Case Report

Sialendoscopy for Definitive Management of a Submandibular Abscess following Radiotherapy for Oropharyngeal Squamous Cell Carcinoma

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Abstract

Background/Aims: Sialendoscopy has as yet been shown to be ideal for the management of sialolithiasis and chronic inflammatory diseases of the salivary gland. However, its applicability to the management of a broad range of salivary gland disease is continually growing.

Methods: Here we present a case report where sialendoscopy was used to successfully manage an intraparenchymal submandibular gland abscess in a patient with oropharyngeal squamous cell carcinoma managed with primary chemoradiation.

Results: The use of sialendoscopy enabled visualization of the patency of salivary ducts, drainage of abscess, and irrigation of antibiotic-impregnated fluid. In this particular patient, we were able to avoid a transcervical approach through a previously irradiated field, which would have necessitated concurrent tracheostomy and placed undue risk to surrounding neurovascular structures.

Conclusion: Sialendoscopy should thus, in select patients, be considered as an initial intervention for patients with intraparenchymal salivary gland abscesses in which prior therapy creates an increased risk of complication from an open transcervical approach.

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Introduction

Deep neck space infections present the potential for significant morbidity and mortality due to the proximity of vital airway and neurovascular structures. These infections are typically polymicrobial, involving *Streptococcus*, *Staphylococcus*, and *Peptostreptococcus* species [1]. Infections of the intimately associated submandibular and sublingual spaces can progress to the life-threatening diagnosis of Ludwig’s angina. In rare cases, the submandibular gland (SMG) itself is the source of infection; these cases are typically associated with significant comorbidities including diabetes mellitus and other states of immunocompromise [2]. Patients with xerostomia, namely head and neck oncology patients who received chemoradiation, are at higher risk of infectious complications due to reduced gland function. Traditionally, transcervical drainage and parenteral antibiotics represent the preferred treatment for submental and submandibular abscesses. Acute sialadenitis has been considered a relative contraindication to sialendoscopy due to the decreased success rate, increased risk of pain and swelling, and theoretical increased risk of complication [3]. However, in appropriately selected cases, transoral drainage has been shown to have equivalent outcomes without risk to the marginal mandibular nerve or an aesthetically unappealing scar [4]. There are no reports in the literature characterizing the use of sialendoscopy. Herein we report a case of an SMG abscess managed definitively using sialendoscopy in a previously irradiated oropharyngeal cancer patient, avoiding the need for transcervical or transoral incision and subsequently avoiding postoperative wound complications and altering airway management.

Case Presentation

This research was approved by the Institutional Review Board at the University of Pennsylvania. A 57-year-old male with stage IVc oropharyngeal squamous cell carcinoma (T4a N2c M1) managed with primary chemoradiation presented with left submandibular pain and swelling. Physical exam showed an erythematous, edematous left neck with a palpable mass, left oral floor firmness, and an absence of saliva production from the left Wharton’s duct papilla. A computed tomography scan demonstrated a 1.8 × 1.2 cm peripherally enhancing fluid collection within the SMG with adjacent soft tissue stranding (Fig. 1a).

Fine-needle aspiration (FNA) was nondiagnostic, and the patient was treated with two courses of amoxicillin/clavulanic acid with incomplete symptom resolution. He was subsequently admitted for intravenous antibiotics and glucocorticoids due to concern for airway edema. A repeat FNA revealed methicillin-resistant *Staphylococcus aureus* (MRSA) with clindamycin resistance, and he was converted to parenteral vancomycin with minimal improvement in the edema. He was thus taken to the operating room for transcervical drainage and possible SMG excision. The patient was counseled that sialendoscopy, while not standard of care as a single modality, may be a helpful adjunct, and he consented.

The senior surgeon performed direct laryngoscopy for intubation as videolaryngoscopy by the attending anesthesiologist demonstrated grade III Cormack and Lehane view. It was evident that an open approach for drainage of the abscess or excision of the SMG would necessitate tracheostomy placement due to the expected increase in laryngeal and oropharyngeal edema with an incision in the presence of marked lymphedema. The initial intervention performed was sialendoscopy.

Salivary probes were used to dilate the submandibular duct papilla before navigation with a 1.3 mm Karl Storz rigid sialendoscope (Karl Storz, Germany). The gland had the appearance of chronic inflammation and radiation change. Initially there was no drainage, but saline irrigation and gland massage expressed large volumes of mucopurulent secretions (see online suppl. video, www.karger.com/doi/10.1159/000492967; Fig. 2). The secondary ducts were explored using a guidewire through the working channel of the scope without evidence of obstruction and with repeated production of purulence on multiple passes and massages. Vancomycin-containing irrigation was used to lavage the gland. Following drainage, the floor of mouth, neck, larynx, and oropharynx were significantly less edematous.
The patient was successfully extubated in the operating room. Postoperatively, he was maintained on 14 days of trimethoprim/sulfamethoxazole with complete resolution of symptoms. Imaging obtained 1 year postoperatively showed no abscess recurrence (Fig. 1b). Additionally, his clearance of infection made him a candidate for a clinical trial. At the 2- and 3-year follow-up, the patient remains symptomatically improved with postradiation xerostomia but no submandibular swelling.

Fig. 1. Computed tomography scan of the neck showing a rim-enhancing lucency in the left submandibular gland indicative of abscess (a). Follow-up at 1 year post-sialendoscopy shows durable resolution of abscess (b).

Fig. 2. Intraoperative images show evidence of a mucous plug (a), which is successfully cleared using sialendoscopy with clear ducts postprocedurally (b).
Discussion

Abscesses of the SMG are rare but can progress rapidly to Ludwig's angina. This report establishes that submandibular abscesses secondary to sialadenitis may potentially be successfully drained with sialendoscopy. To our knowledge, this is the first such report and is unique in its avoidance of open surgery and tracheostomy in the setting of MRSA infection. The risks of transcervical and transoral incisions are increased in the setting of infection in a postradiation neck to rates approaching 46% [5, 6].

This case presents a novel method of submandibular abscess drainage using sialendoscopy in a previously irradiated patient. The patient avoided neck surgery and experienced durable abscess resolution. We suggest sialendoscopy be considered prior to incision and drainage or gland excision in select cases of intraparenchymal SMG abscess.

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Disclosure Statement

The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript apart from those disclosed.

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