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TUGSE or OSCC? The Twisted Diagnostic Challenge: A Case Series

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Abstract

Background & Aim: Chronic, non-healing oral ulcers often straddle the fine line between benign reactive lesions and malignancies. Such lesions merit vigilant evaluation. This case series delineates two confounding clinical scenarios, initially suspected as oral squamous cell carcinoma (OSCC), which were later histologically diagnosed as Traumatic Ulcerative Granuloma with Stromal Eosinophilia (TUGSE), enhancing the pivotal role of biopsy in averting misdiagnosis.

Case Overview: Two geriatric patients presented with persistent, painful ulcerative lesions on the lateral tongue for over 7–9 months. Clinically mimicking malignancy, both lesions exhibited induration and proliferative features. Histopathological examination post-excisional biopsy confirmed TUGSE. Conservative surgical management resulted in complete healing within two months, with no recurrence.

Conclusions: Clinicians must maintain a high index of suspicion and consider TUGSE in the differential diagnosis of persistent oral ulcers. Timely histological confirmation can prevent aggressive over treatment and offer immense psychological relief to the patient.

Clinical Significance: Despite its alarming appearance, TUGSE is a benign, self-resolving entity. Its close resemblance to OSCC mandates careful clinical and histological assessment to ensure appropriate therapeutic decisions.

Keywords: osinophilic granuloma, non-healing oral ulcer, OSCC, traumatic ulcer

Introduction

Oral ulcerations persisting beyond three weeks often incite concern for malignancy. Traumatic Ulcerative Granuloma with Stromal Eosinophilia (TUGSE) is a rare, yet clinically deceptive, benign lesion of the oral mucosa that often masquerades as malignancy particularly oral squamous cell carcinoma (OSCC). First described in infants as Riga-Fede disease and later characterized in adults by Elzay in 1983, TUGSE has intrigued clinicians due to its dramatic presentation and benign course. It most commonly affects the lateral border of the tongue in older adults, with a slight male predilection, and presents as a chronic, non-healing ulcer with indurated, raised margins and a firm base features that often raise alarm for OSCC.[1]

Though frequently linked to mucosal trauma from sharp teeth, restorations, or dental appliances, many patients report no identifiable source of irritation, suggesting additional immunologic or idiopathic components in its pathogenesis. Histologically, TUGSE is hallmarked by a polymorphous inflammatory infiltrate rich in eosinophils, lymphocytes, macrophages, and large mononuclear cells extending into underlying muscle a pattern that can mimic lymphoproliferative disorders. CD30 positivity among these mononuclear cells has led to diagnostic confusion, although most immunohistochemical and molecular findings support a reactive, polyclonal nature rather than a neoplastic one.

Despite its alarming appearance, TUGSE often regresses spontaneously, particularly after biopsy and removal of causative factor, highlighting the importance of conservative management and clinician awareness. Recent systematic reviews have even noted rare occurrences on palatal mucosa and in edentulous regions, reinforcing the need for vigilance across all oral sites. Enhanced understanding of this rare entity is essential to prevent overtreatment and undue psychological stress to patients. This case series illustrates two elderly patients with clinically ominous long term ulcerations ultimately diagnosed as TUGSE. The importance of histological scrutiny in such scenarios cannot be overstated.

Case Presentations

Case 1

A 65-year-old female reported to the Department with a complaint of a gradually enlarging lesion on the right lateral border of her tongue, persisting for approximately nine months. The lesion was mildly painful, and the patient denied any para functional habits such as tongue biting, or a history of trauma and other habits like Tobacco use. She had occasionally manipulated the lesion out of concern, Patient is diabetic for past 10 years under regular medication and her medical history was non-contributory.

Clinical examination

Intraoral examination revealed a solitary, well-circumscribed, nodular lesion measuring approximately 1.0×1.5 cm on the right postero-lateral aspect of the tongue. The lesion appeared reddish-pink with a yellowish fibrinous ulcerated base and was tender on palpation. The margins were slightly everted and indurated, with a sloping edge, and a mucosal collar was noted at the periphery of the ulcer. Notably, root stumps of mandibular right molar and attrition of the opposing mandibular right first premolar was observed, suggesting chronic traumatic irritation as a potential etiological factor. For radiological assessment, orthopantomogram (Figure 1) was taken to exclude hidden sources of irritation such as impacted root tips or osseous abnormalities.

Provisional diagnosis and management

Given the clinical features persistent ulceration with induration and proliferative appearance, chronic traumatic ulcer was suspected, with OSCC considered as a differential diagnosis. After obtaining informed consent, the offending root stumps were extracted. Following informed consent and physician clearance, an excisional biopsy was performed using electrocautery, and the suspected traumatic tooth was extracted under local anaesthesia. The tissue was submitted for histopathological analysis (Figure 1).

Histopathological findings

Microscopic examination of specimen revealed parakeratinised stratified squamous epithelium exhibiting hyperplasia. The underlying connective tissue shows dense highly cellular stroma with thickened fibrous purulent membrane. Areas of chronic inflammatory cells chiefly of lymphocytes and presence of eosinophils exhibiting deep down the underlying muscles. Areas of muscular degeneration are evident. The prominent eosinophilic infiltrate observed served as a histological hallmark of TUGSE and in differentiating it from other chronic ulcerative lesions and neoplastic conditions. (H&Ex4 &x10) (Figure 2)

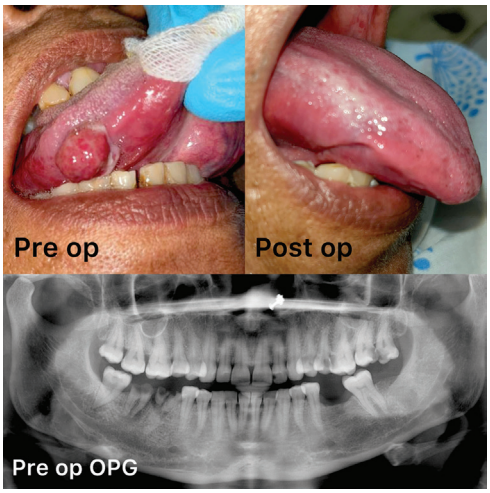

Figure 1: Pre-op & Post-op: Ulcerative growth with indurated margins and slough at the base and Pre-op OPG.

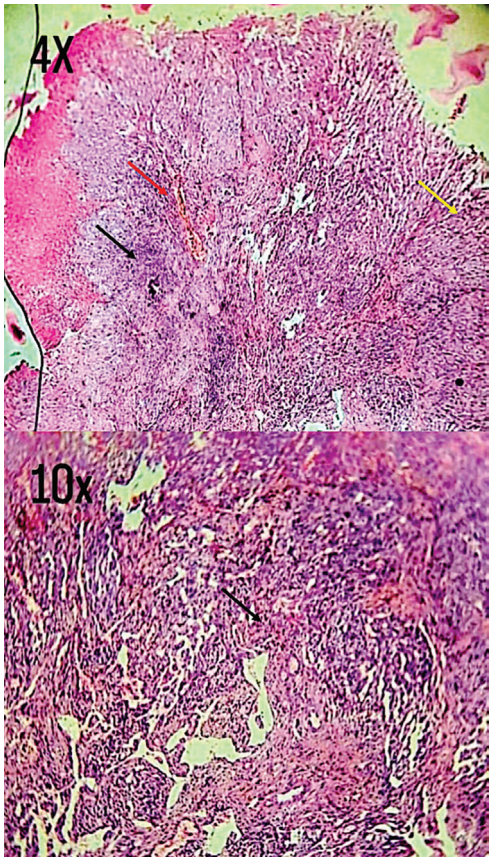

Figure 2: H&E Staining (4X & 10X). Epithelium exhibiting parakeratinized stratified squamous epithelium showing hyperplasia; In CT- Black arrow shows abundant inflammatory cells includes lymphocytes, neutrophils, eosinophils and plasma cells; Red arrow-dilated blood vessels; Yellow arrow - area of muscle degeneration.

Follow-up

The traumatic etiologic factors including sharp tooth structures and root stumps were clearly identified and addressed during the initial treatment phase. Their removal enhanced a critical role in promoting healing and preventing recurrence. The patient was monitored over a six-month follow-up period. Remarkable improvement was noted after the biopsy, with progressive reduction in inflammation and complete epithelialization by the eighth week. At the final review, the lesion had fully resolved, and the patient reported no pain, irritation, or functional limitation. No recurrence was observed (Figure 1).

Case 2

An 80-year-old male presented with a chief complaint of persistent pain on the right lateral surface of the tongue for the past seven months. The patient's medical history was unremarkable, and he reported no known systemic illnesses, or traumatic incidents. The patient is a non-smoker and has no history of tobacco use. On further inquiry, he reported no systemic illnesses, and his medical records confirmed the absence of comorbidities such as diabetes, hypertension, or immunodeficiency. The patient also denied any recent dental procedures or mechanical injury to the area.

Intraoral findings

Clinical examination revealed a solitary, non-healing, ulcerative lesion on the right dorsal-lateral tongue, measuring approximately 1.0×1.0 cm. The lesion demonstrated an ulcero-proliferative growth pattern with rolled, indurated borders, a firm base, and a floor coated with pale-yellow necrotic slough. It was located adjacent to sharp root stumps of maxillary right molar, and mandibular right molars (46 and 47) possibly altering the patient's bite and compounding tongue irritation. Along with prominent attrition on premolars 43, 44, 45, suggesting chronic trauma as a likely precipitating factor. A radiographic evaluation (orthopantomogram) was performed to rule out any residual root fragments, bone spicules, or underlying pathology that might delay healing (Figure 3).

Clinical impression and intervention

Given the ulcer's chronicity, induration, and proliferative features, a provisional diagnosis of a Chronic non healing ulcer was established, while oral squamous cell carcinoma (OSCC) remained a significant differential diagnosis. Following appropriate counseling, the sharp

lesions without recurrence. The patient was reviewed at regular intervals over a six-month period. Healing was progressive, with notable reduction in inflammation and pain by the fourth week (Figure 3).

Discussion

TUGSE, though rare, is a diagnostic chameleon that often mimics malignancy, especially OSCC, as it manifests as a rare, single, well-demarcated ulcer with indurated, often elevated margins[1], which can raise considerable clinical concern. Traumatic ulcers typically heal within two to three weeks once the source of irritation such as sharp teeth, ill-fitting dentures, or trauma is removed, although they can persist longer in immunocompromised individuals. TUGSE is a rare, benign, self-limiting lesion usually affecting the tongue or cheek, with two peak incidence periods: infancy and the fifth to seventh decades of life. It is thought to arise from repeated trauma triggering a deep inflammatory response rich in eosinophils, (Figure 5) and although histology is needed to exclude malignancy, TUGSE generally resolves spontaneously often after biopsy. In contrast, OSCC is much more common, representing over 90% of oral cancers, and is strongly associated with risk factors such as tobacco, alcohol, HPV infection, and chronic irritation. OSCC typically appears in adults over age 40, especially males, and requires biopsy for definitive diagnosis, followed by aggressive treatment (surgery, often with neck dissection, and possibly radiation and chemotherapy). Prognosis depends heavily on early detection, as many cases are already advanced and involve lymph node metastasis at diagnosis.

Experimental studies, such as those by Bhaskar and Lilly[2], support that persistent trauma to the mucosa in animal models can result in lesions histologically resembling TUGSE. Other authors, including Segura and Pindborg, suggest that an aberrant immune-mediated repair process might contribute to lesion persistence and its aggressive inflammatory profile.

Histologically, TUGSE is characterized by a deep, polymorphous inflammatory infiltrate composed of lymphocytes, eosinophils, histiocytes, and large mononuclear cells, often extending into the underlying muscle fibers. The presence of eosinophils in large numbers is a hallmark finding. The large mononuclear cells sometimes described as atypical or bizarre have raised concerns about a neoplastic process. However, immunohistochemical

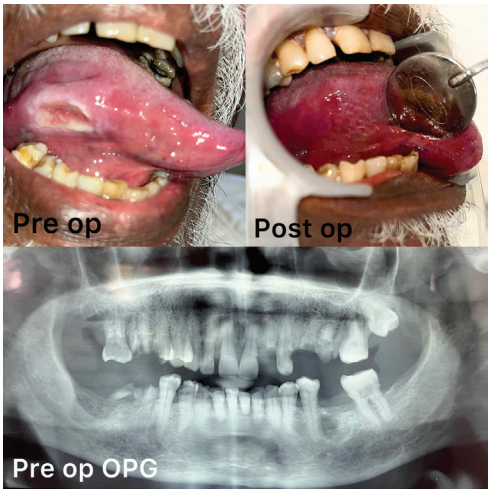

Figure 3: Pre-op & Post-op: Ulcero-proliferative lesion on the lateral tongue surface and Pre-op OPG.

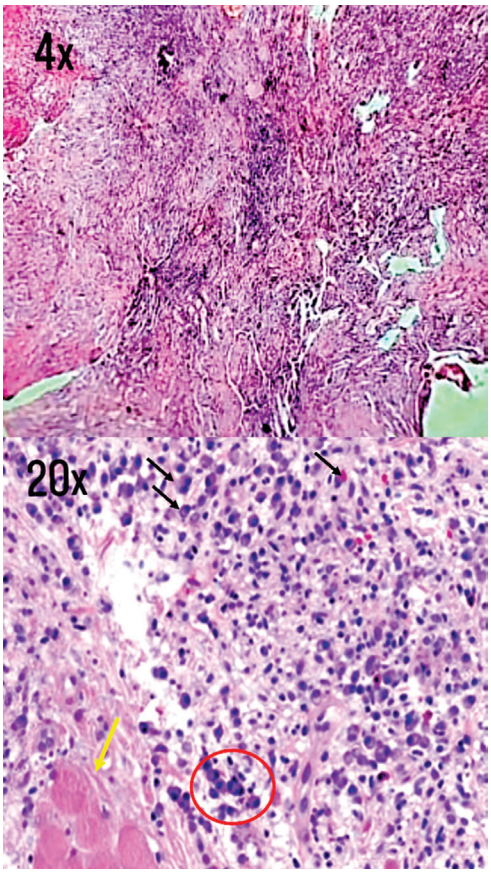

Figure 4: H&E Staining (4X & 20X). Black arrows - Numerous eosinophils into the submucosa and the underlying muscle bundle; Red circle - atypical cells; Yellow arrow - Infiltrate extending into submucosa and into the underlying muscles.

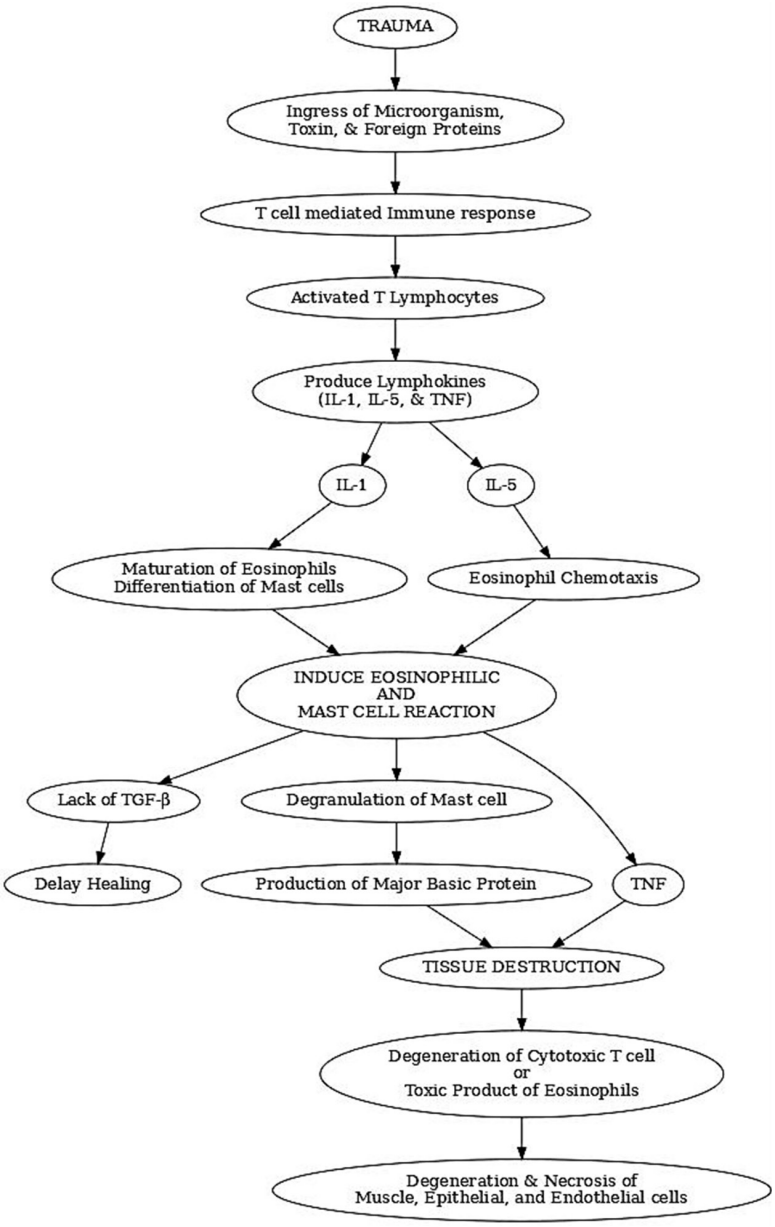

Figure 5: Pathophysiology of traumatic ulcerative granuloma with stromal eosinophilia.

root stumps were extracted, and electrocautery of the lesion was performed under local anesthesia. The specimen was sent for histopathological analysis to confirm the diagnosis and rule out malignancy (Figure 2).

Histological findings

Microscopic evaluation revealed an ulcerated surface lined by irregular, non-keratinized stratified squamous epithelium, which was non-dysplastic in nature. Beneath the epithelium, there was a diffuse and deeply penetrating inflammatory infiltrate composed predominantly of eosinophils, along with a mixture of B and T lymphocytes, macrophages, plasma cells, and occasional large atypical-appearing mononuclear cells. This infiltrate extended beyond the submucosa and infiltrated into the underlying skeletal muscle fibers, reflecting the lesion's aggressive yet reactive inflammatory pattern. On high-power magnification (H&E, 20X), the eosinophils displayed their characteristic nuclei and prominent eosinophilic granules, confirming their identity and highlighting their abundance within the deep inflammatory infiltration (Figure 4).

Follow-up

The source of trauma was successfully identified and eliminated during initial management, which likely contributed to the rapid and complete resolution of the

Table 1: Differential diagnosis of traumatic ulcerative granuloma with stromal eosinophilia.

Diagnosis	Site	Clinical Feature	Histology	IHC
Traumatic ulcerative granuloma with eosinophilia	Tongue, buccal, vestibular, palatal mucosa, retromolar area, gingiva, floor of mouth	Indurated ulcer, elevated margin, yellow base	Granuloma, dense, diffuse, polymorphic infiltrate of eosinophils, histiocytes, submucosal, muscle, salivary glands	Phenotypically regular T cells, occasionally CD30+
Squamous cell carcinoma	Lateral/tip of tongue, lower lip, retromolar area, base of oral cavity	Endophytic, infiltrative, destructive nodule, shallow ulcer, elevated margin	Epithelial differentiation, horn pearls, dyskeratosis, absent bridges, cornification, peritumoral inflammation	CK5/6+, CK19+, p63+, p40+
Atypical histiocytic granuloma	lingual mucosa and mandibular gingiva is predominant & lips.	ulceroproliferative lesions	histologically shows a histiocytic proliferation and is characterised by specific mitotic activity	CD68 marker
Lymphomatoid papulosis.	The lingual location is the most frequent, with mainly on the tongue's dorsal surface. Labial involvement from the lip commissure to the mucosal side of the lips	"ulcerated red papule" or an "inflammatory nodular lesion with an ulcerated center	infiltrate of CD 30 positive atypical lymphocytes together with a mixed inflammatory infiltrate of eosinophils, neutrophils, histiocytes and plasma cells	T-cell specific markers CD3 and UCLH1 (CD45RO)
Lymphoma (CD30+)	Reoccurring, exophytic lesions in the oral cavity	Indolent nodule or ulcer, primary cutaneous disease	Oral, soft tissue infiltrate of atypical lymphoid cells, eosinophils	MUM1+, MYC+, CD30+, loss of T cell markers
Leus (Syphilis)	Lips, tongue, pharynx	Papule at entry, indolent superficial ulcer, indurated margin, multifocal, aphthous enanthema	Intense plasma cell infiltrate, ill-defined granuloma, spirochetes	Treponema pallidum by TPPA or FTA-ABS
Muco-cutaneous ulcer (EBV+)	Oropharyngeal mucosa	Well circumscribed indolent ulcer	Inflammatory cells, atypical, large B-cell blasts, RS-like cells	EBER+, CD30+
Aphthous stomatitis	Non-keratinized labial and buccal mucosa, soft palate, inferior tongue	Shallow, round, oval, painful ulcer; fibrin pseudo-membrane, erythematous margin.	Nonspecific ulcer, extensive T cell infiltrate, elevated local TNF-α	Nonspecific

profiling generally supports a reactive origin. These cells are frequently CD30+, CD3+, CD68+, and TIA-1+, suggestive of an activated T-cell or histiocytic lineage.[3] According to Davoine *et al*.,[4] the reduced expression of cytokines such as TGF-α and TGF-β1 in eosinophils may contribute to impaired wound healing and chronicity of the lesion. Further support for a benign diagnosis comes from molecular analysis. Studies by Magro *et al*.,[3] have shown predominantly polyclonal or oligoclonal T-cell receptor gene rearrangements in most TUGSE cases. While occasional cases with clonal patterns have been documented, these tend to follow a benign, non-progressive clinical course. The differential diagnosis of TUGSE encompasses a wide range of conditions, including oral squamous cell carcinoma, CD30+ lymphoproliferative disorders (e.g., lymphomatoid papulosis), deep fungal infections, Langerhans cell histiocytosis, and granulomatous diseases such as tuberculosis and syphilis. These entities have been summarized in (Table 1).[5]

The clinical and histopathological findings in our case series align closely with those described in the literature. Similar to the majority of reported TUGSE cases, both patients in our series presented with solitary, indurated ulcers on the lateral tongue the most commonly affected site. The histological pattern, including a dense eosinophil-rich inflammatory infiltrate extending into muscle fibers are hallmark features that have been consistently documented in prior studies. The prolonged duration of ulceration (7-9 months) in both patients exceeds the typical course reported in most studies, where spontaneous

healing often occurs within weeks or shortly after biopsy. Furthermore, both patients were geriatric, a demographic shown to be vulnerable to delayed healing and heightened cancer anxiety, making evident the clinical value of timely biopsy and conservative management in this age group.

In our both cases, electrocautery was selected as the technique of choice for biopsy, not only to obtain a definitive diagnosis but also to achieve precise tissue removal with optimal hemostasis, Given the high vascularity of the tongue, managing intraoperative bleeding becomes a critical concern, particularly in elderly patients. Topical corticosteroids were initially not started, as their empirical use in a lesion with malignancy like features could have masked disease progression or delayed critical histopathological diagnosis. This conservative approach minimized patient morbidity while still achieving complete healing in both cases. Interestingly, as also reported by Wolk R *et al*.,[6] many TUGSE lesions begin to regress spontaneously following the biopsy procedure. Additional therapies topical steroids, antimicrobial rinses, or low-level laser therapy may be employed but are not typically necessary.

By consolidating clinical, histological aspects, this report contributes to the growing body of literature urging conservative management in suspected OSCC/ chronic non healing ulcer cases where TUGSE may be a differential diagnosis. Timely diagnosis not only prevents unnecessary radical surgery but also provides immense psychological relief to the patient especially in geriatric populations where anxiety about cancer is high.

Contemporary literature continues to provide valuable insights. Wolk *et al*.,[6] highlighted the consistent presence of CD30-positive T cells in TUGSE and differentiated it from lymphoproliferative disorders. Other authors like Ficarra *et al*.,[7] echo similar findings and stress the need for clinician awareness to prevent misdiagnosis and overtreatment.

Conclusions

TUGSE serve as a valuable reminder in clinical practice that not all indurated or chronic oral ulcers are malignant, even when they closely mimic the features of oral squamous cell carcinoma. As a clinician, maintaining a broad differential diagnosis and prioritizing timely histopathological evaluation are essential to avoid unnecessary aggressive interventions. The outcomes in our cases reinforce the importance of identifying and removing local traumatic factors, as well as adopting a conservative, evidence-based approach when managing suspicious lesions. Incorporating these principles into daily practice enhances diagnostic accuracy, reduces patient anxiety, and supports more personalized, minimally invasive care particularly in elderly patients with high cancer related fear.

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