International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Case Report: Use of Airway Exchange Catheter (AEC) for Difficult Extubation in Postoperative Commando Patient

Mrualini Subhash Jagadale

Corresponding Author, Respiratory Therapist
mrunalinis96[at]gmail.com

Abstract: ***69 years old male with no comorbidities, presented with right cervical node, level 2. Fine needle aspiration cytology positive for malignant cells. CT neck showed-ulcerative lesion on right lower alveolus extending on cheek retromolar trigone tumor and significant surrounding induration. Received 2 cycles of chemotherapy for the same. Posted for commando PMMC and DP. Received in ICU postoperated, nasotracheally intubated with flexometallic tube, was stable on t-piece 2lpm O2. Assessed for extubation on POD-1, nasotracheal tube was patent, no bleed or edema noted, patient vitally stable, flap circulation was adequate. Extubated over endotracheal tube exchanger (frova), and later removed as airway remained patenet and safe. Phonation was good.***

Keywords*:* Difficult airway, difficult intubation, difficult extubation, AEC

1.Introduction

Oral cancer is the most common cancer worldwide. Surgical management is the first choice of treatment for oral cancer. Anaesthetic concerns during surgery are airway difficulty, mainly because of restricted mouth opening and less inter-incisor gap. The nasotracheal route is preferred as it gives space to surgeons while operating and because patients have better tolerance to nasal tubes. Use of bougie for the guidance of nasal intubation can be done if check scopy suggestive of difficult airway. The decision regarding the elective tracheostomy is based on the level of airway difficulty [(1)]. Because of nasotracheal tube and difficult airway, the difficulty level of extubation also increases. International guidelines (such as American Society of Anesthesiologists Task Force guidelines) recommend considering the placement of an airway exchange catheter (AEC) when extubating a patient with a difficult airway [(2)]. The principle of using AECs in the setting of difficult intubation is to insert them through the ETT at a predefined depth. Distance marks on the AEC allow alignment with those on the ETT, to avoid the tip of the AEC protruding beyond that of the ETT, causing trauma or irritation to the trachea, carina, or bronchi. The AEC is left in place with the tip in the trachea after extubation [(3)]. If reintubation is necessary, the AEC is used as a stylet to guide reinsertion of an ETT. AECs have a high success rate, particularly when a videolaryngoscope is used to facilitate reintubation over the AEC [(4)]. AECs are hollow and allow the delivery of oxygen either via a 15-mm connector (for a resuscitation bag or ventilator circuit) or a luer-lock connection for jet ventilation.

2.Case Study

69 year-old male came in ER. Clinically presented with swelling in the right side of neck, no history of trauma. Advised CT neck, on examination had large right cervical nodal mass at level 1,2 and 3.Ulcerative lesion on right lower alveolus extending on cheek and RMT Another 3x3cm ulcerative lesion on right lower cheek with significant surrounding induration. Videolaryngoscopic findings were unremarkable.

Advised fine needle aspiration cytology (FNAC). Specimen-Right cervical (level 1to3) lymphnode. Showed- Atypical squamous cells, highly suggestive of squamous cell carcinoma.

After diagnosis, chemotherapy sessions initiated. Received 2 chemo cycles. (Inj Paclitaxel and Inj Carboplatin)

Patient readmitted for surgery - commando PMMC DP (Pectoralis major myocutaneous flap, Deltopectoral flap).

Was stable preoperatively, Kept NBM, hemodynamically stable, had good mouth opening, phonation was good. Vitals- HR~84beats/min, RR~24breaths/min, SpO2~98% on room air, BP~130/70mmHg, temp-97.1 f.

Patient underwent surgery and shifted to ICU.

POD 0, Intra-op blood loss was around 300ml, received 2 PCV, 1.5L crystalloid, 500 ml colloid fluid. Stable hemodynamics. Nasotracheal tube was in situ, 8mm ID flexometallic tube fixed on 25cms. Maintained neutral neck position, head tilt slightly to right as per surgery team instructions. Avoid neck extention. On examination was conscious oriented and following all commands, was afebrile, HR 79/MIN, BP 127/67 mmhg, on auscultation chest air entry was equal bilaterally, and was maintaining spo2 100% on Tpiece with O2 2lit/min, p/a soft, periphery warm, u/o adequate Planned extubation on POD1.

Stable hemodynamics.(HR-79beats/min, RR~22/min, SpO2-98% with 2lpm o2) Nasotracheal tube was patent. Air blast checked. Flap circulation was adequate, No bleed or oedema noted. IV hydrocort 100mg, and bronchodilators administered.
Three hours later (after administering IV steroid), assessed for extubation. Difficult airway cart was kept ready bedside including- supraglottic airways, flexometallic

tubes, bougie, video laryngoscope, emergency cricothyrodoctomy kit, fibreoptic bronchoscope, tracheostomy set, airway exchange catheter. Gentle suctioning done through the tube. Cuff leak test performed, audible leak was present. With due precautions, airway exchange catheter (14F Cook AEC) inserted through the nasotracheal tube and inserted till it matches the level of tube fixation -25cms, gradually nasotrachal tube was removed over the airway exchange catheter. Patient had cough, and saturation was 86%, immediately oxygen started by 5lit/min with the attachment of 15mm adaptor of the airway exchange catheter and 98% saturation achieved. No respiratory distress noted. RR~28/min, HR~88/min, BP~135/80mmHg. Gentle oral suctioning done. Patient was phonating well.

AEC removed after 30 minutes as airway remained patent and safe and applied nasal prongs with 4lpm O2. Good phonation. Tongue stitch removed. Tolerated extubation well, Clear chest, spO2 was 99% , O2 decreased gradually. No striodor noted. Tongue movement was normal.

Post extubation remained stable hence shifted in ward next day.

3.Discussion

Management of the difficult airway is an important issue, as minute changes in the performance of airway management are highly relevant to the outcome. Airway management is a process that requires thorough preparation, which includes careful airway assessment, planning, and appropriate decision making. Management of the airway involves the use of appropriate techniques and skills, an appropriate response to difficulty or failure, and careful planning for tracheal extubation[(6)]. Skills and human factors together are the key to triumphant airway access and management.

Extubation differs from intubation and in that it should always be an elective process.

The DAS extubation guidelines promote the concept of an extubation strategy, involving a stepwise approach to planning, preparation and risk stratification, aimed at clear identification and management of patients ‘at risk’ during extubation[(6)].

The DAS guidelines define the main goals of safe extubation as ensuring uninterrupted oxygen delivery and having a backup plan for tracheal reintubation, should tracheal extubation fail. Risk factors for difficult reintubation include known difficult tracheal intubation or upper airway surgery[(5)].

The use of an airway exchange catheter for extubation in an at-risk patient in whom reintubation might be difficult is recommended under an expertise observation.

Airway exchange catheters can be used as a guide over which a tracheal tube can be passed should reintubation become necessary, and can be used to oxygenate the patient’s lungs. They have a high success rate when used as a guide for reintubation. Most of the morbidity attributed to their use is associated with oxygenation and inappropriate positioning. Meticulous care must be taken to ensure that the distal tip is positioned in the mid trachea at all times[(5)]. The patient’s trachea can be immediately reintubated through this placeholder in the case of a failed extubation. In this case, reintubation can be improved by using a video laryngoscope[(4)].

Oxygenation through an AEC usually occurs during one of two clinical scenarios: 1) Passage of the replacement ETT has failed during an ETT exchange or re-intubation facilitated by an AEC, and oxygen is jetted or insufflated pending a decision on how to proceed; or 2) A patient with a known or potentially difficult airway has been extubated over an AEC, and oxygen insufflation is performed electively through the catheter. Under emergency circumstances, oxygen insufflations or manual ventilation through an AEC may be considered provided vigilance for barotrauma is maintained and tracheal intubation is not delayed[(7)].

Figure 1: Cook 14F and 3mmID AEC with stiffening cannula and Rapi-Fit adaptors connecting to the proximal end of the Cook airway exchange catheter. Leur-Lok adaptor for jet ventilation or oxygen insufflations, and standard 15mm adaptor.

References

[1] Sapna Annaji Nikhar, Ashima Sharma, Mahesh Ramdaspally, Ramachandran Gopinath, Airway Management of Patients Undergoing Oral Cancer Surgery: A Retrospective Analysis of 156 Patients, Turk J Anaesthesiol Reanim 2017; 45: 108-11, DOI: 10.5152/TJAR.2017.67365
[2] Apfelbaum JL, Hagberg CA, Caplan RA, et al. American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on management of the difficult airway. Anesthesiology.2013; 118 (2): 251.
[3] Artime CA, Hagberg CA. Tracheal extubation. Respir Care.2014; 59 (6): 991-1002.
[4] Mort TC, Braffett BH. Conventional versus video laryngoscopy for tracheal tube exchange: glottic visualization, success rates, complications, and rescue alternatives in the high-risk difficult airway patient. Anesth Analg.2015; 121 (2): 440-8.
[5] **5**. M. Popat (Chairman), V. Mitchell, R. Dravid, A. Patel, C. Swampillai, A. Higgs
[6] Difficult Airway Society Guidelines for the management oftracheal extubation Membership of the Difficult Airway Society Extubation Guidelines Group

[7] Thomas Heidegger, M. D, Management of the Difficult Airway, N Engl J Med 2021; 384: 1836-47.
[8] DOI: 10.1056/NEJMra1916801
[9] Laura V. Duggan, MD, J. Adam Law, MD, Michael F. Murphy, MD Brief review: Supplementing oxygen through an airway exchange catheter: efficacy, complications, and recommendations Received: 20 January 2011 / Accepted: 15 March 2011 / Published online: 5 April 2011 Canadian Anesthesiologists' Society 20113