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Uvular Necrosis after Oral Bronchoscopy with Bronchoalveolar Lavage: A Case Report with Review of Evidence

Vamsidhar Vennamaneni[1], Rishbha Dua[1,*], George Michel[2], Virendrasinh Ravat[1], George Yatzkan[3]

[1]Department of Internal Medicine, Larkin Community Hospital, 7031 SW 62nd Ave, South Miami, FL 33143
[2]Department of Science, University of Miami, 1320 S Dixie Hwy, Coral Gables, Fl 33146
[3]Department of Pulmonary Medicine, Larkin Community Hospital, PalmSprings Campus, 1475 W 49th St, Hialeah, FL 33012
*Corresponding author: rishbhad@larkinhospital.com

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Abstract Uvular Necrosis is a relatively rare and unfortunate postprocedural circumstance that can occur following a traumatic oropharyngeal insertion of medical instruments. These medical instruments cause compression of the uvula decreasing vascular supply and leading to necrosis and subsequently sloughing off of the affected area. We present here possibly the first-ever case reported as a rare complication of oral bronchoscopy with bronchoalveolar lavage (BAL) that leads to uvular necrosis. The patient complained of persistent sore throat, odynophagia, and dysphagia one day after the procedure. Uvular necrosis is more commonly reported during nasopharyngeal endoscopies and traumatic blind intubations but is rarely associated with bronchoscopies. Though the inciting event is unclear on this patient whether it was the BAL or the bronchoscope itself, the uvular necrosis was a certainty. With appropriate management, the patient's symptoms started resolving and the area of necrosis diminished. While symptoms from uvular necrosis typically self-resolve within two weeks with conservative management, it is important to recognize the concern to the provider of life-threatening oropharyngeal edema that can be a sequel of this event.

Keywords: *uvular necrosis, oral bronchoscopy with bronchoalveolar lavage, review of evidence*

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1. Introduction

Uvular necrosis is a rare complication from endoscopies, forceful suctioning, intubations, and bronchoscopies. Uvular necrosis is more commonly reported during nasopharyngeal endoscopies and traumatic blind intubations but is rarely associated with bronchoscopies. Though the pathophysiology is the same the inciting trauma may differ. This adverse effect is due to compression of the uvula; obstructing the blood flow causing necrosis and eventual sloughing off. Though this occurs in very few patients, it is important to note that many commonly experience symptoms of odynophagia, dysphagia, and sore throat; it can also lead to life-threatening oropharyngeal edema due to its inflammatory nature. This case study entails the occurrence of this phenomenon secondary to bronchoscopy with bronchoalveolar lavage to rule out Tuberculosis.

2. Case Presentation

A 29 y/o M cruise ship worker presented to the hospital with a dry cough for 8-10 days with associated fever, chills, night sweats, anorexia, and weight loss. He reported a cough that was productive initially and was treated with cough suppressants and antibiotics which helped resolve the sputum production. He stated that the fevers have been occurring only at night with temperate reaching a maximum of 101*F. In addition, he reported fatigue, multiple joint pain, and muscle aches. The patient denied any mosquito or tick bites but reported traveling to Europe, Spain, Panama, and Miami. He expressed being appropriately vaccinated prior to his employment. He complained of ear fullness and mild rhinorrhea along stated a history of exposure to sick contacts on the cruise ship. Chest X-Ray of the patient was obtained (Figure 1).

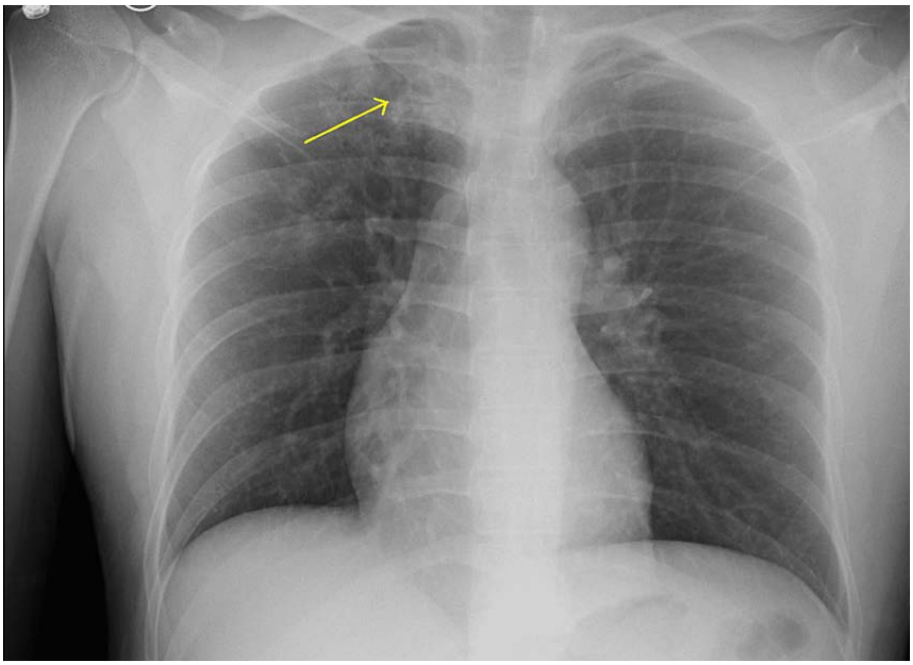

Figure 1. CXR: Patchy opacity of the right apical lung. Further examination with CT imaging warranted. CXR: Chest X-Ray; CT: Computed Tomography

CT of the Chest was obtained on the same day. (Figure 2)

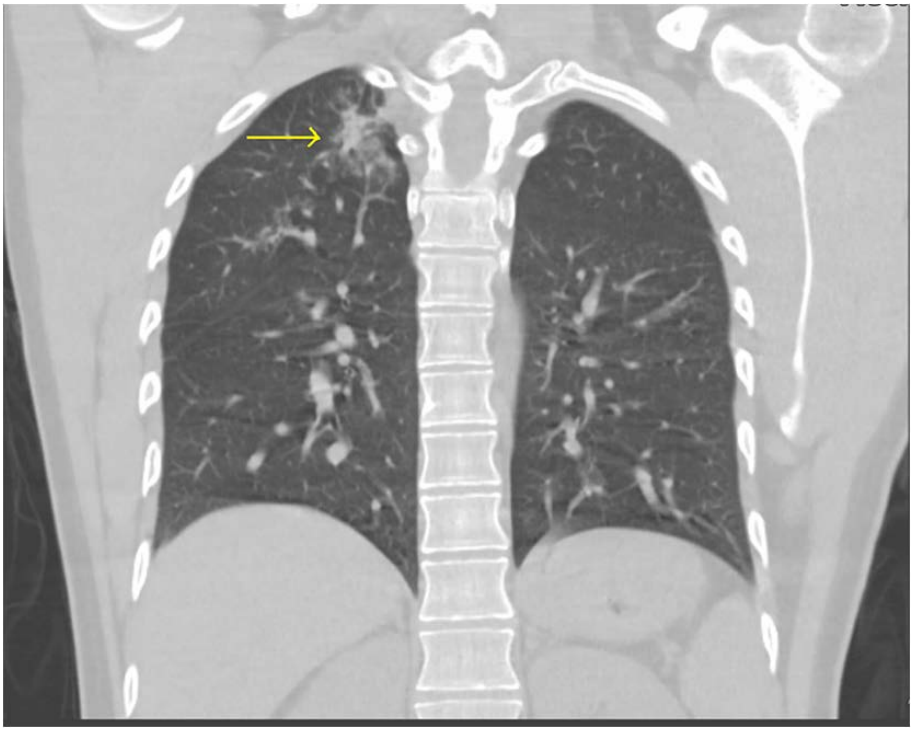

Figure 2. CT Chest: Right apical reticulonodular consolidations. May represent developing infectious processes including mycobacterium avium or tuberculosis (CT: Computed Tomography)

Infectious Diseases were consulted. By infectious diseases recommendation, the patient was scheduled to undergo oral bronchoscopy with bronchoalveolar lavage (BAL) for sputum cultures and for visualization of any endobronchial lesions.

The patient was placed under general anesthesia with Propofol during the bronchoscopy procedure with bronchoalveolar lavage. The patient tolerated the procedure well with stable vital signs and no signs of distress. Twenty-four hours after the procedure, the patient started complaining of discomfort in his throat, dysphagia to both solids and liquids, and intolerance to both hot and cold liquids. Upon oropharyngeal examination; an erythematous swollen and elongated uvula was present with an exudative distal tip freely hanging (Figure 3). Patient-reported that the uvula would irritate the back of the throat when he laid back or tried to swallow. The remainder of the oropharyngeal exam was unremarkable leading to the diagnosis of uvular necrosis.

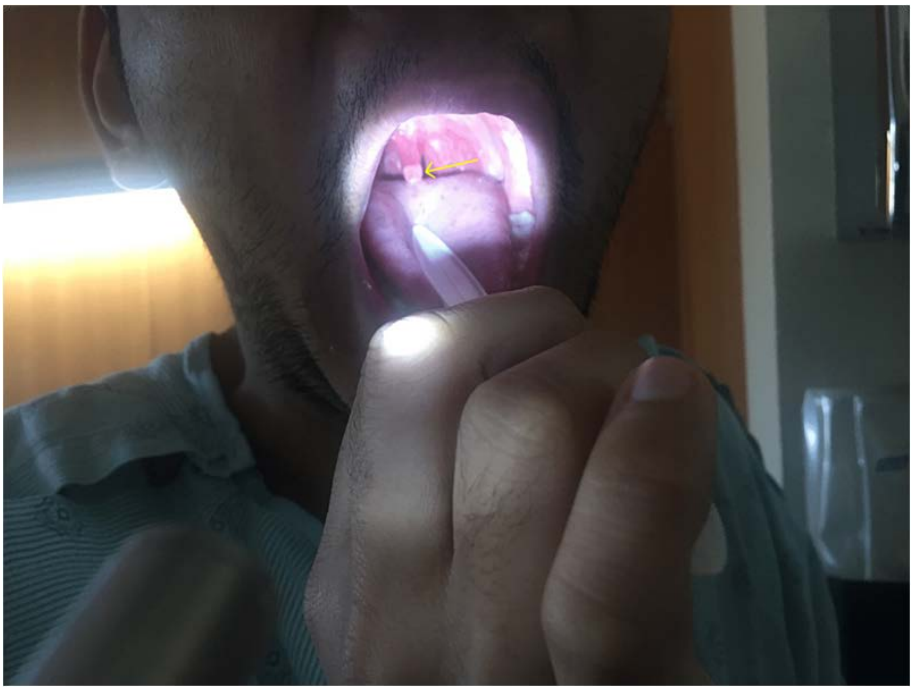

Figure 3. Uvula freely hanging with the distal tip showing necrosis

Infectious Disease was consulted, and the patient was recommended Magic mouthwash (diphenhydramine, viscous lidocaine, antacid, nystatin, and corticosteroids), and Unasyn 3gm IV Q6 hours was initiated due to BAL showing Gram-positive cocci in chains and pairs. Unasyn was later discontinued due to the cultural growth of normal endogenous flora.

Six days after the bronchoscopy, the patient started feeling some relief and was able to tolerate a soft diet. Upon examination, it was noted that the uvula has decreased in size as it was no longer freely moving around and resting on the tongue. The necrotic tip had sloughed off and was measured to be 1mm x 1mm. Once the patient's AFB smears, BAL cultures, and PCR results all came back inconclusive, the patient was discharged with magic mouthwash and a follow-up appointment with an ENT.

3. Discussion

Literature has shown that uvular necrosis is a rare adverse effect after trauma most commonly seen by endotracheal intubations, traumatic endoscopies, and less commonly through bronchoscopies, this being possibly the first case caused by oral bronchoscopy with bronchoalveolar lavage.

Trauma during these procedures can occur in the soft palate, posterior part of the tongue, posterior pharyngeal wall, or the uvula. It is common for patients to have a sore throat, dysphagia, and pain following a bronchoscopy [13]. They might also report a foreign body sensation that leads to anxiety and disturbed sleep. These symptoms may present for several hours to days and are self-resolving [14]. Some patients may experience life-threatening oropharyngeal edema and such patients should be closely monitored post-procedure to prevent mortality.

Due to the nature of the possible decrease in blood supply during procedures, a patient's uvula is predisposed to necrosis which at a later time sloughs off [2]. Hence, with non-resolving sore throat and dysphagia after procedures, the diagnosis of uvular necrosis should be kept in mind. We speculated two different causes of this patient's trauma. The first was thought to be, the trauma of the uvula by compression against the posterior oropharynx as the patient was supine. The decreased vascular supply for the 15min procedure would have been enough to cause the damage due to the fact that the uvula is only supplied by the lesser palatine artery; a branch of the ascending palatine artery [15]. Our second proposed cause was due to forceful suctioning during the bronchoalveolar lavage (BAL). Experimentally, it was shown that the vacuum pressures of -500mmHg are capable of suctioning the uvula [16]. Though the inciting trauma differs between the two, the underlying pathology would still remain as decreased vascular supply.

Amongst the differentials, sore throat from Streptococcus pyogenes was considered. Group A Strep is the number one bacterial organism to cause tonsillopharyngitis in adults and children with symptoms of sore throat and dysphagia. The mainstay treatment for such patients is Penicillin and symptomatic care of cough with anti-tussive and oral analgesia [17]. Our patient received Unasyn (Ampicillin/Sulbactam) along with Magic Mouthwash (diphenhydramine, viscous lidocaine, antacid, nystatin, and corticosteroids) as a precaution against infections and for symptomatic relief.

This condition should be recognized correctly since in rare cases, uvular necrosis can result in an obstruction of the airway, bleeding, or infection. Dysphagia and odynophagia can complicate nutrition and hydration post-operatively as well. Symptoms typically resolve on their own within days to weeks when the necrotic tip sloughs off, so treatment is generally conservative and focused on pain management.

Table 1. Displays documented cases and the intervention that caused Uvular Necrosis from 2006-2021 [1-12]

References	Year	Methodology	Age	Gender	Type of Intervention causing Uvular Necrosis
Almomen, Hisham S. et al.	2021	Case Report	19	M	Esophagogastroduodenoscopy
Xiao, Michelle et al.	2021	3 Case Report	20, 22, 21	M	Endotracheal Intubation (ETT), Laryngeal Mask Airway (LMA)
Bright, Matthew R et al.	2021	Case Series (13 Cases)	Varying	Varying	ETT (9), LMA (3), Rapid Suctioning (1)
MH, Iftikhar et al.	2019	Case Report	69	M	Endotracheal Intubation (ETT)
Budde, A et al.	2018	Case Report	28	M	Fiberoptic Intubation
Smith, Zoe	2014	Case Report	13	F	Endotracheal Intubation (ETT)
Goldin Mark, Ji Lynn	2013	Case Report	24	M	Endotracheal Intubation (ETT)
Kim-Fine, Shunaha et al.	2013	Case Report	49	F	Endotracheal Intubation (ETT) with Endoscopy
Sunio, Lily KF et al.	2011	Case Report	30	M	Nasopharyngeal Bronchoscopy
Evans David P, Lo Bruce M	2009	Case Report	22	M	Endotracheal Intubation (ETT)
Shores NJ, Bloomfeld RS	2009	Case Report	28	M	Esophagogastroduodenoscopy
C.J Atkinson, J. Rangasami	2006	Case Report	39	F	Endotracheal Intubation (ETT)

4. Conclusions

Though there are many mechanisms of uvular trauma our patient was introduced to this either through the traumatic insertion of a bronchoscope or vigorous suctioning during the BAL. The patient experienced telltale symptoms such as sore throat, odynophagia, dysphagia, and foreign body sensation. Despite different inciting events the pathophysiology remains the same between all traumas; decreased vascular supply for a short period described as short as 15 minutes as in this case. While symptoms from uvular necrosis typically self-resolve within two weeks with conservative management, it is important to recognize the concern to the provider of life-threatening oropharyngeal edema that can be a sequel of this event.

Abbreviations

CXR: Chest X-ray, CT: Computed Tomography, IV: Intravenous, AFB: Acid-Fast Bacillus smear, BAL: Bronchoalveolar Lavage, PCR: polymerase chain reaction, ENT: Ear Nose Throat Specialist.

Authors' Contributions

All authors participated in the management of this patient, conceived the idea of the case report, and participated in the drafting of the study.

Acknowledgments

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Competing Interests

All authors in this case report declare that they have no competing interests.

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