

A Case of a Difficult Airway Control during Glottic Tumor Biopsy

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Abstract

Glottic tumors might cause severe airway problems due to their location. Manipulations with endotracheal intubation may increase the severity of airway problems. This case reports presents our experience with a patient who was admitted with acute dysphonia and respiratory stress, diagnosed with laryngeal tumor following CT, and underwent biopsy under general anesthesia. In the light of similar cases in the literature, our report aims to present airway management of this patient who had to go through difficult ventilation and intubation during the anesthesia induction due to a glottic mass.

Key Words: Glottic Mass; Difficult Ventilation; Tracheostomy.

Glottik Kitle Direk Biyopsisi Sırasında Gelişen Zor Hava Yolu Olgusu

Özet

Glottik yerleşimli tümörler, yerleşim yerine bağlı olarak ciddi hava yolu sorunlarına yol açabilmektedir. Endotrakeal entübasyon sırasındaki manipülasyonlar, hava yolu sorunlarını daha da arttırabilir. Larenkste kitle nedeniyle ses kısıklığı ve solunum sıkıntısı hastanemize başvuran hastaya glottik kitle biyopsisi nedeniyle genel anestezi uygulandı. Bu olgu sunumunda glottik yerleşimli kitlesi olan hastanın anestezi induksiyonunda karşılaştığımız zor ventilasyon ve zor entübasyon sonrası başarı ile sonlandırılan hava yolu kontrolünü literatür eşliğinde sunmayı amaçladık.

Anahtar Kelimeler: Glottik Kitle; Zor Ventilasyon; Trakeostomi.

INTRODUCTION

Depending on size and location, masses in the hypopharynx can cause severe airway problems (1, 2). Patients who are not yet diagnosed with mass in the hypopharynx may present at the ER with progressive respiratory distress and cyanosis complaints. Without quick and effective intervention, such patients can develop airway related cardiovascular dysfunction, hypoxia, brain damage and even lose their lives (3). Anaesthesia may be required for those patients who present with upper airway obstruction symptoms throughout the diagnosis of the case and possible surgical intervention. Practitioners are advised to commence anaesthesia by taking the necessary precautions against a possible airway challenge in such applications (4). In our report, we aim to present our experience of a successfully applied anaesthesia for airway control in a diagnosis and treatment targeted direct biopsy case for a glottic located mass despite the difficult ventilation and intubation that preceded the process.

CASE REPORT

A 44-year-old male patient, who had a 30 years/30-a-day smoking history no known systemic diseases, was admitted to our hospital with hoarseness. The indirect laryngoscopy showed that the right vocal cord had

motion with adequate rima glottis opening and that the left vocal cord had paralysis. A biopsy under anaesthesia with direct laryngoscopy was planned for the patient. The preoperative assessment for the anaesthesia showed normal physical examination results and laboratory values. The patient was taken to the operating room where we performed ECG, measured the heart rate (HR), applied arterial oxygen saturation (SpO₂), and checked non-invasive arterial blood pressure (ABP). HR was 90 beats/min, ABP was 130/80 mmHg, and SpO₂ was measured 97%, respectively. The patient's Mallampati score was Class I. The head and neck examination was normal. However, assuming that the ventilation and intubation after the anaesthesia induction might prove to be difficult due to the mass located on the left cord vocal, we made the necessary preparations. We kept a fiberoptic bronchoscopy set, a stylet, a laryngeal mask, flat blade, a jet ventilation system, and an emergency tracheostomy kit ready to use in the operation room. We got the written consent from the patient and his relatives for the anaesthesia and surgical procedures after informing them about the anaesthesia method and the planned surgical procedures. We intravenously applied propofol (2 mg/kg) and fentanyl (1 mcg/kg) for the induction of anaesthesia. After an unproblematic ventilation, we applied rocuronium bromide (0.5 mg/kg) as muscle relaxant. After the patient developed resistance in the first minute of the ventilation, we decided to perform emergency intubation. The results of the laryngoscopy

we performed was assessed as Grade I according to Cormack and Lahen classification. It was observed that the solid mass completely obstructed the subglottic stenosis. We tried the endotracheal tubes (ETT) numbers 6, 5.5, and 5, respectively, for the intubation. But the ETT failed to reach the subglottic narrowing. Once the ventilation failed, the patient developed rapid desaturation and we decided to open an emergency tracheostomy without delay. With stable hemodynamic findings after the tracheostomy, we continued the surgery. As observed in the direct laryngoscopy, we found a mass, possibly emerging from the left band and anterior commissure, impacting the glottic narrowing. We applied a total excision to the mass that almost totally obstructed the opening (Figures 1-2). The patient was transferred to the intensive care unit after the operation.



Figure 1. The mass that almost totally obstructs the glottic narrowing as observed in laryngoscopy.

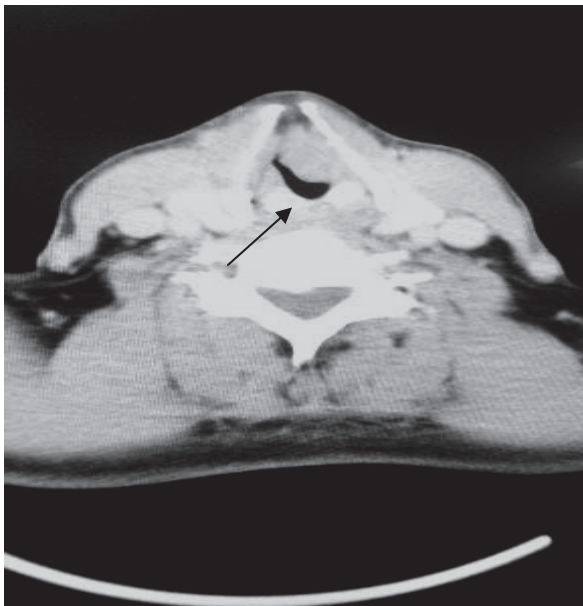


Figure 2. The CT image of the mass that blocks the larynx passage.

DISCUSSION

The application of anaesthesia is especially important in all surgical procedures related to airway. The administration of anaesthesia in surgery of glottic tumours may accompany serious issues such as strenuous intubation and ventilation due to narrowed airway, difficulties in managing airway control during direct laryngoscopy and rigid bronchoscopy, and problems in maintaining airway control during surgery. In such cases, preparations for alternative methods of airway control should be planned prior to surgery and necessary probes should be made ready in the operation room. As it was the case in our patient, the airway control after the induction of anaesthesia may fail with smaller intubation tubes in glottic tumours while it is also possible for intubation and ventilation to fall short as ETTs do not reach out because of the mass that almost entirely blocks the glottic opening. In our case, we tried the endotracheal intubation three times. Failing that, we decided to apply emergency tracheostomy believing that further applications might cause trauma in the tumour tissue, bleeding, rupture of the tumoral mass, and eventually obstruction of small airways as the severed parts may move to the lower segments of trachea. It should be noted that mask ventilation and endotracheal intubation can be difficult in these patients after the implementation of the muscle relaxant agents. In case of a possible obstructed airway, a fiberoptic bronchoscopy set, a stylet, a flat blade, a laryngeal mask, a jet ventilation system, and an emergency tracheostomy kit should be available in the operation room (5). In our case, because the patient rapidly developed desaturation, we decided to apply tracheostomy without trying other methods to save time. In such cases, practitioners should make a preliminary assessment by maintaining spontaneous breathing with supplemental oxygen before the application of muscle relaxant (5).

The fundamental task of an anaesthesiologist is to ensure airway safety and to make necessary preoperative preparations by planning alternative airway control methods in surgeries for diagnosis and treatment. As it was the case in our patient, practitioners should consider the possibility that masses may totally block the airway after the application of muscle relaxants in cases where masses largely obstruct the tracheal lumen. It should also be kept in mind that practitioners may choose to administer intubation with fiberoptic bronchoscope or perform tracheostomy to ensure airway control maintaining spontaneous breathing under sedation when laryngoscopy intubation is not be feasible.

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