FEBRUARY 26, 2021 • VOLUME 5 • ISSUE 2 PRINT ISSN 2519-2086 • ONLINE ISSN 2522-1965

DT Journal

2 2021

Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology

omf publishing

Official Journal of the
Ukrainian Association for
Maxillofacial and Oral Surgeons

DTJournal.org

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About the Journal: Aims and Scope

FEBRUARY 2021 • VOLUME 5 • ISSUE 2
www.dtjournal.org

Official Title

Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology

Standard Abbreviation: ISO 4

J. Diagn. Treat. Oral Maxillofac. Pathol.

International Standard Serial Number (ISSN)

Print ISSN 2519-2086 | Online 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.

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- EB shows significant geographic diversity representing 26 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.
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- The journal has a several full-time professional editors.
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Frequency

12 print/online 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

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Journal combines a *hybrid* and *delayed open access* publishing models. The articles of all types, except Editorials, are immediately in open access. Editorials became an open access publication too after 3-month embargo period.

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Registration: Ministry of Justice of Ukraine

Registration: July 28, 2016
Re-Registration: May 21, 2019 (Certificate: КВ # 23999-13839ПР)

Co-Founders

1. Shupyk National Medical Academy of Postgraduate Education (from January-February 2021, the Academy receives a new name: Shupyk National Healthcare University of Ukraine).
2. Private Higher Educational Establishment "Kyiv Medical University."
3. OMF Publishing, Limited Liability Company.

Publisher

OMF Publishing, LLC is an academic publisher focused on medical and linguistic sciences.
Address: 13-A Simferopolska Street, Office 121, Kyiv 02096, Ukraine.

Crossref Membership

OMF Publishing, LLC is a member of Publishers International Linking Association, Inc. which doing business as a Crossref. OMF Publishing`s active membership: From February 2017 to present.

Official Journal of

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.

Subscription Index

In Ukraine: 60077 | In Donetsk/Luhansk Regions: 88263.
See page A5.

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FEBRUARY 2021 • VOLUME 5 • ISSUE 2
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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

Subscription in Ukraine

FEBRUARY 2021 • VOLUME 5 • ISSUE 2
www.dtjournal.org

Frequency of the *Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology*: 12 issues (synonym: numbers) a year.

Subscription index in Ukraine: 60077.
Subscription index for Donetsk and Luhansk Regions: 88263.

Three ways of individual/institutional subscription of print version of the *Journal*:

1. At Ukrposhta post offices.
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3. At the website www.dtjournal.org

Issues	Fee in 2021
1 Issue	$1.35 (37.88 UAH)
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Content

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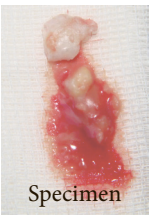
COURTESY

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.



CASE

Infected Punctum–Associated Cyst Mimicking Erysipelas

Ievgen I. Fesenko[a, b, *], Pavlo P. Snisarevskyi[c], & Valentyna I. Zaritska[d]

SUMMARY

Epidermoid cysts (congenital and acquired) are not the unusual benign lesions. But to our knowledge, this is the first report in the English literature that describes an uncommon presentation of the infected *acquired epidermoid cyst* (ie, *punctum–associated cyst* or *atheroma*) manifesting as unilateral facial erysipelas in a 74-year-old Caucasian female. Terminology and the "submarine sign" ultrasound appearance are also analyzed.

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Please cite this article as: Fesenko II, Snisarevskyi PP, Zaritska VI. Infected punctum–associated cyst mimicking erysipelas. J Diagn Treat Oral Maxillofac Pathol 2021;5(2):15–9.

The word 'Specimen' at the upper right icon means that article contains presentation of the removed specimen.

Paper received 6 January 2021
Accepted 16 January 2021
Available online 28 February 2021

https://dx.doi.org/10.23999/j.dtomp.2021.2.1

INTRODUCTION

Punctum–associated cyst (PAC) is termed in the literature as epidermoid cyst[1,2], epidermal cyst[3], keratinous cyst[4], sebaceous cyst[4], retention cyst of the sebaceous gland[5], and atheroma[5]. The authors are united in their opinions that *cutaneous punctum* is a hallmark of the clinical diagnosis for the acquired keratin-filled cutaneous-linked cysts (ie, acquired epidermoid cyst).[1–5] They describe punctum as *1)* a place of plugging of the follicular orifice[1] and *2)* a place where the skin is fused with the cyst membrane (in this place, a cutaneous retraction point can be found).[5]

Hoang et al notes that such benign lesions may become inflamed as a result of the rupture of the cyst wall (ie, cyst lining).[1] Usually, with suppuration of PAC, the skin above it has a round-shape hyperemia, edematous, does not fold into a fold, the formation is painful and badly movable.[5] Even fluctuation can be determined (due to the appearance of pus).[5]

The differential diagnosis of PAC can be performed with furuncle[6], cutaneous above-the-skin-level manifestations (subcutaneous granuloma) of odontogenic cutaneous sinus tract[7], non-odontogenic subcutaneous granuloma[5], and pyogenic granuloma[8].

This study presents a uniquely rare case of infected PAC of the infraorbital area mimicking unilateral erysipelas in a 74-year-old female.

CASE

A 74-year-old Caucasian female presented to the center of maxillofacial surgery in July 2015 with a local facial pain and a skin erythema in the right infraorbital area which began 4 days ago.

Examination revealed an erythematous area (severe redness) of the right face extending vertically from the projection of the infraorbital rim to the angle of the mouth and horizontally from the right zygomatic area to the right nasal ala. Also, a separate erythematous area (moderate redness) at the dorsum of the nose with a wound on the skin was visualized what mimicked the facial emphysema. But, the presence of a punctum (Fig 1) on the skin surface (in the middle of erythema) at the right infraorbital area with a white 1.5-mm circle around gave a reason to suspect an infected punctum–associated cyst with atypical manifestation.

Under the local anesthesia (right extraoral infraorbital nerve block using 0.7 ml Ultracain D-S forte, Frankfurt, Aventis Pharma Deutschland GmbH, Germany) a small diameter elliptical incision was performed with the inclusion of the punctum[1]. A suppurated malodorous cheese-like content was obtained and the fragment of a thick white cystic wall (what is typical for the PACs) was removed during the curettage (Fig 2).

Microscopic histopathologic examination confirmed the diagnosis *atheroma* (common term in some East European countries) (ie, *acquired type of epidermoid cysts*) showing a stratified squamous epithelium with perifocal inflammation. Postoperative period was smooth with no pain and gradual (during several days) decrease of skin erythema.

DISCUSSION

Epidermoid cyst can be congenital and acquired.[1] To the acquired ones belong punctum–associated cysts (ie, atheromas) which can be suspected by collecting anamnesis and performing clinical and ultrasound examination.[1–3,5] Moreover, Lee et al introduced a "submarine sign" term as a special ultrasonographic feature of the epidermoid cysts.[9] Such term was applied because a keratin-plugged orifice of the PAC was visualized on sonograms as a submarine periscope.

Nowadays, the literature indicate that the term *sebaceous cyst* is considered misnomer due to the fact of absence of sebaceous glands within the cyst lining.

A small elliptical incision with partial skin removal and cystectomy is recommended if a punctum or scar is present.[5] Also, the malignant degeneration of the epidermoid cysts is described what required a wide excision of the tumor (with a small possibility of radiation therapy after surgery) or radiation therapy as a primary treatment.[10] Multiple works reported carcinomas arising from epidermoid/sebaceous cysts (patients` age varied from 21 to 89 yrs) what required from surgeons to motivate patients to remove the cysts as soon as possible.[10–15]

Veenstra et al summarized global literature presenting the data that squamous cell carcinoma arising from epidermal cysts has an incidence ranging from 0.011 to 0.045 percent.[14]

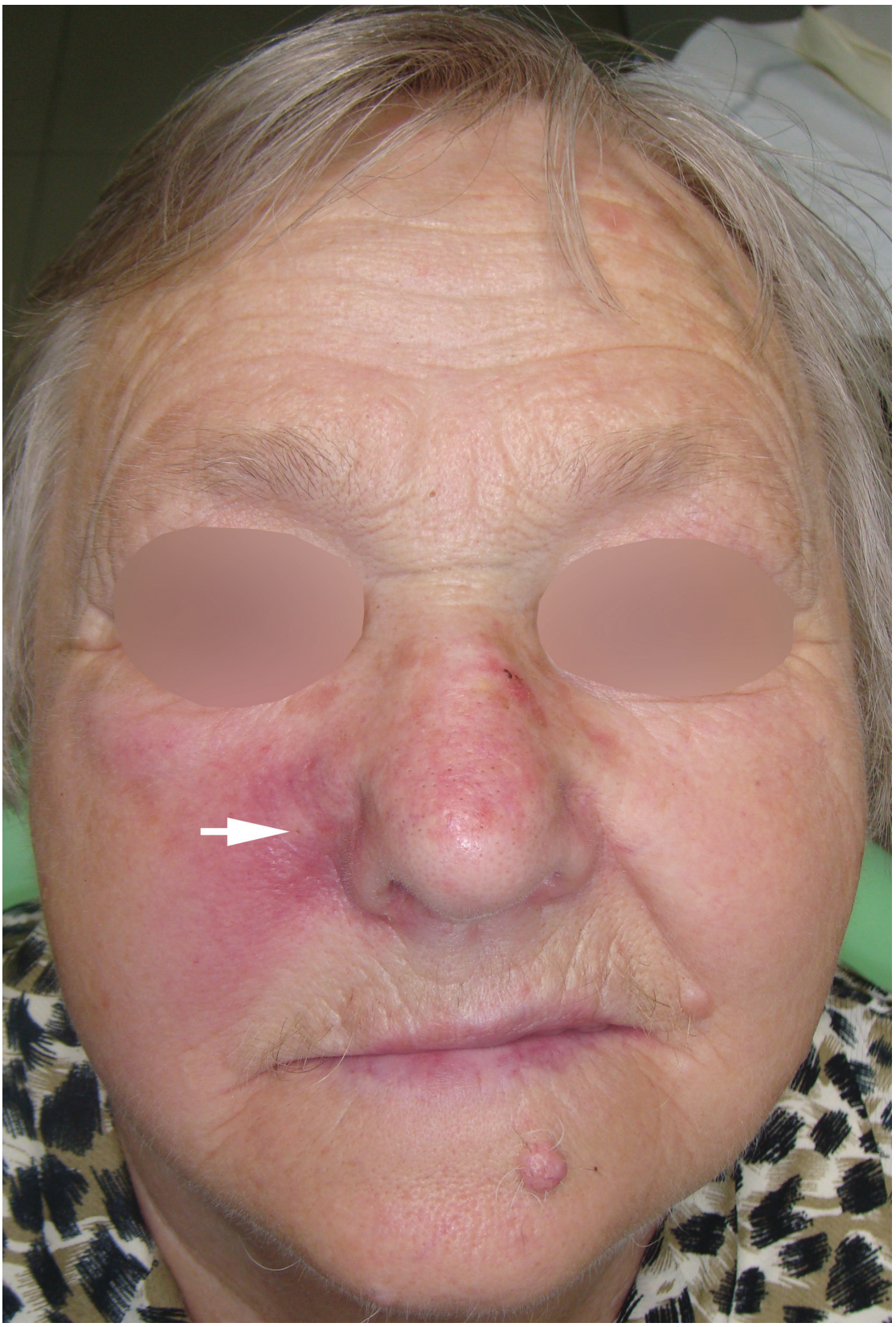

FIGURE 1. *Arrow* indicates a punctum (ie, keratin-filled orifice) of the cyst in a 74-year-old female. Printed with permission and copyrights retained by I.I.F.

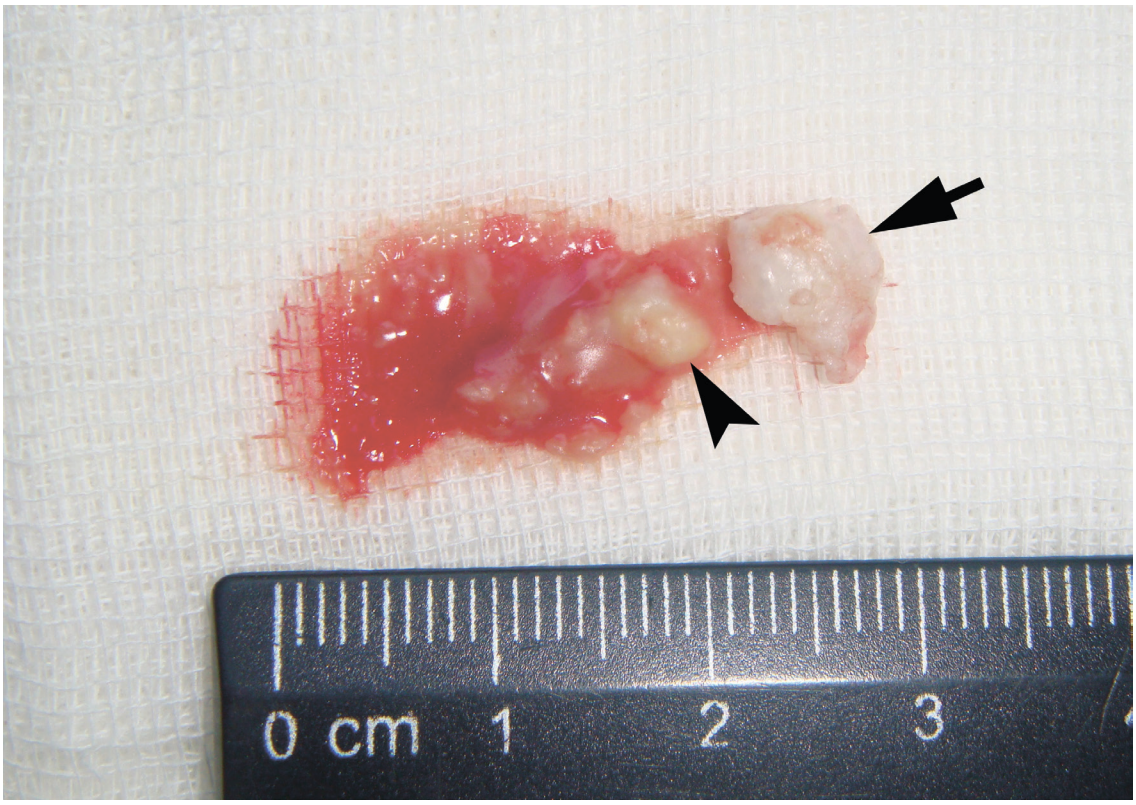

FIGURE 2. Specimen visualized as a thick shell-like fragment of a cystic wall (*arrow*) and a suppurated malodorous cheese-like content (*arrowhead*). Printed with permission and copyrights retained by I.I.F.

According to Ochs and Dolwick erysipelas distinguished from other soft tissue infection (cellulitis) primarily by its well-defined and raised margins.[16] In our case the presence of only one part of a cystic wall explains why the erythematous skin area was so large and had no well-defined round-shape borders. Analysis of the English literature sources show no evidence of previously published cases of acquired infected epidermoid cysts mimicking erysipelas.

CONCLUSIONS

In sum, the proposed term *punctum–associated cysts* can be applied to the acquired epidermoid cysts which show the presence of plugged orifice, which have "submarine sign" ultrasonographic appearance and which were previously termed *sebaceous cysts* (also known as *atheroma* and *retention cysts of the sebaceous glands*). Such punctum can be very useful in differential diagnostics between infect cyst and unilateral facial erysipelas.

TERM OF CONSENT

Written patient consent was obtained from all patients to publish the clinical photographs.

AUTHOR CONTRIBUTION

Conceptualization: Fesenko II. Data and interpretation acquisition: Snisarevskyi PP, Zaritska VI. Drafting of the manuscript: Fesenko II. Critical revision of the manuscript: Snisarevskyi PP, Zaritska VI, Fesenko II. Approval of the final version of the manuscript: all authors.

REFERENCES

1. Hoang VT, Trinh CT, Nguyen CH, Chansomphou V, Chansomphou V, Tran TTT. Overview of epidermoid cyst. *Eur J Radiol Open* **2019**;6:291–301. https://doi.org/10.1016/j.ejro.2019.08.003
2. Wollina U, Langner D, Tchernev G, França K, Lotti T. Epidermoid cysts - a wide spectrum of clinical

presentation and successful treatment by surgery: a retrospective 10-year analysis and literature review. *Open Access Maced J Med Sci* **2018**;6(1):28–30. https://doi.org/10.3889/oamjms.2018.027

3. Takemura N, Fujii N, Tanaka T. Epidermal cysts: the best surgical method can be determined by ultrasonographic imaging. *Clin Exp Dermatol* **2007**;32(4):445–7. https://doi.org/10.1111/j.1365-2230.2007.02408.x
4. Sabhlok S, Kalele K, Phirange A, Kheur S. Congenital giant keratinous cyst mimicking lipoma: case report and review. *Indian J Dermatol* **2015**;60(6):637. https://doi.org/10.4103/0019-5154.169160
5. Tymofieiev OO. Maxillofacial surgery and surgical dentistry [Russian]. Kyiv, Ukraine: Medicine; **2020**.
6. Lin HS, Lin PT, Tsai YS, Wang SH, Chi CC. Interventions for bacterial folliculitis and boils (furuncles and carbuncles). *Cochrane Database Syst Rev* **2018**;2018(8):CD013099. https://doi. org/10.1002/14651858.CD013099
7. Cherniak OS, Zaritska VI, Snisarevskyi PP, Fesenko II, Blinova VP, Koba NM, Pavlenko RA, Holodenko VM. Single and multiple odontogenic cutaneous sinus tracts. *J Diagn Treat Oral Maxillofac Pathol* **2020**;4(11):197–216. https://doi.org/10.23999/j.dtomp.2020.11.2
8. Wollina U, Langner D, França K, Gianfaldoni S, Lotti T, Tchernev G. Pyogenic granuloma – a common benign vascular tumor with variable. *Open Access Maced J Med Sci* **2017**;5(4):423–6. https://doi.org/10.3889/oamjms.2017.111
9. Lee DH, Yoon CS, Lim BJ, Lee HS, Kim S, Choi AL, Kim S. Ultrasound feature-based diagnostic model focusing on the "submarine sign" for epidermal cysts among superficial soft tissue lesions. *Korean J Radiol* **2019**;20(10):1409–21. https://doi.org/10.3348/kjr.2019.0241
10. Faltaous AA, Leigh EC, Ray P, Wolbert TT. A rare transformation of epidermoid cyst into squamous cell carcinoma: a case report with literature review. *Am J Case Rep* **2019**;20:1141–3. https://doi.org/10.12659/AJCR.912828
11. López-Ríos F, Rodríguez-Peralto JL, Castaño E, Benito A. Squamous cell carcinoma arising in a cutaneous epidermal cyst. *Am J Dermatopathol* **1999**;21(2):174–7. https://doi.org/10.1097/00000372-199904000-00012
12. Bauer BS, Lewis VL. Carcinoma arising in sebaceous and epidermoid cysts. *Ann Plast Surg* **1980**;5(3):222–45. https://doi.org/10.1097/00000637-198009000-00008
13. Yaffe HS. Squamous cell carcinoma arising in an epidermal cyst. *Arch Dermatol* **1982**;118(12):961.
14. Veenstra JJ, Choudhry S, Krajenta RJ, Eide MJ. Squamous cell carcinoma originating from cutaneous cysts: The Henry Ford Experience and review of the literature. *J Dermatolog Treat* **2016**;27(1):95–8. https://doi.org/10.3109/09546634.2015.1054779
15. Morgan MB, Stevens GL, Somach S, Tannenbaum M. Carcinoma arising in epidermoid cyst: a case series and aetiological investigation of human papillomavirus. *Br J Dermatol* **2001**;145(3):505–6. https://doi.org/10.1046/j.1365-2133.2001.04400.x
16. Ochs MW, Dolwick MF. Facial erysipelas: report of a case and review of the literature. *J Oral Maxillofac Surg* **1991**;49(10):1116–20. https://doi.org/10.1016/0278-2391(91)90148-f

ORIGINAL

Prevention of Inflammatory Complications in Fractures of Alveolar Processes of the Jaw

Oleksii O. Tymofieiev[a,*], Natalia O. Ushko[b], Ievgen I. Fesenko[c], Sergii V. Maksymcha[c], Maria O. Yarifa[c], Viktoriia M. Ripa[d], Anton O. Myroshnyk[e], Olexander O. Savytskyi[e], Sergii I. Dubichenko[e], Viktoriia P. Blinova[e], Oksana A. Uharska[e], Olena O. Serga[e]

SUMMARY

Purpose: To determine the effectiveness of the nonsteroidal anti-inflammatory drug "Tantum Verde" in patients with fractures of the alveolar processes of the maxilla and mandible, to evaluate its effectiveness for the prevention of inflammatory complications.

Methods: Clinical and laboratory examination of 129 patients with fractures of the alveolar processes of the jaws.

Results: Based on the results of the patients examination with open fractures of the jaws. It was found that the analgesic, anti-inflammatory and deodorant efficacy of the nonsteroidal anti-inflammatory drug "Tantum Verde" is significantly higher than traditional therapy, and also has a smaller number of inflammatory complications.

Conclusions: The use of the nonsteroidal anti-inflammatory drug "Tantum Verde" made it possible to significantly reduce the number of inflammatory complications and reduce the treatment duration of patients. It was established that the drug "Tantum Verde" is an effective analgesic and anti-inflammatory drug and can be recommended for the treatment of patients with fractures of the alveolar processes of the jaws.

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Please cite this article as: Tymofieiev OO, Ushko NO, Fesenko II, Maksymcha SV, Yarifa MO, Ripa VM, Myroshnyk AO, Savytskyi OO, Dubichenko SI, Blinova VP, Uharska OA, Serga OO. Prevention of inflammatory complications in fractures of alveolar processes of the jaw. J Diagn Treat Oral Maxillofac Pathol 2021;5(2):20–31.

The word 'CBCT' at the upper right icon means that article contains cone-beam computed tomography scans.

Paper received 15 December 2020
Accepted 7 January 2021
Available online 28 February 2021

https://dx.doi.org/10.23999/j.dtomp.2021.2.2

INTRODUCTION

Fractures of the alveolar processes of the jaws (Fig 1) occupy one of the leading places among the fractures of the facial skeleton bones.[1–5] These fractures of the jaw bones include the injury of the alveolar processes and mucous membranes, thus they are associated with the oral cavity and are always infected. Fractures of the alveolar processes of the maxilla and the mandible occur at any age, more often in adolescence.[2] The most common method of reposition and fixation of jaw bone fragments in fractures is the use of wire or arch bars, which are attached to the teeth with a wire. All these dental metal structures (arch bars, wires) are located on the oral cavity vestibule. It should be noted that any design of dental splints used to fix bone fragments makes it impossible to eat normally.

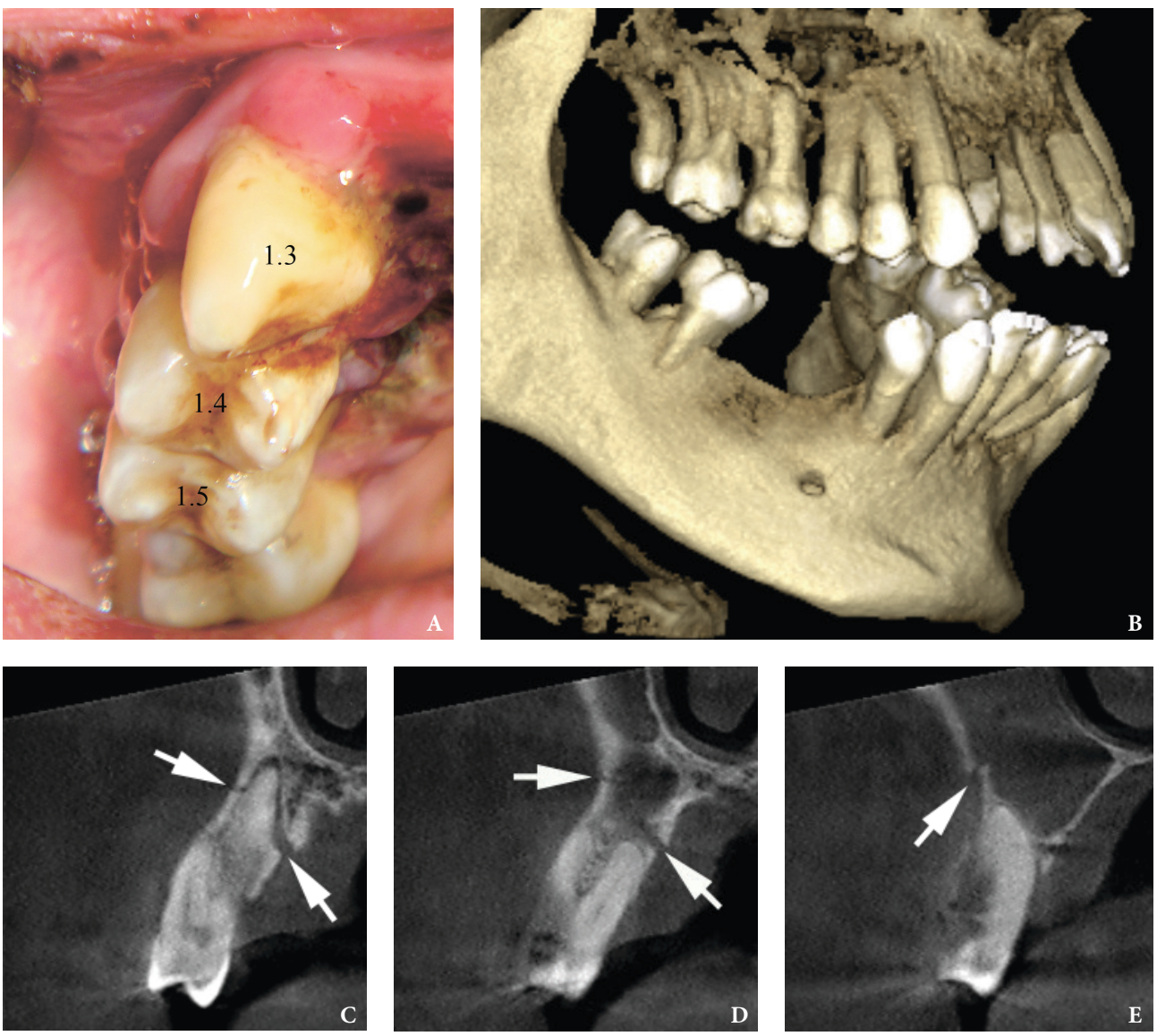

FIGURE 1. A 45-year-old Caucasian male after the injury. Intraoral view (**A**) shows mucosal laceration and buccal dislocation of the teeth 1.5, 1.4, and 1.3. Cone-beam computed tomography (3-dimensional [**B**] and coronal scans [**C**–**E**]) shows segmental alveolar fracture (*arrows*) at the right maxilla with dislocation of involved teeth 1.5–1.3. Image **C** demonstrates tooth 1.3 and fracture line/gap located coronal to apical foramen. Image **D** visualize tooth 1.4 and fracture line located apical to apical foramen. Image **E** shows tooth 1.5 and fracture line located apical to apical foramen. Printed with permission and copyrights retained by I.I.F.

It is very difficult to clean the metal structures in the patient's mouth. Many additional retention points appear in the oral cavity, where food debris can be retained, which are a medium for the development of pathogenic microflora. Oral hygiene is of great importance for the prevention of inflammatory complications in the treatment of patients with fractures of the alveolar processes of the maxilla and the mandible. Individual oral hygiene of patients with jaw fractures contributes not only to the removal of food debris and soft dental plaque, which are located on the splinting metal structure, ligature wire, teeth, gingiva, but is also a prophylaxis for the development of microbial flora of the oral cavity vestibule. The absence of food debris on the dental metal structures and the absence of pathogenic microflora make it possible for a faster and more favorable healing of the bone fragments of the jaws.

Thus, hygiene measures for the oral cavity care of patients with fractures of the alveolar processes of the jaw bones is one of the important factors for the prevention of complications such as gingivitis and the development of a purulent-inflammatory process in the fracture gap of injured bones (post-traumatic osteomyelitis).

The patient regularly undergoes not only medical oral hygiene, i.e. the doctor teaches the patient to carry out hygiene measures for the oral cavity care and exercises control. The patient must independently carry out individual hygiene care of the metal structures in his oral cavity. The traditional method of medical oral hygiene for fractures of the jaws is irrigation (using a stream of antiseptic from a syringe) of additional retention points with solutions of hydrogen peroxide, potassium permanganate (pale pink solution), chlorhexidine bigluconate, furacilin, etc. With the help of a toothbrush, the patient cleans metal arch bars, wires and teeth from food debris, and then antiseptic irrigation and rinsing of the oral cavity vestibule are repeated. Individual hygiene should be carried out by the patient not only after each meal, but also in the intervals between meals, as well as before bedtime.

When choosing an antimicrobial drug for hygienic oral care, you need to focus on the preventive purpose of its use, ie to prevent the development of inflammation from the mucous membranes of the oral cavity. For these purposes, the patients use a toothbrush to clean arch bars, wires and teeth from food debris, and then carry out antiseptic irrigation and antiseptic rinsing of the oral cavity with a non-steroidal anti-inflammatory drug "Tantum Verde" approved for use in Ukraine (order of the Ministry of Health of Ukraine No. 1789 dated August 04, 2020; Registration certificate UA / 3920/02/01).[6]

The drug "Tantum Verde" is available in the form of a solution in a package of 120 ml (Fig 2). Tantum Verde is a 0.15 percent solution for local application in the form of a clear green liquid with a characteristic mint odor. 1 ml of solution contains benzydamine hydrochloride 1.5 mg; excipients: ethanol 96 percent, glycerin, methyl p-hydroxybenzoate (E218), flavor enhancer (menthol), saccharin, sodium bicarbonate, polysorbate 20, quinoline yellow 70 percent (E104), patented blue V 85 percent (E131), purified water. The active substance of the drug – benzydamine, is a non-steroidal anti-inflammatory drug (NSAID), which has an expressed anti-exudative and analgesic effect. When applied topically, benzydamine acts as a disinfectant. Its effectiveness when applied topically is due to its ability to penetrate the epithelial layer and reach effective concentrations in inflamed tissues. The mechanism of action of benzydamine is associated with the stabilization of cell membranes and inhibition of prostaglandin synthesis. The antibacterial activity of the active substance is manifested due to the rapid penetration of microorganisms through the outer membranes, followed by damage to cellular structures, disruption of metabolic processes and cell lysis. Benzydamine restores the integrity of the mucous membranes epithelium, increases its resistance to pathogenic effects. When applied topically in the indicated concentrations, benzydamine is absorbed by the mucous membrane, but its concentration in the blood plasma is so low that it cannot cause any pharmacological effect. Benzydamine is excreted in the urine in the form of inactive metabolites or conjugation products.[1]

Contraindications are: hypersensitivity to the drug, pregnancy and lactation. Benzydamine is not recommended for patients with hypersensitivity to salicylic acid or other NSAIDs. When using the drug, sometimes there is a feeling of numbness or burning at the area of application, which is associated with the presence of ethanol in the drug. In some cases, allergic reactions may occur – skin rash, dry

FIGURE 2. Appearance of the "Tantum Verde."

mouth, bronchospasm, angioedema or other allergic reactions, as well as swelling and discoloration of the tongue, change in taste. For athletes: the use of medicines containing ethyl alcohol can give a positive result under doping control. When using the drug in the recommended doses, we did not observe any side effects. In case of an overdose of the drug, dry mouth, drowsiness, and allergic reactions are possible. Tantum Verde can be used by children over 12-year age.[1]

Method of application of the drug "Tantum Verde": for rinsing the mouth, we used 15 ml (1 tablespoon or a measuring cup from a bottle) of Tantum Verde (can be diluted in 15 ml of water). Rinsing was performed 5-6 times a day. After rinsing, spit out the solution. You can't swallow it.

The aim of the study is to determine the effectiveness of the use of the drug "Tantum Verde" for the prevention of inflammatory complications in the oral cavity of patients with injuries (fractures) of the alveolar processes of the maxillary and mandibular bones.

MATERIAL AND METHODS

A total of 129 patients with fractures of the alveolar processes of the maxilla and the mandible were examined. The main group consisted of 89 patients with fractures of the alveolar processes of the maxilla and the mandible at the age from 13 to 43 years. The drug "Tantum Verde" was prescribed by us in the form of antiseptic rinses. For these purposes, a measuring cap was used, 15 ml of the Tantum Verde solution was measured and undiluted or diluted (15 ml of the solution can be diluted with 15 ml of water) rinsed the oral cavity. Rinsing was carried out 3 times a day. The course of treatment was 10-12 days. General drug treatment was not prescribed to the patients. The control group consisted of 40 patients with the same injuries and the same age who, in the dynamics of the treatment, used a solution of chlorhexidine digluconate (0.05 percent) for antiseptic baths (Fig 3). The patients were not prescribed general drug treatment.

FIGURE 3. 0.05% chlorhexidine digluconate appearance.

In the dynamics of examination and treatment of patients, a general clinical examination was carried out, which included: clarification of complaints, pain examination, palpation, anamnesis, X-ray/computed tomography of the jaws, general blood test.

In the dynamics of the examination, microbiological methods were carried out (microflora and its antibiotic sensitivity were determined). Material from the tooth-gingival pockets in the area of the fracture gap (rupture of the mucous membrane of the alveolar process) was taken both by the standard method (using a sterile cotton swab) and using a Volkmann spoon (to identify common microflora and fungi). Microbiological studies were performed in the morning on an empty stomach. The collected material was carefully applied onto a sterile glass slide (the material should not be rubbed on the glass, as this may damage the delicate elements of the fungus). Microscopic examination of unstained and also Romanovsky-Giemsa stained native preparation was performed. The sowing of the discharge from the tooth-gingival pocket was transferred to the Sabouraud nutrient medium, followed by sowing on special medium and identification of the pathogenic agent.

Evaluation of the effectiveness of the use of hygiene products was determined by the following indices. To detect the presence of an inflammatory process of the alveolar processes mucous membrane, the Schiller-Pisarev test was performed. The mucous membrane of the alveolar processes was treated with Lugol's solution. The digital value of the Schiller-Pisarev test (Svrakov iodine number) was determined in points.

Evaluation of the Svrakov iodine number values:

- weakly expressed process of inflammation – up to 2.3 points;
- moderately expressed inflammation process – 2.67-5.0 points;
- intense process of inflammation – 5.33-8.0 points.

Gingivitis index was proposed in 1967 by Silness-Loe. Evaluated on a 4-point system:

0 – no inflammation;
1 – mild inflammation (slight discoloration);
2 – moderate inflammation (hyperemia, edema, possible hypertrophy);
3 – severe inflammation (severe hyperemia).

Index evaluation criteria:

0.1-1.0 – mild degree of gingivitis;
1.1-2.0 – average degree of gingivitis;
2.1-3.0 – severe degree of gingivitis.

Contact thermometry was carried out using a TPEM-1 electrothermometer with a resolution of 0.2°C. Contact thermometry is based not on the measurement of absolute temperatures over the pathological focus, but on the identification of the temperature difference in symmetrical areas (Δ T). Thermal asymmetry (Δ T) in symmetrical areas, revealed in practically healthy people of the same age and sex, served as a control. The temperature of the

mucous membrane of the alveolar processes of the upper and lower jaws of the patients was measured in the area of bone injury (the area of the fracture gap) and on the symmetrical (intact) healthy side. The contact temperature was measured at the first visit of the patient, as well as in the dynamics of the treatment.

Clinical symptoms and the obtained digital data of laboratory examinations were processed by the variation-statistical method using a personal computer. The reliability of the results was calculated according to Student's *t*-test. Differences were considered significant at $p < 0.05$.

RESULTS AND DISCUSSION

Microbiological examinations were carried out in 80 patients of the main group, and in the control group of observation – in 38 people.

In all 80 patients of the main group and 38 patients in the control observation group, microorganisms were sown on the 3-4th day after the reposition of the jaw fragments, ie 100 percent. Material for microbiological studies was taken from the tooth-gingival pockets in the area of the fracture gap (rupture of the mucous membrane of the alveolar process).

In the main observation group, upon treatment of patients, *Staphylococcus aureus* was sown from the periodontal pockets (Fig 4) in 77.5 percent (in 62 of 80 people), *Staphylococcus epidermidis* – in 53.8 percent (in 43 of 80 people) and hemolytic Streptococcus – in 27.5 percent (22 out of 80 people). In 20 of 80 patients of the main group (in 25 percent), the causative agent of *Candida: Candida albicans* and *Candida tropicalis* were found in the tooth-gingival pocket. Of the 80 patients in the main group, 52 patients (65 percent) were sown with monocultures, and 28 patients (35 percent) – associations of microorganisms (2-3 microbes).

In the control group, from the tooth-gingival pockets (Fig 5), *Staphylococcus aureus* was found in 76.3 percent (in 29 of 38 people), *Staphylococcus epidermidis* – in 47.4 percent (in 18 of 38 people) and hemolytic streptococcus – in 29.0 percent (11 out of 38 people). In 9 out of 38 patients from the control group (in 23.7 percent) during the first examination, the causative agent of *Candida* was found in the periodontal pocket: *Candida albicans* and *Candida tropicalis*. In 22 people (in 57.9 percent) of 38 patients in the control group, microflora was detected in the form of a monoculture, and in 16 people (42.1 percent) – in the form of associations (2-3 microbes).

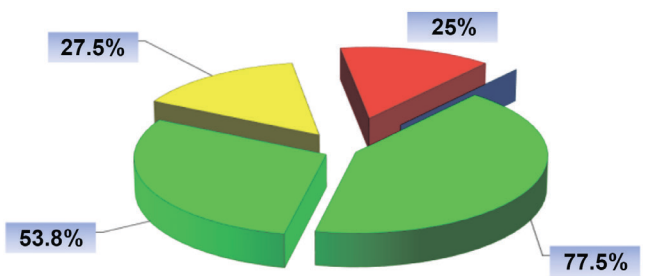

FIGURE 4. The proportion of certain types of microorganisms identified in the main observation group in patients with fractures of the alveolar processes of the maxilla and the mandible.

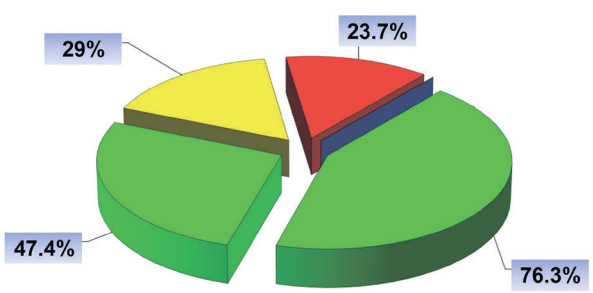

FIGURE 5. The proportion of certain types of microorganisms identified in the control group of observation in patients with fractures of the alveolar processes of the maxilla and the mandible.

If we compare the species composition of the detected microflora depending on the examined group (main or control), then it should be noted that it was practically the same, ie did not differ significantly between the examined groups.

Monocultures of staphylococci showed sensitivity to aminoglycoside drugs and, to a lesser extent, to semisynthetic penicillins and anti-staphylococcal reserve antibiotics. Hemolytic streptococci showed sensitivity to most of the studied antibiotics, which did not depend on their associative links.

Before the removal of arch bars in the main group, *Staphylococcus aureus* was sown in 2.5 percent (in 2 out of 80 patients) from the periodontal pockets, *Staphylococcus epidermidis* and hemolytic streptococcus were not detected. *Staphylococcus aureus* was found as a monoculture. We did not find any fungal microflora after rinsing the mouth with the Tantum Verde.

In the control group of observation, after rinsing the mouth with traditional antiseptics in the periodontal pocket, *Staphylococcus aureus* was found in 23.7 percent (in 9 of 38 patients), *Staphylococcus epidermidis* – in 13.2 percent (in 5 of 38 people) and hemolytic streptococcus – in 15.8 percent (in 6 out of 38 people). In 4 out of 38 examined in the control group (10.5 percent), patients with fractures of the mandible in the periodontal pocket were re-detected the causative agent of *Candida: Candida albicans* and *Candida tropicalis*. Microorganisms were identified both as monocultures and in associative links with other microbes.

The Schiller-Pisarev test (ie, Svrakov iodine number) in patients with fractures of the alveolar processes of the maxilla and the mandible in the main observation group on the next day after reposition of fragments was 6.9 ± 0.6 points, which indicated the presence of an intense inflammatory process of the mucous membrane of the alveolar process, and in the control group – 6.8 ± 0.7 points (Fig 6). On the 7-8th day of the treatment in the patients of the main observation group, the Svrakov iodine number was 4.0 ± 0.3 points (moderately expressed inflammatory process in the mucous membrane of the alveolar process of the jaw), and in the control group – 5.7 ± 0.4 points (intense inflammation). On the 14-15th day, in patients with fractures of the alveolar processes of the jaws in the main group, the iodine number of Svrakov was 2.0 ± 0.3 points (mild inflammatory process in the mucous membrane of the alveolar process of the jaw), and in the control group – 4.7 ± 0.5 points

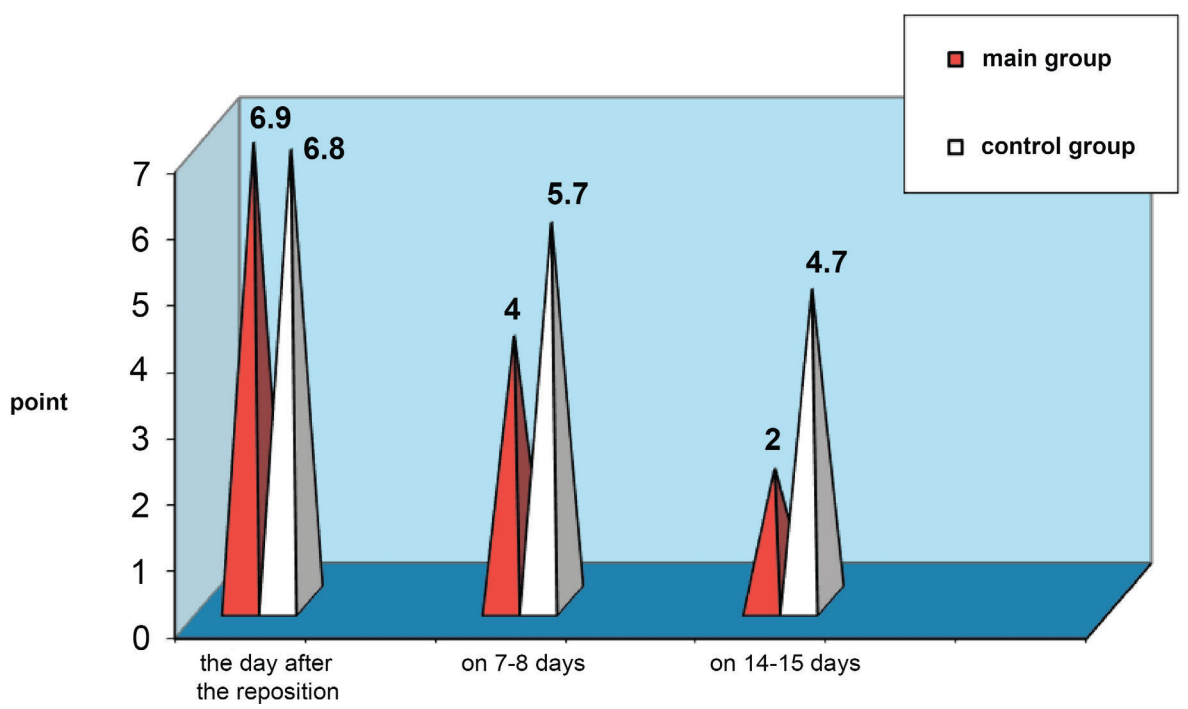

FIGURE 6. Schiller-Pisarev test (Svrakov iodine number) in patients with fractures of the alveolar processes of the jaw in the dynamics of treatment.

(moderately expressed inflammatory process in the mucous membrane of the alveolar process). The Schiller-Pisarev test in patients with fractures of the alveolar process of the jaws in the dynamics of the treatment indicated a high anti-inflammatory efficacy of the drug "Tantum Verde."

The index of gingivitis in patients with fractures of the alveolar processes of the jaws in the main observation group on the next day after reposition of fragments was 1.32 ± 0.11 points, in the control group – 1.33 ± 0.09 points, which indicated the presence of an average degree of gingivitis (Fig 7). On the 7-8th day of the treatment, the gingivitis index in patients of the main group was 0.81 ± 0.07 points (mild gingivitis), and in the control group – 1.42 ± 0.11 points (moderate gingivitis). On the 14-15th day of treatment in patients with fractures of the alveolar processes of the jaws, the gingivitis index in the main observation group was 0.61 ± 0.05 points (mild gingivitis), in the control group – 1.35 ± 0.11 points (moderate gingivitis). The gingivitis index indicated the high efficacy of "Tantum Verde."

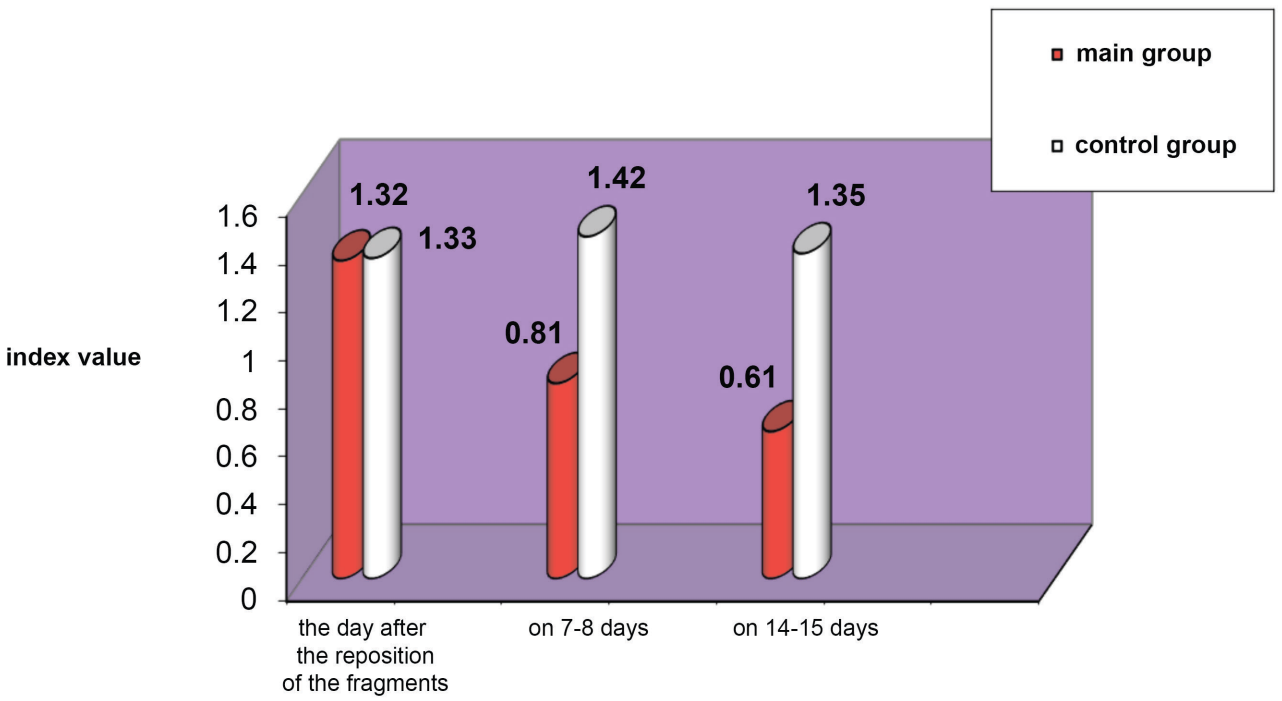

FIGURE 7. Changes in the gingivitis index in patients with fractures of the alveolar processes of the jaws in the dynamics of treatment.

Bad breath in patients with fractures of the alveolar processes of the jaws in the main and control groups of observation (Fig 8) on the next day after the reposition of fragments was recorded in 100 percent of cases. After 7-8 days of hygienic treatment of the oral cavity, in the main observation group, an unpleasant odor was detected in 14 out of 89 subjects (15.7 percent), and in the control group – in 21 out of 40 patients (52.5 percent). After 14-15 days of hygienic treatment of the oral cavity, an unpleasant odor in the main group persisted in 2 out of 89 patients (2.3 percent), and in the control group – in 17 out of 40 people (42.5 percent). The examinations indicated a high ($p < 0.001$) deodorizing effect of the drug "Tantum Verde" in comparison with the control group of the examination.

We performed thermometric examinations of 129 patients with fractures of the jaws (89 people – the main group, 40 people – the control group). Thermal asymmetry was determined on the mucous membrane of the alveolar process of the jaws in the area of the fracture gap and the obtained temperature was compared with the symmetrical area on the intact side. The data obtained while examination are presented in Table 1. It was revealed that on the mucous membrane of the alveolar process at the

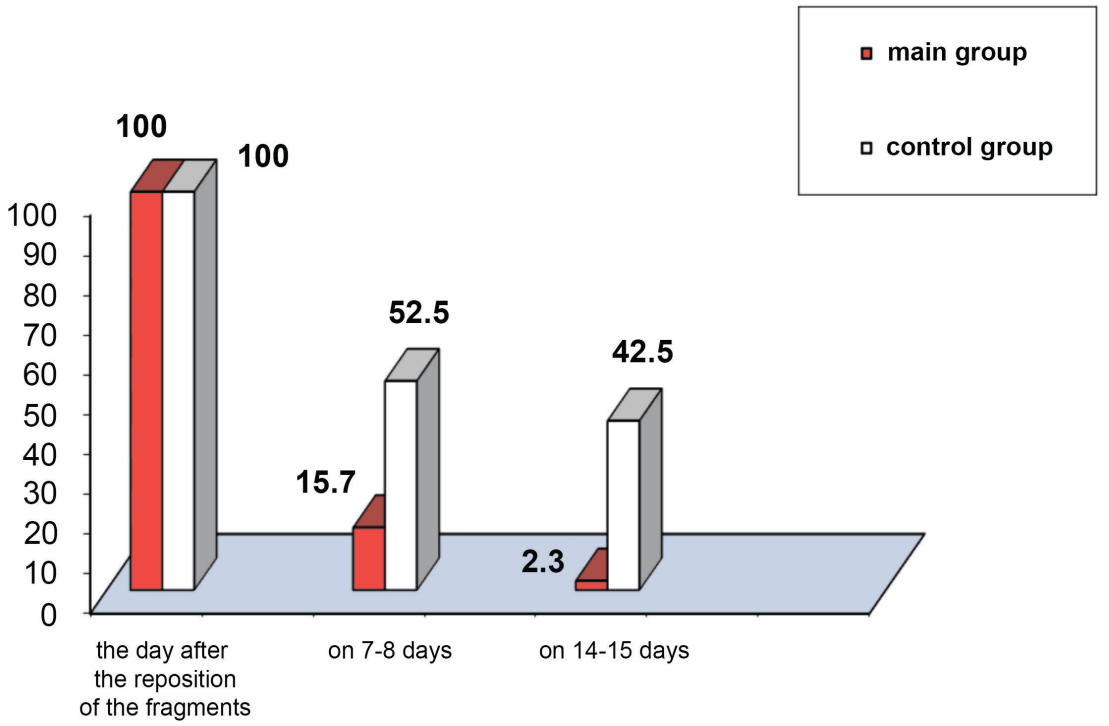

FIGURE 8. Frequency of occurrence of bad breath in patients with fractures of the alveolar processes of the jaws in the dynamics of the examination.

site of injury to the mandibular bone, on the first day during treatment there was a significant (< 0.01) increase in local temperature in all examined patients up to 1.7 ± 0.2°C (main group) and 1.8 ± 0.2°C (control group). On the 7th day of the treatment, the thermal asymmetry of the mucous membrane of the alveolar process was: 1.1 ± 0.3°C (main group) and 1.2 ± 0.3°C (control group). On the 14th day of the treatment, the thermal asymmetry of the mucous membrane of the alveolar process in the area of the fracture site in the main observation group returned to normal (Table 1). In the control group of observation, the normalization of thermometric indicators occurs only on the 18-20th day. The examinations indicated a high (p < 0.001) anti-inflammatory effect of the drug "Tantum Verde" in comparison with the control group of patients.

The soft tissues around the jaws on the side of the injury, the day after the reposition of the jaw fragments,

TABLE 1. Thermal Asymmetry Indicators of the Mucous Membrane of the Alveolar Process of the Jaws in Patients of the Main and Control Groups.

Observation Group	Number of Examined	Time of Examination	Δ T – Thermal Asymmetry (in °C)	
			M ± m	p
Main group	89	While hospitalization	1.7 ± 0.2	< 0.001
		On the 7th day	1.1 ± 0.3	< 0.05
		On the 14th day	0.5 ± 0.2	> 0.05
Control group	40	While hospitalization	1.8 ± 0.2	< 0.001
		On the 7th day	1.2 ± 0.3	< 0.05
		On the 14th day	1.2 ± 0.2	< 0.05
		On 18-20 days	0.9 ± 0.3	> 0.05
Healthy persons	33	0.5 ± 0.1		

Note: p – significance of differences in comparison with healthy people.

were edematous (with the presence of hemorrhages) and infiltrated (Fig 9) in all patients (100 percent) in both the main and control groups. In the main group, moderate edema and infiltration of the soft tissues were observed in 49 of 89 patients (55.1 percent), and insignificant – in 40 people (in 44.9 percent). In the control group: moderate edema and infiltration – in 21 out of 40 people (in 52.5 percent), and insignificant – in 19 people (in 47.5 percent). 2-3 days after the reposition of the fragments in the main observation group, moderate edema and infiltration of the soft tissues was observed in 24 out of 89 patients (in 27.0 percent), and insignificant in 65 patients (in 73 percent). In the control group: moderate edema and infiltration – in 20 out of 40 people (in 50 percent), and insignificant – in 20 people (in 50 percent). In 5-6 days after the fragments reposition in the main group, edema and infiltration of the soft tissues around the jaws in all patients (in 100 percent) were insignificant. In the control group: moderate edema persisted in 7 out of 40 people (in 17.5 percent), and insignificant – in 33 people (in 82.5 percent). The examinations indicated a high ($p < 0.001$) anti-inflammatory effect of the drug "Tantum Verde" in comparison with the control group of the examined.

The next day after reposition, post-traumatic ruptures of the mucous membrane covered with dirty gray plaque of the alveolar process (Fig 10), were in all patients (100 percent) in a moderate amount in both: the main and control groups. In the main observation group, a moderate amount of plaque on the mucous membrane in the fracture gap in 2-3 days after reposition was in 20 of 89 people (in 22.5 percent), and insignificant – in 69 people (in 77.5 percent). In the control group: moderate – in 31 out of 40 people (in 77.5 percent), and insignificant – in 9 people (in 22.5 percent), and insignificant – in 69 people (in 77.5 percent). In the control group: moderate – in 31 out of 40 people (in 77.5 percent), and insignificant – in 9 people (22.5 percent). 5-6 days after reposition in the main group, they were insignificant in all patients (100 percent). In the control group: moderate plaque remained in 4 out of 40 people (10.0 percent), and insignificant – in 36 people (90.0 percent). The examinations indicated a high ($p < 0.001$) anti-inflammatory effect of the "Tantum Verde" drug in comparison with the control group of the examined.

When treating patients with fractures of the alveolar processes of the jaws in the main observation group, moderate pain in the area of the pathological focus (Fig 11) was detected in 57 out of 89 examined (64.1 percent), and insignificant in 32 people (35.9

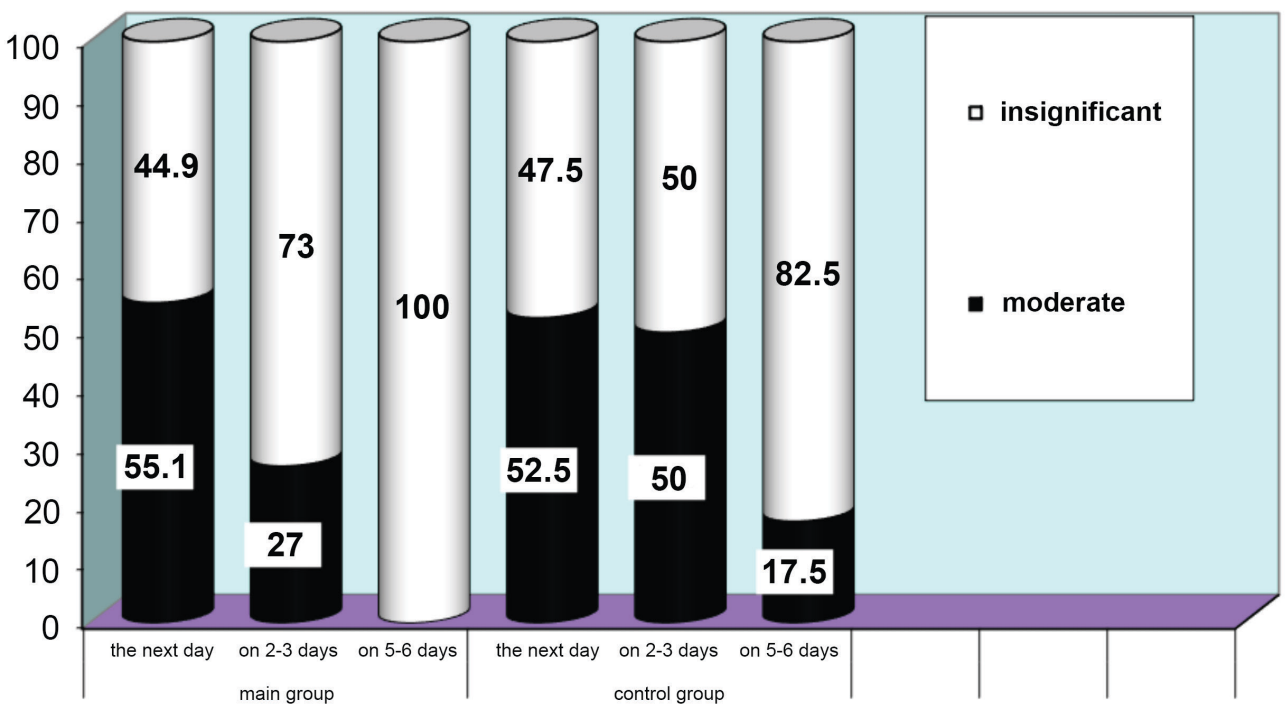

FIGURE 9. Changes in edema and soft tissues infiltration in the area of jaws in the treatment dynamics of patients after reposition of jaw fragments.

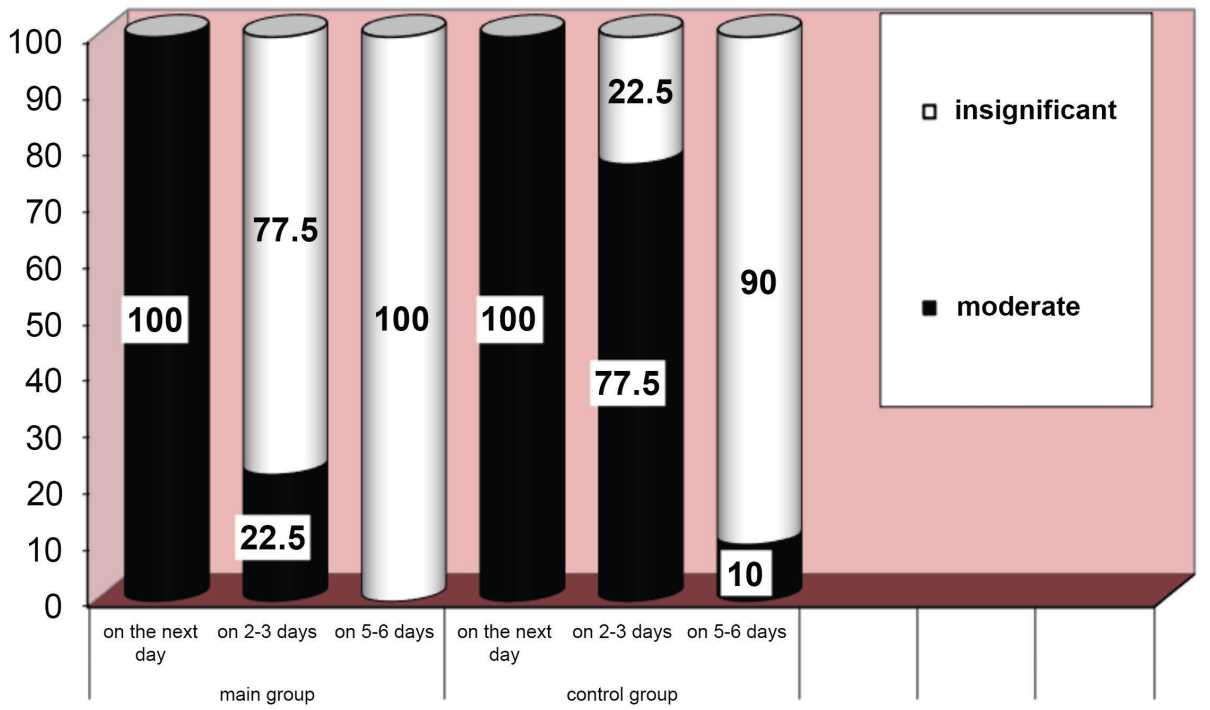

FIGURE 10. Changes of plaque on a mucous membrane in a fracture crack in treatment dynamics of patients with a fracture of alveolar processes of jaws.

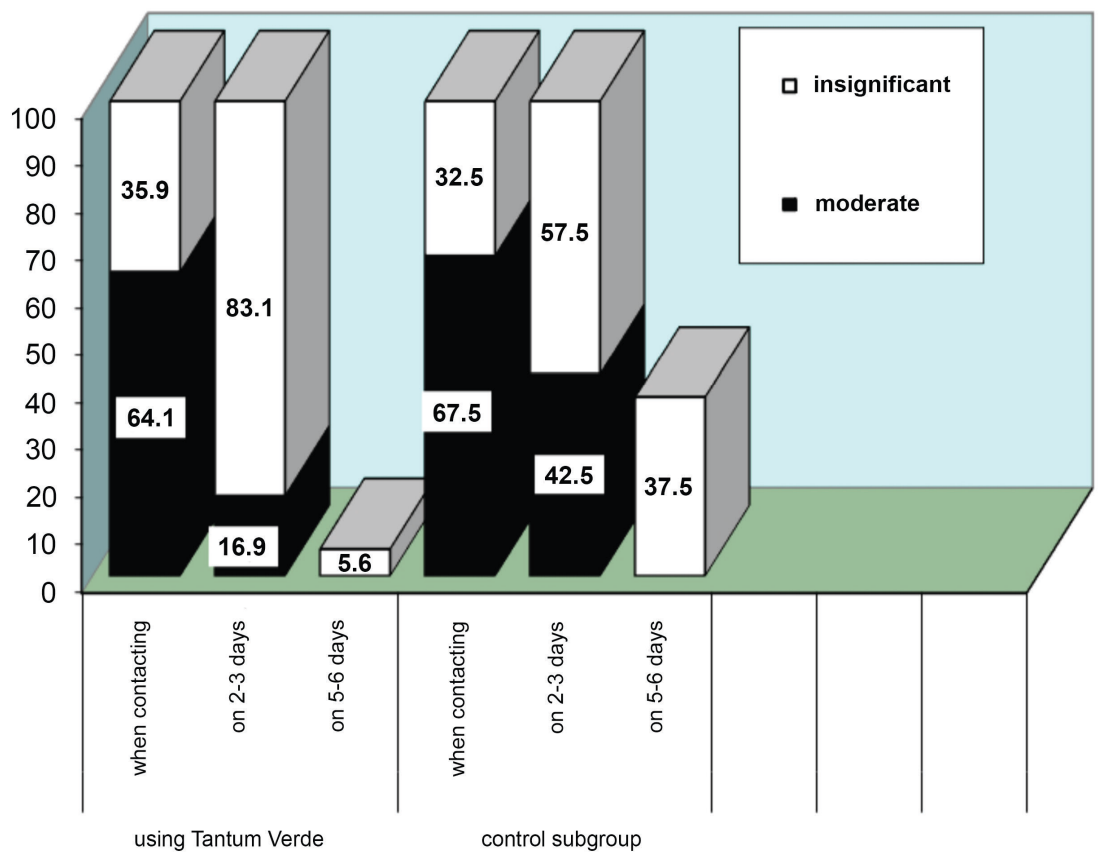

FIGURE 11. Changes of plaque on a mucous membrane in a fracture crack in treatment dynamics of patients with a fracture of alveolar processes of jaws.

percent). In the control group of patients, moderate pain was noted in 27 out of 40 examined (67.5 percent), insignificant – in 13 people (32.5 percent). After 2-3 days of treatment, the patients of the main group had moderate pain in 15 of 89 examined (16.9 percent), and insignificant pain in 74 people (83.1 percent). In the control group, during the same period, moderate pain was recorded in 17 out of 40 patients (42.5 percent), and insignificant pain in 23 people (57.5 percent). After 5-6 days from the start of treatment, the patients of the main group had no pain of a moderate nature, and 5 out of 89 examined (5.6 percent) had insignificant pain, the rest of the examined did not have pain at all. The patients in the control group also did not have moderate pain, and 15 out of 40 examined patients (37.5 percent) had insignificant pain, and the rest of the patients in the same group had no pain symptoms. The examinations indicated a high ($p < 0.001$) local anesthetic effect of the "Tantum Verde" drug in comparison with the control group of examined (Fig 11).

Early inflammatory complications of patients with fractures of the alveolar processes of the maxilla and mandible in the main observation group in the form of gingivitis were observed in 2 of 89 examined (2.3 percent). In the control observation group we detected early inflammatory complications in the form of gingivitis in 9 out of 40 examined (22.5 percent).

The use of the proposed method of hygienic treatment with the "Tantum Verde" of the oral cavity for patients with fractures of the alveolar processes of the jaws made it possible to reduce the time of consolidation of fragments for 2.4 ± 0.7 days.

CONCLUSIONS

It has been established that the nonsteroidal anti-inflammatory drug "Tantum Verde" has an expressed antibacterial, anti-inflammatory and deodorizing effect, and also provides a good cleaning of metal structures located in the vestibule of the oral cavity (arch bars). On the basis of the conducted examinations, it was proved that the anti-inflammatory and analgesic efficiency of the "Tantum Verde" drug in the treatment of patients with fractures of the alveolar processes of the maxilla and mandible significantly exceeds traditional methods of treatment. The use of the proposed method of hygienic oral cavity treatment for patients with fractures of the alveolar processes of the jaws allowed to significantly reducing the number of early inflammatory complications and the time of consolidation of alveolar fragments of the jaw.

AUTHOR CONTRIBUTION

Conceptualization: Tymofieiev OO. Data and interpretation acquisition: Ripa VM, Myroshnyk AO, Savytskyi OO, Dubichenko SI, Blinova VP, Uharska OA, Serga OO. Drafting of the manuscript: Maksymcha SV, Yarifa MO. Critical revision of the manuscript: Tymofieiev OO, Ushko NO, Fesenko II. Approval of the final version of the manuscript: all authors.

REFERENCES

1. Lauridsen E, Gerds T, Andreasen JO. Alveolar process fractures in the permanent dentition. Part 2. The risk of healing complications in teeth involved in an alveolar process fracture. *Dent Traumatol* **2016**;32(2):128–39. https://doi.org/10.1111/edt.12229
2. Tymofieiev OO. Maxillofacial surgery and surgical dentistry [Russian]. Volume 1. Kyiv, Ukraine: Medicine; **2020**
3. Gutmacher Z, Peled E, Norman D, Lin S. Alveolar bone fracture: pathognomonic sign for clinical diagnosis. *Open Dent J* **2017**;11:8–14. https://doi.org/10.2174/1874210601711010008
4. Lim L, Sirichai P. Bone fractures: assessment and management. *Aust Dent J* **2016**;61 Suppl 1:74–81. https://doi.org/10.1111/adj.12399
5. Tymofieiev OO, Fesenko II, Tymofieiev OO. Condition of the teeth in fracture gap of the mandible. *J Diagn Treat Oral Maxillofac Pathol* **2017**;1(1):41–53. https://doi.org/10.23999/j.dtomp.2017.1.6
6. Instructions for medical application of TANTUM VERDE® (TANTUM VERDE®). Order of the Ministry of Healthcare of Ukraine No. 1789 dated 08/04/2020

POSTSCRIPT

Fibula Jaw and Fibula Teeth Course by Fayette Williams

Ivan V. Nagorniak[a] & Ievgen Fesenko[b]

FIGURE 1. Instagram post of Dr. Williams.[1]

Learn immediate implants and even immediate teeth during jaw reconstruction.[1]
—Fayette C. Williams, DDS, MD, FACS
Fort Worth, Texas, United States

Fibula technologies are developing with an overwhelming speed. In order to keep up with improvements in technology and techniques, we have a unique opportunity to take part in a state-of-the-art surgical course (Fig 1).[1] A Fibula Teeth Course (fibulateeth.com) is a cutting-edge one-day course holding in Texas 2-3 times per year.[2] The course consists of lecture, computer training, and a hands-on lab experience.[2] Its program, based on a fundamental experience of Dr. Fayette Williams and his team, gives a chance for participants to absorb incredible developments[3–5] extremely useful for the oral-maxillofacial surgeons, prosthodontists, and ENT/plastic surgeons.[2] Obtaining such knowledge can bring to our practice a lot of new treatment options to guarantee the surgical results our patients deserve.

REFERENCES

1. Instagram post of dr_fayette_williams [document on the internet]; December 25, **2021** [cited 2021 Jan 20]. Available from: https://www.instagram.com/p/CMGsjHQJAVz/
2. Fibula teeth: course detalis [document on the internet]; February 15, **2021** [cited 2021 Feb 15]. Available from: https://www.fibulateeth.com/program
3. Kim RY, Sokoya M, Ducic Y, Williams F. Free-flap reconstruction of the mandible. *Semin Plast Surg* **2019**;33(1):46–53. https://doi.org/10.1055/s-0039-1677791
4. Williams FC, Hammer DA, Wentland TR, Kim RY. Immediate teeth in fibulas: planning and digital workflow with point-of-care 3D printing. *J Oral Maxillofac Surg* **2020**;78(8):1320–7. https://doi.org/10.1016/j.joms.2020.04.006
5. Sukato DC, Hammer D, Wang W, Shokri T, Williams F, Ducic Y. Experience with "jaw in a day" technique. *J Craniofac Surg* **2020**;31(5):1212–7. https://doi.org/10.1097/SCS.0000000000006369

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Please cite this article as: Nagorniak IV, Fesenko II. Fibula jaw and fibula teeth course by Fayette Williams. J Diagn Treat Oral Maxillofac Pathol 2021;5(2):32

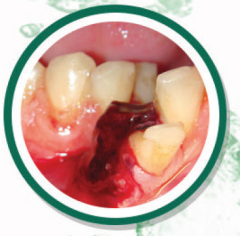
https://dx.doi.org/10.23999/j.dtomp.2021.2.3

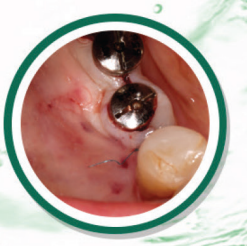
TANTUM VERDE®

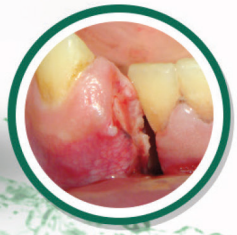
QUICK RELIEF FROM PAIN AND INFLAMMATION IN THE MOUTH AND THROAT[1]

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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