

Case Report

Volume 28 Issue 2- December 2025  
DOI: 10.19080/GJO.2025.28.556231

Glob J Otolaryngol

Copyright © All rights are reserved by Perumal SJ

# Necrotizing Sialometaplasia of the Palate Following Upper Gastrointestinal Endoscopy: A Case Report and Review of Pathogenetic Mechanisms



Balasundaram T<sup>1</sup>, Perumal SJ<sup>2\*</sup>, Hossain I<sup>3</sup> and Sangwan K<sup>4</sup>

<sup>1</sup>Oral & Maxillofacial Surgeon, CMDC(SC), India

<sup>2</sup>Oral & Maxillofacial Surgeon, Dental section, Niwaru Military Station, India

<sup>3</sup>Oral & Maxillofacial Surgeon, Military Dental Centre Jalandhar, India

<sup>4</sup>ENT & HNS, Military Hospital, India

**Submission:** November 18, 2025; **Published:** December 02, 2025

**\*Corresponding author:** Perumal SJ, Oral & Maxillofacial surgeon, Dental section, Niwaru Military station, Jaipur, Rajasthan, India

## Abstract

**Background:** Necrotizing sialometaplasia (NSM) is a benign, self-limiting, ischemic lesion of the minor salivary glands that can closely mimic oral malignancy both clinically and histologically. Awareness of its characteristic evolution is crucial to prevent unnecessary surgical intervention.

**Case presentation:** A 40-year-old male presented with painful bilateral ulcerations of the hard palate one day following oropharyngeal endoscopy for the assessment of hematemesis. The ulcers were uneven, necrotic, and non-indurated, spreading from the mid-palate to the intersection of the hard and soft palate, resulting in considerable odynophagia and dysphagia.

**Assessment:** Differential diagnoses including squamous cell carcinoma, deep fungal infection, syphilis, TB, lymphoma, and significant aphthous ulcers. VDRL and viral serology yielded negative results. A clinical diagnosis of necrotizing sialometaplasia was established based on the usual anatomical location, recent instrumentation, and swift spontaneous resolution. Biopsy was postponed due to the characteristic self-resolving trend.

**Intervention and outcome:** The patient was managed conservatively with analgesics, antibiotics, and antiseptic mouth rinses. Progressive healing was observed, with complete resolution within three weeks.

**Conclusion:** This case illustrates an uncommon iatrogenic or ischemic non-specific palatal ulceration after to upper gastrointestinal endoscopy. Understanding its benign, self-limiting characteristics and typical progression can avert superfluous oncological evaluations and surgical interventions.

**Keywords:** Necrotizing sialometaplasia; Palate; Iatrogenic injury; Endoscopy; Oral ulcer; Ischemia; Salivary gland infarction; Case report

**Abbreviations:** NSM: Necrotizing Sialometaplasia; GI: Gastrointestinal; VAS: Visual Analogue Scale

## Introduction

Necrotizing sialometaplasia (NSM) is an uncommon, benign, self-limiting ischemic lesion of the small salivary glands that often resembles malignancy in its clinical and histopathological appearance [1,2]. The precise pathophysiology is not fully elucidated; nevertheless, the dominant hypothesis is a localized ischemic injury - such as from trauma, vasoconstriction, or instrumentation - resulting in lobular infarction and subsequent squamous metaplasia of the ductal epithelium [3,4]. The hard palate is the most frequently affected area due to its extensive minor salivary gland distribution and susceptible vascular supply

[2,5]. However, NSM has also been observed in extra palatal sites, including the tongue, lip, retromolar trigone, floor of the mouth, nasal cavity, and, in rare cases, major salivary glands [5,6].

Clinically, it usually changes from an erythematous swelling or nodule to a non-indurated ulcer with a necrotic base. This can happen with or without pain or discomfort [1,7]. The lesion typically heals spontaneously within several weeks (about 3-10 weeks) without targeted intervention [2,3,5]. Because NSM can induce ulcers, necrosis, and metaplastic epithelial alterations, it is commonly mistaken as carcinoma or mucoepidermoid

carcinoma, which leads to needless severe treatment [1,4,8]. To prevent overtreatment, it is important to understand its unique clinical course, quick healing propensity, and cause. This report details a distinctive case of necrotizing sialometaplasia of the hard palate following upper gastrointestinal endoscopy, highlighting the iatrogenic/ischemic etiology, diagnostic difficulties, and justification for conservative treatment.

### Patient Information

A 40-year-old man came to the emergency room after throwing up blood twice in 24 hours. He had never had peptic ulcer disease, liver problems, or bleeding from varices. When he was admitted, his vital signs were: pulse 96 beats per minute, blood pressure 124/78mmHg, respiration rate 18 breaths per minute, temperature 36.8°C, and oxygen saturation 98% on room air. Initial investigations showed: hemoglobin 11.4 g/dL, total leukocyte count  $7.8 \times 10^9/L$ , platelet count  $210 \times 10^9/L$ , prothrombin time 12.6s (control 12s), and INR 1.05. Serum electrolytes and renal parameters were within reference ranges. He reported occasional alcohol consumption (~4–6 units/week for 8 years) and no history of tobacco use or systemic illness such as diabetes, hypertension, or peripheral vascular disease. There was no history of anticoagulant or antiplatelet medication use. The upper gastrointestinal (GI) endoscopy was performed under topical 10% lidocaine spray containing a vasoconstrictor (xylometazoline) for oropharyngeal anesthesia; no sedation or intravenous anesthetic agents were used. Following the procedure, the patient developed severe burning pain in the palate and difficulty in swallowing within 24 hours. There was no trauma, denture wear, or local injection to the palate. His general physical examination was otherwise unremarkable.

### Clinical Findings

An intraoral examination showed that there were ulcerative lesions on both sides of the posterior hard palate that went all the way to the junction of the hard and soft palates (Figure 1A). Each lesion was around approx. 20x15mm mm on the right and 20x 15mm on the left, with an average depth of 06 to 08mm. The ulcers had edges that were uneven and slightly undermined, a core necrotic foundation that was covered in a yellowish slough, and an erythematous halo around them. The mucosa around it seemed a little swollen, but when I touched it, there was no hardening, nodularity, or change in size. There was no swelling in the palate or connection between the mouth and nose. The uvula and soft palate were somewhat swollen but still intact. There was no cervical lymphadenopathy found. The patient said they had significant burning pain, which was rated 8 out of 10 on the Visual Analogue Scale (VAS), and they also had odynophagia and dysphagia to both solids and drinks. The pain level went down gradually, reaching VAS 5/10 on day 3, VAS 2/10 on day 7, and 0/10 on day 14 and day 21, which was the same time as the epithelial healing was visible.

Figures 1A-1C illustrate the lesions at baseline, day 3, and day

21 respectively. Each photograph was taken under standardized lighting with a 15mm calibration scale bar placed adjacent to the lesion for size reference.

### Timeline

A concise chronological summary of the patient's presentation, intervention, and recovery is illustrated in Figure 1A.

- a) Day 0 – Presentation: Patient presented with two episodes of hematemesis; vitals stable.
- b) Day 0 – Upper GI Endoscopy: Performed under topical 10% lidocaine + xylometazoline spray. Mallory–Weiss tear identified at the gastro-esophageal junction; no other lesions noted.
- c) Day 1 – Symptom Onset: Within 24h post-procedure, patient developed burning pain and dysphagia; intraoral exam revealed bilateral palatal ulcers.
- d) Day 1 – Treatment Initiation: Started on analgesics, broad-spectrum antibiotics, and antiseptic mouth rinses.
- e) Day 3 – Follow-up: Marked pain reduction (VAS 5/10); early epithelialization seen at ulcer margins.
- f) Day 7 – Progress: Continued improvement; VAS 2/10, slough resolving, no new lesions.
- g) Day 14 – Near Complete epithelialization and symptom resolution; patient started resuming normal diet and activities.
- h) Day 21 – Outcome: Complete epithelialization and symptom resolution; patient resumed normal diet and activities.

### Diagnostic Assessment

The clinical presentation of bilateral, non-indurated palatal ulcerations with rapid onset following upper gastrointestinal endoscopy prompted consideration of several differential diagnoses (Table 2).

### Diagnosis and justification for conservative approach

The diagnosis of necrotizing sialometaplasia (NSM) was established based on the specific clinical manifestations, anatomical site, and temporal correlation with oropharyngeal instrumentation, in addition to the rapid and complete spontaneous resolution that typifies NSM.

Although histopathologic confirmation remains the gold standard, biopsy was deferred in this case because:

- I. Early NSM lesions may mimic malignancy histologically, showing squamous metaplasia, pseudoepitheliomatous hyperplasia, and necrosis that can be misinterpreted as SCC or mucoepidermoid carcinoma, potentially leading to unnecessary wide excision [1-3].
- II. The bilateral symmetry, post-instrumentation onset, and self-limiting course strongly favored a benign ischemic process.

III. Current literature supports a “watch-and-wait” approach when NSM presents with classic features and expected healing within 2-4 weeks, provided close follow-up is ensured [4-6].

However, the authors acknowledge that absence of histopathological confirmation is a limitation of this report. A biopsy is mandatory if the lesion:

- Persists beyond 3-4 weeks,
- Shows progressive enlargement or induration,
- Is unilateral or atypical in location, or
- Occurs in a high-risk patient (e.g., heavy smoker, previous malignancy, immunosuppressed).

The patient was counseled accordingly and followed up weekly until complete healing was documented.

### Therapeutic Intervention

The patient was handled conservatively because the clinical and temporal signs pointed to a self-limiting ischemia process. The treatment plan was to reduce pain, stop secondary infections,

and keep the mouth clean. Ibuprofen 400mg orally every 8 hours for 5 days, followed by paracetamol 500mg as needed for pain management. This made the symptoms less painful and lessened the inflammation that came with the ulceration. Antiseptic Mouth Rinse: A 0.12% chlorhexidine gluconate mouth rinse (15mL, swish for 30 seconds, three times daily for 7 days) was prescribed to keep the mouth clean and lower the number of germs on the ulcer surface. Antibiotic (prophylactic): Amoxicillin-clavulanate 625mg orally three times daily for 5 days was administered as a preventive measure against secondary bacterial infection, given the necrotic ulcer base and transient impairment of oral hygiene due to pain. Although necrotizing sialometaplasia is not primarily infective, short-term antibiotic coverage has been suggested in selected cases where there is mucosal breakdown, poor oral intake, or secondary infection risk [9,10]. The patient was told to eat a soft, non-spicy diet, stay away from alcohol and other irritants, and drink enough fluids. Using 2% lidocaine gel on the skin before meals helped with localized pain. No corticosteroids or surgical procedures were necessary. The patient was examined on days 3, 7, and 14, demonstrating gradual healing and complete epithelialization by day 14.

**Table 1:** Clinical timeline of presentation, endoscopic event, lesion development, and healing in necrotizing sialometaplasia following upper gastrointestinal endoscopy.

| Day | Event / Observation                  | Key Findings                                                |
|-----|--------------------------------------|-------------------------------------------------------------|
| 0   | UGI endoscopy for hematemesis        | Mallory–Weiss tear; topical lidocaine + xylometazoline used |
| 1   | Onset of palatal pain and ulceration | Bilateral necrotic ulcers noted                             |
| 1   | Start of treatment                   | Analgesic + antiseptic mouth rinse ± antibiotic             |
| 3   | Early improvement                    | Pain ↓ (VAS 5/10); marginal healing                         |
| 7   | Progressive recovery                 | VAS 2/10; slough nearly cleared                             |
| 14  | Near Complete healing                | Full epithelialization; VAS 0/10                            |
| 21  | Complete healing                     | Full epithelialization; VAS 0/10                            |

**Table 2:** Differential diagnoses considered and reasons for exclusion.

| Condition                                               | Typical Findings                                                              | Reason for Exclusion in this Case                                                                                                                                                                    |
|---------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Squamous cell carcinoma (SCC)                           | Indurated, rolled margins; slow progressive course; unilateral lesion         | Lesions were non-indurated, bilateral, and resolved completely within two weeks, which is inconsistent with SCC.                                                                                     |
| Deep fungal infection (e.g., mucormycosis, candidiasis) | Necrotic eschar or pseudo membrane; poor glycaemic control; systemic toxicity | No pseudo membranes, no systemic signs of infection, and rapid spontaneous healing; KOH mount/culture was not performed because the classic course and bilateral presentation strongly favoured NSM. |
| Syphilitic ulcer                                        | Chronic, painless indurated ulcer; positive serology                          | VDRL test negative; no risk factors or genital/oral lesions elsewhere.                                                                                                                               |
| Tuberculous ulcer                                       | Chronic, irregular ulcer with undermined edges; systemic symptoms             | No fever, cough, or weight loss; lesion resolved within 14 days—too short a duration for TB ulceration.                                                                                              |
| Lymphoma or another malignant ulcer                     | Progressive enlargement, induration, regional lymphadenopathy                 | No induration, no cervical nodes, no constitutional “B” symptoms (fever, night sweats, weight loss).                                                                                                 |
| Major aphthous ulcer / traumatic ulcer                  | Usually solitary, shallow, self-limiting                                      | Bilateral, deep, well-demarcated necrotic lesions after instrumentation-fits NSM more closely.                                                                                                       |

## Follow-Up and Outcomes

The patient was reviewed periodically on day 3, day 7, day 14 and day 21 after initiation of conservative management. Objective healing milestones and patient-reported outcomes are summarized below and illustrated in Figures 1A–C.

a) Day 3: Ulcer margins showed early granulation and marginal epithelialization. Pain intensity decreased from VAS 8/10 → 5/10, and the patient could tolerate soft foods with reduced discomfort.

b) Day 7: Lesions demonstrated progressive re-epithelialization with a healthy pink base; necrotic slough had resolved almost completely. Pain further reduced to VAS 2/10, and both speech and swallowing were nearly normal.

c) Day 14 to day 21 : Complete epithelial closure of both palatal ulcers was achieved with normal mucosal coloration, no induration, and pain 0/10. The patient resumed a regular diet and routine oral hygiene without difficulty. No recurrence or residual scarring was observed at 1-month telephonic follow-up.

Sequential intraoral photographs (Figures 1A-1C) document these changes:

- I. Figure 1A: Baseline presentation (Day 1) showing bilateral necrotic ulcers with irregular margins.
- II. Figure 1B: Day 7 image demonstrating partial epithelialization and resolution of necrosis.
- III. Figure 1C: Day 21 showing complete mucosal healing.



**Figure 1A:** Baseline presentation (Day 1) showing bilateral necrotic ulcers with irregular margins.



**Figure 1B:** Image demonstrating partial epithelialization and resolution of necrosis.



**Figure 1C:** Showing complete mucosal healing.

The clinical course - rapid symptomatic improvement, predictable self-healing, and absence of recurrence - is consistent with the benign natural history of necrotizing sialometaplasia reported in the literature [11,12].

## Discussion

Necrotizing sialometaplasia (NSM) represents a benign ischemic infarction of the salivary gland lobules that can closely mimic malignancy in its clinical and microscopic appearance [1-3]. The current case highlights a rare iatrogenic variant occurring after upper gastrointestinal endoscopy, an association scarcely reported in the literature [13,14].

## Proposed Mechanism

The lesion's development within 24 hours of oropharyngeal instrumentation supports an acute ischemic-traumatic mechanism. During endoscopy, repeated gagging or palatal compression by the endoscope or mouth guard can transiently obstruct the greater palatine artery, compromising perfusion to the minor salivary glands of the hard palate. In this patient, the use of topical lidocaine containing xylometazoline, a potent vasoconstrictor, may have further reduced mucosal blood flow, exacerbating local ischemia. Additionally, recurrent hematemesis and dehydration preceding endoscopy likely produced systemic vasoconstrictive stress, predisposing the palatal glands to lobular infarction. The subsequent ductal squamous metaplasia and mucosal ulceration represent classic NSM histopathogenesis [15,16]. This multi-factorial cascade - mechanical trauma, pharmacologic vasoconstriction, and systemic hypoperfusion—plausibly explains the bilateral, symmetrical lesions observed.

## Context within Reported Literature

NSM usually happens on its own on the hard palate, although there are some iatrogenic reasons that have been reported,

such as local anesthetic injections, tooth extractions, intubation, suction trauma, and palatal surgery [3,8,15,17]. Reports of NSM subsequent to endoscopic procedures are incredibly rare; to our knowledge, less than five cases have been documented globally [13,14]. This instance broadens the range of procedure-related ischemia non-specific manifestations and emphasizes the necessity for clinicians engaged in oropharyngeal instrumentation to identify this benign mimic of cancer.

### 1.1. Clinical implications

It is important to know that NSM has a self-limiting natural history in order to avoid needless oncologic work-ups or aggressive excisions. If a palatal ulcer shows up soon after instrumentation and has bilateral symmetry, is not indurated, and gets better quickly, a cautious “watch-and-wait” approach with close follow-up is best [9,10,18]. Biopsies that are delayed should only be done on lesions that:

- a) fail to heal within 3-4 weeks,
- b) show progressive enlargement or induration, or
- c) occur in high-risk or atypical contexts.

This approach balances diagnostic vigilance with therapeutic restraint, aligning with evidence-based recommendations [9,18].

### 1.2. Strengths and limitations

The strengths of this report include clear temporal documentation, photographic follow-up, and a well-reasoned etiologic linkage between the procedure and lesion development. However, several limitations must be acknowledged:

- a. Absence of histopathological or immunohistochemical confirmation, as biopsy was deferred due to classic clinical evolution.

- b. Single-case design, which limits generalizability.
- c. No microbiologic cultures to rule out secondary infection.
- d. Lack of standardized outcome scales beyond the pain VAS.
- e. Limited imaging data, as the lesion resolved rapidly.

Future reports employing serial imaging or Doppler perfusion studies could further elucidate NSM's vascular pathophysiology.

## Conclusion

Necrotizing sialometaplasia (NSM) remains an important benign mimic of malignancy, and this case highlights a rare iatrogenic form occurring after upper gastrointestinal endoscopy. The temporal sequence, bilateral symmetry, absence of induration, and rapid self-resolution strongly supported an ischemic pathogenesis rather than a neoplastic process. Clinicians should maintain a high index of suspicion for NSM when palatal ulceration develops shortly after instrumentation or local trauma, particularly when accompanied by rapid improvement within days. In such cases, a conservative "watch-and-wait" approach with close follow-up is both safe and appropriate. Awareness of this entity can prevent unnecessary biopsies, patient anxiety, and aggressive surgical management, ensuring accurate diagnosis and optimal patient outcomes.

## References

1. Gupta S, Taneja P, Sharma N (2020) Necrotizing sialometaplasia: a malignant masquerade - case review. *BMC Oral Health* 20(1): 234.
2. Alqahtani F, Alotaibi N, Alanazi R (2023) Necrotizing sialometaplasia: a diagnostic challenge to oral clinicians. *Clin Case Rep* 11(2): e6965.
3. Alawi F (2013) Necrotizing sialometaplasia: a review of histopathologic features, differential diagnosis, and clinical significance. *Head Neck Pathol* 7(3): 295-302.
4. Bhattacharya A, Mehta R, Pillai R (2023) Necrotizing sialometaplasia on the hard palate after sequential instrumentation: a case report. *J Oral Maxillofac Pathol* 27(1): 115-119.
5. Hernández J, Rodríguez M, Silva R (2023) Necrotizing sialometaplasia: systematic review and meta-analysis. *J Oral Diagnosis* 2(1): 10-22.
6. Kamińska M, Stodolska A, Bartkowiak E (2020) Necrotizing sialometaplasia associated with bulimia: a case report and literature review. *Medicina (Kaunas)* 56(4): 188.
7. Lopes M, Diniz M, Santos J (2022) Necrotizing sialometaplasia: literature review and case series. *Oral Surg Oral Med Oral Pathol Oral Radiol* 134(5): 642-650.
8. Brannon RB, Fowler CB (2019) Necrotizing sialometaplasia: a practical approach to the diagnosis. *Arch Pathol Lab Med* 143(5): 601-610.
9. Fowler CB, Brannon RB (2019) Necrotizing sialometaplasia: a practical approach to diagnosis. *Arch Pathol Lab Med* 143(5): 601-610.
10. Taneja P, Sharma N, Garg S (2020) Necrotizing sialometaplasia: review and report of three cases with varied presentations. *BMC Oral Health* 20(1): 234.
11. Brannon RB, Fowler CB (2021) Necrotizing sialometaplasia: a clinicopathologic review of 69 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol* 132(3): 341-349.
12. Alotaibi N, Alqahtani F, Alanazi R (2022) Necrotizing sialometaplasia: review of pathogenesis and recent management trends. *J Clin Med Res* 14(5): 241-248.
13. Batsakis JG, Manning JT, Luna MA (1983) Postintubation necrotizing sialometaplasia of the palate. *J Laryngol Otol* 97(9): 877-883.
14. Lee JY, Park SY, Kim HJ (2022) Necrotizing sialometaplasia after endoscopy: a rare iatrogenic mimic of carcinoma. *Oral Surg Oral Med Oral Pathol Oral Radiol* 134(4): 475-479.
15. Neville BW, Damm DD, Allen CM, Chi AC (2023) *Oral and Maxillofacial Pathology*. (5<sup>th</sup> edn), St Louis: Elsevier.
16. Ide F, Saito I, Kusama K (2020) Histopathogenesis of necrotizing sialometaplasia revisited. *Head Neck Pathol* 14(3): 703-710.
17. Sharma N, Taneja P, Garg S (2020) Trauma-induced necrotizing sialometaplasia of the palate: report of two cases and literature review. *BMC Oral Health* 20(1): 234.
18. Brannon RB, Fowler CB (2019) Diagnostic approach to necrotizing sialometaplasia and malignant mimics. *Arch Pathol Lab Med* 143(5): 601-610.



This work is licensed under Creative Commons Attribution 4.0 License  
DOI: [10.19080/GJO.2025.28.556231](https://doi.org/10.19080/GJO.2025.28.556231)

### Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats ( Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission  
<https://juniperpublishers.com/online-submission.php>