the alveolar process.
There are no signs of pathologic changes in the MS area.

In 11 patients (36.7%) there was a complaint of "tightness" of the postoperative area, which in 8 patients (26.7%) passed by the 7th day after surgery, and in 3 patients (10%) by the 14th day.

One patient 40 years old complained of a one-time bloody secretion from the nose on the first night after surgery.

Two patients 40 and 72 years old (6.7%) complained of sensory dysfunction in the postoperative area in the zone of localization of the BFP. The patients noted these signs starting from the moment the reactive inflammatory symptoms in the postoperative area subsided and complained about it at the control examination on the 7th day. Clinically, there was an area of loss of sensitivity of the postoperative area according to the location of the BFP in the socket of the extracted tooth. This symptom disappeared independently within 1 month after the surgical intervention.

One 35-year-old patient had a complication in the form of superficial necrosis of the vestibular flap. The patient complained of discomfort when wearing a mouth guard on the 3rd day after OAC treatment. Clinically, there were signs of necrosis of the vestibular mucosa area on the 3rd day after surgical treatment. When signs of necrosis of the vestibular flap were detected, the vestibular border of the protective plastic mouth guard in the area of teeth 1.7, 1.6 was reduced. There were no signs of necrosis of the underlying flap of the BFP and no recurrence of OAC in this clinical case. Complete epithelization confirmed by negative peroxide test was determined at the control examination 2 months after surgical treatment. Also, only this patient noted irradiation of pain to the right eye, which, according to the patient's words, occurred on the 2nd day after surgery. Starting from the control examination on the 14th day after the surgical treatment, the patient did not have such a complaint.

Discussion

In our work, the absence of OAC recurrence was observed in all cases. Final epithelialization was clinically determined at 30 days after surgery in 96.6% of cases. The time interval between the examinations on the 14th and 30th day in the presented work is 2 weeks. Taking into account a certain study design in our work, we admit the probability of earlier terms of complete epithelization of the postoperative area, which agrees with the data of other authors [17, 18]. When comparing the epithelialization time in the tunnel technique of OAC treatment with the use of a trapezoidal vestibular Rehrmann flap and a lingual flap from the palate, including the use of a vestibular flap with complete overlap of the covering flap, complete epithelialization occurred significantly later in the first case.[3,6,11]

Comparable data on clinical manifestations at

follow-up examinations were obtained by Shukla B. et al. in 2021 when comparing the techniques of OAC treatment with the use of the BFP and advanced vestibular trapezoidal flap. The study included 20 patients aged 24-64 years who were divided into 2 groups of 10 patients each. In the first group OAC treatment was performed with an advanced vestibular trapezoidal flap, in the second group - with the BFP with its partial exposure in the oral cavity. The authors compared the techniques in terms of the speed of intervention, the recurrence of OAC, as well as the severity of pain, mouth opening, edema, infection, and wound edge dehiscence. In both cases, there was no recurrence of the disease, infection and wound dehiscence.

The operative time was comparable in both groups (average 27-29 minutes). Pain and edema were less pronounced in the first group, and restriction of mouth opening in the second group.[19] When the tunnel technique was used in our work, all patients were free from the symptom of restriction of mouth opening.

The authors of an earlier article, which also compared these techniques, came to similar conclusions. The control and experimental groups consisted of 11 people aged 25 to 56 years. The postoperative follow-up period was 1 month. Despite the more pronounced edema and pain syndrome in the BFP group, the authors noted less restriction of mouth opening, and the overall treatment outcome was described as equally successful in both groups.[20]

The main complaint of patients in our study in 36.7% (11 patients) was "tightness" of the postoperative area. In our opinion, this may be mostly related to the specific features of the BFP, especially the resulting tension of the ligaments of the BFP, by which it is fixed to the surrounding anatomical structures during its traction. Also, during the formation of the subgingival tunnel from the socket of the extracted tooth to the BFP, the area of soft tissues detached from the bone can acquire some mobility, which at the stage of suturing can lead to its coronal displacement and even in the visual and instrumental absence of soft tissue tension can lead to such a complaint in patients. This condition cannot be called flap mobilization in its classical sense. On the one hand, it may affect the depth of the oral vestibule and the height of the attached gingival tissues in the future.

And at the same time, such a technique of OAC treatment is not purely "one-layer": coronal displacement of the flap allows reducing the distance between the vestibular and palatal edges of the mucosa, reducing the probability of OAC recurrence and accelerating the process of epithelization of the postoperative area. And the absence of loosening incision and mobilization of the covering flap contributes to the preservation of its thickness and, accordingly, reduces the risk of necrosis of the covering flap and the underlying tissues.

The presence of a complication in the form of necrosis of the covering flap in a 35-year-old patient (3.3% of cases) can be explained by the thin biotype of the mucosa and excessive pressure of the plastic mouth guard on the postoperative area from the vestibular side, as reported by the patient. Despite the fact that the plastic mouth guard allows to protect the postoperative area from undesirable mechanical effects, including traumatization during meal, it is necessary to draw the patients' attention to the necessity of urgent unscheduled visits in case of discomfort when wearing them for timely correction of the mouth guard.

Also, only this patient (3.3% of cases) complained of irradiation of pain to the right suborbital region. Despite the fact that the authors note the absence of large nerve trunks in the BFP [11], it is possible that smaller branches of the maxillary nerve may pass through the BFP tissue. Thus, aseptic inflammation occurring in the mobilized flap of the BFP at the stage of healing of the postoperative area may lead to the temporary appearance of such a complaint.

In 2 patients (6.7% of cases) there was a reversible sensory disturbance in the postoperative area. We also associate the occurrence of this complaint in patients with reduced innervation of the BFP and, accordingly, prolonged formation of nerve endings in the area of the BFP accordingly to the socket of a tooth with OAC.

Some authors have noted that the use of BFP for OAC treatment may be limited by possible changes in facial configuration, as the BFP, especially its superficial structures, are involved in the formation of the aesthetic contour of the face.[10,21]

Despite the absence of assessment of facial configuration changes in the study objectives, no patient visually intraoperatively and on control examinations after the disappearance of edema was

found to have facial configuration changes. This result is supported by the work of Park J. et al. (2019), which investigated the effectiveness of OAC treatment with BFP in 25 patients. The causes of OAC were as follows: maxillary resection for tumor process, removal of implants and osteoplastic material, tooth extractions.

In 3 patients there was repeated surgical intervention for OAC treatment after previous surgical treatment by mobilization of the vestibular trapezoidal flap. A two-layer technique with mobilization of the trapezoidal vestibular flap was used in 22 cases, and in 3 cases a collagen membrane was placed on the OAC area previously. The treatment success rate was 92%. In two cases the OAC recurred, of which the first case was spontaneously healed and the second case required surgical closure of dehiscence. In all cases, no complications in the form of cheek retraction or restriction of mouth opening were observed.[13] We have also previously found in experimental anatomical modeling that traction of the BFP or its closest outgrowth to the maxillary canine socket does not lead to statistically significant changes in the aesthetic parameters of the human face.[22] OAC treatment using the tunnel technique occurs due to more deeply located extensions of the BFP, which does not affect the patient's face configuration,[23] which in turn has a positive effect on the psychological landscape of the surgical process, when doctors tend for a slight decrease of arterial oxygen saturation within the normal range when the patient developed pain.[24]

Despite the wide variety of techniques of OAC treatment, including clinical cases of OAC treatment with OAC, there is no detailed description of the clinical specific features of the postoperative period, especially in domestic sources, which actualizes more studies on this topic, including those using the tunnel technique of OAC treatment with BFP.

Conclusions

The emerging specific features of the clinical course in the postoperative period allow us to recommend the tunnel method of OAC treatment with BFP when OAC occurred during tooth extraction.

Declarations

Conflicts of interest and financial disclosures

The author declares that he has no conflict percent and there was no external source of funding for the research in question.

Ethical approval

The study was approved by the University ethics committee and was conducted in accordance with the Declaration of the World Medical Association.

Source of funding

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Data Availability Statement

Not applicable.

REFERENCES

1. Mirontsev AV, Vasil’ev YuL, Kolesova LYu, et al. Clinical anatomy features of the buccal part of the facial vein. *Clinical Dentistry (Russia).* 2023;26(3):140—145 doi:10.37988/1811-153X_2023_3_140

2. Chinnaiah R, Sujith Raj Stephen Veeramuthu M, Satheesh G, Rajashri R. The Management of Infected Oroantral Fistula After Maxillary Third Molar Removal: A Case Report. *Cureus.* 2023;15(7):e42633. doi:10.7759/cureus.42633

3. Bereczki-Temistocle DL, Gurzu S, Ioan I, Vlad GM, Beresescu G, Ormenisan A. Successful Closure of an Oro-Antral Communication, after Three Previously Failed Attempts, Using Bichat Fat Pad Flap: A Case Report. *World J Plast Surg*. 2023;12(1):90-94. doi:10.52547/wjps.12.1.90

4. Lazutikov DO, Morozov AN, Chirkova NV, Garshina MA, Romanova LM. Overview of methods of plastics of odontogenic perforations of super-severe sinus (literature review). *Journal of new medical technologies.* 2018;3 doi:10.24411/2075-4094-2018-16040

5. Zhidkov RA, Tsitsiashvili AM, Vasil'ev YuL, Panin AM. Review of current methods for closing the oroantral communication. *Russian Stomatology.* 2022;15(3):16-24. doi:10.17116/rosstomat20221503116

6. Kwon MS, Lee BS, Choi BJ, et al. Closure of oroantral fistula: a review of local flap techniques. *J Korean Assoc Oral Maxillofac Surg*. 2020

7. Ganzha IR, Postnikov MA, Ganzha IS. Prevention and treatment of chronic odontogenic sinusitis by autotransplantation of the third molar in retention (clinical cases). *Clinical Dentistry (Russia).* 2023;26(3):52—59 doi:10.37988/1811-153X_2023_3_52

8. Park WB, Xu Z, Lim HC, Kang P. Successful Management of Late Sinus Graft Infection via Functional Endoscopic Sinus Surgery and Press-Fit Block Bone Graft: A Case Report. *J Oral Implantol.* 2023;49(3):263-270. doi:10.1563/aaid-joi-D-22-00112

9. Amroun S, Zouari Y, Bouattour A. Closure of an oroantral fistula by bone autograft: a case report. *J Oral Med Oral Surg*. 2018;24:143-148 doi:10.1051/mbcb/2018006

10. Durnovo EA, Fedorichev AO, Khomutinnikova NE. Modern view on the problem of oroantral fistula closure: literature review. *Stomatologiya.* 2019;98(2):76 80

11. Rathod N, Khobaragade B, Ganesan K. Use of the temporal extension of the buccal fat pad for closure of oro-antral communications. *International journal of oral and maxillofacial surgery*, 2021;50(12):1638–1642. doi:10.1016/j.ijom.2021.02.030

12. Yaremenko AI, Petrishin VL, Lebedev DV, Katina MV, Kirillov PA. Anatomical and topographic features of buccal fat pad in various gender and age groups. *Scientific and Practical Journal Institute of Dentistry*. 2018;78(1):106-107

13. Park J, Chun BD, Kim UK, et al. Versatility of the pedicled buccal fat pad flap for the management of oroantral fistula: a retrospective study of 25 cases. *Maxillofac Plast Reconstr Surg.* 2019;41(1):50. doi:10.1186/s40902-019-0229-x

14. Panin AM, Tsitsiashvili AM, Vasiliev YL, Daraushe HMS, Zhidkov RA. Patent No. 2803983 Russian Federation, IPC A61B 17/24 (2006.01), A61B 17/24 (2023.05). Method of treatment oroantral communication with the buccal fat pad by the tunnel method: No. 2022121838: declared on 11.08.2022: published on 25.09.2023/; applicant FGBOU HE MSMSU named after. A.I. Evdokimov, Ministry of Health of Russia - 20 p.ill

15. Alpan AL, Cin GT. Comparison of hyaluronic acid, hypochlorous acid, and flurbiprofen on postoperative morbidity in palatal donor area: a randomized controlled clinical trial. *Clin Oral Investig.* 2023;27(6):2735-2746. doi:10.1007/s00784-022-04848-5

16. Khorguani A, Panin A, Tsitsiashvili A, Arutyunov S, Mustafazade K, Ovchinnikov A. Assessment of mometasone furoate effectiveness for prevention of inflammatory complications after sinus lift surgery. *Archiv Euromedica*. 2019;9(2):156-159

17. Chouikh F, Dierks EJ. The Buccal Fat Pad Flap. *Oral Maxillofac Surg Clin North Am.* 2021;33(2):177-184. doi:10.1016/j.coms.2020.12.005

18. Adeyemo WL, Ibikunle AA, James O, Taiwo OA. Buccal Fat Pad: A Useful Adjunct Flap in Cleft Palate Repair. *J Maxillofac Oral Surg*. 2019;18(1):40-45. doi:10.1007/s12663-018-1100-9

19. Shukla B, Singh G, Mishra M, Das G, Singh A. Closure of oroantral fistula: Comparison between buccal fat pad and buccal advancement flap: A clinical study. *National journal of maxillofacial surgery*. 2021;12(3):404–409.

doi:10.4103/njms.njms_323_21

20. Nezafati S, Vafaii A, Ghojazadeh M. Comparison of pedicled buccal fat pad flap with buccal flap for closure of oro-antral communication. *Int J Oral Maxillofac Surg*. 2012;41(5):624-8. doi:10.1016/j.ijom.2011.11.011

21. Nelke K, Morawska A, Błaszczyk B, et al. Anatomical and Surgical Implications of the Usage of Bichat Fat Pad in Oroantral Communication, Maxillary, Palatal, and Related Surgeries-Narrative Review. *J Clin Med*. 2023;12(15):4909. doi:10.3390/jcm12154909

22. Vasil'ev YuL, Zhidkov RA, Tsitsiashvili AM, Smilyk IM, Glinskii AV, Fakhrislamova L.R. Evaluation of the face configuration changes during extrusion of the buccal fat pad. Pilot study. *Russian Journal of Operative Surgery and Clinical Anatomy*. 2023;7(4):25-32. doi:10.17116/operhirurg2023704125

23. Lebedev DV, Yaremenko AI, Chetina ED, Ivanov VV. Planning the movement of the buccal fat pad when replacing various defects in the oral cavity, taking into account anthropometry and facial aesthetics. *Science and innovations in the XXI century: topical issues, discoveries and achievements proceedings of the 8th International Scientific and Practical Conference*. 2018;3(1)3

24. Vasil'ev YuL, Rabinovich SA, Dydykin SS, Bogoyavlenskaya TA, Kashtanov AD, Kuznetsov AI. Evaluation of dentists regulatory systems stress during the provision of dental care according to pulse oximetry data. *Stomatologiya*. 2020;99(6):89-93. doi:10.17116/stomat20209906189

ՕՐՈԱՆՏՐԱԼ ԱՆԱՍՏՈՄՈԶԻ ՎԵՐԱՑՄԱՆ ԿԼԻՆԻԿԱԿԱՆ ԱՌԱՆՁՆԱՀԱՏԿՈՒԹՅՈՒՆՆԵՐԸ ԹՈՒՆԵԼԻ ՄԵԹՈԴԻ ԿԻՐԱՌՄԱՄԲ ԲՈՒԿԱԼԱՅԻՆ ՃԱՐՊԱՅԻՆ ԲԱՐՁԻԿԻ ՄԻՋՈՑՈՎ

Ռոման Ժիդկով,[1] Ալեքսանդր Ցիցիաշվիլի,[2] Յուրի Վասիլև,[3] Ելենա Կանուկովա,[4] Մարիա Ժդանովա,[5] Անդրեյ Պանին[6]

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2. Բժշկական գիտությունների դոկտոր, Ռուսաստանի բժշկական համալսարանի վիրաբուժական ստոմատոլոգիայի ամբիոնի պրոֆեսոր, Մոսկվա, ՌԴ
3. Բժշկական գիտությունների դոկտոր Մոսկվայի Սեչենովի անվան առաջին պետական բժշկական համալսարանի կլինիկական բժշկության ինստիտուտի տեղագրական անատոմիայի և օպերատիվ վիրաբուժության ամբիոնի պրոֆեսոր, Մոսկվա, ՌԴ
4. Ռուսաստանի բժշկական համալսարանի ցավի վերահսկման ամբիոնի դոցենտ, Մոսկվա, ՌԴ
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Ամփոփում

Ներածություն. Այսօր կա օրոանտրալ անաստոմոզի վերացման տեխնիկայի լայն տեսականի: Դրանցից մեկը թունելային տեխնիկան է, որն օգտագործվում է այտերի ճարպային մարմնով: Այս տեխնիկայի ներդրումը կլինիկական պրակտիկայում և հետվիրահատական շրջանի կլինիկական ընթացքի բնութագրերի որոշումը թունելի մեթոդով այտի ճարպային մարմնի օգտագործմամբ օրոանտրալ անաստոմոզի վերացում ունեցող հիվանդների մոտ որոշեցին այս աշխատանքի նպատակը:

Նպատակներ. Որոշել հետվիրահատական շրջանի կլինիկական ընթացքի առանձնահատկությունները օրոանտրալ անաստոմոզ ունեցող հիվանդների մոտ՝ թունելի մեթոդով, օգտագործելով այտի ճարպային մարմինը:

Նյութեր եւ մեթոդներ. 35-ից 72 տարեկան 30 հիվանդների մոտ Մոսկվայի Ա.Ի. Եվդոկիմովը անվան պետական բժշկական համալսարանի վիրաբուժական ստոմատոլոգիայի պրոպեդեւտիկայի ամբիոնում թունելի մեթոդով բուժվել է օրոանտրալ անաստոմոզը, որն առաջացել է վերին ծնոտի մի խումբ աղորիք ատամների հեռացման ժամանակ՝ օգտագործելով այտի ճարպային մարմնի փեղկը՝ թունելի մեթոդով:

Արդյունքներ. Վերին ծնոտի աղորիքների հեռացնելուց հետո օրոանտրալ անաստոմոզի վերացման բոլոր դեպքերում կիրառվել է թունելային տեխնիկա՝ այտի ճարպային մարմնի փեղկն ամբողջությամբ ծածկող վեստիբուլյար փեղկով: Բուժումից հետո 3-րդ օրը ցավի և այտուցի ուժգնության ընդհանուր միտում կար, իսկ 7-րդ օրը նվազել է: Վերահսկիչ հետազոտությունների ընթացքում օրոանտրալ անաստոմոզի կրկնության դեպքեր չեն հայտնաբերվել: Հետվիրահատական տարածքի ամբողջական էպիթելացում նկատվել է 29 հիվանդի մոտ (96,7%) 30-րդ օրը:

Եզրակացություններ. Կլինիկական ընթացքի ի հայտ եկած առանձնահատկությունները հետվիրահատական շրջանում թույլ են տալիս մեզ խորհուրդ տալ օրոանտրալ անաստոմոզը վերացնելու թունելային մեթոդը՝ օգտագործելով այտի ճարպային մարմինը՝ ատամի հեռացման ժամանակ առաջացած օրոանտրալ անաստոմոզը հայտնաբերելիս:

КЛИНИЧЕСКИЕ ОСОБЕННОСТИ УСТРАНЕНИЯ ОРОАНТРАЛЬНОГО СОУСТЬЯ С ПОМОЩЬЮ ЖИРОВОГО ТЕЛА ЩЕКИ ТОННЕЛЬНЫМ МЕТОДОМ

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Абстракт

Введение: На сегодняшний день существует большое разнообразие методик устранения ороантрального соустья. Одним из них является тоннельная методика с использованием лоскута жирового тела щеки. Внедрение данной методики в клиническую практику и определение особенностей клинического течения послеоперационного периода у пациентов при устранении ороантрального соустья тоннельным методом с помощью жирового тела щеки и определили цель данной работы.

Цель: Определить особенности клинического течения послеоперационного периода у пациентов при устранении ороантрального соустья тоннельным методом с помощью жирового тела щеки.

Материалы и методы: У 30 пациентов возрастом от 35 до 72 лет кафедры хирургической стоматологии

Российского университета медицины было проведено устранение ороантрального соустья, возникшего во время удаления зубов группы моляров на верхней челюсти с помощью лоскута жирового тела щеки тоннельным методом.

Результаты: Во всех случаях устранения ороантрального соустья после удаления зубов верхней челюсти группы моляров применялась тоннельная методика без полного перекрытия лоскута жирового тела щеки покрывным вестибулярным лоскутом. Наблюдалась общая тенденция увеличения степени выраженности болевого синдрома и отека на 3 сутки после лечения и уменьшения к 7 суткам. На контрольных осмотрах случаев рецидива ороантрального соустья выявлено не было. Завершение эпителизации послеоперационной области наблюдалась у 29 пациентов (96,7%) на 30 сутки.

Выводы: Возникающие особенности клинического течения в послеоперационном периоде позволяют рекомендовать тоннельный метод устранения ороантрального соустья с помощью жирового тела щеки при выявлении ороантрального соустья, возникшего во время удаления зуба.