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DT Journal

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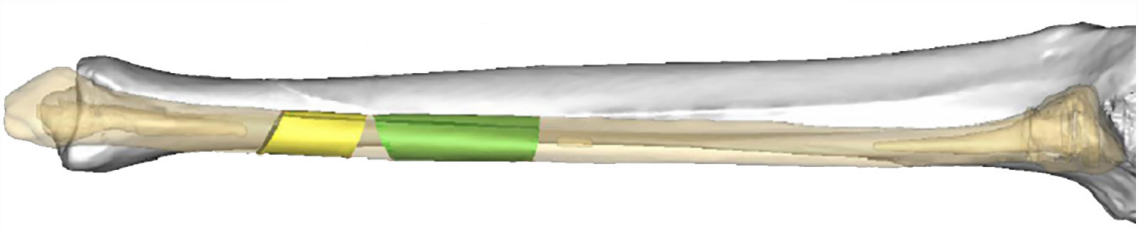

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Official Journal of the
Ukrainian Association for
Maxillofacial and Oral Surgeons

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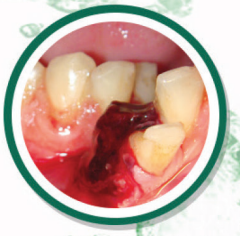
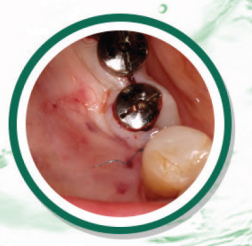
TANTUM VERDE®

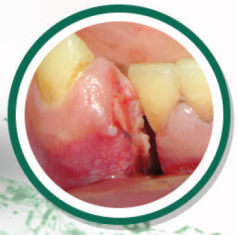
QUICK RELIEF FROM PAIN AND INFLAMMATION IN THE MOUTH AND THROAT[1]

AN INTEGRAL COMPONENT OF THE TREATMENT OF PAIN AND INFLAMMATION IN THE ORAL CAVITY IN 60 COUNTRIES WORLDWIDE![2]

- **JAWS FRACTURES[3]**
- **IMPLANTS PLACEMENT[4]**
- **WOUNDS OF ORAL CAVITY[5]**







Reg. № UA/3920/01/01

LOCAL ANESTHETIC AND ANTI-INFLAMMATORY EFFECT[1]

SUMMARY OF PRODUCT CHARACTERISTICS

NAME OF THE MEDICINAL PRODUCT. Tantum Verde 0.15% mouthwash. QUALITATIVE AND QUANTITATIVE COMPOSITION. Each 100 ml contains: active ingredient: benzydamine hydrochloride 0.15 g (equivalent to 0.134 g of benzydamine). **Therapeutic indications.** Treatment of symptoms such as irritation/inflammation including those associated with pain in the oropharyngeal cavity (e.g. gingivitis, stomatitis and pharyngitis), including those resulting from conservative or extractive dental therapy. **Posology and method of administration.** Pour 15 ml of Tantum Verde mouthwash into the measuring cup, 2-3 times per day, using it either at full concentration or diluted. If diluted, add 15 ml of water to the graduated cup. Do not exceed the recommended dosage. **Contraindications.** Hypersensitivity to benzydamine or to any of the excipient. **PHARMACOLOGICAL PROPERTIES. Pharmacodynamic properties.** Pharmacotherapeutic group: Stomatologic drugs: other agents for local oral treatment, ATC code: A01AD02. Clinical studies demonstrate that benzydamine is effective in relieving suffering from localised irritation of the mouth and pharynx. In addition, benzydamine possesses a moderate local anaesthetic effect. **Pharmacokinetic properties.** Absorption. Absorption through the oropharyngeal mucosa is demonstrated by the presence of measurable quantities of benzydamine in human plasma. These levels are insufficient to produce systemic effects. Distribution. When applied locally, benzydamine has been shown to accumulate in inflamed tissues where it reaches effective concentrations because of its capacity to penetrate the epithelial lining.

Information about medicines. Information for health care professionals for use in professional activities.

1. Інструкція для медичного застосування лікарського засобу Тантум Верде®, розчин для ротової порожнини, РП № UA/3920/01/01, затверджено Наказом Міністерства охорони здоров'я України № 636 від 01.10.2015.
2. http://www.angelinipharma.com/wps/wcm/connect/com/home/Angelini+Pharma+in+the+world/
3. Тимофеев А.А. и др. "Особенности гигиены полости рта для профилактики воспалительных осложнений при переломах нижней челюсти". Современная стоматология 2015;1(75):52–8.
4. 4,5. Tymofieiev O.O. et al"Prevention of inflammatory complications upon surgeries in maxillofacial region". J Diagn Treat Oral Maxillofac Pathol. 2017;1:105–12.

Clinical and CT images are courtesy of: Ievgen Fesenko (Department of Oral & Maxillofacial Surgery, PHEI "Kyiv Medical University", Kyiv, Ukraine), Oleg Mastakov ("SCIEDECE—Scientific Center of Dentistry & Ultrasound Surgery" Kyiv, Ukraine)

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Dileo FARMA

About the Journal: Aims and Scope

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Official Title

Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology

Standard Abbreviation: ISO 4

J. Diagn. Treat. Oral Maxillofac. Pathol.

Acronym

JDTOMP

International Standard Serial Number (ISSN)

Electronic ISSN 2522-1965

Aims & Scope

This is a monthly peer-reviewed oral and maxillofacial surgery journal focused on: microvascular and jaw reconstructive surgery, dental implants, salivary gland tumors/diseases, TMJ lesions, virtual surgical planning, implementation of ultrasonography into the practice of oral and maxillofacial surgeons.

Editorial Board (EB) Composition

- EB shows significant geographic diversity representing 29 opinion leaders from 13 countries: Brazil, Canada, Colombia, Greece, Hong Kong (SAR, China), India, Israel, Italy, Slovak Republic, Spain, Ukraine, United Arab Emirates, and United States.
- The majority of the EB Members have a discernible publication history in Scopus, Web of Science, and journals with a high impact factor.
- The publication records of all EB members are consistent with the stated scope and published content of the journal.
- The journal has a several full-time professional editors.
- Gender distribution of the editors: 10.34% women, 89.65% men, 0% non-binary/other, and 0% prefer not to disclose.

Frequency

12 issues a year (from January 2020)

Publication History

2017: 4 issues a year
2018: 4 issues a year
2019: 10 issues a year
From 2020: 12 issues a year

Publishing Model

Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology is a fully online-only open access and peer-reviewed publication.

Type of Peer Review

The journal employs "double blind" reviewing.

Article Publishing Charge (APC)

The APC in this journal is 100 USD and 50 USD (excluding taxes) depending on the article`s type. Details at website: dtjournal.org.

13 Types of Articles Currently Published by the Journal

Editorials/Guest Editorials/Post Scriptum Editorials, Images, Case Reports/Case Series, Original Articles, Review Articles, Discussions, Paper Scans (*synonyms*: Review of Articles, Literature Scan), Book Scans (*synonym*: Book Reviews), Letters to the Editor (*synonym*: Letters), and Viewpoints.

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Registration: Jul 28, 2016 (Certificate: КВ № 22251-12151 Р)
Re-registration: May 21, 2019 (Certificate: КВ № 23999-13839 ПР)
Re-registration: Aug 10, 2021 (Certificate: КВ № 24951-14891 ПР)

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1. Shupyk National Healthcare University of Ukraine (formerly known as Shupyk National Medical Academy of Postgraduate Education).
2. Private Higher Educational Establishment "Kyiv Medical University."
3. OMF Publishing, Limited Liability Company.

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Ukrainian Association for Maxillofacial and Oral Surgeons

Ukrainian Association for Maxillofacial and Oral Surgeons (UAMOS)

Address: 4-A Profesora Pidvysotskoho Street, Kyiv 01103, Ukraine.
Tel., fax: +38 044 528 35 17.
Website: uamos.org.

Editorial Board

JUNE 2022 • VOLUME 6 • ISSUE 6
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TANTUM VERDE®

INFORMATION LEAFLET
for the medicinal product

Composition:
active substance: **benzydamine hydrochloride**;
100 mL of solution contain benzydamine hydrochloride 0.15 g;
excipients: ethanol 96%, glycerol, methyl parahydroxybenzoate (E 218), flavor (menthol), saccharin, sodium hydrocarbonate, Polysorbate 20, Quinoline Yellow (E 104), Patent Blue V (E 131), purified water.

Dosage form. Oromucosal solution.
Basic physical and chemical properties: a clear green liquid with a typical mint flavor.

Pharmacotherapeutic group. Dental preparations. Other agents for local oral treatment.
ATC code: A01A D02.

Pharmacological properties.
Pharmacodynamics.
Benzydamine is a non-steroidal anti-inflammatory drug (NSAID) with analgesic and antiexudative properties.

Clinical studies have shown that benzydamine is effective in the relief of symptoms accompanying localized irritation conditions of the oral cavity and pharynx. Moreover, benzydamine has anti-inflammatory and local analgesic properties, and also exerts a local anesthetic effect on the oral mucosa.

Pharmacokinetics.
Absorption through the oral and pharyngeal mucosa has been proven by the presence of measurable quantities of benzydamine in human plasma. However, they are insufficient to produce any systemic pharmacological effect. The excretion occurs mainly in urine, mostly as inactive metabolites or conjugated compounds.

When applied locally, benzydamine has been shown to cumulate in inflamed tissues in an effective concentration due to its ability to permeate through the mucous membrane.

Clinical particulars.
Indications.
Symptomatic treatment of oropharyngeal irritation and inflammation; to relieve pain caused by gingivitis, stomatitis, pharyngitis; in dentistry after tooth extraction or as a preventive measure.
Contraindications.
Hypersensitivity to the active substance or to any other ingredients of the product.

Interaction with other medicinal products and other types of interaction.
No drug interaction studies have been performed.

Warnings and precautions.
If sensitivity develops with long-term use, the treatment should be discontinued and a doctor should be consulted to get appropriate treatment.

In some patients, buccal/pharyngeal ulceration may be caused by severe pathological processes. Therefore, the patients, whose symptoms worsen or do not improve within 3 days or who appear feverish or develop other symptoms, should seek advice of a physician or a dentist, as appropriate.

Benzydamine is not recommended for use in patients hypersensitive to acetylsalicylic acid or other non-steroidal anti-inflammatory drugs (NSAIDs).

The product can trigger bronchospasm in patients suffering from or with a history of asthma. Such patients should be warned of this.

For athletes: the use of medicinal products containing ethyl alcohol might result in positive antidoping tests considering the limits established by some sports federations.

Use during pregnancy or breast-feeding
No adequate data are currently available on the use of benzydamine in pregnant and breastfeeding women. Excretion of the product into breast milk has not been studied. The findings of animal studies are insufficient to make any conclusions about the effects of this product during pregnancy and lactation.

The potential risk for humans is unknown.

TANTUM VERDE should not be used during pregnancy or breast-feeding.

Effects on reaction time when driving or using machines
When used in recommended doses, the product does not produce any effect on the ability to drive and operate machinery.

Method of administration and doses.
Pour 15 mL of TANTUM VERDE solution from the bottle into the measuring cup and gargle with undiluted or diluted product (15 mL of the measured solution can be diluted with 15 mL of water). Gargle 2 or 3 times daily. Do not exceed the recommended dose.

Children.
The product should not be used in children under 12 years due to a possibility of ingestion of the solution when gargling.

Overdosage.
No overdose has been reported with benzydamine when used locally. However, it is known that benzydamine, when ingested in high doses (hundreds times higher than those possible with this dosage form), especially in children, can cause agitation, convulsions, tremor, nausea, increased sweating, ataxia, and vomiting. Such acute overdose requires immediate gastric lavage, treatment of fluid/salt imbalance, symptomatic treatment, and adequate hydration.

Adverse reactions.
Within each frequency group, the undesirable effects are presented in order of their decreasing seriousness.

Adverse reactions are classified according to their frequency: very common (≥ 1/10); common (≥ 1/100 to <1/10); uncommon (≥ 1/1,000 to <1/100); rare (≥ 1/10,000 to <1/1,000); very rare (<1/10,000); frequency unknown (cannot be estimated from the available data).

Gastrointestinal disorders: rare – burning mouth, dry mouth; *unknown* – oral hypesthesia, nausea, vomiting, tongue edema and discoloration, dysgeusia.

Immune system disorders: rare – hypersensitivity reaction, *unknown* - anaphylactic reaction.

Respiratory, thoracic and mediastinal disorders: very rare –laryngospasm; *unknown* – bronchospasm.

Skin and subcutaneous tissue disorders: uncommon – photosensitivity; *very rare* – angioedema; *unknown* – rash, pruritus, urticaria.

Nervous system disorders: unknown – dizziness, headache.

TANTUM VERDE contains methyl parahydroxybenzoate, which can cause allergic reactions (including delayed-type reactions).

Shelf life. 4 years.

Storage conditions.
Do not store above 25°C. Keep out of reach of children.

Packaging.
120 mL of solution in a bottle with a measuring cup; 1 bottle per cardboard box.

Dispensing category.
Over-the-counter medicinal product.

Manufacturer.
Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Italy.

Location of the manufacturer and its business address.
Via Vecchia del Pinocchio, 22 – 60100 Ancona (AN), Italy.

Date of the last revision of the text.
September 26, 2018.

Information leaflet is

APPROVED by
Order of the

Ministry of Health of Ukraine
No. 636 dated 01.10.2015

Registration Certificate
No. UA/3920/01/01

Our Supporters

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FIGURE. Evangelos G. Kilipiris, MD, DMD from the National Institute of Children's Diseases and Faculty of Medicine at Comenius University, Bratislava, Slovak Republic. A kind support of Dr. Kilipiris during the 5 years at the position of Director, Journal Development Department helped our journal to move forward and to evolve. An honorary plaque was presented to him on behalf of the Chief Editor with words "To a Founding Director, Author of Multiple Articles and Reviews, Great Thanks and Appreciation." Photo was taken on November 23, 2021.

Content

of the Volume 6 • Issue 6 • June 2022

COURTESY

Journal`s cover image (virtual surgical planning for a segmental mandibular reconstruction with fibula transplant) is courtesy of Rui P. Fernandes, MD, DMD, FACS, FRCS.

Image was taken from the article: Fernandes RP, Quimby A, Salman S. Comprehensive reconstruction of mandibular defects with free fibula flaps and endosseous implants. *J Diagn Treat Oral Maxillofac Pathol* **2017**;1(1):6–10.

https://doi.org/10.23999/j.dtomp.2017.1.1

ORIGINAL

Prevention of Post-Implantation Inflammatory Complications

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ABSTRACT

Purpose: Currently, dental prosthetics on endosseous implants is used in most dental clinics of Ukraine. The incidence of inflammatory complications after the surgical stage of dental implantation, according to different authors, ranges from 0.4 to 5 percent. Therefore, many doctors during the surgical stage of dental implantation are looking for medications that simultaneously have both anti-inflammatory and analgesic effects. The purpose of this study is to determine the effectiveness of the treatment of early post-implantation complications when using the drug "Trachisan®" and compare its effectiveness with the traditionally used therapy.

Materials and Methods: According to our observation, there were 24 patients aged from 20 to 56 years (1st observation group or main group). We prescribed Trachisan to these patients in the post-implantation period for 4 days. The control group consisted of 30 patients (2nd observation group or the control group), who were treated with traditional methods in the post-implantation period (Analgin tablets [metamizole sodium] and conventional antiseptic rinses).

Results: Inflammatory complications in the 1st (main) group were not detected, and in the 2nd (control) group, inflammatory complications were diagnosed in 7 patients (23.3 percent), namely: mucositis – in 4 patients (13.3 percent) and peri-implantitis – in 3 patients (10 percent).

Conclusions: Thus, the drug "Trachisan" should be recommended for widespread use in maxillofacial surgery after the surgical stage of dental implantation to prevent post-implantation inflammatory complications.

Kyiv, Ukraine

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INTRODUCTION

Currently, dental prosthetics on endosseous implants is used in most dental clinics of Ukraine. The incidence of inflammatory complications after the surgical stage of dental implantation, according to different authors, ranges from 0.4 to 5 percent.[1–5] With dental implantation, both early and late inflammatory complications can develop.[6–10] The leading factors in the development of early post-implantation inflammatory complications are considered to be exogenous intrusion of microorganisms, exacerbation of endogenous inflammatory foci, traumatic factor of the surgery, overheating of the bone when drilling the bone bed. Among the late complications causes is the excessive load on the dental implant when it functions as supports for dentures, etc.[1–3] Considering the fact that patients who most often use dental implantation are not completely healthy people and the vast majority of them have concomitant diseases (foci of chronic infection in the nasal and oral cavity, chronic inflammatory processes of the respiratory system and gastrointestinal tract), this problem is of great practical importance.

Early inflammatory complications in the post-implantation period include: pain syndrome, post-injection and/or postoperative hematomas and hemorrhages; divergence of sutures; inflammatory processes in the soft tissues (mucositis).

It is well known that technical difficulties during the dental implantation surgery contribute to the development of early inflammatory complications: breakage of the instrument used to install the dental implant (bur, cutter); penetration of the lateral walls or fracture of the wall of the alveolar processes of the jaws; damage to the intraosseous vessel; opening the bottom of the maxillary sinus or nasal cavity; damage to the upper wall of the mandibular canal and injury of the inferior alveolar nerve; lack of primary fixation of the dental implant (the bone bed for the implant does not correspond to the implant). It should be remembered that the occurrence of early inflammatory post-implantation complications is also facilitated by non-compliance with the doctor's recommendations (poor oral hygiene, postoperative wound trauma during meals, etc.). One of the most common early post-implantation inflammatory complications is mucositis—an inflammation of the mucous membrane, which is directly adjacent to the transgingival part of the dental implant (no bone loss is observed).

Therefore, many doctors, during the surgical stage of dental implantation, are looking for drugs that simultaneously have both anti-inflammatory and analgesic effects. Thus, the drug "Trachisan" attracted our attention.

The drug "Trachisan®" (Engelhard Arzneimittel GmbH & Co, Niederdorfelden, Germany) contains a combination of medicinal substances that have both antimicrobial properties and local anesthetic action. This medication is approved by Order of the Ministry of Health of Ukraine dated 20.04.2012 No. 290, registration certificate No. UA/6121/01/01. One tablet of "Trachisan" contains: tyrothricin 0.5 mg, lidocaine hydrochloride 1 mg, chlorhexidine digluconate 1 mg, as well as supporting substances: sorbitol, magnesium stearate, and peppermint oil.

Tyrothricin is a mixture of different cyclic and linear (aliphatic) polypeptides that have an antibacterial effect. The mixture contains up to 70–80% of tyrocidine, an alkaline cyclic decapeptide, and 20–30% of gramicidin, a neutral linear pentadecapeptide. Tyrocidine leads to the release from bacterial cells of substances containing nitrogen and phosphorus, which, like cationic detergents, destroy the osmotic barrier of the bacterial cell membrane. Tyrocidine has a bactericidal effect on growing and dividing microorganisms. Gramicidin creates cation-conducting channels in the bacterial cell membrane, leading to a change in the intracellular concentration of cations and cytolysis. The gramicidin component contributes to the further separation of the processes of tissue respiration and oxidative phosphorylation. The spectrum of action of tyrothricin extends to gram-positive cocci, bacteria and some types of fungi, such as *Candida albicans*. Unlike antibiotics, when using tyrothricin, cross-resistance of microorganisms is not noted. This property is due to the special mechanism of action of tyrothricin.

Chlorhexidine and its salts have a broad spectrum of antimicrobial activity against gram-positive and gram-negative bacteria. The mechanism of chlorhexidine action is based on its affinity between chlorhexidine and the cell membrane of microorganisms, the properties of which change due to contact with the active substance. The lipophilic groups of chlorhexidine cause disaggregation of the lipoprotein membrane of the cell, disrupt the

osmotic balance in the cells, which destroys the cytoplasmic membrane of the pathogen cell. It has a bactericidal effect on some gram-negative bacteria (pseudomonas, proteus), yeast, dermatophytes, but on mycobacteria – only slightly. However, chlorhexidine is ineffective against fungal spores, putrefactive fungi, viruses.

Lidocaine hydrochloride is an amide-type local anesthetic. The drug causes a blockade of the sodium channels of the nerve fiber, as a result of which the process of depolarization of the nerve cell membrane through the active potential is disrupted. In this case, the transmission of excitation in the fibers of the sensory nerves is blocked.

Patients took 1 tablet of Trachisan, dissolving in the mouth every 2 hours. The daily dose for adults was 8 tablets. The treatment lasted 3-4 days.

Contraindication for the use of Trachisan is hypersensitivity to any component of the drug. Possible side effects: the appearance of short-term taste changes, temporary numbness of the tongue. With prolonged use in isolated cases, a slight yellow or light brown color of teeth, dental fillings and prostheses or tongue may appear, in such cases it is necessary to adhere to careful oral hygiene. The color disappears on its own after stopping the drug intake.

The purpose of this study is to determine the effectiveness of the treatment of early post-implantation complications when using Trachisan and compare its effectiveness with the traditionally used therapy.

MATERIALS AND METHODS

According to our observation, there were 24 patients aged from 20 to 56 years (1st observation group or main group). We prescribed Trachisan to these patients in the post-implantation period for 4 days. The control group consisted of 30 patients (the 2nd observation group or the control group), who were treated with traditional methods in the post-implantation period (Analgin tablets [metamizole sodium] and conventional antiseptic rinses).

All patients underwent clinical examination methods, which included: examination (the severity of facial asymmetry, edema, hyperemia, and infiltration of the mucous membrane in the post-implantation period were determined) and palpation. In addition to the previously mentioned examinations, we also performed contact thermometry, the Schiller-Pisarev's test (to detect the inflammatory process of the mucous membrane of the alveolar process) with the calculation of the Svrakov's iodine number, and also determined the Silness-Loe gingivitis index.

The obtained digital data of laboratory examinations were processed by the generally accepted variational-statistical method using a personal computer and the statistical software package "SPSS 11.0 for Windows" and "Microsoft Excel 2000." The reliability of the results was assessed according to Student's *t*-test. Differences were considered as significant at $P < 0.05$.

RESULTS AND DISCUSSION

Pain in the area of the postoperative wound in patients of the 1st (main) observation group on the first day after the surgery were as follows: moderate pain – in 9 patients (37.5%) and insignificant – in 15 patients (62.5%). In the control group, i.e., in the 2nd group, pain was as follows: moderate – in 13 patients (43.3%), insignificant – in 17 patients (56.7%). On the 5th day after the drug treatment, pain in the area of the postoperative wound in patients of the 1st (main) observation group was insignificant – in 2 patients (8.3%) and there was no pain – in 22 patients (91.7%). In the control group (in the 2nd) observation group on the 5th day after the drug treatment: pain of a minor nature – in 24 patients (80%), there was no pain – in 6 patients (20%).

The asymmetry of the soft tissues of the face in patients of the 1st (main) observation group on the first day after the surgery was as follows: moderate – in 18 patients (75%) and insignificant – in 6 patients (25%). In the control group of observation, i.e., in the 2nd group, the asymmetry of the face was as follows: moderate – in 22 patients (73.3%), insignificant – in 8 patients (26.7%). On the 5th day after the drug treatment, the asymmetry of the soft tissues of the face in patients of the 1st (main) observation group was insignificant – in 2 patients (8.3%) and was absent – in 22 patients (91.7%). In the control group (in the 2nd) observation group on the 5th day after the drug treatment: the asymmetry was insignificant in 20 patients (66.7%) and there was no pain in 10 patients (33.3%).

The mucous membrane in the area of the pathological focus on the first day after the surgery was infiltrated and edematous in the 1st (main) observation group in all patients (100%): expressed

– in 2 patients (8.3%); moderate – in 22 patients (91.7%). In the control group of observation (in the 2nd group), infiltration and edema of the mucous membrane in the area of the pathological focus was also noted in all patients: expressed – in 11 patients (36.7%) and moderate – in 19 patients (63.3%). On the 5th day after the treatment, the mucous membrane in the area of the pathological focus was infiltrated in the 1st group (main) observation very rarely, namely: moderate – in 1 patient (4.2%) and there was no infiltration – in 23 patients (95.8%). In the control group of observation, the infiltration of the postoperative wound was as follows: moderate – in 11 patients (36.7%) and absent – in 19 patients (63.3%).

Svrakov's iodine number the next day after dental implantation in the 1st (main) group was 2.6 ± 0.4 (moderately expressed inflammatory process), and in the control (2nd) group – 3.4 ± 0.6 points (moderate inflammatory process). 3 days after the surgery, the iodine number of Svrakov's in the 1st (main) group was 2.2 ± 0.6 points (mild inflammatory process), and in the control (2nd) group – 3.9 ± 0.6 points (moderate inflammatory process). 5 days after dental implantation, the Svrakov's iodine number in the 1st (main) group was 1.5 ± 0.7 points (mild inflammatory process), and in the control (2nd) group – 3.6 ± 0.7 points (moderate inflammatory process).

The gingival index (IG) in patients of the 1st (main) group of observation on the first day after dental implantation was 1.16 ± 0.12 points (average degree of gingivitis), and in the 2nd (control) group – 1.18 ± 0.11 points (medium degree of gingivitis). On the 3rd day, the gingival index in the 1st (main) observation group was 0.81 ± 0.11 points (mild gingivitis), in the 2nd (control) group – 1.28 ± 0.14 points (moderate gingivitis). On the 5th day in patients of the 1st (main) group, the gingival index was 0.52 ± 0.12 points (mild gingivitis), in the 2nd (control) group – 1.12 ± 0.13 points (average degree of gingivitis). When removing sutures from a postoperative wound, the gingival index in patients of the 1st (main) observation group was significantly lower than in patients in the 2nd (control) group ($P < 0.001$).

The papillary bleeding index (PBI) in patients of the 1st (main) observation group on the first day after the surgical stage of dental implantation was 1.99 ± 0.11 points, and in the 2nd (control) group – 2.01 ± 0.12 points. On the 3rd day, the PBI in patients in the 1st (main) observation group was 1.61 ± 0.13 points, in the 2nd (control) group – 2.13 ± 0.14 points. On the 5th day in patients of the 1st (main) group, the PBI was 1.12 ± 0.11 points, in the 2nd (control) group – 1.91 ± 0.14 points.

On the next day after the surgery, in patients of the 1st (main) observation group, the thermo-asymmetry was significantly increased and amounted to 1.7 ± 0.1 °C ($P < 0.001$), which was also noted in the patients of the control (2nd) group – 1.8 ± 0.1 °C ($P < 0.001$). After 3 days of the treatment, the thermo-asymmetry in patients of the 1st (main) group significantly decreased to 0.8 ± 0.1 °C ($P < 0.001$). In the 2nd (control) group, a decrease in thermo-asymmetry was also noted, but it was insignificant and amounted to – 1.4 ± 0.1 °C ($P < 0.001$). After 7 days of treatment, the thermo-asymmetry in the main group returned to normal and amounted to 0.5 ± 0.1 °C ($P > 0.05$), while in the control group it remained significantly increased – 0.9 ± 0.1 °C ($P < 0.01$).

Inflammatory complications in the 1st (main) group were not detected, and in the 2nd (control) group, inflammatory complications were diagnosed in 7 patients (23.3%), namely: mucositis – in 4 patients (13.3%) and peri-implantitis – in 3 patients (10%).

Thus, it should be concluded that the healing of postoperative wounds during treatment with Trachisan proceeded smoothly, with no inflammatory complications.

CONCLUSIONS

Based on our examinations of patients after the surgical stage of dental implantation, it was found that the drug "Trachisan" has a highly effective antimicrobial and analgesic effect. The drug has a wide spectrum of antimicrobial activity against microflora, which is most often found in patients in the maxillofacial region. We did not observe side effects and inflammatory complications of the antibacterial drug "Trachisan."

Thus, "Trachisan" should be recommended for widespread use in maxillofacial surgery after the surgical stage of dental implantation to prevent post-implantation inflammatory complications.

AUTHOR CONTRIBUTION

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ORIGINAL

Modern Methods of Patients' Examination with Traumatic Jaw Injuries

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ABSTRACT

Purpose: To determine the possibility of using cytological methods for examining prints taken from the mucous membrane of the alveolar process of a jaw in the area of the bone injury, to determine the effectiveness of the treatment of patients with jaw fractures.

Materials and Methods: We examined 43 patients with jaw fractures. All patients were divided into the following observation groups: group 1 – 19 patients with fractures of the maxilla; group 2 – 24 patients with fractures of the mandible. As a control group served 27 practically healthy people.

Results: For patients with post-traumatic complications, it was characteristic that on the 3-4th day after the injury (with early purulent complications) there was an increase in the studied parameters by 1.5-2 times, and similarly on the 7-8th day of treatment – with late purulent complications (post-traumatic osteomyelitis). The normalization of these indicators in patients with developed complications occurred only after the complete elimination of inflammatory phenomena both in the bone tissue and soft tissues.

Conclusions: The study of cytological and cytochemical parameters in prints taken from the mucous membrane of the alveolar process in the area of the fracture allows both to determine the effectiveness of the treatment and to predict the course of the disease.

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INTRODUCTION

Currently, much attention is paid to the search for affordable and objective methods of monitoring the effectiveness of medical and preventive measures. It is known that the assessment of general clinical blood tests (formulas, leukocyte number, erythrocyte sedimentation rate [ESR], indices, etc.) does not always reliably reflect the effectiveness of the measures taken in the early stages. Therefore, the problem is urgent of finding affordable, but at the same time, objective examination methods that could allow to determine reliably the effectiveness of the treatment being carried out and to correct it in the early stages for the secondary prevention of post-traumatic inflammatory complications.[1–5]

The purpose of this study is to determine the possibility of using cytological methods for examining prints taken from the mucous membrane of the alveolar process of a jaw in the area of the bone injury, and besides to determine the effectiveness of the treatment of patients with jaw fractures.

MATERIALS AND METHODS

We examined 43 patients with jaw fractures. All patients were divided into the following observation groups: group 1 – 19 patients with fractures of the maxilla; group 2 – 24 patients with fractures of the mandible. 27 practically healthy people served as control group.

During hospitalization and in the dynamics of the treatment, a general clinical examination of patients was carried out, which included: clarification of complaints, collection of the anamnesis, examination, palpation, X-ray of the jaws (if necessary, computed tomography), contact thermometry, general blood and urine analysis, determination of the leukocyte formula. Of the special examination methods, we used the determination of the number of neutrophilic leukocytes and the content of the enzyme in them – alkaline phosphatase (per 100 counted cells) in prints made from the mucous membrane of the alveolar process in the area of the pathological focus.

The indicators obtained during cytological and cytochemical examination methods were processed by the method of variation statistics with the calculation of Student's *t*-test. 27 practically healthy people with a sanitized oral cavity served as control group. Differences were considered as significant at $P < 0.05$.

RESULTS AND DISCUSSION

Examination of 19 patients with fractures of the maxilla (first group) allowed us to establish that in the prints made on the mucous membrane of the alveolar process from the fracture side a significant increase takes place both in the number of neutrophils – 26.4 ± 0.6 pieces (pcs) ($P < 0.001$), and in the activity of alkaline phosphatase in them – 76.7 ± 1.6 conventional units ($P < 0.001$). On the 3-4th day after hospitalization of the injured, on the maxilla injury side, the number of neutrophilic leukocytes that emigrated through the mucous membrane significantly increased to 42.7 ± 1.2 pcs ($P < 0.001$), which was also noted with the activity of alkaline phosphatase – 118.3 ± 2.7 conventional units ($P < 0.001$). On the 7-8th day, a slight decrease both in the number of emigrated neutrophils was revealed – to 33.0 ± 1.1 pcs ($P < 0.001$) and in the activity of alkaline phosphatase in them – up to 94.5 ± 3.1 conventional units ($P < 0.001$). When discharging the patients from the hospital after the completion of their treatment, we found that there was a significant decrease (in 2 times) in the studied analyzes, but they remained significantly increased compared to the norm: the number of neutrophils was 17.2 ± 0.9 pcs ($P < 0.001$) and alkaline phosphatase activity – 43.1 ± 2.0 conventional units ($P < 0.001$). The normalization of these indicators was noted only 2-3 days after the removal of the arch bars. We found that with a smooth course of the post-traumatic period, a sharp increase in the studied indicators was noted on 3-4 day, but no more than 1.5-1.7 times (compared to the previous period), and on the next day (on 7-8 day and beyond) – their gradual decrease. If the dynamic of changes in these indicators was disturbed, then this circumstance indicated the development of post-traumatic inflammatory complications.

Examining 24 patients with mandibular fractures (second observation group), we found that they had a significant increase in these indicators during hospitalization: the number of neutrophils was 27.4 ± 1.0 pcs ($P < 0.001$) and the activity of alkaline phosphatase in them – 81.8 ± 2.0 conventional units ($P < 0.001$). It should be noted that for this group we selected patients who were hospitalized in the

first few days after the injury. After the reposition and fixation of the fragments of the mandible with intermaxillary fixation using arch bars and rubber traction, these indicators increased being on the 3-4th day of treatment: the number of neutrophils that emigrated through the mucous membrane of the alveolar ridge at the bone injury area – 42.0 ± 1.4 pcs ($P < 0.001$) and the activity of alkaline phosphatase in them – 121.4 ± 3.7 conventional units ($P < 0.001$). On the 7-8th day of the treatment, the number of neutrophils that emigrated through the mucous membrane slightly decreased to 34.7 ± 1.3 pcs ($P < 0.001$), and alkaline phosphatase – to 112.3 ± 2.7 conventional units ($P < 0.001$).

Although when the patients have been discharged from the hospital, i.e., on the 22-26th day of the treatment (depending on the location of the fracture and other factors), we revealed a significant decrease in the above mentioned indicators, however, we did not notice their normalization (the number of neutrophils – 18.2 ± 1.3 pcs, $P < 0.001$ and activity of alkaline phosphatase in them – 41.4 ± 2.1 conventional units, $P < 0.001$). The normalization of the studied parameters was observed on 6-7 day after the removal of the arch bars. We found that a certain dynamic of changes in the number of neutrophils and the content of alkaline phosphatase in them was characteristic both for patients with a favorable course of the postoperative period and for patients with the development of post-traumatic complications. The latter was characterized by the fact that on the 3-4th day after the injury (with early purulent complications) there was an increase in the studied parameters by 1.5-2 times, and similarly on the 7-8th day of treatment – with late purulent complications (post-traumatic osteomyelitis).[1,6–11] The normalization of these indicators in patients with developed complications occurred only after the complete elimination of inflammatory phenomena in the bone tissue and peri-maxillary soft tissues. For patients with post-traumatic complications, it was characteristic that on the 3-4th day after the injury (with early purulent complications) there was an increase in the studied parameters by 1.5-2 times, and similarly on the 7-8th day of treatment – with late purulent complications (post-traumatic osteomyelitis). The normalization of these indicators in patients with developed complications occurred only after complete elimination of inflammatory phenomena both in the bone tissue and soft tissues.

CONCLUSIONS

Based on the examination of patients with jaw fractures, we found that cytological and cytochemical indicators are objective criteria for the effectiveness of the treatment and the prognosis of its course. With a smooth course of the post-traumatic period in patients with jaw fractures, there is a decrease and normalization of cytological and cytochemical parameters of neutrophils that have emigrated through the mucous membrane of the alveolar process in the area of the injured bone. In case of inflammatory complications, there is a characteristic dynamic of changes in these indicators, which makes possible in the early stages to recognize the development of purulent complications in the bone and surrounding soft tissues and to correct the treatment.

The study of cytological and cytochemical parameters in prints taken from the mucous membrane of the alveolar process in the area of the fracture allows determining the effectiveness of the treatment and predicting the course of the disease.

AUTHOR CONTRIBUTION

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ORIGINAL

Prevention of Inflammatory Complications after Atypical Tooth Removal

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ABSTRACT

Purpose: To determine the effectiveness of the "Tantum Verde®" drug for the prevention of inflammatory complications in patients after performing an extraction operation of impacted and ectopic wisdom teeth.

Materials and Methods: Seventy patients after an extraction operation of impacted and ectopic wisdom teeth were examined. We have divided the surveyed patients into two observation groups: the main group is 34 patients, who have used "Tantum Verde®" drug (Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Ancona, Italy) to prevent inflammatory complications in the oral cavity for 4-5 days and a control group – 36 patients with common preventive Furacilin mouthwash (also for 4-5 days).

Results: Inflammatory infiltration of the mucous membrane of the retromolar region in the area of the postoperative wound, on the next day after the surgery, was in all patients (100%), both in the main and in the control group. In the main group, 20 patients had moderate inflammatory infiltration of the mucous membrane (58.8%), and insignificant – in 14 patients (41.2%). In the control group: moderate infiltration – in 22 patients (61.1%), and insignificant – in 14 patients (38.9%). 2-3 days after surgery, in the main group, moderate inflammatory infiltration of the retromolar region was in 13 patients (38.2%), and insignificant – in 21 patients (61.8%). In the control group: moderate infiltration – in 24 patients (in 66.7%), and insignificant – in 12 patients (in 33.3%). In 5-6 days after the surgery, in the main group an inflammatory infiltration of the mucous membrane of the retromolar region was insignificant in all patients (in 100%). In the control group: moderate infiltration persisted in 8 patients (in 22.2%), and insignificant – in 30 patients (in 77.8%).

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Conclusions: Based on our researches we can conclude that the hygienic care of the oral cavity with the "Tantum Verde®" drug in patients after the removal of impacted wisdom teeth is more effective, than traditional means. It has been proven that the non-steroidal drug "Tantum Verde" has an expressed anti-inflammatory effect, and also provides a good cleaning of the postoperative wound in the retromolar region. The use of our method of hygienic treatment of the oral cavity in this contingent of patients can significantly reduce the number of postoperative inflammatory complications. The proposed method of the oral cavity care in patients after surgical treatment for the removal of impacted wisdom teeth is the most effective for preventing the development of inflammatory complications and is recommended for use both in maxillofacial hospitals and in surgical departments of dental clinics.

INTRODUCTION

Among the inflammatory complications that develop after performing an extraction operation of impacted and ectopic wisdom teeth are the following: inflammatory infiltration of the surrounding soft tissues and *dry socket*[1] (also known *as alveolar osteitis*,[2,3] *postextraction alveolar osteitis*,[4] and *alveolitis* in some East European countries[5–7]).

Inflammatory infiltrates of the soft tissues, surrounding jaws and alveolitis occur when the bone and mucous membrane are severely injured and subsequently infected. These inflammatory complications occur during prolonged teeth extraction operation, as well as when patients fail to observe oral hygiene rules during the post-operative period.

As we indicated earlier, two pathological processes are most common complications associated with the wisdom teeth extraction: inflammatory phenomena in the area of postoperative wound (alveolus) and pain reaction of the body.[8–14] Precisely, we must therefore dedicate our research towards eliminating these two factors.

When selecting an antimicrobial medication for the hygienic oral cavity care during the post-operative period, we keep in mind that it should be oriented towards the prophylactic purpose of its use, i.e., preventing the development of inflammatory phenomena from the mucous membranes of the oral cavity. Therefore, we have chosen a non-steroidal anti-inflammatory drug (NSAID) "Tantum Verde®," permitted for use in Ukraine (referring to the order № 1015 of 22 November 2010 of the Ministry of Health of Ukraine; registration in Ukraine № UA/3920/02/01).

Actually, we have used the medication "Tantum Verde®" – it is a drug for the topical application, which is in the form of a solution in packs of 120 ml, as an aerosol (spray) or lozenges.

The 0.15% local solution has the appearance of a green transparent liquid with a typical mint smell. 1 ml of solution contains benzydamine hydrochloride 1.5 mg; auxiliary substances: ethanol 96%, glycerine, methyl para-hydroxybenzoate (E 218), flavoring agent (mentholic), saccharin, sodium hydracarbonate, polysorbate 20, quinoline yellow 70% (E104), patented blue V 85% (E131), and purified water.

Local spray with a dosage of 0.255 mg/dose. 1 ml of solution contains 1.5 mg benzidamine hydrochloride; auxiliary substances: ethanol 96%; glycerol; methyl parahydroxybenzoate; menthol (flavoring agent); saccharin; sodium hydrocarbonate; polysorbate 20; purified water.

The lozenges contain 3 mg benzidamine hydrochloride; auxiliary substances: isomaltose; racementolum; aspartame; citric acid monohydrate; peppermint; lemon flavor; quinoline yellow dye (E104); indigo carmine dye (E132).

The active substance benzidamine is a non-steroidal anti-inflammatory drug (NSAID), which has pronounced anti-exudative and analgesic action. Its effectiveness after local use is due to its ability to penetrate the epithelial layer and reach effective concentrations in inflamed tissues. The mechanism of action of benzidamine is related to the stabilization of cell membranes and inhibition of prostaglandin synthesis.

Antibacterial activity of the active substance is manifested by rapid penetration through the external membranes of microorganisms, with further damage of cellular structures, disruption of metabolic processes and cell lysis. Benzidamine restores the integrity of the mucous membrane epithelium, increases its resistance to pathogenic action. When used locally in the indicated concentrations, benzidamine is absorbed into the mucous membrane, but the concentration in the blood plasma is so small that it cannot cause any pharmacological effect.

Benzidamine is excreted from the body mainly with urine in the form of inactive metabolites or conjugation products.

To rinse the oral cavity we used 15 ml (1 tablespoon or a measuring cup from a vial) of the "Tantum Verde®" solution (can be diluted with 15 ml of water). Rinse 3-4 times a day did not exceed the one-time recommended dose of the drug. After rinsing the solution must be spit out (cannot be swallowed).

Local sprays were prescribed as follows: 4-8 doses every 1.5-3 hours. The lozenges – 1 pill three or four times per day. The pill must be kept in the mouth until it is fully diluted (for greater effect it is desirable to keep as long as possible).

At present, no cases of overdose of "Tantum Verde®" have been reported or observed. The contraindications for using are: hypersensitivity to the drug, pregnancy, and breastfeeding.

If a burning sensation occurs during the application of the solution, it shall be diluted with water (by 1:2) adding the water to the line on the graded cup. Contact with spray in the eyes should be avoided. It has no impact on the ability to drive the car and other activities requiring increased attention.

The aim of this research is to determine the effectiveness of the "Tantum Verde®" for the prevention of inflammatory complications in patients after performing an extraction operation of impacted (also known as retained [4–7]) and ectopic wisdom teeth.

MATERIALS AND METHODS

Seventy patients after an extraction operation of impacted and ectopic wisdom teeth were examined. We have divided the surveyed patients into two observation groups: the main group is 34 patients, who have used "Tantum Verde®" (Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Ancona, Italy) to prevent inflammatory complications in the oral cavity for 4-5 days and a control group – 36 patients with common preventive Furacilin mouthwash (also for 4-5 days).

General clinical tests were conducted for all patients, which included: history taking, investigation of the nature of complaints, examination, and clinical blood tests.

Microbiological analyses were conducted in the surveying dynamics (microflora and its antibiotic sensitivity were determined). The material in the retromolar region was taken by the standard method (with the sterile cotton swab), and the material from the gingival pockets (for the detection of banal microflora and fungi) were taken by a Folkman spoon, on an empty stomach. The collected material was carefully applied to the sterile pane of glass (the material cannot be rubbed on the glass, as the delicate fungal elements can be damaged). The microscopy of the native slide was carried out by not painted and painted methods (according to Romanovsky-Gimza). The sowing of the material from the gum pocket was carried to the Sabouraud dextrose agar, followed by sowing on special growth media and identification of the pathogenic agent.

The evaluation of the efficiency of the use of hygienic products was determined by the following indices: the Schiller-Pisarev's test, papillary-marginal-alveolar (PMA) index, and gingivitis index.

The obtaining figures of the laboratory research were processed in a conventional variation-statistical method using the personal computer and the statistical software package "SPSS 11.0 for Windows" and "Microsoft Excel 2000." The reliability of derived survey results was assessed by the Student's *t*-test. Differences were considered reliable at $P < 0.05$.

RESULTS AND DISCUSSION

Microbiological tests were carried out from 23 patients in the main group, and from 31 patients in the control group. Material for microbiological research was collected at two sites: in the area of the mandibular molars gum pockets and in the retromolar regions.

In all of the patients (100%) from the main and control observation groups the microorganisms have been detected in the gingival pockets and in the retromolar region.

In the main observation group, *Staphylococcus aureus* was sown from the periodontal pockets in 87.0% (in 20 patients), *Staphylococcus epidermidis* – in 34.8% (in 8 patients) and *Streptococcus haemolyticus* – in 39.1% (in 9 patients). In 3 out of 23 examined patients of the main group (13.0%), the causative agent of *C. albicans* and *C. tropicalis* were found in the periodontal pocket. Of the 23 examined patients in the main group, 14 patients (60.9%) were seeded with monocultures, and in 9 patients (39.1%) – associations of microorganisms (several microbes).

In the retromolar region, in 23 patients of the main observation group, *S. aureus* was found in 95.7% (in 22 patients), *S. epidermidis* – in 26.1% (in 6 patients), and *S. haemolyticus* – in 34.8% (in 8 patients). No fungal flora was found. Of the 23 examined, monocultures of microorganisms were found in 10 patients (in 43.5%), and in associations (for several microbes) in 13 patients (in 56.5%).

In the control group, in the periodontal pockets, *S. aureus* was found in 96.8% (in 30 patients), *S. epidermidis* – in 38.7% (in 12 patients), and *S. haemolyticus* – in 41.9% (in 13 patients). In 7 out of 31 patients in the control group (in 22.6%), the causative agent of *C. albicans* and *C. tropicalis* were found in the periodontal pockets pocket before the surgery. Of the 31 patients of the control group, in 20 patients (in 64.5%) microflora was detected in the form of monoculture, and in 11 patients (35.5%) – in the form of associations (several microbes).

In the retromolar region, in 29 of 31 patients in the control group of observation, *S. aureus* was found in 93.6%, *S. epidermidis* – in 41.9% (in 13 patients) and *S. haemolyticus* – in 48.4% (in 15 patients). The fungal pathogen was not found in the retromolar region. Monocultures of microorganisms were found in 18 of 31 patients (in 58.1%), and in the form of associations (several microbes each) – in 13 patients (in 41.9%).

If we compare the species composition of the detected microflora depending on the examined group (main or control), it was practically the same, i.e., it did not differ significantly between the examined groups.

Monocultures of staphylococci showed sensitivity to aminoglycoside drugs and, to a lesser extent, to semi-synthetic penicillin's and anti-staphylococcal reserve antibiotics. Hemolytic streptococci showed sensitivity to most of the studied antibiotics, which did not depend on their associative relationships.

After 4-5 days, microbiological examinations were repeated in the same patients of the main and control groups.

In the main group, *S. aureus* was sown from the tooth-gingival pockets in 8.7% (in 2 of 23 examined patients), *S. epidermidis* – in 8.7% (in 2 patients), and *S. haemolyticus* was not detected. We did not find any fungal microflora after rinsing the oral cavity with "Tantum Verde®" during repeated examination of patients. Microorganisms were found only as monocultures.

S. aureus was found in the retromolar region in 2 of the 23 examined in the main group (8.7%), *S. epidermidis* and *S. haemolyticus* were not detected by us. The microflora was identified as a monoculture.

In the control group of observation (after 4-5 days), after rinsing the mouth with traditional antiseptics, *S. aureus* was found in the tooth-gingival pocket in 45.2% (in 14 of 31 subjects), *S. epidermidis* in 16.1% (in 5 people) and *S. haemolyticus* – in 22.6% (in 7 people). In 6 out of 31 examined control group (19.4%), the causative agent of Candida: albicans and tropicalis was re-detected in the dentogingival pocket. Microorganisms were identified both as monocultures and in associative relationships with other microbes.

At discharge, in the retromolar region of 31 patients in the control group of observation, *S. aureus* was inoculated in 22.6% (7 people), *S. epidermidis* – in 12.9% (in 4 patients), and *S. haemolyticus* – in 19.4% (6 patients). Microorganisms were identified both as monocultures and in associations with other microbes.

Hygienic indices were studied in the patients of the main and control groups of observation.

The Schiller-Pisarev's test (Svrakov iodine number) in patients with retention and dystopia of teeth in the main and control groups before the surgery was as follows: 2.2 ± 0.5 points (main group) and 2.0 ± 0.7 points (control group). On the next day after surgery, in the main group, this number was 3.9 ± 0.7 points, which indicated the presence of a moderate inflammatory process of the mucous membrane of the alveolar process, and in the control group – 3.8 ± 0.8 points. On days 2-3 after the surgery, the Svrakov iodine number in the main group was 2.6 ± 0.7 points (moderate inflammatory process in the mucous membrane of the alveolar process of the jaw), and in the control group – 4.3 ± 0.5 points (moderate inflammatory process). On days 6-7, in these patients of the main group, the Svrakov iodine number was 1.7 ± 0.6 points (moderate inflammatory process), and in the control group – 3.6 ± 0.5 points (moderate inflammatory process). The Schiller-Pisarev's test in patients after the removing of an impacted tooth during suture removal (6-7 days after surgery) in the main group was significantly lower than in the control group ($P < 0.001$), which indicates a high anti-inflammatory efficacy of "Tantum Verde®."

The PMA index before the removing of the impacted and ectopic tooth in the main group was 23.1

± 1.2%, and in the control group – 23.4 ± 1.1% (the assessment criterion of the PMA index was the mild severity of gingivitis). On the next day after surgery, the PMA index in the main observation group was 29.6 ± 1.4% (moderate severity of gingivitis), in the control group – 28.5 ± 1.9% (moderate severity of gingivitis). On days 2-3 after surgery, the PMA index in the main group of patients was 24.3 ± 1.3% (mild severity of gingivitis), in the control group – 29.9 ± 2.3% (moderate severity of gingivitis). On days 6-7 after surgery, the PMA index in the main group was 20.9 ± 0.9% (mild severity of gingivitis), in the control group – 28.3 ± 2.4% (the assessment criterion of the PMA index was the average severity of gingivitis). The PMA index in these patients 6-7 days after the surgery in the main group was significantly lower than in those examined in the control group ($P < 0.001$), which indicated the high efficacy of the Tantum Verde drug.

The gingival index (IG) in patients with impacted and ectopic teeth before surgery was 0.8 ± 0.1 points, in the control group – 0.8 ± 0.1 points, which indicated the presence of a mild degree of gingivitis. On the next day after the surgery, the GI in patients of the main group was 1.2 ± 0.1 points, in the control group – 1.3 ± 0.1 points (average degree of gingivitis). On 2-3 days after surgery, in patients in the main group, the GI was 0.9 ± 0.1 points (mild gingivitis), in the control group – 1.4 ± 0.1 points (average gingivitis). On 6-7 days after surgery, the gingival index in the main observation group was 0.3 ± 0.1 points (mild gingivitis), in the control group – 1.2 ± 0.2 points (average gingivitis). The GI in patients in the main group 6-7 days after the surgery was significantly lower than in those in the control group ($P < 0.001$), which indicated the high efficacy of the Tantum Verde.

The soft tissues on the side of the surgery, the next day after, were infiltrated in all patients (100%), both in the main and in the control group. In the main group, moderate inflammatory infiltration of the soft tissues was in 18 patients (52.9%), and insignificant in 16 patients (47.1%). In the control group: moderate infiltration – in 18 patients (50.0%), and insignificant – in 18 patients (50.0%). 2-3 days after the surgery, in the main observation group, moderate inflammatory infiltration of the soft tissues was in 11 patients (32.4%), and insignificant in 23 patients (67.6%).

In the control group: moderate infiltration – in 21 patients (58.3%), and insignificant – in 15 patients (41.7%). In 5-6 days after the surgery in the main group, inflammatory infiltration of the soft tissues was insignificant in all patients (in 100%). In the control group: moderate infiltration was preserved in 6 patients (16.7%), and insignificant – in 30 patients (83.3%).

Inflammatory infiltration of the mucous membrane of the retromolar region in the area of the postoperative wound, on the next day after the surgery, was in all patients (100%), both in the main and in the control group. In the main group, 20 patients had moderate inflammatory infiltration of the mucous membrane (58.8%), and insignificant – in 14 patients (41.2%). In the control group: moderate infiltration – in 22 patients (61.1%), and insignificant – in 14 patients (38.9%). 2-3 days after surgery, in the main group, moderate inflammatory infiltration of the retromolar region was in 13 patients (38.2%), and insignificant – in 21 patients (61.8%).

In the control group: moderate infiltration – in 24 patients (in 66.7%), and insignificant – in 12 patients (in 33.3%). In 5-6 days after the surgery in the main group, inflammatory infiltration of the mucous membrane of the retromolar region was insignificant in all patients (in 100%). In the control group: moderate infiltration persisted in 8 patients (in 22.2%), and insignificant – in 30 patients (in 77.8%).

Thus, on the basis of the examinations carried out, the anti-inflammatory effect of the "Tantum Verde" drug is significantly superior to that when using traditional methods of treatment.

CONCLUSIONS

Based on our researches we can conclude that the hygienic care of the oral cavity with the "Tantum Verde®" drug in patients after the removal of impacted wisdom teeth is more effective than traditional means. It has been proven that the non-steroidal drug "Tantum Verde" has an expressed anti-inflammatory effect, and also provides a good cleaning of the postoperative wound in the retromolar region. The use of our proposed method of hygienic treatment of the oral cavity in this contingent of patients can significantly reduce the number of postoperative inflammatory complications.

The proposed method of the oral cavity care in patients after surgical treatment for the removal

of impacted wisdom teeth is the most effective for preventing the development of inflammatory complications and is recommended for use both in maxillofacial hospitals and in surgical departments of dental clinics.

AUTHOR CONTRIBUTION

Conceptualization: Tymofieiev OO, Sokoliuk MA. Data and interpretation acquisition: Tymofieiev OO, Sokoliuk MA, Ripa VM, Havlytiuk DS, Kolisnichenko LA. Drafting of the manuscript: Sokoliuk MA, Ripa VM. Critical revision of the manuscript: Tymofieiev OO. Approval of the final version of the manuscript: all authors.

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