

CASE REPORT

A can't ventilate, can't intubate and can't do tracheostomy situation

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ABSTRACT

Difficult airway scenarios may result in significant morbidity and mortality and require prompt intervention. American Society of Anesthesiologists¹ and Difficult Airway Society of UK have published guidelines for the management of difficult airway and both end in the management of can't intubate can't ventilate (CICV) situation. We present an unusual case of a collapsed anterior wall of trachea resulting in a situation of "can't intubate, can't ventilate and can't do tracheostomy". A desperate use of a rigid bronchoscope resulted in successful intubation by lifting the collapsed tracheal rings and saved the patient.

Key words: Thyroplasty; Airway obstruction; Rigid, Bronchoscopy

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INTRODUCTION

Failed or difficult endotracheal intubation is a significant cause of morbidity and mortality during anesthesia. It has been estimated that inability to successfully manage a difficult airway has resulted in as many as 30% deaths in anesthesia. Several methods have been introduced to identify difficult airways before initiation of anesthesia; however, not all cases can be identified before induction of anesthesia. One may encounter an occasional case of unexpected difficult intubation once anesthesia has been induced and muscle relaxant given. We present one such case of a collapsed anterior wall of trachea resulting in a situation of "can't intubate can't ventilate and can't do tracheostomy" following a thyroplasty in a patient with history of tracheostomy due to cut throat injury.

CASE REPORT

A 32 year old male was rushed to the operating room with respiratory distress following an elective Type 1 thyroplasty done four hours back. On examination patient was conscious, oriented, unable to phonate, with active accessory muscles of respiration. His

pulse rate was 120/min, blood pressure 140/80 mmHg, respiratory rate 26/min, and SpO₂ 96% with oxygen via face mask. On auscultation, conducted sounds were heard bilaterally in the chest. Airway assessment showed normal dentition, adequate mouth opening, and normal neck measurements. There was a tracheostomy scar just above the suprasternal notch. He had sustained accidental cut throat injury 8 months back for which he had had tracheostomy done for 3 months.

This history and examination alerted us to the possibility of a difficult intubation. We kept difficult intubation gadgets ready. Surgeons were asked to be ready for a tracheostomy. Patient was preoxygenated, inj. hydrocortisone 200 mg, inj. glycopyrrolate 0.2 mg and inj. propofol 50 mg in two incremental doses were injected. Mask ventilation was not adequate, so the senior anesthesiologist was called. Meanwhile, various maneuvers were tried to achieve effective mask ventilation, but in vain. Intubation with size 6.0 endotracheal tube (ETT) was attempted, but it could not be negotiated beyond the vocal cords. However, oxygen saturation improved to 94%. Probably some oxygen could

be pumped through but the ventilation remained inadequate. Smaller size ETT (size 5.0), too, could not be inserted. The heart rate increased to 140/min and SpO₂ decreased to 90%. An attempt to pass a gum elastic bougie also failed. The surgeon was called for a tracheostomy, who disclosed that a week back the patient was posted for a thyroplasty and the intubation had been very difficult. No more details were available. The surgeon created a stoma through the previous tracheostomy scar but neither a tracheostomy tube nor ETT of any size could be inserted through the tracheostomy opening. Once the stoma was opened, SpO₂ decreased to 70%. As ventilation was now not possible through ETT, it was removed and mask oxygenation with spontaneous respiration was tried. Saturation improved to 85%. Tracheostomy attempts were unsuccessful and mask oxygenation was insufficient. We were in a "can't ventilate, can't intubate and can't do tracheostomy" situation. At this point the saturation fell to 55%, the patient developed cyanosis and pulse rate fell to 60/min. Inj atropine 0.6 mg was given IV. After few more failed attempts at endotracheal intubation and tracheostomy tube manipulation, a rigid bronchoscope (adult, size 6.5, length 43 cm, Karl Storz®, Germany) was passed but the patient could not be ventilated through it. As a last resort, the bronchoscope was removed and intubation with a size 6 ETT was tried. Surprisingly, the tube went in easily. Ventilation was now smooth and satisfactory, saturation improved to 100%, pulse and BP came back to normal. The overall time taken for securing the airway was 30-40/min. Patient was shifted to the intensive care unit and put on mechanical ventilation.

After two hours, he was fully conscious, oriented and had stable vital signs with no obvious neurological deficits. A CT scan revealed collapse of 7th, 8th and 9th rings of the anterior wall of the trachea. Next day he was put on T-piece. He was taken for an elective tracheostomy on the third day which was uneventful and was discharged home with a normal neurological status and a tracheostomy tube in situ. After two months he was posted for T-tube placement which was managed under deep sedation uneventfully.

DISCUSSION

American Society of Anesthesiologists and Difficult Airway Society of UK, difficult airway algorithms end in the management of can't intubate can't ventilate (CICV) situation¹. Needle or surgical

cricothyroidotomy or tracheostomy remains the gold standard for securing airway in CICV scenarios². Ours was an unusual situation of CICV plus can't do a tracheostomy. Thyroplasty³, first described by Isshiki in 1974 is an operation on the upper airway to improve voice quality in patients with unilateral vocal cord paralysis. Thyroplasty associated⁴ minor complications are implant displacement, bleeding, hematoma and vocal fold edema. A major complication is airway obstruction requiring emergency tracheostomy. Tracheostomy itself causes delayed airway complications⁵ such as tracheomalacia, stenosis etc. Laryngeal stenosis is a known complication of cut throat injuries.^{6,7} Our patient had all these risk factors like history of a cut throat injury, tracheostomy, airway surgery and now he had come for an emergency postoperative intubation. The cause of airway obstruction in our case could be multifactorial like post tracheostomy tracheomalacia or tracheal stenosis and post thyroplasty laryngeal edema. Nevertheless, a prospective CT scan revealed collapse of anterior wall of 7th, 8th and 9th tracheal rings. Awake flexible fiberoptic bronchoscopic intubation (FFBI) is a viable option in anticipated and unanticipated difficult airway as long as it is not a CICV situation.⁸ FFBI is contraindicated in tracheal or laryngeal stenosis where FFB cannot be negotiated.⁹ In our case FFB was not available to us. LMA and supraglottic airway devices provide rescue ventilation in CICV situation¹⁰ but they are not useful in subglottic obstruction.¹¹ In CICV scenarios transtracheal jet ventilation provides an optimal way of achieving rapid oxygenation but it carries the risk of barotrauma in upper airway obstruction.¹² Rigid bronchoscope¹³ has been used to dilate stenotic upper airways to facilitate intubation. In our case also, intubation was possible only after passing a rigid bronchoscope. The rigid bronchoscope must have lifted the collapsed segment of trachea thus facilitating intubation.

Our case is an example of an airway complication after a thyroplasty. Although technology is of utter importance, clinical examination and history taking is invaluable. Every clinician handling airway difficulties must be familiar with airway evaluation and, in the event of unanticipated difficult airway, be able to use a wide variety of tools and techniques.¹⁴ Our case also shows that a rigid bronchoscope may sometimes rescue a case with upper airway obstruction below the vocal cords.

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