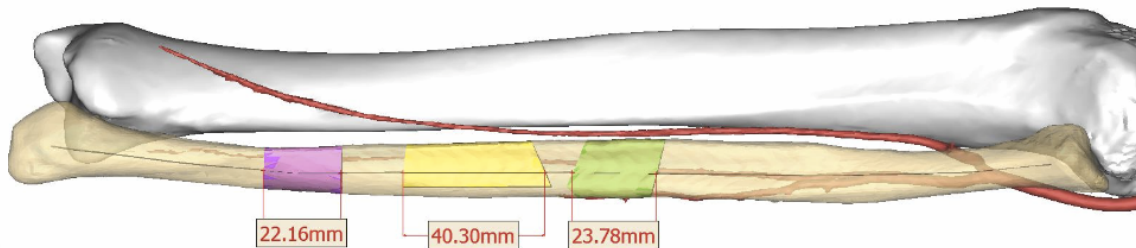
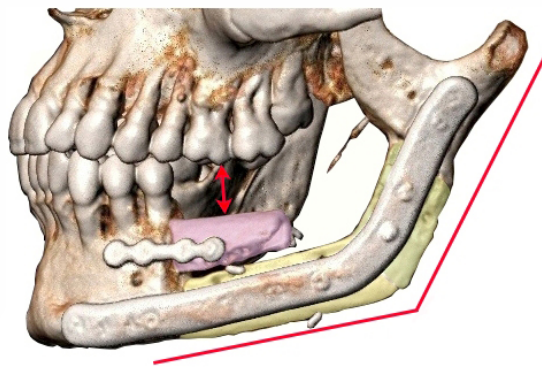


Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology

11 2025

The cover images indicate the key direction of the journal and highlight an article titled “The ‘Beveled One-and-a-Half-Barrel’ Fibula Transplant with Virtual Surgical Planning and CT-Guided Implant Surgery for Prosthetic Rehabilitation in Posterior Mandible Defects: A Pictorial Essay” by Olindo MASSARELLI and Silvio Mario MELONI. The article was published in Volume 6, Issue 3.

This is a monthly open access and peer-reviewed publication. This is the first Ukrainian journal dedicated exclusively to oral and maxillofacial surgery, registered in 2016. The Editor in Chief is Oleksii Tymofeiev, Kyiv, Ukraine.



TANTUM VERDE®

QUICK RELIEF FROM PAIN
AND INFLAMMATION IN THE
MOUTH AND THROAT¹

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



Reg. № UA/3920/01/01

**LOCAL ANESTHETIC
AND ANTI-INFLAMMATORY
EFFECT¹**

- **JAWS
FRACTURES³**
- **IMPLANTS
PLACEMENT⁴**
- **WOUNDS OF ORAL
CAVITY⁵**



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.angelini-pharma.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. Tymofiev 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 Mostakov ("SCIEDECE—Scientific Center of Dentistry & Ultrasound Surgery" Kyiv, Ukraine)



04119, Kiev, Melnikova str. 83D, of. 404.
Tel.: (044) 538-01-26
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About the Journal

NOVEMBER 2025 • VOLUME 9 • ISSUE 11
www.dtjournal.org

Official Title

Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology

Official Title in Ukrainian

Журнал діагностики та лікування оральної і щелепно-лицевої патології

Standard Abbreviation: ISO 4

J. Diagn. Treat. Oral Maxillofac. Pathol.

Acronym

JDTOMP

International Standard Serial Number (ISSN)

ISSN 2522-1965 (online)

Aims & Scope

This is a monthly open access and peer-reviewed oral and maxillofacial surgeons. The journal is focused on trauma, 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 38 opinion leaders from 15 countries: Brazil, Canada, Colombia, Greece, Hong Kong (SAR), India, Indonesia, Israel, Italy, Slovak Republic, Spain, Ukraine, United Arab Emirates, United Kingdom, 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 several full-time professional editors.
- Gender distribution of the editors: 10.53% women (4 persons), 89.47% men (34 persons), 0% non-binary/other, and 0% prefer not to disclose.

Frequency

12 issues a year (since January 2020)

Publishing Model

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

Open Access

This journal is licensed under the CC BY-NC-SA license.

Types of Peer Review

The journal employs “double blind” and open reviewing.

Article Publishing Charge (APC)

The APC in this journal is 519 Euro (\$590 USD) and 259 Euro (\$295 USD)(excluding taxes) depending on the article's type. Details at website: www.dtjournal.org.

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.

State Registration in the Ministry of Justice of Ukraine

Registration: Jul 28, 2016 (Certificate: KB № 22251-12151 P)

Re-registration: May 21, 2019 (Certificate: KB № 23999-13839 ПП)

Re-registration: Aug 10, 2021 (Certificate: KB № 24951-14891 ПП).

State Registration in the National Council of Television and Radio Broadcasting of Ukraine

- The journal is registered as print media (Decision of 2024, April 11, No. 1225). The identifier of print media R30-04318.
- The journal is registered as online media (Decision of 2024, April 25, No. 1454). The identifier of online media R40-04708.

Journal is Included in

Encyclopedia of Modern Ukraine, Google Scholar, National Repository of Academic Texts, Register of Scientific Publications of Ukraine (also known as Ukrainian Scientific Periodicals or Register of Scientific Professional Publications of Ukraine), ResearchGate, Scilit, and Vernadsky National Library of Ukraine

Co-Founders

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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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.

Digital Object Identifier (DOI) of the Journal

10.23999/j.dtomp

Official Journal of the Association

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: www.uamos.org.

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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 ($\geq 1/10$); common ($\geq 1/100$ to $<1/10$); uncommon ($\geq 1/1,000$ to $<1/100$); rare ($\geq 1/10,000$ 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

State Registration

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Міністерство юстиції України
СВІДОЦТВО
про державну реєстрацію
друкованого засобу масової інформації

Серія KB № 24951-14891 ПП

«Журнал діагностики та лікування оральної і щелепно-лицевої патології»
(назва видання державною мовою)
«Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology»
(назва видання іншою мовою (мовами))

Вид видання журнал
(газета, журнал, бюлетень, збірник, альманах, календар, дайджест)

Статус видання вітчизняне
(вітчизняне, спільне)

Мова (мови) видання змішаними мовами: українська, англійська

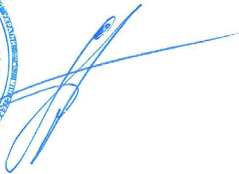
Вид видання за цільовим призначенням наукове, науково-виробниче
(громадсько-політичне, наукове, навчальне, інформаційне, рекламне (понад 40 відсотків обсягу одного номера – реклама), еротичне тощо)

Обсяг, періодичність 23,1 ум. друк. арк., формат А4 (210x297мм), 1 раз на місяць

Сфера розповсюдження та категорія читачів загальнодержавна, зарубіжна
лікарі-стоматологи-хірурги; лікарі ультразвукової діагностики, лікарі-рентгенологи, лікарі-патологоанатоми, студенти, лікарі-інтерни, слухачі, аспіранти, докторанти, наукові, науково-педагогічні та педагогічні працівники закладів вищої освіти та наукових установ

Засновник (співзасновники) Національний університет охорони здоров'я України імені П.Л. Шупика (код за ЄДРПОУ 01896702), Приватний вищий навчальний заклад «Київський медичний університет» (код за ЄДРПОУ 16478809), Товариство з обмеженою відповідальністю «ОМФ ПАБЛІШІНГ» (код за ЄДРПОУ 40493077)

Програмні цілі (основні принципи) журнал присвячений сучасним проблемам діагностики і лікування в хірургічній стоматології та щелепно-лицевій або тематична спрямованість хірургії

Перший заступник Міністра  **Євгеній ГОРОВЕЦЬ**

10.08.2021
(дата реєстрації)



FIGURE 1. Certificate of State Re-Registration of the Print Mass Media (journal) in the Ministry of Justice of Ukraine as of 2021. The *Journal* was registered for the first time in 2016 under the title *Diagnostics and Treatment of Oral and Maxillofacial Pathology*. The next re-registration took place in 2019.

State Registration

NOVEMBER 2025 • VOLUME 9 • ISSUE 11
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УКРАЇНА

**НАЦІОНАЛЬНА РАДА УКРАЇНИ
З ПИТАНЬ ТЕЛЕБАЧЕННЯ І РАДІОМОВЛЕННЯ**

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на № _____

ВИТЯГ*
З РЕЄСТРУ СУБ'ЄКТІВ У СФЕРІ МЕДІА - РЕЄСТРАНТІВ

Виданий ТОВАРИСТВУ З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ «ОМФ ПАБЛІШИНГ», м. Київ, код ЄДРПОУ 40493077
(найменування суб'єкта у сфері медіа, код згідно з ЄДРПОУ)

Ідентифікатор медіа R30-04318

Логотип, позивні або назва медіа «Журнал діагностики та лікування оральної і щелепно-лицевої патології» / «Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology»

Суб'єкт у сфері друкованих медіа, вид друкованого медіа –журнал
(суб'єкт, що здійснює мовлення без використання радіочастотного спектра (лінійне медіа, вид та технологія мовлення), суб'єкт у сфері аудіовізуальних медіа на замовлення (нелінійний медіа-сервіс, технологія, що застосовується для надання сервісу), провайдер аудіовізуальних сервісів (технологія, що застосовується для надання доступу), провайдер платформ спільного доступу до відео (технологія, що застосовується для надання сервісу), суб'єкт у сфері друкованих медіа (вид друкованого медіа), суб'єкт у сфері онлайн-медіа (вид онлайн медіа))

Рішення від 11.04.2024 № 1225
(дата і номер рішення Національної ради про реєстрацію; дата і номер рішення про внесення останніх змін до Реєстру)

М. П.
Перший заступник голови
Валентин КОВАЛЬ

Відповідальний секретар
Олена НІЦКО



* до введення в дію Електронного кабінету (за вимогою суб'єкта)

A

FIGURE 2. The *Journal* is registered by the National Council of Television and Radio Broadcasting of Ukraine as print media **(A)** (Decision of April 11, 2024, No. 1225) and online media **(B)** (Decision of April 25, 2024, No. 1454). The identifier of print media is R30-04318 and the identifier of online media is R40-04708. **(Fig 2 continued on next page.)**

State Registration

NOVEMBER 2025 • VOLUME 9 • ISSUE 11
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УКРАЇНА

**НАЦІОНАЛЬНА РАДА УКРАЇНИ
З ПИТАНЬ ТЕЛЕБАЧЕННЯ І РАДІОМОВЛЕННЯ**
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ВИТЯГ*
З РЕЄСТРУ СУБ'ЄКТІВ У СФЕРІ МЕДІА - РЕЄСТРАНТІВ

Виданий ТОВАРИСТВУ З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ «ОМФ ПАБЛІШІНГ», м. Київ, код ЄДРПОУ 40493077
(найменування суб'єкта у сфері медіа, код згідно з ЄДРПОУ)

Ідентифікатор медіа R40-04708

Логотип, позивні або назва медіа «Journal of Diagnostics and Treatment of Oral and Maxillofacial Pathology» / «Журнал діагностики та лікування оральної і щелепно-лицевої патології»

Суб'єкт у сфері онлайн-медіа, вид онлайн-медіа – журнал
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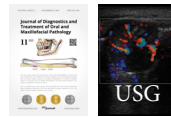


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CASE REPORT

Bone Formation in Peripheral Giant Cell Granuloma: A Case Report with a First Clinical, Radiographic, Ultrasonographic, Macroscopic, and Histopathologic Comparison

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SUMMARY

Peripheral giant cell granuloma (PGCG) is one of the benign peripheal reactive lesions of the jaws. Clinically, it is difficult to distinguish from peripheral ossifying fibroma or even metastatic tumor. We report a case of a PGCG in a 64-year-old Caucasian male. Clinically, PGCG presented as a 2.4- × 2-cm saddle-shaped pedunculated lesion of the partially edentulous alveolar ridge of the anterior mandible. The case is unique in that areas of bone formation were noted within the PGCG upon comparison of gray-scale ultrasonography (USG), macroscopic, and histopathological examination. To our knowledge it's a first ever reported comparison in the medical literature. Indirect ultrasound imaging technique is considered in this article. Prominent intralesional vascularity upon color Doppler USG was proved upon intraoperative step when significant bleeding was noted from soft and bone tissues. Understanding by clinicians of ultrasound patterns in similar cases will facilitate differential diagnosis between alveolar ridge lesions. This paper proves ones again that ultrasound is an essential tool for the oral and maxillofacial surgeons.

KEY WORDS

Peripheral giant cell granuloma, ultrasonography, gray-scale ultrasound, color Doppler ultrasound, bone formation, intralesional vascularity

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The abbreviation "USG" in the upper right icon means that this article describes ultrasonography.

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INTRODUCTION

Peripheral giant cell granuloma (PGCG) is a benign sessile lesion of the gingiva or alveolar ridge mucosa [1, 2]. The old name of the PGCG, fungus flesh (John **Tomes**, 1848), referred to the fungus-like appearance of the growth [1, 3]. PGCG is a site-specific lesion [1]. The PGCG was previously termed as (1) reparative giant cell granuloma (Henry **Jaffe**, 1953), (2) peripheral giant cell reparative granuloma, (3) epulis, (4) giant cell epulis, (5) myeloid epulis, (6) osteoclastoma, (7) peripheral giant cell tumor, and (8) giant cell hyperplasia of the oral mucosa [1, 4-7]. Typically, PGCG develops following chronic irritation or trauma [5, 8, 9]. And **Kfir** et al. (1980) classify PGCG as one of the reactive lesions of the gingiva [10].

Establishing a preliminary diagnosis for alveolar ridge neoplasms and lesions without performing a biopsy is not always a simple task for clinicians. And the use of ultrasonography (USG) is an excellent way to diagnose formations within the alveolar process of the jaws. Unlike other oral lesions and tumors, there is limited literature regarding the imaging characteristics of PGCG on USG [7, 11]. That is why the purpose of this article is to present unique ultrasound data of the bone formation in the PGCG and compare it with macroscopic and histopathological data. In fact, the case highlighted below is an extremely important continuation and addition to the research and publications of such groups of authors as **Katsikeris** et al. (1988), **Dayan** et al. (1990), and **Ogbureke** et al. (2015) [12, 13, 1]. All three studies thoroughly describe the presence of mineralized areas in the thickness of the PGCGs.

CASE REPORT

On June 15, 2015, a 64-year-old Caucasian male presented to the Department of Maxillofacial Surgery and Dentistry with complaints of a growth of a neoplasm in the oral cavity for four months. Intraoral examination revealed a saddle-shaped, lobulated lesion with short peduncle (**Fig 1**) involving the alveolar ridge of the partially edentulous anterior mandible. The lesion was measured 2.4×2 cm and consisted of anterior (vestibular) and posterior (lingual) lobe and located between lower right second premolar and left second incisor. The formation had a smooth surface

of red, gray, brown, and bluish hue.

A radiographic examination was performed to assess the condition of the bone tissue and teeth, and an USG was performed to assess the structure and vascularization of the soft tissue lesion. The panoramic radiograph (**Fig 2**) showed a dome-shaped radiopacity rising above the alveolar ridge of the edentulous area of the anterior mandible.

Figure 3 demonstrates indirect ultrasonography of the lesion: The linear transducer (i.e., linear probe) does not come into direct contact with the tumor, but rather with the lip and chin area, thus covering the surrounding tissues.

Gray-scale USG (**Fig 4**) revealed a unilocular, well-defined lesion with heterogeneous echogenicity. The lesion was measured 2.08×2.2 cm and located in a saddle-shaped position on the edentulous area of the anterior part of alveolar ridge of the mandible. The presence of multiple echoic areas and acoustic enhancement behind the neoplasm is noted.

Color Doppler USG (**Fig 5**) showed prominent intralesional vascularity. **Figure 6** demonstrates gray-scale USG of the lesion from two different angles, which allows for better visualization of echogenic areas (i.e., areas of ossification) within the lesion. It was not possible to adequately determine the area of the “stem” of the lesion.

During the complete surgical excision of the lesion (V.H.D.) followed by a peripheral osteotomy, profuse bleeding was noted both from the soft tissues and from the bone tissue of the alveolar ridge. This significant bleeding is confirmation of the color Doppler data on the presence of increased vascularization within the lesion.

It is worth noting the mushroom-shaped appearance of the lesion, which had an extremely large saddle-shaped “cap” and an extremely thin “stem/stipe.” After removal, when the gross specimen was cut, several areas with calcifications were found (**Fig 7**). It felt as if the cartilage tissue was being cut when cutting specimen in areas of calcifications.

Two highly experienced pathologists (A.P.C. and V.I.Z.) independently established a diagnosis of giant cell epulis (i.e., PGCG). V.I.Z. described the histopathological images as giant cell epulis with fragments of bony beams. **Figure 8** shows the histopathological image with bony beams within the cellular mass of a PGCG.

Postoperative period was smooth and a 1-year follow-up showed no evidence of recurrence.

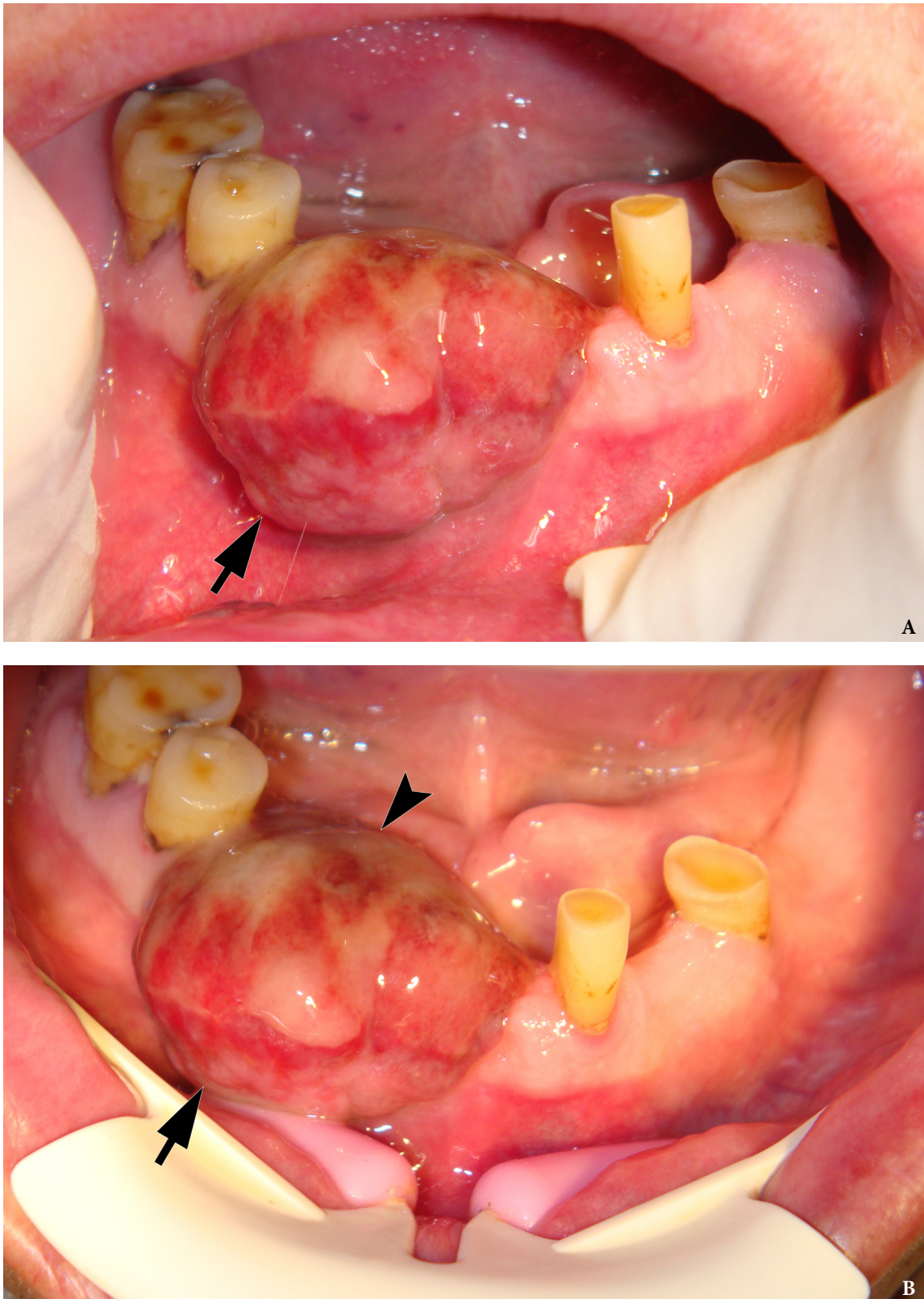


FIGURE 1. Intraoral appearance of the sessile lesion (**A, B**). *Arrow* labels anterior (vestibular) lobe and *arrowhead* labels posterior (lingual) lobe of this saddle-shaped lesion.

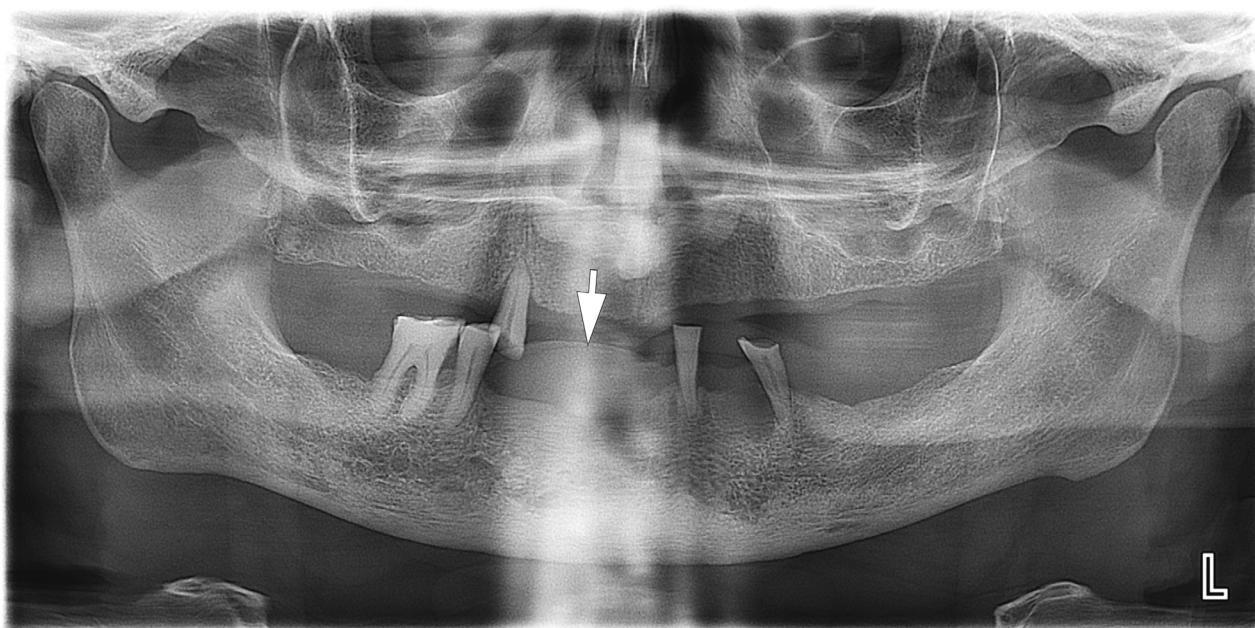


FIGURE 2. A panoramic radiograph shows a dome-shaped radiopacity (*arrow*, i.e., lesion) rising above the alveolar ridge of the edentulous area of the mandible. It is difficult to identify areas of ossification in the projection of radiopacity. L, left side.



FIGURE 3. Indirect ultrasonography: Image demonstrates position of the linear transducer (i.e., linear probe) relative to the pathologic area.

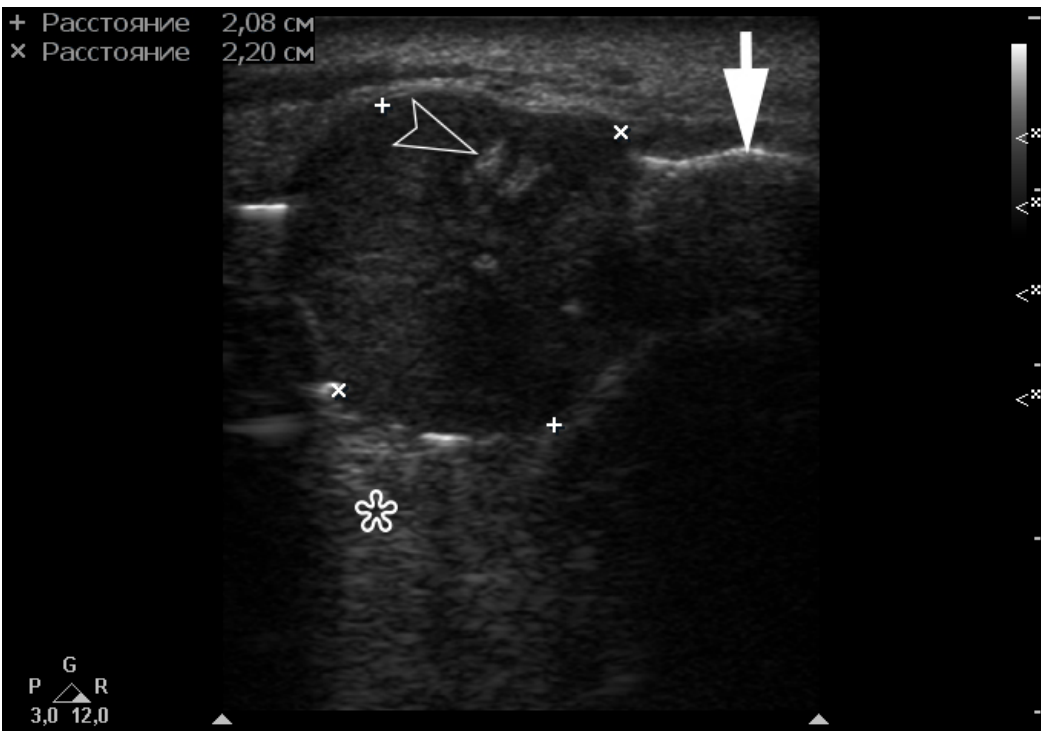


FIGURE 4. Gray-scale ultrasound shows a unilocular, well-defined lesion with heterogeneous echogenicity. The lesion is measured 2.08×2.2 cm and indicated by “+” and “x” calipers. The lesion is located in a saddle-shaped position on the edentulous area of the anterior part of alveolar ridge of the mandible. Echoic area of bone formation is indicated by *arrowhead*. The area of the mandible on which the mass is located is indicated by an *arrow* and has a hyperechoic appearance. Acoustic enhancement is marked with an *asterisk*.

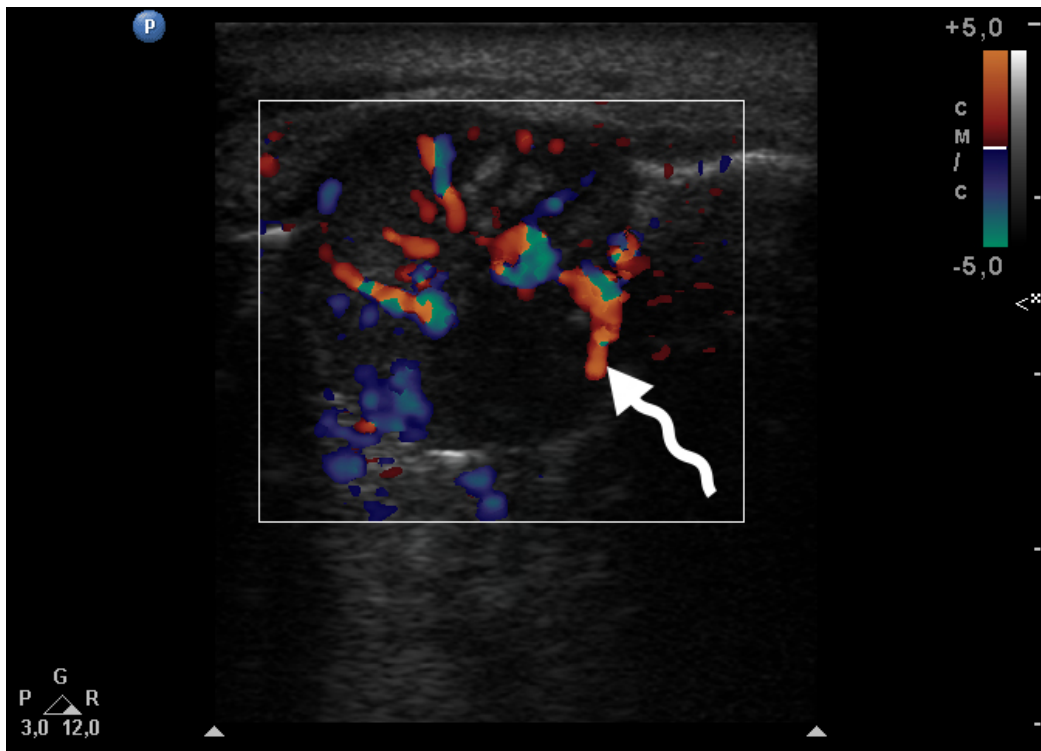


FIGURE 5. Color Doppler ultrasound shows prominent intralésional vascularity (*waved arrow*).

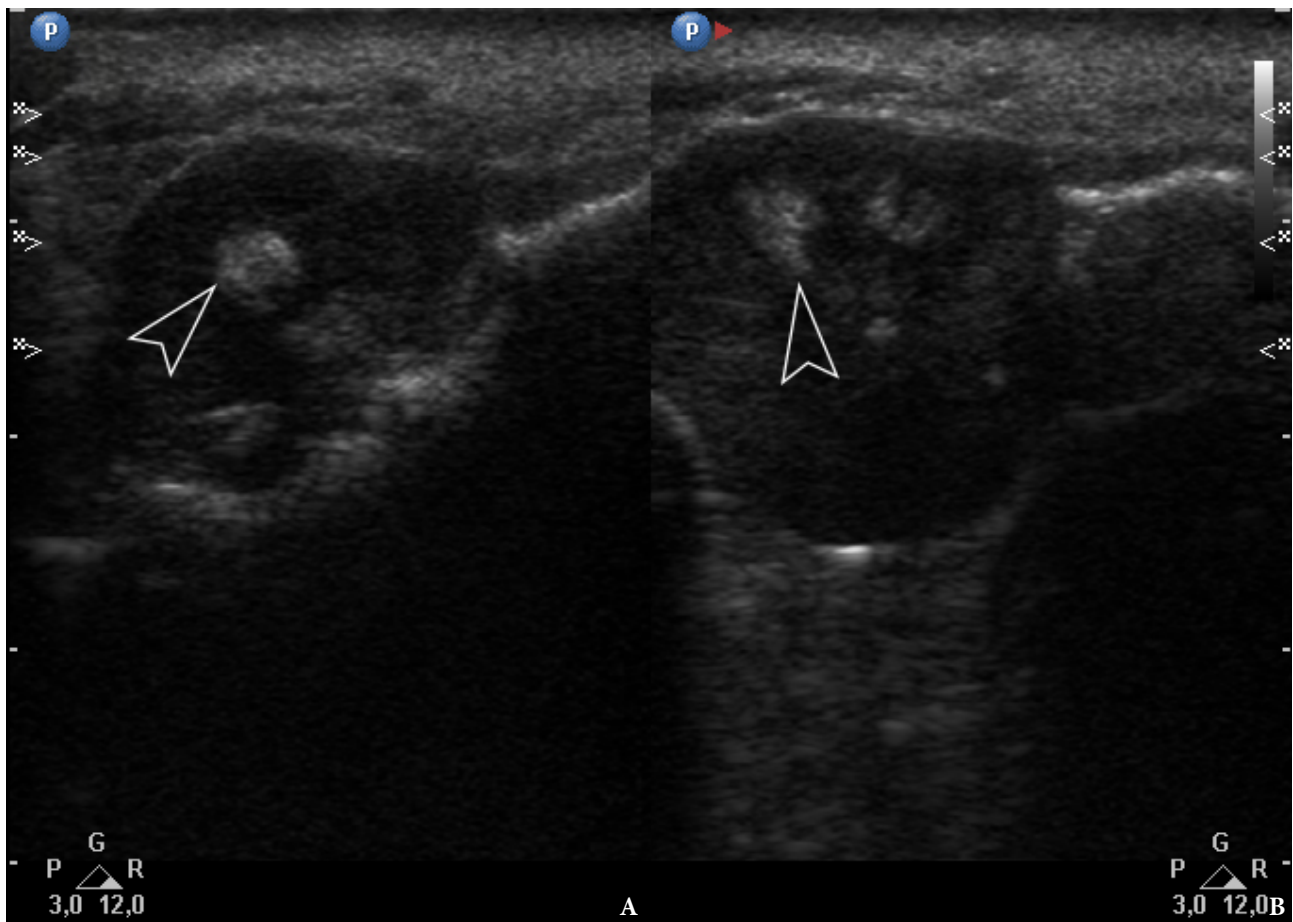


FIGURE 6. Gray-scale sonograms of the lesion from two different angles (**A, B**). Sonograms show a hypoechoic lesion with multiple echoic areas (i.e., areas of bone formation). It is easy to distinguish areas of ossification (*arrowheads*) in the thickness of the lesion due to their echoic look. These two images demonstrate that gray-scale ultrasound is highly sensitive for detecting areas of ossification within a neoplasm such as PGCG.

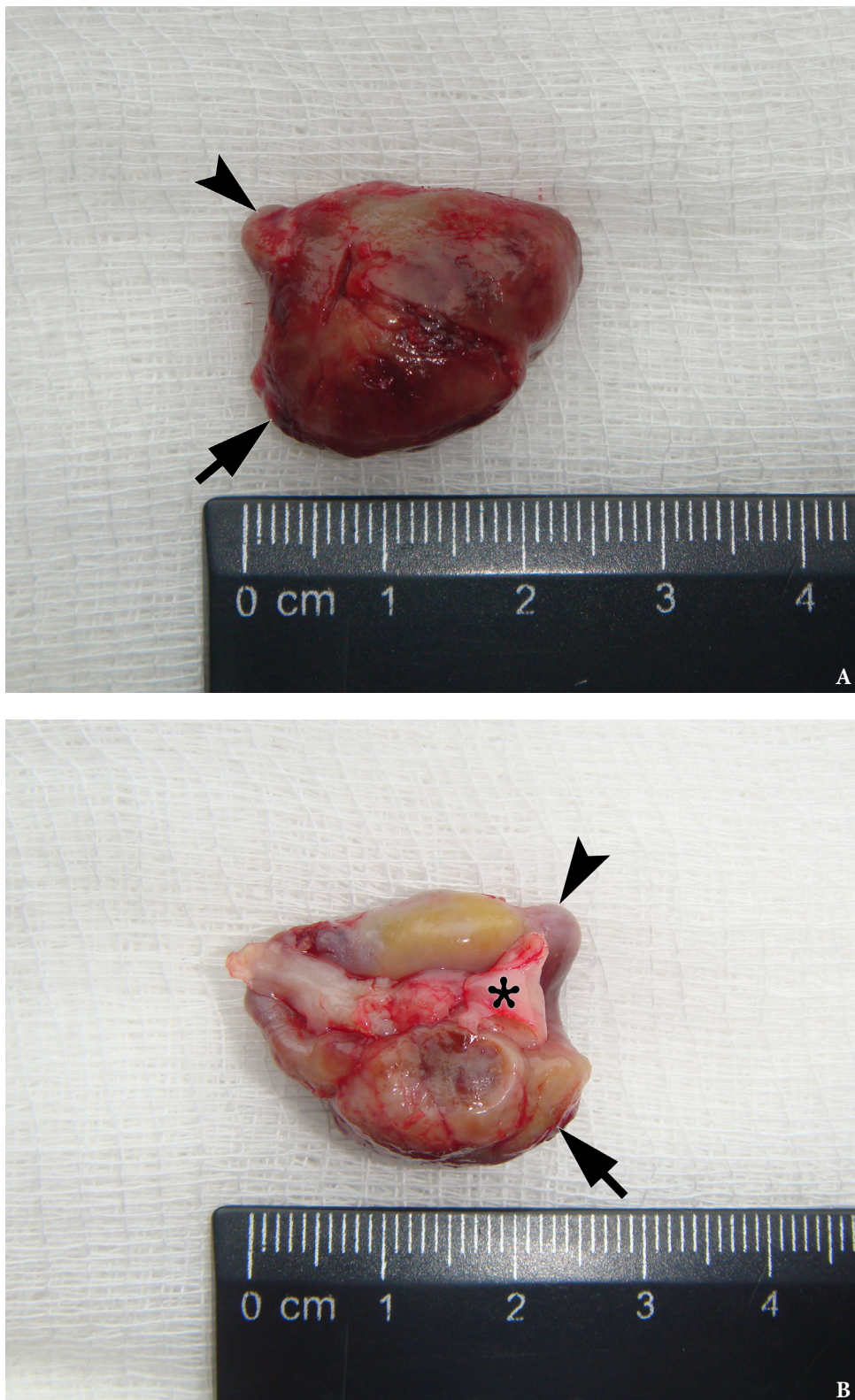


FIGURE 7. Macroscopic view of the lesion. Image **A** shows a top view of the lesion. Image **B** shows the removed saddle-shaped lesion in inverted position, which clearly demonstrates its shape. *Arrow* labels anterior (vestibular) lobe and *arrowhead* labels posterior (lingual) lobe of this lesion. The attachment zone is indicated by an *asterisk*. The gross specimen after a longitudinal section (**C**) and subsequent two separate sections (**D**) of the anterior (*arrow*) and posterior (*arrowhead*) lobes of the lesion shows presence of calcified areas (*open arrows*). (**Fig 7 continued on next page.**)

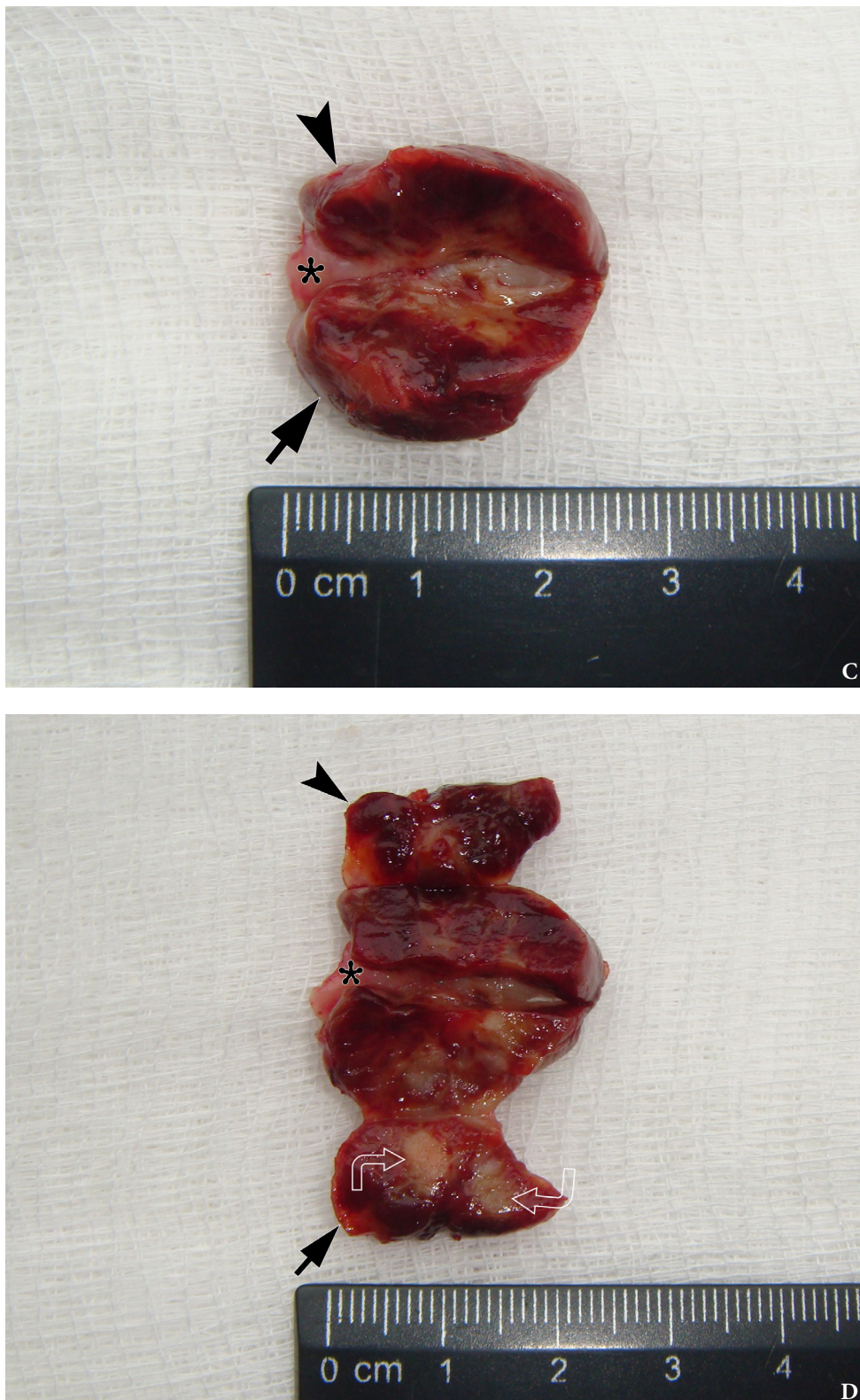


FIGURE 7 (continued). Macroscopic view of the lesion. Image **A** shows a top view of the lesion. Image **B** shows the removed saddle-shaped lesion in inverted position, which clearly demonstrates its shape. *Arrow* labels anterior (vestibular) lobe and *arrowhead* labels posterior (lingual) lobe of this lesion. The attachment zone is indicated by an *asterisk*. The gross specimen after a longitudinal section (**C**) and subsequent two separate sections (**D**) of the anterior (*arrow*) and posterior (*arrowhead*) lobes of the lesion shows presence of calcified areas (*open arrows*).

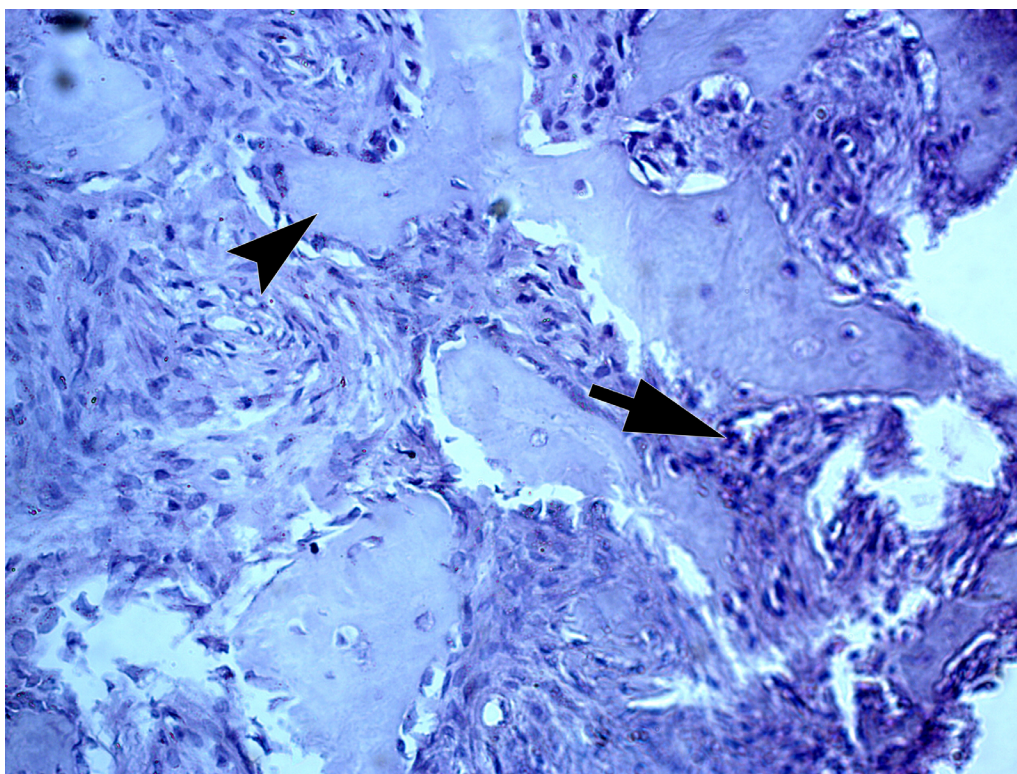


FIGURE 8. Bony beams (*arrowhead*) (woven bone) within the cellular mass (*arrow*) of a PGCG. Hematoxylin and eosin staining, magnification 40×.

DISCUSSION

The Greek word “epulis” literally means the “(growth) on the gingiva.” In Ukraine, the term giant cell epulis was previously mainly used for PGCG. Interestingly, Boffano et al. (2013) noted that the term “epulis” is a topographic term and does not indicate histopathological differences [14]. Differential diagnosis of PGCG is most often carried out with neoplasms such as pyogenic granuloma [15], peripheral ossifying fibroma [7, 16, 17], hybrid PGCG-peripheral ossifying fibroma [1], inflammatory fibrous hyperplasia [18], ameloblastoma [19], and metastatic tumors [20, 21]. Comparison of the clinical differentiating features in between various entities that resemble PGCG is described in the study by Patil et al. (2014) [20]. The peripheral ossifying fibroma and PGCG are clinically indistinguishable from one another [1].

Katsikeris et al. (1988) and Patil et al. (2014) are emphasizing that PGCG can arise from the connective tissue of the gingiva, periodontal membrane or from the periosteum of the alveolar ridge [12, 20].

Authors certify that local irritating factors such as

teeth extraction, poor restorations, food impaction, calculus, ill-fitting dentures, etc. [13, 22].

The simplest method of diagnosing the oral cavity is panoramic radiography. It is also appropriate in the case of PGCG, but it solves a limited range of issues, namely, assessing the condition of neighboring teeth and the presence of bone resorption.

In our case, it was difficult to reliably determine the areas of ossification in the projection of radiopacity (i.e., PGCG) on the orthopantomography. This can most likely be explained by an insufficient level of ossification. In other cases, newly formed bone tissue in the projection of the PGCG was visible radiologically [23].

But on gray-scale sonograms, it was extremely easy for our team to detect areas of ossification within PGCG. Therefore, we believe that ultrasound is a key examination method for reactive jaw formations such as PGCG.

A fairly large number of works are devoted to ultrasound of jaw lesions [24–28]. However, there are not many reliably known descriptions of ultrasound of the PGCG [8, 11].

Orhan and Ünsal (2021) demonstrated five gray-scale and color Doppler sonograms with PGCG [11].

In their case, no pronounced areas of ossification were observed. However, increased vascularization of the lesion was noted. A characteristic location in the anterior region of the mandible was also noted. This coincides with the data of Dayan et al. (1990) [13].

Ewansiha et al. (2022) presented a 12-year-old boy patient and two ultrasound images of the PGCG of the maxilla [8]. First one, a gray scale sonogram, and a second one, color Doppler interrogation. Sonograms showed a fairly ovoid-shaped, heterogenic lesion, measuring 43.5×25.6 mm with multifocal echogenic areas due to calcification. On Doppler interrogation, it showed high intraparenchymal flow with low-resistant spectral pattern.

In our case, we applied transfacial USG (i.e., indirect USG) (Gad et al., 2018) for examination of the lesion and surrounding tissues [28]. The case we presented confirms the data that an advanced vascularization is frequently seen in PGCG upon Doppler examination [11].

In the clinicopathologic study of 224 PGCGs by Katsikeris et al. (1988) was revealed that mature bone or osteoid was found in 44.6% of the PGCG cases, whereas 4.9% of the lesions contained foci of amorphous calcifications [12].

Mineralized tissue was found in 35% of the 62 PGCG cases [13]. Most of the PGCGs which contained mineralized material (73%) were located in the anterior region in both jaws [13]. This fact of such localization is also confirmed in our case.

Important clinical and radiological data were presented in the case series of Kaya et al. (2011) [23]. Panoramic radiography in one of their PGCG cases showed widespread vertically oriented bony spicules at the base of the lesion. This fact confirms our data and literature data [1, 12, 13] on possible histological variants of PGCG with bone formation.

Bouquot et al. (2009) emphasize that osteoblastic new bone formation may be seen in the PGCG [7]. Occasional lesions show an admixture of tissue types compatible with PGCG, peripheral ossifying fibroma, and pyogenic granuloma, presumably because of the common pathoetiology of these lesions. The authors claim that such lesions are traditionally diagnosed according to the dominant tissue type.

An updated analysis of 2824 cases of PGCG reported in the literature showed that excision of the PGCG led to recurrence in some cases [2]. Therefore, excision followed by a curettage or peripheral osteotomy should be the first choice of

treatment of PGCG [2]. The periosteum must be included in the excision to prevent recurrences (Falaschini et al., 2007) [29].

Thus, our case allows to add two important ultrasound differential features for PGCG located in the anterior edentulous mandible compared to other reactive alveolar ridge pathology. Namely, areas of bone formation and prominent intralesional vascularity.

CONCLUSION

The presented case confirms the histopathological data that most of the peripheral giant cell granulomas which contained mineralized material (73%) were located in the anterior region of the jaws. Moreover, this case shows how ultrasonography can increase the likelihood of establishing the correct diagnosis before biopsy in reactive gingival lesions.

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