

# Traumatic Ulcerative Granuloma with Stromal Eosinophilia (TUGSE) Mimicking Oral Malignancy: a case series

Yong-Seung Kim

Seoul National University

JaeHong Lee

Seoul National University

Mi Hyun Seo

t.jalrus@snu.ac.kr

Seoul National University

---

## Case Report

**Keywords:** Traumatic ulcerative granuloma with stromal eosinophilia, Oral ulcer, Eosinophilia, Mouth neoplasms, Diagnosis, differential, Biopsy, Radiotherapy

**Posted Date:** August 6th, 2026

**DOI:** <https://doi.org/10.21203/rs.3.rs-10279821/v1>

**License:**   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

**Additional Declarations:** No competing interests reported.

---

**Version of Record:** A version of this preprint was published at BMC Oral Health on October 13th, 2026.  
See the published version at <https://doi.org/10.1186/s12903-026-10168-x>.

# Abstract

## Background

Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) is an uncommon benign reactive lesion of the oral mucosa that can mimic malignancy. Its bimodal age distribution is recognized, but the clinical implications of this distribution remain underexplored. We report four biopsy-proven cases spanning a wide age range across childhood–adolescence and older adulthood to examine age-specific malignancy mimicry, trauma source, and the dissociation between tissue and peripheral eosinophilia.

## Case presentation:

Four consecutive patients diagnosed at a single tertiary oral and maxillofacial surgery center between December 2025 and May 2026 were reviewed: three pediatric or adolescent males (7, 8, and 17 years) and one 68-year-old woman. The suspected malignancy differed by age — lymphoma in the pediatric cases, and recurrent or second primary oral squamous cell carcinoma in the older patient, who had a remote palatal carcinoma treated with radiotherapy and a long-standing history of removable partial denture wear, a combination not previously reported. The likely trauma source varied similarly, from cheek biting and suspected self-injurious behavior to prosthetic trauma on previously irradiated mucosa. Despite eosinophil-rich histology, calculated peripheral eosinophil counts (60–217/ $\mu$ L) remained well below the diagnostic threshold, with normal lymphocyte proportions and inflammatory markers. All lesions healed without recurrence.

## Conclusions

TUGSE mimicked different malignancies at different ages, each with a different likely trauma source. Neither the clinical pattern of the lesion nor the peripheral blood differential reliably excludes the diagnosis; biopsy must remain the decisive diagnostic step, particularly in pediatric patients with lymphoma-like ulceration and in head and neck cancer survivors with new ulcers within a previously irradiated field.

## Background

Traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) is an uncommon benign reactive lesion of the oral mucosa, histopathologically defined by surface ulceration with a dense polymorphous infiltrate rich in eosinophils that often extends into the underlying skeletal muscle [1, 2]. Although the lesion is self-limiting, its clinical importance lies in a persistent ability to mimic malignant disease — induration, rolled borders, delayed healing, or a mass-like component that may be clinically indistinguishable from oral squamous cell carcinoma (OSCC) or lymphoma at initial presentation [2, 3, 4].

A recognized but underdiscussed feature of TUGSE is its classically described bimodal age distribution: an infantile peak within the first two years of life, corresponding to Riga–Fede disease, and a later peak in the sixth-to-seventh decades [2, 5]. The clinical implication of this distribution has received little systematic attention. The specific malignancy that a TUGSE lesion is most likely to be confused with appears to differ between the two peaks, and so does the most plausible source of mechanical mucosal trauma. In children and adolescents, deep persistent ulcers are most readily interpreted as lymphoma or CD30-positive lymphoproliferative disorder, in line with the atypical mononuclear and CD30-positive cells repeatedly demonstrated in TUGSE specimens [2, 6, 7, 8]; the inciting trauma, when identifiable, is typically related to mixed-dentition factors such as cheek biting, sharp cusps of erupting molars, or self-injurious oral habits in patients with neurodevelopmental conditions. In older adults – particularly those with a prior diagnosis of head and neck cancer or postoperative radiotherapy (PORT) – the same lesion is far more likely to be read as recurrence or a second primary OSCC, prompting urgent oncologic referral; the inciting trauma in this age group is most often prosthetic, related to the flanges, clasps, or unstable occlusion of a removable partial or complete denture [5, 9]. To our knowledge, TUGSE arising in previously irradiated oral mucosa with a prior partial denture history has not been specifically described, although both prosthetic trauma [9] and post-irradiation mucosal vulnerability [10] are individually well recognized.

A second clinical pitfall, encountered repeatedly in our patients, is the dissociation between local tissue eosinophilia and peripheral blood eosinophilia. Despite the eosinophil-rich histopathology that defines TUGSE, a normal peripheral eosinophil count is the rule rather than the exception, and clinicians may inadvertently use a normal differential count to argue against the diagnosis. Peripheral blood differentials – including absolute eosinophil count, lymphocyte profile, and acute-phase reactants – were specifically reviewed in all of our patients for this reason, both to characterize this dissociation and to document the absence of systemic lymphoproliferative or infectious activity that might otherwise support an alternative diagnosis.

We describe four consecutive biopsy-proven TUGSE cases evaluated at a single tertiary oral and maxillofacial surgery center, in which the patient ages spanned a broad range at and beyond the margins of the classically described bimodal distribution. Three cases occurred in pediatric or adolescent patients with lesions clinically suspicious for lymphoma or malignancy; one case occurred in an older woman with a remote history of palatal cancer treated with PORT and a long-standing history of removable partial denture wear that had been recently discontinued, in whom recurrent or second primary carcinoma was the leading clinical concern and the eventual diagnosis of TUGSE was clinically unexpected. The aims of this case series are to (i) illustrate how the malignancy that TUGSE mimics, and the most plausible source of mechanical trauma, differ by age across childhood, adolescence, and older adulthood, (ii) document a previously unreported presentation of TUGSE arising in previously irradiated mucosa with a denture-related traumatic background, and (iii) confirm the dissociation between tissue and peripheral eosinophilia as a diagnostic pitfall – together emphasizing why biopsy, rather than clinical pattern or laboratory inference, must remain the decisive diagnostic step.

# Case presentation

This was a retrospective case series of four consecutive patients with biopsy-proven oral traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) evaluated at a single tertiary oral and maxillofacial surgery center between December 2025 and May 2026. This study was conducted in accordance with the principles of the Declaration of Helsinki. This Study was approved Seoul National University Dental Hospital Institutional Review Board (IRB No. ERI26035).

For each patient, the following information was extracted from the medical record: age and sex; relevant medical history with specific attention to prior head and neck malignancy or radiotherapy; presenting symptoms and duration; lesion site, size when documented, and clinical appearance; the dominant clinical impression at biopsy; available radiologic findings; biopsy type and histopathologic diagnosis; peripheral blood differential — including white blood cell count, absolute neutrophil count, lymphocyte and eosinophil proportions, erythrocyte sedimentation rate, and C-reactive protein — with absolute eosinophil counts calculated as the product of white blood cell count and eosinophil proportion (threshold for peripheral eosinophilia,  $>500/\mu\text{L}$ ); identifiable mechanical trauma; treatment; and follow-up outcomes including healing status and recurrence. Demographic and clinical characteristics of the four patients are summarized in Table 1.

## Case 1

Case 1 was a 7-year-old male who presented to our department with a persistent ulcerative lesion of the right buccal mucosa that had been present for approximately three weeks. The patient reported pain associated with the lesion and explicitly recalled having bitten his right cheek before the lesion appeared. His past medical history was unremarkable. Intraoral examination revealed a 2 cm ulceration with raised, indurated borders on the right buccal mucosa (Figure 1A). Given the persistence, size, and indurated character of the lesion in a pediatric patient, the initial clinical impression favored lymphoma, and incisional biopsy was planned to exclude malignancy.

Panoramic radiography and contrast-enhanced computed tomography were obtained as part of the diagnostic workup. No aggressive bone destruction, cortical erosion, or invasive soft-tissue mass was identified on imaging (Figure 1C, 1D). Peripheral blood differential at presentation showed a white blood cell count of  $8,720/\mu\text{L}$ , absolute neutrophil count of  $4,587/\mu\text{L}$ , lymphocyte proportion of 40.7%, and eosinophil proportion of 0.7%, yielding a calculated absolute eosinophil count of  $61/\mu\text{L}$  — well below the conventional threshold for peripheral eosinophilia ( $>500/\mu\text{L}$ ). The erythrocyte sedimentation rate was mildly elevated at 38 mm/hr; C-reactive protein was within the normal range at 0.16 mg/dL (Table 2). Incisional biopsy of two distinct sites within the lesion was performed; two specimens were independently submitted, and histopathologic examination of hematoxylin and eosin-stained sections demonstrated identical features of surface ulceration with a dense polymorphous inflammatory infiltrate rich in eosinophils extending into the underlying tissue, establishing the diagnosis of TUGSE in both specimens. No atypical lymphoid features were noted on the pathology report; additional immunohistochemical staining, including CD30, was not performed.

No specific medication was prescribed following the biopsy. At the final follow-up on postoperative day 41, the ulcer had healed completely without recurrence (Figure 1B).

## **Case 2**

Case 2 was a 17-year-old male with autism spectrum disorder who was referred to our department for evaluation of a persistent ulcerative lesion of the right floor of the mouth that had been present for approximately 8 to 12 weeks. The patient reported pain associated with the lesion. Direct verbal history was limited by his communication difficulties; his caregiver reported a long-standing tendency toward recurrent oral ulcers since early childhood, raising the possibility of unrecognized self-injurious oral behavior, although no specific traumatic event could be confirmed. Intraoral examination revealed an ulcerative lesion of the right floor of the mouth (Figure 2A). The differential diagnosis at presentation was recorded as “TUGSE versus malignancy,” and excisional biopsy was planned given the duration and clinical concern.

Panoramic radiography was obtained; no aggressive bone destruction or imaging features suspicious for malignancy were identified (Figure 2C). Peripheral blood differential showed a white blood cell count of 7,490/ $\mu$ L, absolute neutrophil count of 4,314/ $\mu$ L, lymphocyte proportion of 34.2%, and eosinophil proportion of 2.9% — the highest among the four patients in this series — yielding a calculated absolute eosinophil count of 217/ $\mu$ L, still well below the conventional threshold for peripheral eosinophilia. The erythrocyte sedimentation rate was within the normal range at 15 mm/hr; C-reactive protein was not measured (Table 2). Excisional biopsy was performed, and histopathologic examination of one hematoxylin and eosin-stained section confirmed the diagnosis of TUGSE, with characteristic surface ulceration and stromal eosinophilia. No atypical lymphoid features were noted, and additional immunohistochemical staining was not performed.

Postoperative management consisted of benzydamine hydrochloride and diphenhydramine-containing oral rinses. At the postoperative result and suture-removal visit on day 15, satisfactory healing of the excisional biopsy site was documented photographically (Figure 2B). At the final follow-up on postoperative day 50, complete mucosal healing without recurrence was confirmed by clinical record review.

## **Case 3**

Case 3 was an 8-year-old male who presented with a persistent ulcerative lesion involving the right buccal mucosa, extending to the retromolar trigone region and the gingiva adjacent to the right mandibular first molar (tooth #46), of approximately 4 weeks' duration. The patient reported discomfort associated with the lesion and described it as “a wound on the cheek”; his past medical history was unremarkable. No specific traumatic event could be elicited despite careful history-taking from both the patient and his family, who had initially attributed the lesion to mumps. Intraoral examination revealed an ulcerative lesion involving two adjacent anatomical sites — the right buccal mucosa with the retromolar trigone region, and the gingiva near tooth #46 (Figure 3A). A clinical impression of TUGSE was favored

from the outset, though biopsy was still indicated to exclude malignancy given the persistence of the lesion and its involvement of two adjacent sites.

Panoramic radiography and contrast-enhanced computed tomography were performed; no aggressive bone destruction, cortical erosion, or invasive soft-tissue mass was identified on imaging (Figure 3F, 3G). Peripheral blood differential showed a white blood cell count of 10,970/ $\mu$ L, absolute neutrophil count of 6,878/ $\mu$ L, lymphocyte proportion of 30.5%, and eosinophil proportion of 1.2%, yielding a calculated absolute eosinophil count of 132/ $\mu$ L — well below the conventional threshold for peripheral eosinophilia. The erythrocyte sedimentation rate was within the normal range at 14 mm/hr; C-reactive protein was also normal at 0.21 mg/dL (Table 2). Incisional biopsy of both anatomical sites was performed, and two anatomically distinct specimens — the right buccal mucosa and the gingiva adjacent to tooth #46 — were independently submitted to pathology. Histopathologic examination of two hematoxylin and eosin-stained sections demonstrated identical findings in both specimens, confirming the diagnosis of TUGSE (Figure 5). No atypical lymphoid features were noted, and additional immunohistochemical staining was not performed.

Postoperative management consisted of amoxicillin-clavulanate, acetaminophen, benzydamine rinse, and a topical steroid ointment prescribed by the pediatric department. The patient attended four follow-up visits on postoperative days 12, 22, 50, and 78 (Figure 3B–3E), during which progressive mucosal healing was documented at each visit; the lesion had healed completely at the final follow-up without recurrence.

#### **Case 4**

Case 4 was a 68-year-old woman who was referred to our department for evaluation of an indurated ulcerative lesion of the right upper vestibule. The lesion had been identified incidentally at a local dental clinic approximately five days before referral; the exact date of onset was not clearly documented, and the patient reported no associated pain. Her medical history was notable for a remote palatal squamous cell carcinoma treated in 2011 by surgical resection and postoperative radiotherapy at an outside institution, with additional comorbidities of hypertension, type 2 diabetes mellitus, dyslipidemia, and osteoporosis. She had a long-standing history of removable partial denture wear, which had been discontinued before the present visit due to damage to the abutment teeth. Intraoral examination revealed an ulcerative lesion of the right upper vestibule, anatomically within the expected clinical target volume and dose fall-off region for postoperative radiotherapy of a palatal carcinoma (Figure 4A). Given the combination of remote oral cancer history, prior radiotherapy involving this anatomical region, and the indurated character of the lesion, the initial clinical impression was recurrent or second primary oral squamous cell carcinoma, and the patient was referred specifically for exclusion of malignancy. Detailed radiation oncology records from the 2011 treatment could not be retrieved from the outside institution.

Panoramic radiography and maxillary cone-beam computed tomography were performed. No aggressive bone destruction, cortical erosion, or radiologic evidence of recurrent or second primary malignancy was identified (Figure 4C, 4D). Peripheral blood differential showed a white blood cell count of 7,530/ $\mu$ L,

absolute neutrophil count of 4,578/ $\mu$ L, lymphocyte proportion of 32.4%, and eosinophil proportion of 0.8%, yielding a calculated absolute eosinophil count of 60/ $\mu$ L – well below the conventional threshold for peripheral eosinophilia. The erythrocyte sedimentation rate was within the normal range at 19 mm/hr; C-reactive protein was not measured (Table 2). Incisional biopsy was performed, and histopathologic examination of one hematoxylin and eosin-stained section demonstrated surface ulceration with a dense eosinophil-rich polymorphous inflammatory infiltrate, establishing the diagnosis of TUGSE. No atypical features prompting additional immunohistochemical workup were identified, and CD30 staining was not performed. The eventual histopathologic diagnosis of TUGSE was, in this clinical context, unexpected.

No specific medication was prescribed following the biopsy. The patient subsequently attended follow-up visits, most recently on postoperative day 147, at which mucosal healing of the right maxillary anterior region was documented both clinically and photographically without recurrence (Figure 4B).

## Discussion and Conclusions

Across four consecutive biopsy-proven cases of oral TUGSE (Table 1), the cases spanned the childhood–adolescent and older-adult ends of the reported age range rather than reproducing the classic infantile (Riga–Fede) peak: three pediatric and adolescent patients (Cases 1–3, ages 7–17 years) and one older adult (Case 4, age 68 years) [2, 5]. The malignancy that was clinically suspected at presentation differed systematically between these two peaks. In the pediatric group, the clinical concern was lymphoma or a lymphoma-versus-TUGSE differential in two of three patients; in the older adult, the clinical concern was recurrent or second primary oral squamous cell carcinoma in mucosa with a history of palatal cancer and postoperative radiotherapy. The plausible source of mechanical mucosal trauma similarly varied by age – cheek biting and suspected self-injurious behavior in the pediatric group, and prosthetic trauma on previously irradiated mucosa in the older adult – yet all four lesions converged on the same benign histopathologic endpoint, with normal peripheral eosinophil counts despite eosinophil-rich histology. Taken together, this series argues that the age at which TUGSE occurs is not merely a demographic detail but tracks distinct clinical contexts of malignancy mimicry, each with its own most plausible trauma background and each requiring biopsy for definitive distinction.

The persistent ulcerative lesions in our three pediatric and adolescent patients (Cases 1–3) prompted clinical suspicion of lymphoma or of a “TUGSE versus malignancy” differential before tissue diagnosis. This pattern is consistent with the histopathologic overlap between TUGSE and CD30-positive lymphoproliferative disorders that has been documented since the original observations of large atypical mononuclear cells and CD30-positive infiltrates within TUGSE specimens [2, 7, 8, 11]. The relationship between TUGSE and low-grade CD30-positive lymphoproliferative disease has recently been revisited, with Wolk and Trocheset proposing that some TUGSE cases may lie along a continuum with reactive CD30-positive lymphoproliferative processes rather than representing a uniformly polyclonal reactive lesion [6]. From a practical standpoint, this means that the pediatric clinician evaluating a deep persistent oral ulcer cannot rely on clinical features alone to exclude lymphoproliferative disease, and the

alarming clinical appearance that prompted lymphoma suspicion in our Cases 1 and 2 is a defensible clinical reflex rather than an overreaction. In our cases, none of the pathology reports described atypical lymphoid features that would have triggered additional immunohistochemical workup, and CD30 staining was therefore not performed; this is acknowledged below, but the uncomplicated clinical course and complete mucosal healing in all three patients argue against a clinically significant lymphoproliferative process.

The contrasting case in this series, Case 4, is in our view the most clinically instructive. A 68-year-old woman with a remote history of palatal cancer treated with postoperative radiotherapy and a long-standing history of removable partial denture wear presented with an indurated right upper vestibular ulcer, anatomically within the expected target volume and dose fall-off region of her prior radiotherapy. The combination of these factors — oncologic history, anatomically plausible radiation exposure of the affected mucosa, and an indurated ulcerative lesion in a patient under continued oncologic surveillance — placed the clinical impression squarely in the category of recurrent or second primary oral squamous cell carcinoma. The eventual histopathologic diagnosis of TUGSE was, in this clinical context, genuinely unexpected. To our knowledge, TUGSE arising in previously irradiated oral mucosa with a denture-related traumatic background has not been specifically described in the prior literature. Two earlier observations are relevant. Prosthetic trauma — ill-fitting dentures, denture flanges, and unstable occlusion — has been repeatedly noted as a plausible inciting factor for TUGSE in older adults [5, 9]. Previously irradiated oral mucosa is widely recognized as biologically altered, with reduced vascularity, impaired wound healing, and predisposition to chronic non-healing ulceration [10]. Our Case 4 sits at the intersection of these two factors. Whether the dominant trigger was past prosthetic microtrauma during the years of denture wear, transient mucosal irritation during the period of denture discontinuation due to abutment tooth damage, intrinsic post-radiation mucosal fragility, or a combination cannot be resolved retrospectively. What can be confidently stated is that an ulcer arising in this specific clinical context can present indistinguishably from recurrent cancer and that, in the absence of histopathologic confirmation, the default clinical reflex correctly favors malignancy. Even after biopsy returns a benign diagnosis in this setting, close clinical follow-up with a low threshold for re-biopsy is warranted until complete mucosal healing is documented.

A clear traumatic etiology has long been considered conceptually central to TUGSE, yet the literature has repeatedly noted that a definite traumatic source cannot be identified in a substantial proportion of cases [2, 3, 4, 12]. Our four patients, despite the small sample size, illustrate four distinct points along this spectrum: explicit self-reported cheek biting in a mixed-dentition child (Case 1); suspected self-injurious oral behavior in an adolescent with autism spectrum disorder, plausible but not directly verifiable due to communication limitations (Case 2); no identifiable traumatic source despite careful history-taking (Case 3); and prosthetic trauma compounded by prior mucosal irradiation (Case 4). This heterogeneity — and particularly the absence of any elicitable trauma in Case 3 — supports the view that “traumatic” in the diagnostic label is primarily a histopathologic descriptor and that the clinician should neither demand a clear trauma history before considering the diagnosis nor exclude TUGSE simply because no such history is forthcoming.

A separate diagnostic pitfall observed across all four patients was the dissociation between local tissue eosinophilia and peripheral blood eosinophilia (Table 2). None of our patients met the conventional threshold for peripheral eosinophilia ( $> 500/\mu\text{L}$ ); calculated absolute eosinophil counts ranged from 60 to  $217/\mu\text{L}$ , with the highest value, in Case 2, reaching less than half of the diagnostic threshold. Peripheral lymphocyte proportions were within normal limits in every patient (30.5–40.7%), providing no hematologic support for the lymphoproliferative process that had been clinically suspected in the pediatric group, and inflammatory markers — when measured — were either normal (CRP in Cases 1 and 3) or showed only mild isolated ESR elevation (Case 1). This dissociation between robust tissue-level eosinophilia and an unremarkable peripheral blood differential has practical importance: a normal peripheral eosinophil count, lymphocyte profile, and CRP cannot be used to argue against the diagnosis of TUGSE, and conversely, the diagnosis cannot be supported by laboratory inference. The decision to obtain tissue diagnosis therefore should not be modulated by peripheral blood findings in either direction.

Several limitations of this series should be acknowledged. The number of cases was small, reflecting the uncommon nature of TUGSE; statistical inference was therefore not attempted, and the observed concentration of lesions on the right side of the oral cavity (4 of 4) is reported descriptively rather than interpreted. The series was retrospective, and clinical descriptions, lesion measurements, trauma histories, and follow-up intervals were not standardized. Additional histopathologic characterization beyond routine hematoxylin and eosin staining — in particular, CD30 immunohistochemistry, which would have helped formally exclude CD30-positive lymphoproliferative disorder in the pediatric group — was not performed; this reflects the absence of atypical lymphoid features noted on the original pathology reports rather than a deliberate omission, but should be considered in future cases with any atypical histologic feature. In Case 4, detailed radiation oncology records from the 2011 treatment at an outside institution could not be obtained, and the anatomical relationship of the ulcer to the radiotherapy field is therefore inferred on the basis of standard treatment volumes rather than confirmed from primary dosimetry records. The follow-up period was relatively short (41 to 147 days), sufficient to document mucosal healing but insufficient to formally exclude late recurrence, which has been reported in TUGSE in rare cases [5]. Finally, as a single-institution descriptive series, these findings cannot be used to estimate the true prevalence of TUGSE among patients with malignancy-mimicking oral ulceration.

In conclusion, this four-case series demonstrates that TUGSE mimicked different malignancies at different ages — pediatric lymphoma-like presentation and post-irradiation carcinoma-like presentation in an older adult with a denture history — and that all four cases shared a consistent dissociation between robust tissue eosinophilia and unremarkable peripheral blood findings. Neither the clinical pattern of the lesion nor the peripheral blood differential reliably distinguishes TUGSE from the malignant entities it mimics; biopsy must remain the decisive diagnostic step, particularly in pediatric patients with lymphoma-like ulceration and in head and neck cancer survivors with new ulcerative lesions within or adjacent to a previously irradiated field.

## Abbreviations

TUGSE

traumatic ulcerative granuloma with stromal eosinophilia

OSCC

oral squamous cell carcinoma

PORT

postoperative radiotherapy

CD30

cluster of differentiation 30

WBC

white blood cell count

ANC

absolute neutrophil count

AEC

absolute eosinophil count

ESR

erythrocyte sedimentation rate

CRP

C-reactive protein

ASD

autism spectrum disorder

CECT

contrast-enhanced computed tomography

CBCT

cone-beam computed tomography

RPD

removable partial denture

RMT

retromolar trigone

IRB

Institutional Review Board.

## Declarations

### ***Ethics approval and consent to participate***

This retrospective case series was conducted in accordance with the principles of the Declaration of Helsinki. Institutional Review Board review was granted by the Institutional Review Board of Seoul National University Dental Hospital (IRB No. ERI26035).

### ***Consent for publication***

Written informed consent for publication of the clinical details and clinical images was obtained from all patients. For the patients under 18 years of age, written informed consent for publication was obtained from their parents.

### ***Availability of data and materials***

All data generated or analyzed during this study are included in this published article. Further details are available from the corresponding author on reasonable request.

### ***Competing interests***

The authors declare that they have no competing interests.

### ***Funding***

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (RS-2026-25483379).

### ***Authors' contributions***

YSK conceptualized the study, collected and curated the clinical data, and wrote the original draft. JHL contributed to data collection and investigation and critically revised the manuscript. MHS conceptualized and supervised the study, critically reviewed and edited the manuscript, and administered the project. All authors read and approved the final manuscript.

### ***Acknowledgements***

Not applicable.

## **References**

1. el-Mofty SK, Swanson PE, Wick MR, Miller AS. Eosinophilic ulcer of the oral mucosa. Report of 38 new cases with immunohistochemical observations. *Oral Surg Oral Med Oral Pathol.* 1993;75:716–22.
2. Hirshberg A, Amariglio N, Akrish S, Yahalom R, Rosenbaum H, Okon E, et al. Traumatic ulcerative granuloma with stromal eosinophilia: a reactive lesion of the oral mucosa. *Am J Clin Pathol.* 2006;126:522–9.
3. Segura S, Pujol RM. Eosinophilic ulcer of the oral mucosa: a distinct entity or a non-specific reactive pattern? *Oral Dis.* 2008;14:287–95.
4. Benitez B, Mülli J, Tzankov A, Kunz C. Traumatic ulcerative granuloma with stromal eosinophilia – clinical case report, literature review, and differential diagnosis. *World J Surg Oncol.* 2019;17:184.
5. Shen WR, Chang JY, Wu YC, Cheng SJ, Chen HM, Wang YP. Oral traumatic ulcerative granuloma with stromal eosinophilia: a clinicopathological study of 34 cases. *J Formos Med Assoc.* 2015;114:881–

- 5.
6. Wolk R, Trocheset D. Traumatic ulcerative granuloma with stromal eosinophilia: from reactive process to low grade CD30 + lymphoproliferative disorder. *Head Neck Pathol.* 2025;19:70.
7. Segura S, Romero D, Mascaró JM Jr, Colomo L, Ferrando J, Estrach T. Eosinophilic ulcer of the oral mucosa: another histological simulator of CD30 + lymphoproliferative disorders. *Br J Dermatol.* 2006;155:460–3.
8. Salisbury CL, Budnick SD, Li S. T-cell receptor gene rearrangement and CD30 immunoreactivity in traumatic ulcerative granuloma with stromal eosinophilia of the oral cavity. *Am J Clin Pathol.* 2009;132:722–7.
9. Bordignon NCT, Correia-Neto IJ, Gondak R, de Albuquerque-Júnior RLC. Traumatic ulcerative granuloma with stromal eosinophilia mimicking a squamous cell carcinoma. *J Clin Exp Dent.* 2024;16:e377–82.
10. Sroussi HY, Epstein JB, Bensadoun RJ, Saunders DP, Lalla RV, Migliorati CA, et al. Common oral complications of head and neck cancer radiation therapy: mucositis, infections, saliva change, fibrosis, sensory dysfunctions, dental caries, periodontal disease, and osteoradionecrosis. *Cancer Med.* 2017;6:2918–31.
11. Aizic A, Raiser V, Solar I, Aharon Z, Shlomi B, Kaplan I. Traumatic ulcerative granuloma with stromal eosinophilia: CD30 analysis and clonality for T cell receptor gene re-arrangement. *Acta Histochem.* 2019;121:151450.
12. Hannan TA, Umer M, Syed L, Anis-Alavi MA. A case report of traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) in a 21-year-old. *Clin Case Rep.* 2020;8:2214–6.

## Tables

**Table 1.** Demographic and clinical characteristics of the four patients.

|                                        | <i>Pediatric / adolescent group</i> |                                    |                            | <i>Older adult</i>                                           |
|----------------------------------------|-------------------------------------|------------------------------------|----------------------------|--------------------------------------------------------------|
| <b>Variable</b>                        | <b>Case 1</b>                       | <b>Case 2</b>                      | <b>Case 3</b>              | <b>Case 4</b>                                                |
| <b>Age / sex</b>                       | 7 / M                               | 17 / M                             | 8 / M                      | 68 / F                                                       |
| <b>Medical history</b>                 | None                                | ASD                                | None                       | HTN, DM, DL, OP;<br>palatal Ca + PORT<br>(2011)              |
| <b>Symptom duration</b>                | 3 wk                                | 8–12 wk                            | 4 wk                       | ~5 d (incidental)                                            |
| <b>Pain</b>                            | Yes                                 | Yes                                | Yes                        | No                                                           |
| <b>Lesion site (all right-sided)</b>   | Buccal mucosa                       | Floor of mouth                     | Buccal + RMT + gingiva #46 | Upper vestibule                                              |
| <b>Lesion size</b>                     | 2 cm                                | ND                                 | ND                         | ND                                                           |
| <b>Identifiable trauma</b>             | Cheek biting (self-reported)        | Suspected SIB (caregiver-reported) | None identified            | RPD wear, recently discontinued; within plausible PORT field |
| <b>Initial clinical impression</b>     | Lymphoma                            | TUGSE vs malignancy                | TUGSE                      | Recurrent / 2nd primary OSCC                                 |
| <b>Imaging</b>                         | Panoramic, CECT                     | Panoramic                          | Panoramic, CECT            | Panoramic, CBCT                                              |
| <b>Biopsy type</b>                     | Incisional (2 sites)                | Excisional                         | Incisional (2 sites)       | Incisional                                                   |
| <b>Final histopathologic diagnosis</b> | TUGSE                               | TUGSE                              | TUGSE (both specimens)     | TUGSE                                                        |
| <b>Follow-up duration</b>              | 41 d                                | 50 d                               | 78 d                       | 147 d                                                        |

*Abbreviations:* ASD, autism spectrum disorder; Ca, carcinoma; CBCT, cone-beam computed tomography; CECT, contrast-enhanced computed tomography; d, days; DL, dyslipidemia; DM, diabetes mellitus; F, female; HTN, hypertension; M, male; ND, not documented; OP, osteoporosis; OSCC, oral squamous cell carcinoma; PORT, postoperative radiotherapy; RMT, retromolar trigone; RPD, removable partial denture; Rt., right; SIB, self-injurious behavior; TUGSE, traumatic ulcerative granuloma with stromal eosinophilia; wk, weeks.

**Table 2.** Peripheral blood differential and inflammatory markers.

|                              | <i>Pediatric / adolescent group</i> |               |               | <i>Older adult</i> |
|------------------------------|-------------------------------------|---------------|---------------|--------------------|
| <b>Variable</b>              | <b>Case 1</b>                       | <b>Case 2</b> | <b>Case 3</b> | <b>Case 4</b>      |
| <b>WBC (/μL)</b>             | 8,720                               | 7,490         | 10,970        | 7,530              |
| <b>ANC (/μL)</b>             | 4,587                               | 4,314         | 6,878         | 4,578              |
| <b>Lymphocyte (%)</b>        | 40.7                                | 34.2          | 30.5          | 32.4               |
| <b>Eosinophil (%)</b>        | 0.7                                 | 2.9           | 1.2           | 0.8                |
| <b>Calculated AEC (/μL)*</b> | 61                                  | 217           | 132           | 60                 |
| <b>ESR (mm/hr)</b>           | 38                                  | 15            | 14            | 19                 |
| <b>CRP (mg/dL)</b>           | 0.16                                | NM            | 0.21          | NM                 |

\* Calculated as WBC × eosinophil proportion. Conventional threshold for peripheral eosinophilia: >500/μL.

*Abbreviations:* AEC, absolute eosinophil count; ANC, absolute neutrophil count; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; NM, not measured; WBC, white blood cell count.

## Figures

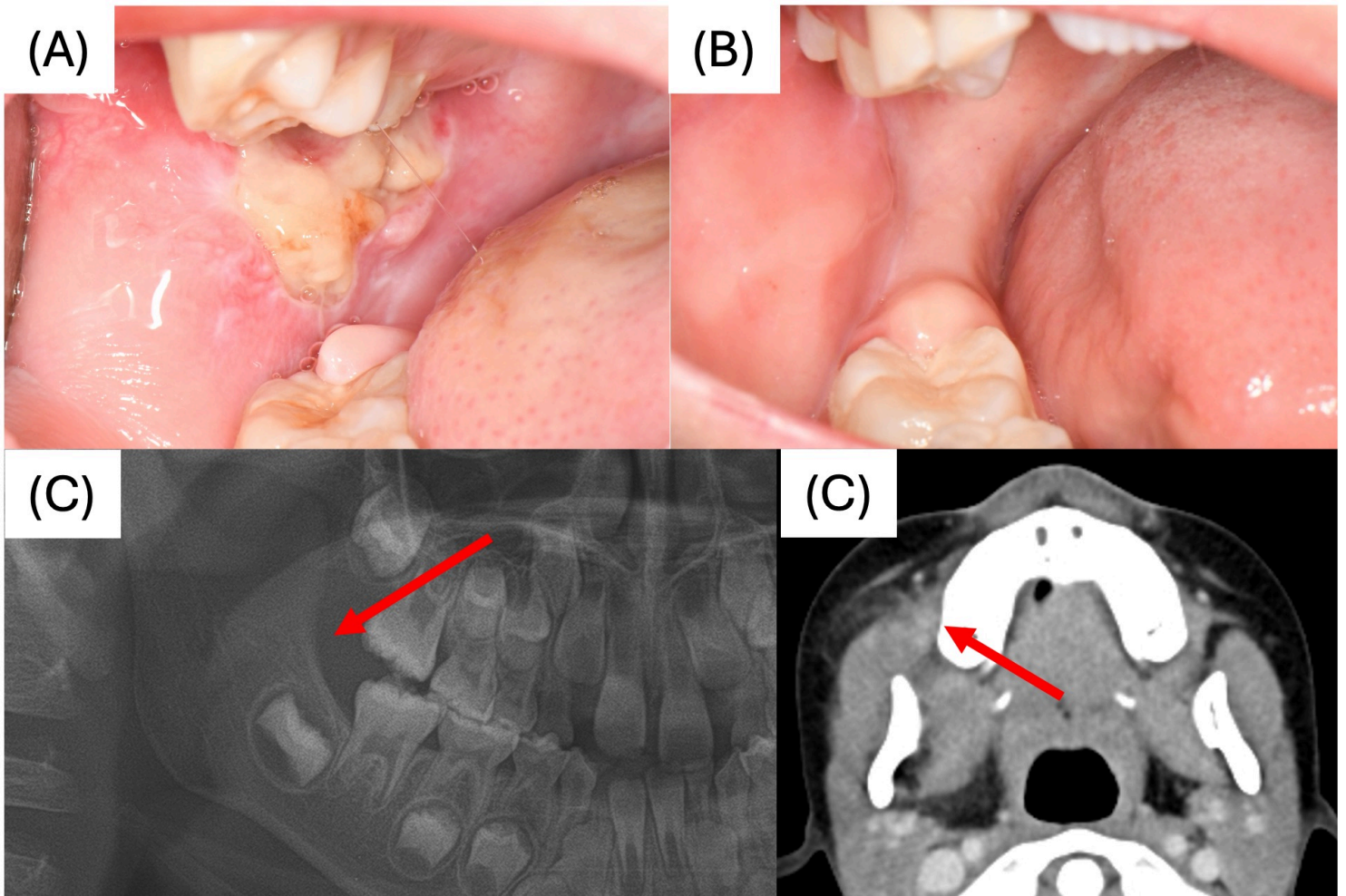


**Figure 1**

Case 1, a 7-year-old male presenting with a right buccal mucosal ulcer initially suspected to represent lymphoma. (A) Initial clinical photograph (preoperative) showing a 2 cm ulceration with raised, indurated borders on the right buccal mucosa. (B) Clinical photograph at postoperative day 41 (final follow-up), showing complete mucosal healing of the same region. (C) Panoramic radiograph (cropped to the region of interest); the arrow indicates the area corresponding to the right buccal ulcer, with no aggressive bone destruction or features suspicious for malignancy. (D) Contrast-enhanced computed tomography axial view (cropped); the arrow indicates the soft-tissue thickening corresponding to the ulcer, with no invasive mass or cortical erosion.

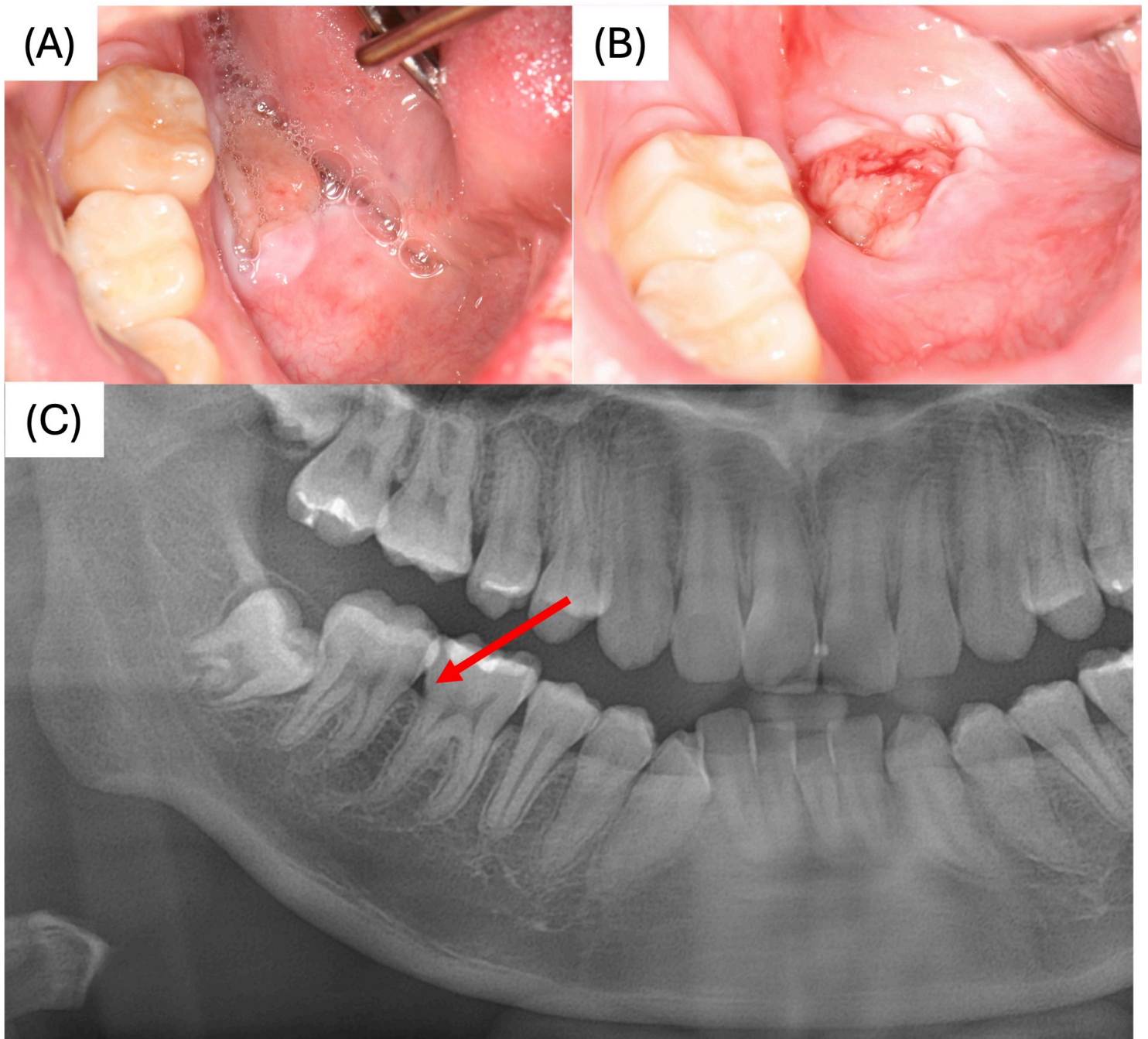


**Figure 2**

Case 2, a 17-year-old male with autism spectrum disorder presenting with a right floor of mouth ulcer, with a clinical differential of “TUGSE versus malignancy.” (A) Initial clinical photograph (preoperative) showing an ulcerative lesion of the right floor of the mouth. (B) Clinical photograph at postoperative day 15 (biopsy result and suture removal visit), showing satisfactory healing of the excisional biopsy site. (C) Panoramic radiograph (cropped to the region of interest); the arrow indicates the approximate mandibular region corresponding to the right floor of mouth lesion, with no aggressive bone destruction or features suspicious for malignancy.

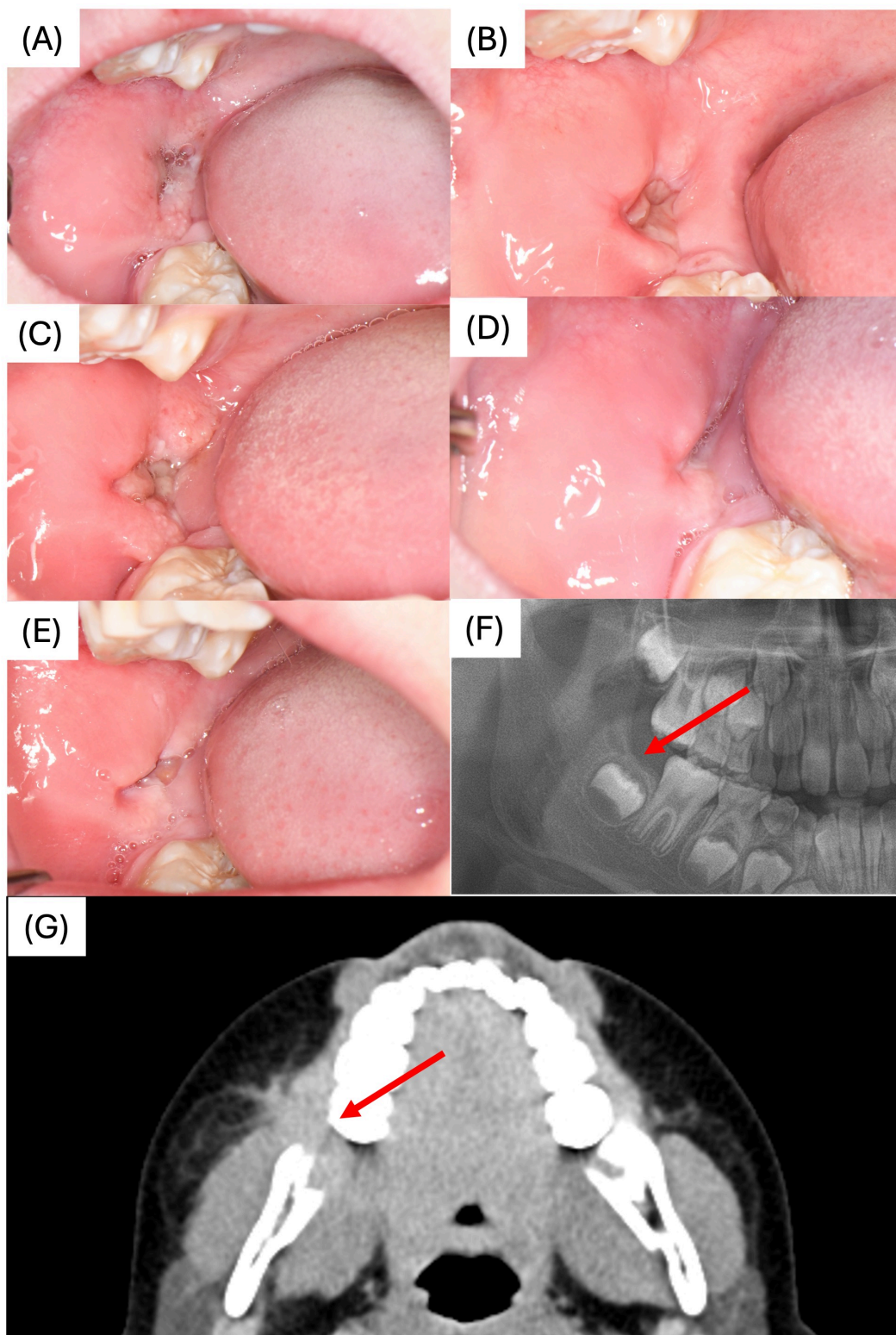


**Figure 3**

Case 3, an 8-year-old male presenting with a persistent ulcerative lesion involving two adjacent anatomical sites of the right oral cavity, with sequential documentation of mucosal healing. (A) Initial clinical photograph (preoperative) showing involvement of the right buccal mucosa with the retromolar trigone region and the gingiva adjacent to tooth #46. (B) Clinical photograph at postoperative day 12 (biopsy result and suture removal visit). (C) Postoperative day 22. (D) Postoperative day 50. (E)

Postoperative day 78 (final follow-up), showing complete mucosal healing. (F) Panoramic radiograph (cropped to the region of interest); the arrow indicates the affected region near tooth #46, with no aggressive bone destruction. (G) Contrast-enhanced computed tomography axial view (cropped); the arrow indicates the affected mucosa, with no invasive mass or cortical erosion.

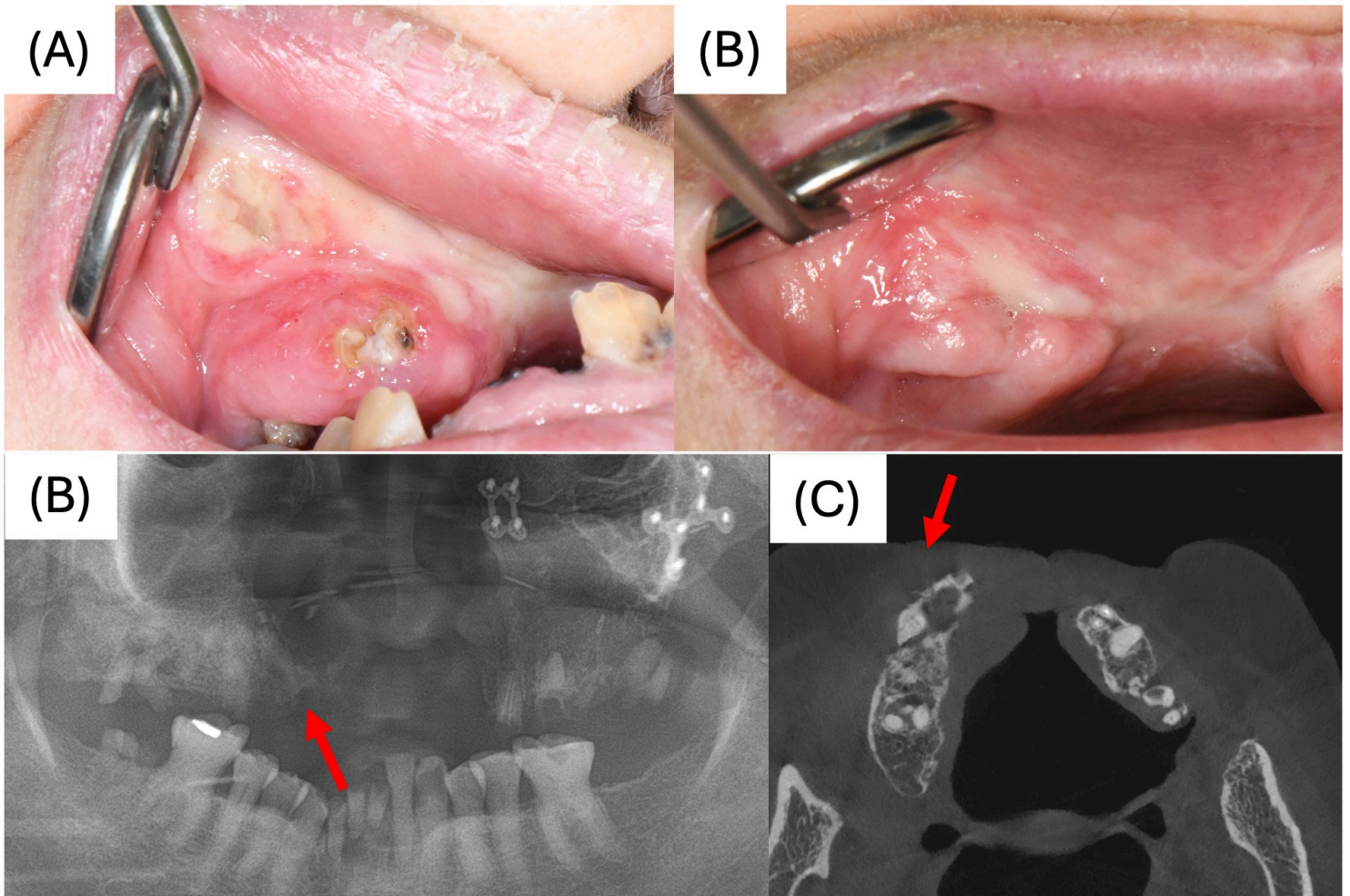


**Figure 4**

Case 4, a 68-year-old woman with a remote history of palatal cancer treated with postoperative radiotherapy, presenting with a right upper vestibular ulcer initially suspected to represent recurrent or second primary oral squamous cell carcinoma. (A) Initial clinical photograph (preoperative) showing an indurated ulcerative lesion of the right upper vestibule, anatomically within the expected clinical target volume and dose fall-off region for postoperative radiotherapy of a palatal carcinoma. (B) Follow-up clinical photograph at postoperative day 147 showing healed mucosa of the right maxillary anterior region without recurrence. (C) Panoramic radiograph (cropped to the region of interest); the arrow indicates the affected right upper vestibular region, with no aggressive bone destruction or radiologic features suspicious for recurrence. (D) Maxillary cone-beam computed tomography axial view (cropped); the arrow indicates the affected vestibular mucosa, with no cortical erosion or invasive osseous involvement.

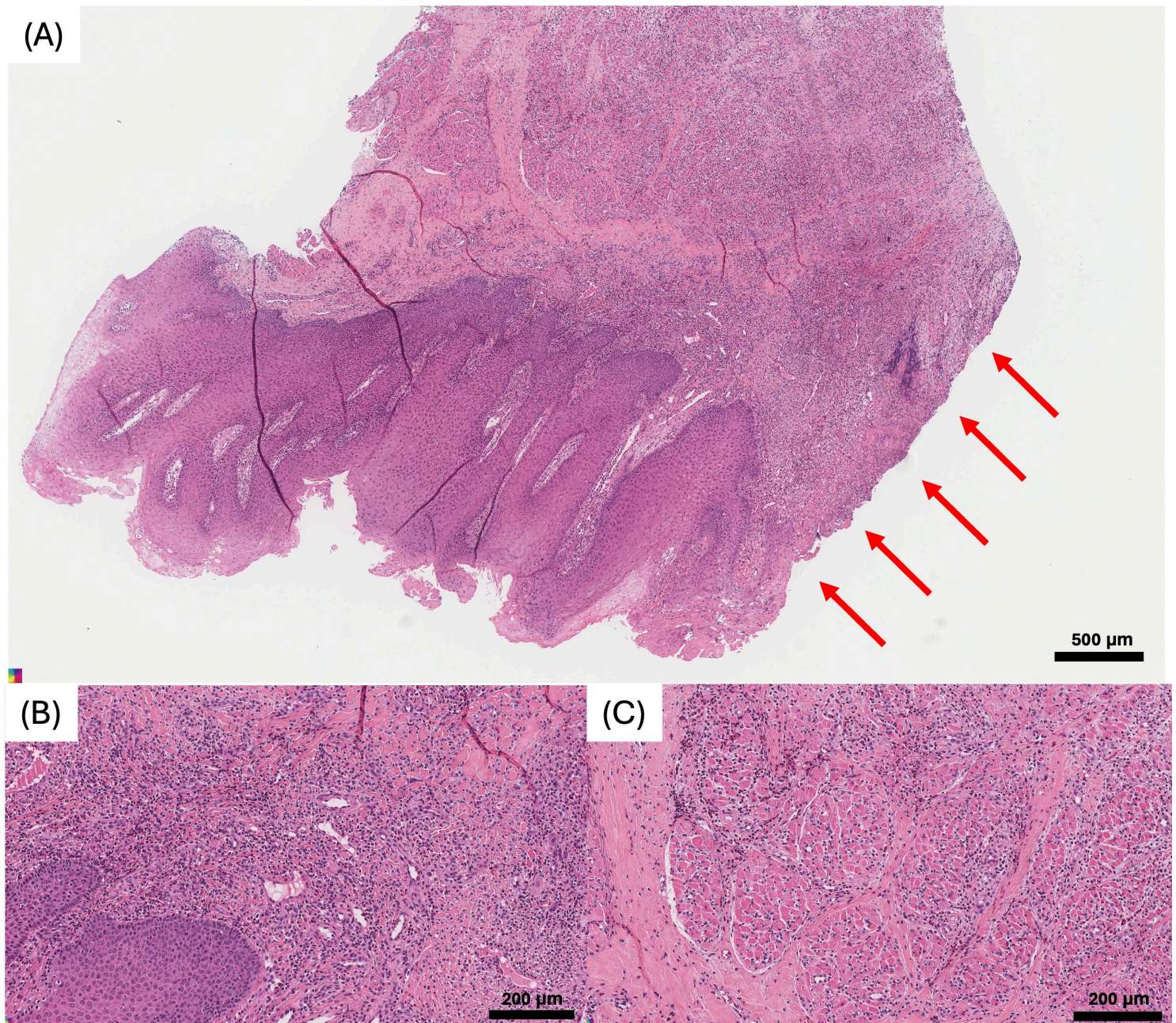


**Figure 5**

Representative histopathologic findings of TUGSE (Case 3). (A) Surface ulceration covered with a pseudomembrane composed of fibrin and neutrophils (arrows). Hematoxylin and eosin stain; scale bar = 500 μm. (B) Infiltration by both chronic and acute inflammatory cells with abundant eosinophils. Hematoxylin and eosin stain; scale bar = 200 μm. (C) Inflammatory cells and eosinophils infiltrating the underlying skeletal muscle. Hematoxylin and eosin stain; scale bar = 200 μm.