

Peri-Whartonitis Mimicking a Cellulitis: A Case Report and Diagnostic Pitfalls

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Abstract

Case Report

Peri-Whartonitis is an uncommon inflammatory condition involving the periductal tissues surrounding Wharton's duct, most frequently caused by salivary duct obstruction due to sialolithiasis. Its clinical manifestations often mimic odontogenic cellulitis or infections of the floor of the mouth, leading to potential diagnostic errors and delayed treatment. This report presents the case of a woman in her mid-forties, without relevant medical history, referred to the Military Hospital of Tunis for persistent submandibular swelling initially diagnosed as cellulitis. The patient had received a one-week course of amoxicillin and paracetamol without improvement. Clinical examination revealed a submandibular swelling without obliteration of the lingual vestibule, and bimanual palpation disclosed a mobile, hard structure along Wharton's duct, associated with mild purulent discharge. A panoramic radiograph showed a radiopaque image resembling a tooth between teeth 45 and 47, while cone-beam computed tomography confirmed an oval calcified structure consistent with a sialolith in the submandibular duct. Based on these findings, a diagnosis of peri-Whartonitis secondary to obstructive sialolithiasis was established. The patient underwent successful transoral sialolithotomy under local anesthesia, followed by a short course of antibiotics, analgesics, and antiseptic mouthwash. The postoperative course was uneventful, with complete resolution of symptoms after 10 days. This case highlights the diagnostic challenges associated with peri-Whartonitis and underscores the importance of careful clinical evaluation and appropriate imaging in distinguishing it from odontogenic infections. Early and minimally invasive surgical management ensures complete healing, preserves glandular function, and prevents unnecessary prolonged antibiotic therapy. Clinicians should consider peri-Whartonitis in cases of submandibular swelling unresponsive to conventional antibiotic treatment.

Keywords: Peri-Whartonitis; Submandibular gland; Sialolithiasis; Sialolithotomy; Salivary duct obstruction.

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INTRODUCTION

One of the most common acute presentations in emergency is a unilateral submandibular swelling covered with an erythema. The wide array of differential diagnosis can be confusing for the dentist as it includes odontogenic infections, non-odontogenic infections, lymphadenitis and salivary gland disorders such as sialadenitis or neoplasms [1]. Failure to consider salivary-duct disease especially the ones located at the end of Wharton's duct, known as peri-Whartonitis, can lead to diagnostic delay.

The process by which stones are formed within the gland or its duct system is called sialolithiasis and it is the most common cause of obstructive submandibular gland disease [2]. The obstruction of Wharton's duct can cause mechanical or infectious complications. When the

sialolith is infected, it causes a secondary bacterial overgrowth that translates into a sudden gland enlargement, pain, and an occasional purulent discharge from the duct orifice [2]. Due to the anatomical location of the submandibular gland, a sudden enlargement with pain can easily be mistaken with an odontogenic cellulitis unless the oral cavity is meticulously examined.

The present diagnostic confusion is not merely theoretical, as the literature shows that a sialoliths can cause a large submandibular inflammatory mass that mimics an acute cellulitis and at the same time, studies show that almost 1 of 3 cellulitis is misdiagnosed [3].

A methodical clinical approach that comprises the patient's history and all the clinical maneuvers is fundamental; however, a targeted high-resolution imaging is must. Ultrasound is the first line modality in

detecting ductal dilatation whereas a computed tomography (CT) scan is the gold standard to explore deep-space extension or abscesses [4].

Management principles can be schematically divided into etiological management with minimally invasive techniques like sialendoscopy and sialolithotomy and symptom-based therapy like antibiotics, hydration, sialagogues and local measures [5].

Special awareness is required when dealing with obstructive submandibular conditions due to the risk of infection that can extend to deeper spaces creating a potentially lethal condition [6].

In this report we describe a case of peri-Whartonitis that was initially treated as submandibular cellulitis, highlight the clinical and imaging findings that prompted the correct ductal diagnosis, and review the evidence-based diagnostic and therapeutic steps that can prevent similar diagnostic errors. Our aim is to provide a practical, evidence-anchored reminder to clinicians evaluating unilateral submandibular inflammation: always examine the floor of mouth and consider ductal obstruction early in the diagnostic algorithm.

CASE REPORT

A female patient in her mid-40s with no significant medical history was referred from a private dental practice to the Military Hospital of Tunis with a persistent swelling in the floor of the mouth. The referring dentist suspected a cellulitis of odontogenic origins and prescribed a one-week course of amoxicillin (2 g/day) and paracetamol (2 g/day). Despite this treatment, no clinical improvement was observed.

On extraoral examination, we noted the preservation of facial symmetry was preserved, and the absence of overlying erythema (Figure 1). Palpation revealed a small, mobile, non-tender lymph node in the right submandibular region. Intraorally, we found a localized swelling in the right submandibular region without obliteration of the lingual sulcus and without mucosal erythema (Figure 2). The absence of the obliteration of the lingual sulcus and the erythema were in favor of eliminating the initial diagnosis of cellulitis of the floor of the mouth. Bimanual palpation revealed a firm, mobile, calculus-like structure along the path of Wharton's duct, associated with mild tenderness and a small amount of purulent discharge from the ductal orifice, which was in favor of an obstructive accident of the submandibular gland.



Figure 1: Extraoral exam with no signs of asymmetry or swelling



Figure 2: Swelling in the submandibular region without erythema

A panoramic radiograph (orthopantomogram) revealed a radiopaque, tooth-like structure between teeth #45 and #47, initially suggesting a possible odontogenic origin of the infection (Figure 3). However, cone-beam computed tomography (CBCT) confirmed the presence of an oval, calcified structure with cement-like radio

opacity consistent with a sialolith located in the submandibular space (Figure 4). After thorough evaluation of the clinical and radiological findings, we confirmed the diagnosis of peri-Whartonitis due to an obstructive sialolith.

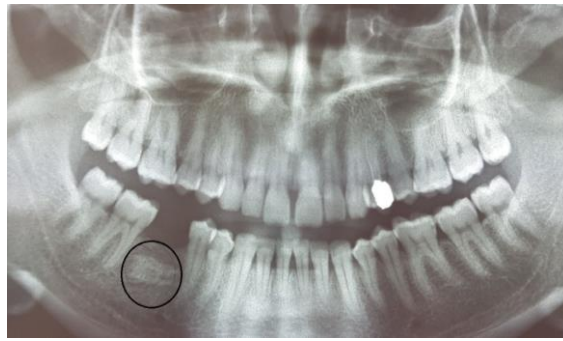


Figure 3: The panorex showed a tooth-like structure between teeth #45 and #47

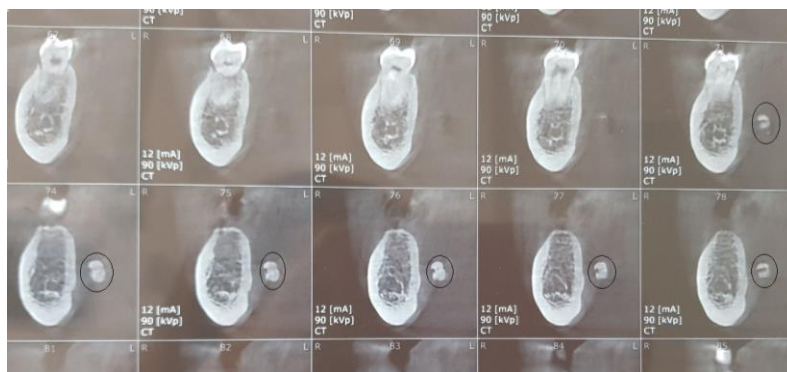


Figure 4: CBCT showed the presence of an oval calcified structure with cement-like radio opactiy

We performed a transoral sialolithotomy under local anesthesia (Figure 5), allowing for complete removal of the calculus (Figure 6). The patient was prescribed postoperative amoxicillin for seven days, dexamethasone (Unidex) for two days, paracetamol for

five days, and a chlorhexidine mouthwash. We proceeded to close the site with 3 “O” shaped sutures (Figure 7). The post-op was uneventful and we removed the sutures 10 days after the intervention.



Figure 5: Intra-oral Sialolithomy



Figure 6: The calculus collected after sialolithomy

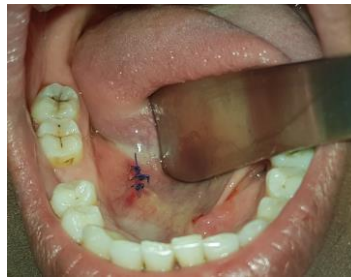


Figure 7: Sutures

DISCUSSION

Our case, a mid 40s woman with peri-Whartonitis secondary to an obstructive submandibular sialolith who was initially misdiagnosed with cellulitis of the floor of the mouth, is a very common diagnostic trap. An external submandibular swelling or erythema can stem from an intraductal salivary disease, and failure to execute simple inspection and palpation maneuvers can be detrimental to the submandibular gland and can cause long and ineffective systemic antibiotic courses.

The epidemiological data surrounding the incidence of sialolithiasis is scarce, F.Marchal & P.Dulguerov reported an annual incidence between 1 per 15.000 and 1 per 30.000 case [7]. Other authors reported approximately the same numbers (1 in 10,000 to 1 in 30,000 individual) [8].

Sialoliths occur predominantly in the submandibular gland (approximately 85% of cases) followed by the parotid gland (approximately 15%) and the sublingual gland and minor salivary glands (less than 15%) [9-10]. One of the reasons is that the submandibular duct ascends towards its opening in the oral cavity, resulting in a stagnant flow of saliva. Additionally, the submandibular gland produces predominately mucinous saliva, which is more viscous than the secretions created by the parotid gland, resulting in a more stagnant flow of secretions [9-10]. The primary age of diagnosis is between 30 and 60, with a higher incidence in men

The etiology of these calculi is little known and their exact mechanism of formation is unknown. However the most accepted hypothesis is the laminar mineral deposition (calcium and phosphate) around an organic nidus (Mainly formed by mucus, desquamated cells, bacteria). Bacterial infection also plays a role since it increases the salivary pH consequently increasing the increments of calcium phosphate [11-12].

The clinical presentation of peri-Whartonitis includes meal-related pain and swelling, the occasional gland enlargement and possible pus discharge from the duct orifice when palpating the gland [13]. These symptoms can be confusing for any practitioner since they are the same as any odontogenic and non-

odontogenic infection minus the pus discharge from Wharton's duct that is specific to peri-Whartonitis.

For radiological examination, the 2-dimension techniques are only viable for screening since 20% of sialoliths are radiotransparent [8]. Computed tomography scans (CT) are very reliable in detecting larger stones but they don't show the duct nor the gland [8]. Ultrasonography (US) is very popular in Europe but it is operator-dependent and it is not directly interpretable for the surgeon unless the surgeon is doing the examination [8]. Sialography and MR sialography have niche roles (ductal stenosis, chronic sialadenitis), while sialendoscopy is both diagnostic and therapeutic and often supersedes older invasive imaging. Clinical series and systematic reviews demonstrate the combined diagnostic/therapeutic value of sialendoscopy [14-15].

The management spectrum for these cases vary from conservative measure to minimally invasive surgical technique and finally the gland resection in extreme cases. 16]Conservative measures include hydration, sialogogues, massage warm compresses, antibiotics and analgesia for small stones close to the duct orifice which can sometimes allow the spontaneous stone expulsion [8].

The endoscopic extraction or sialendoscopy alongside intraductal or extracorporeal lithotripsy are now mainstream for intraductal stones [16]. Intraoral sialolithotomy is also a safe and reliable option for ductal stones with minimal complications [17]

Untreated obstructive sialadenitis can progress to frank abscess, submandibular-space or deep-neck infections and, in rare cases, Ludwig's angina with potential airway compromise. Case reports and series document sialolith-related deep infections and the need for surgical drainage and airway management in severe cases [18]

When clinicians encounter unilateral submandibular swelling, especially cases refractory to empiric antibiotics, a focused intraoral exam and targeted imaging (ultrasound → CT/CBCT as indicated) should be performed early; prompt duct-directed intervention (sialendoscopy or transoral sialolithotomy) is usually curative and preserves gland function and prevent potential fatal deep-neck infections [19].

CONCLUSION

Peri-Whartonitis is a rare and often underdiagnosed accident of salivary glands obstructions. Our case shows the diagnostic challenges posed by this condition as it can be confused with an odontogenic infection of the floor of the mouth. Careful clinical assessment particularly bimanual palpation of the duct trajectory combined with appropriate imaging such as cone-beam computed tomography (CBCT), is essential to achieve an accurate diagnosis and to prevent unnecessary or inappropriate antibiotic therapy.

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