**Airway Collapse Due to Unsuspected Epiglottic Cyst**

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**ABSTRACT**

Epiglottic cysts are generally benign lesions, which can affect all age groups. Depending on their location and size they can cause airway obstruction and potentially lead to sudden death. We report the case of a 59-year-old female who was admitted to the hospital following respiratory arrest. Her respiratory symptoms developed soon after the administration of a muscle relaxant, which caused the collapse of an existing epiglottic mass into her airway. Prior to the admission to Cleveland Clinic, the patient required resuscitation and emergency cricothyrotomy. The obstruction was confirmed to be an occlusive epiglottic cyst. This was successfully treated with marsupialization. The patient was immediately decannulated without sequelae.

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**INTRODUCTION**

Epiglottic cysts are abnormalities of the larynx, which have been classified by their location and by their etiology. They are benign tumors whose clinical presentations vary in accordance to their size and exact location. Although epiglottic cysts have been described in all ages, they seem to be more prevalent in the sixth decade. Early diagnosis and treatment will reduce the incidence of airway complications leading to sudden death. Additionally, avoidance of certain substances such as muscle relaxants in patients known to have these lesions will often be necessary; otherwise, collapse of surrounding structures, that would otherwise maintain a patent airway, will be compromised in the unconscious and relaxed patient.

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**CASE REPORT**

A 59-year-old female, who was vacationing in the Caribbean, complained of a 2-day history of progressive worsening of gastrointestinal symptoms. These included malaise, emesis and bloody diarrhea. She was transported to a local hospital by EMS. In the ambulance, the patient developed shortness of breath that worsened with changing of position. According to her husband, she was administered an IV medication to relieve her anxiety. Shortly thereafter, the patient became acutely agitated, developed an episode of seizure-like activity, followed by cardiac arrest. During 18 minutes of cardiopulmonary resuscitation, including chest compressions attempts to intubate the patient were not successful. Diffused swelling of the glottis was described. The patient was stabilized after emergency surgical cricothyrotomy. After resuscitation, she had Glasgow Coma Scale (GCS) of three which improved to eight rapidly. At this point, an anaphylactic reaction was suspected. She was immediately transferred to air ambulance by the Cleveland Clinic Florida.

Upon arrival to our intensive care unit, the patient was responsive with normal neurological function. Physical examination revealed a cricothyrotomy tube in place, bruising around the lips, palate and posterior pharyngeal wall consistent with prior intubation attempts. Flexible fiberoptic laryngoscopy revealed a cystic mass of the epiglottis, which was completely obstructing the airway. Both the right and left vocal cords were mobile and free of lesions. The tongue, nasopharynx, and hypopharynx did not reveal any abnormalities. The rest of her examination was not remarkable. The findings, past medical history, and presenting symptoms suggested that the unknown IV medication administered to this patient might have been a muscle relaxant that led to the collapse of the existing asymptomatic cyst into the larynx. A decision was made to undergo a direct laryngoscopy with removal and biopsy of the mass with a revision of the cricothyrotomy.

Marsupialization was performed under general anesthesia, via the cricothyrotomy tube, without any complications. The larynx was found to be completely obstructed by a 2.5cm cystic mass that was located over the upper border of the epiglottis and lying against the bruised posterior pharyngeal wall. (Figure 1) Subsequently, the cyst was unroofed and thick secretions were suctioned from it. (Figure 2) The cyst wall was partially resected and hemostasis was achieved with electrocautery. Further examination of the larynx was normal and revealed an open upper airway. At this point, the cricothyrotomy tube was removed and the patient recovered successfully from the anesthesia with mask ventilation. She had no further respiratory distress. Histological examination confirmed a benign squamous cyst with acute and chronic inflammation.

The post-operative course was uneventful. The patient had spontaneous respirations and had no neurological deficits. She was discharged four days after her admission in stable condition. The patient reported no sequelae of this episode by phone contact three months.

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**DISCUSSION**

The epiglottis is a thin valve-like structure made of cartilage that is located behind the tongue and is the entrance to the larynx. At rest, the epiglottis is positioned upright to allow air to pass into the respiratory system. During swallowing, it folds back to close the entrance to the larynx, preventing aspiration of food. Cysts of the epiglottis are benign lesions, which can be found at any age, but with increased frequency in adults.[1][2][3][4][5] The most common location for these lesions is the lingual surface of the epiglottis, [1][3][4] and less commonly, on the laryngeal surface[1]. Cysts arising from the lingual surface (epi-laryngeal) mostly consist of small masses which are confined to the sub-mucous layer and do not extend through the cartilage.[1] On mirror laryngoscopy, these epi-laryngeal cysts are described as solitary, spherical, or pedunculated swellings that occupy the vallecula.[1] On the other hand, cysts arising from the laryngeal surface (intra-laryngeal) have been classified as either simple or plunging cysts.[1] The simple cyst is the least common type of epiglottic cyst. It has a tendency to invade the lumen of the larynx, leading to deformation and displacement of the epiglottis. Often, it is described as a solitary and unilocular mass that appears smooth and pale on laryngoscopy. The plunging cyst is similar; however, it is bicondrial and characterized by having a connection through the thyro-hyoid membrane, allowing it to extend into the preepiglottic space. This extension may present as a pulseless, painless swelling that is often palpable on the upper part of the neck. Plunging epiglottic cysts may suddenly change in size with exertion of pressure over the external swelling as well as with maneuvers such as the valsalva maneuver or by a simple neck extension. Intra-laryngeal cysts of the epiglottis have the greatest association with sudden laryngeal obstruction. [1] Epiglottic cysts have also been classified into congenital, dermoid, and retention cysts, with the latter being the most common. [6] The pathophysiology underlying these cysts is thought to be inflammation of the larynx leading to obstruction of gland ducts and in turn causing retention of mucus and ultimately the formation of cysts. [2][3][4][6][7] The lining of these cysts is most often formed by stratified squamous epithelium and rarely by cuboidal, columnar or ciliated type. [2][3] Epiglottic cysts are most often asymptomatic, hence found incidentally during physical examination or intubation procedures. [3] Depending on size, symptoms vary from dysphasia, foreign body sensation, hoarseness, cough, and even risk of sudden laryngeal obstruction, which may lead to death. [1][2][4][7][8] During induction of anesthesia, symptoms are usually subjective, and undiagnosed epiglottic cysts may cause great complications when muscular relaxation may drive the cyst into the larynx causing partial or complete obstruction, which may lead to the inability to ventilate and the development of respiratory failure. [5][6] Another potential complication of unsuspected epiglottic cysts is acute infection and abscess formation. This may lead to airway edema and subsequent respiratory compromise. [3] Therefore, it is important to identify patients with asymptomatic epiglottic cysts on routine throat examination. This may allow treatment and prevention of potentially fatal complications. Treatment of epiglottic cysts depends on size, location, and clinical symptoms. In larger lesions, surgery may be necessary. [3][7] Treatment options include endoscopic excision, marsupialization, and unresecting. Use of a carbon dioxide laser is an option. Simple aspiration is not recommended due to high recurrence rates. Recurrences can be minimized by the complete removal of the cyst wall. [3][7] Prophylactic antibiotics and adequate hydration are recommended after surgery to avoid acute epiglottis. [7]

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**References**