Emergent Cricothyroidotomy for Tracheal Stenosis

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INTRODUCTION

- Tracheal stenosis is a rare, potentially life-threatening condition described as innate narrowing of the tracheal lumen.
- The causes of tracheal stenosis vary widely and include endotracheal intubation or tracheostomy, congenital abnormalities of the larynx, chronic inflammation, or infection.
- Bronchoscopy or surgical resection continue to be the mainstays of treatment.
- This case describes the emergent cricothyroidotomy procedure for acute tracheal stenosis and highlights complications associated with airway management

PATIENT DESCRIPTION

- A 61-year-old male with history of subglottic stenosis presented to the emergency department after a laser ablation and balloon dilation of subglottic stenosis via bronchoscopy.
- He had difficulty breathing and desaturation post procedure.
- The patient was originally thought to be in flash pulmonary edema due to difficulty breathing while in the post anesthesia care unit (PACU).
- Upon transfer to the emergency department the patient was clinically dyspneic.
- Vital Signs upon arrival into the emergency department were: HR 95 BP 175/135 RR 20 SpO2 93% on 65% FiO2.
- Physical exam revealed inspiratory and expiratory stridor, wheezing bilaterally, acute distress. Patient was immediately placed on a bilevel positive airway pressure (BiPAP) machine due to his dyspnea.
- The patient was very uncomfortable with the BiPAP machine and asked for it to be taken off.
- After 2 attempts to take the BiPAP machine off, the patient was unsuccessful with maintaining adequate oxygenation without the machine.
- Patient's respiratory status further declined, and the patient became tired and obtunded.

INTERVENTION

- Endotracheal tube and bougie were unsuccessful in securing the patient's airway.
- The patient's oxygen status further declined so the decision was made to perform a cricothyroidotomy to obtain an airway.
- While attempting to perform the cricothyroidotomy the patient had gradual desaturation of his oxygen levels to below 40% and lost pulses.
- After successful cricothyroidotomy, patient underwent one cycle of CPR due to loss of pulses.
- After one dose of epinephrine and CPR, pulses returned, and the patient subsequently transferred to the ICU.

Figure. Subglottic and Tracheal Stenosis

CONCLUSIONS

- Hypoxemia has been determined to be a major factor in peri-intubation cardiac arrest.
- The patient in this case report had rapidly deteriorating oxygen levels secondary to tracheal stenosis which led to his cardiac arrest.
- Due to successful cricothyroidotomy and reversal of hypoxia the patient had prompt return of spontaneous circulation (ROSC) after initial cardiac arrest.
- The patient’s physical exam of stridor suggested airway obstruction leading to a potential difficult intubation.
- Due to this, instruments for a cricothyroidotomy were secured bedside before the patient deteriorated. The procedure was able to be performed without delay, which increased the probability of successful resuscitation.