Chronic Obstructive Sialadenitis with Stensen Duct Ectasia in a Young Tobacco Chewer: Ultrasound Case Report

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Background: Chronic obstructive sialadenitis often results from ductal obstruction by stones or strictures, leading to salivary stasis and proximal ductal dilatation. Isolated parotid duct ectasia (sialectasis) without calculi is uncommon. High-resolution ultrasound (US) is the first-line modality for salivary duct evaluation.

Keywords: Parotid duct, Sialectasis, Chronic sialadenitis, Ultrasonography, Sialendoscopy

How to cite this article: Kuber R, Pingale K. Chronic Obstructive Sialadenitis with Stensen Duct Ectasia in a Young Tobacco Chewer: Ultrasound Case Report. Int J Drug Deliv Technol. 2026;16(70s): 822-825. DOI: 10.25258/ijddt.16.70s.84

Introduction

Obstructive salivary gland disorders are common non-neoplastic conditions, frequently due to sialolithiasis or duct strictures, leading to gland inflammation and swelling. Chronic sialadenitis is characterized by recurrent or persistent swelling and may cause salivary duct ectasia (sialectasis) with saliva stasis. Tobacco use can exacerbate oral inflammatory changes, although its direct role in parotid duct obstruction is unclear. High-frequency ultrasound (US) is the primary imaging tool for salivary gland pathology, able to visualize ductal abnormalities in over 90% of obstructive cases. MR sialography is an emerging non-invasive alternative for detailed duct mapping.

We report a rare case of isolated left Stensen duct ectasia in a young male tobacco chewer, presenting with a painless cheek swelling. We outline the clinical and sonographic features, discuss the differential diagnoses, and review relevant imaging literature on chronic parotid duct obstruction and management strategies.

Case Presentation

A 26-year-old man presented with a left cheek swelling of 2 months' duration. The swelling was insidious, gradually increasing, and entirely painless. There was no history of fever, facial trauma, prior facial surgery, or salivary gland discharge. The patient had a long-standing habit of chewing tobacco. On examination, a soft, non-tender, fluctuant swelling approximately 3 cm in size was palpable in the left preauricular area. The overlying skin was normal, and there were no palpable cervical lymph nodes. Oral examination showed no intraoral mass or ductal discharge on milking the left parotid gland.

Standard laboratory tests were unremarkable (white cell count, ESR normal). A preliminary diagnosis of salivary gland swelling was made. Fine needle aspiration cytology (FNAC) was considered but deferred as the patient declined invasive testing; no FNAC or biopsy results were available.

Imaging Findings

High-resolution ultrasound was performed using a linear 10–14 MHz transducer. The left parotid region showed a fusiform, predominantly anechoic, tubular structure measuring up to 1.07 cm in anterior-posterior diameter, extending from the preauricular area along the expected course of the Stensen duct. (Figures 1–4). There were low-level internal echoes within the ductal lumen, suggestive of inspissated secretions. The adjacent parotid parenchyma showed mild heterogeneity and a few small hypoechoic areas, consistent with chronic inflammation, but no focal mass. No echogenic shadowing structure (calculus) was seen. Color Doppler showed no intraluminal flow or hyperemia.

These findings indicate a markedly dilated Stensen duct without evidence of sialolithiasis, consistent with chronic obstructive parotitis with duct ectasia. The duct's maximal AP diameter (1.07 cm) was significantly enlarged (normal proximal duct <2–3 mm). Ultrasound measurements of the cystic dilation were documented (Figure 4). A provisional diagnosis of **chronic obstructive sialadenitis with distal duct stricture leading to proximal duct ectasia** was made.

Figure 1. Grayscale ultrasound image (transverse view) of the left parotid region demonstrating a dilated anechoic parotid duct (yellow arrow) anterior to the masseter.

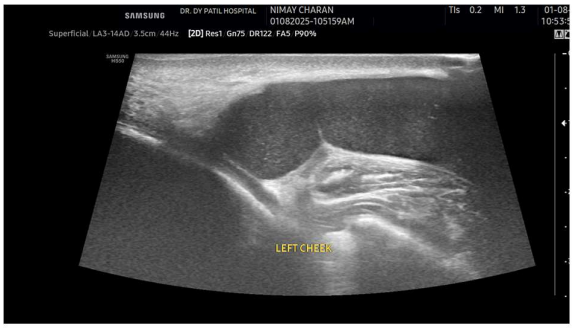

Figure 2. Grayscale ultrasound of left cheek (transverse) labeled "LEFT CHEEK", showing the tubular cystic dilatation (arrow) of Stensen's duct.

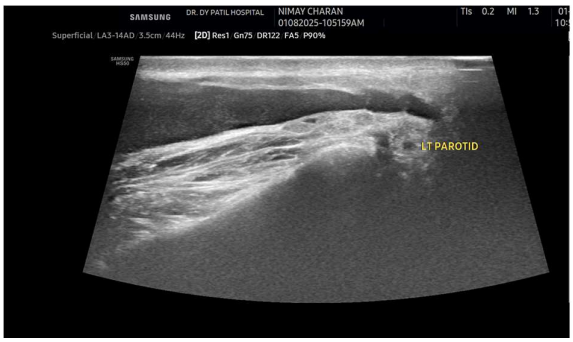

Figure 3. Ultrasound (transverse) of the left parotid gland (screen label "LT PAROTID"), depicting fusiform ductal dilatation (arrowheads) extending through the gland.

Figure 4. Ultrasound image showing measurement of the dilated duct's anterior-posterior diameter (dotted line, 1.07 cm).

Figure 5. Additional parasagittal ultrasound view of the left parotid region showing elongated ductal ectasia (arrow) coursing to the oral vestibule.

Differential Diagnosis

The differential diagnosis for a painless cheek swelling with cystic ultrasound appearance includes:

- **Parotid duct ectasia (sialectasis)** – typically presents as a fusiform ductal swelling; often associated with chronic obstruction.
- **Sialocele** – a saliva-filled pseudocyst usually post-trauma or surgery; ultrasound shows a well-defined anechoic collection, often with a history of injury.
- **Branchial cleft cyst (first branchial cleft anomaly)** – congenital cyst near parotid; typically lateral to buccinator, may involve duct.
- **Lymphatic malformation (cystic hygroma)** – congenital multilocular cystic mass; appears multicystic on US, often in children.

- **Chronic parotid abscess** – usually painful with systemic signs; US shows complex fluid collection with debris and hyperemia.

A comparative summary is given below:

Diagnosis	Clinical Features	Ultrasound Findings
Duct ectasia (sialectasis)	Painless, fluctuant cheek swelling; no acute infection; history of chronic inflammation or irritants.	Single, elongated anechoic/tubular lesion along Stensen duct; possible internal echoes; no vascular flow.
Sialocele	Often post-trauma/surgery; soft swelling that may increase with meals.	Well-defined anechoic collection, often unilocular; may not show duct continuity.
First branchial cleft cyst	Congenital; may present in late adolescence; swelling near angle of mandible.	Cystic lesion often posteroinferior to parotid; no direct duct connection; no debris unless infected.
Lymphatic malformation	Usually in infancy/childhood; soft, compressible swelling; no relation to meals.	Multiloculated cystic spaces ("cobblestone"); septations on US; no arterial flow.
Abscess	Painful, erythematous swelling; fever or raised inflammatory markers.	Complex hypoechoic collection with irregular borders; internal debris; hyperemia of surrounding tissue.

Discussion

Obstruction of the parotid duct leads to upstream dilatation and chronic sialadenitis. Common causes include sialolithiasis (stones) and duct stenosis, which may be idiopathic or post-inflammatory. In our patient, absence of calculus and slow onset pointed to a fibrotic stricture of the distal duct, likely related to chronic tobacco-induced inflammation. Sialectasis of Stensen's duct is rare and often diagnosed only after excluding stones.

Ultrasound is the preferred first-line modality in salivary duct evaluation. It readily differentiates cystic from solid lesions and can reveal ductal anatomy. In our case, US clearly demonstrated the longitudinal, fusiform dilatation of the duct. Previous literature emphasizes that high-frequency US detects duct ectasia and intraductal debris in over 90% of obstructive cases. Transoral ultrasound can further improve visualization of duct segments inaccessible by transcervical scan. Color Doppler helps exclude vascular malformations.

Magnetic resonance (MR) sialography is an advanced option, providing noninvasive duct mapping. It accurately shows duct continuity and strictures without contrast. In calculous disease, MR sialography reliably depicts stone location and ductal anatomy. However, it is less accessible and costly than US. In our patient, MR sialography could be considered if intervention planning is needed to confirm stricture location.

Our imaging strategy adhered to recommendations: ultrasound was performed first. CT was unnecessary given the absence of stone on US; CT is generally reserved for suspected sialolithiasis. Traditional sialography is gold standard but invasive and contraindicated in acute settings.

Management of chronic obstructive sialadenitis has shifted toward gland preservation. Sialendoscopy (endoscopic ductal dilation) is now a mainstay for both diagnosis and treatment. In published series, sialendoscopic intervention relieved symptoms in over 90% of obstructive cases. In a 2023 cohort, complete symptom relief was achieved in 77.6% after a single session and 96.7% after follow-up (mean 6 months). The procedure also allows intraductal steroid infusion to reduce inflammation. Our case will be referred for sialendoscopy with possible ductal dilation or stenting.

Notably, high-resolution ultrasound can be used post-intervention. Jung et al. demonstrated that ultrasonography effectively monitors ductal diameter reduction after sialendoscopy. In their series of chronic sialadenitis patients, clinical improvement correlated with shrinkage of the "megaduct" on follow-up US.

Relevance of Tobacco Use: Chronic chewing tobacco may contribute to salivary gland duct irritation and decreased salivary flow, promoting stasis. While not a well-established cause of sialadenitis, smoking has been associated with changes in salivary composition. Patient counseling on tobacco cessation and hydration was advised, though concrete literature linking tobacco to duct obstruction is limited.

Follow-Up Investigations

Further evaluation and management steps considered:

- **Fine-Needle Aspiration Cytology (FNAC):** In this case, FNAC was not performed (unspecified by patient choice).

If a palpable lesion remained after treatment, FNAC could exclude neoplasia.

- **Doppler Ultrasound:** Repeat Doppler imaging was done to rule out subtle vascular abnormalities; none were found.
- **Magnetic Resonance (MR) Sialography:** This non-invasive ductogram could precisely localize the stenosis prior to sialendoscopy. It was offered but deferred as the patient opted to proceed directly to sialendoscopy due to cost constraints.
- **Sialendoscopy with Contrast:** Diagnostic sialendoscopy under local anesthesia is planned to directly visualize the ductal lumen, confirm the stricture, and perform therapeutic dilation. Informed consent for this procedure was obtained.

Patient Consent and Ethics

The patient provided written informed consent for publication of anonymized imaging and clinical data. Institutional ethics review was not required for this single retrospective case report according to our hospital guidelines.

Conclusion

We report a rare case of chronic obstructive parotitis due to distal Stensen duct fibrosis in a young male chronic tobacco chewer. The high-resolution ultrasound was crucial in demonstrating dilated Stensen duct without stones, steering the diagnosis away from neoplasms or infection. Ultrasound should be the first-line imaging in such cases. Recognition of duct ectasia guided appropriate minimally invasive management (sialendoscopy) and avoided unnecessary surgery. This case underscores the importance of correlating clinical history with ultrasound findings in salivary gland disorders.

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