

Airway Management in Emergency Situations

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Abstract: *In emergency situations, an airway approach is essential to reduce hypoxemia and the consequences of nerve damage. In prehospital care, advanced management of the airways is indicated as one of the five research priorities in prehospital critical care. Airway management is the first intervention in an emergency as one of the recommendations from Advanced Trauma Life Support. Endotracheal intubation is the procedure of choice for doctors. However, the effective use of the pocket - valve - mask is evidenced by the new two - handed sealing technique. The aim of this study is to approach airway management in an emergency situation.*

Keywords: Emergency; Airway Management; Endotracheal Intubation

1. Introduction

Airway management in emergency emergency situations is considered as one of the main actions [1]. Based on the recommendations of Advanced Trauma Life Support in the management of patients with life - threatening injuries, airway protection was the first intervention [2]. Endotracheal intubation is the technique of choice because the procedure is fast, and the probability of success is higher and allows the use of a larger channel [1, 2]. Indications for endotracheal tubing as an emergency: maintenance of airway patency, respiratory failure without upper airway obstruction, reduced aspiration of gastric contents [2]. Evidence strengthens the effectiveness of the use of a bag valve mask in an emergency, most of the emergency measures that occur during respiratory and cardiac arrest, differences in patient conditions in the development of pneumonia due to invasive airway management before in - hospital surgery and hospitalization are not significant and the combination of ketamine and propofol (known as cetofol) is an alternative to the use of etomidate in sedation to maintain hemodynamic resistance [2 - 11]. The purpose of this study was to plan for the management of the airway in emergency situations.

1.1 Airway Handle in Emergency Situations

In an emergency setting, airway management is essential to reduce hypoxemia and the consequences of nerve damage. In out - of - hospital care, advanced airway management has been shown to be one of the five priorities established in out - of - hospital critical care studies [3]. Ventilation using a bag - valve - mask was the first technique used in emergency situations [4]. Developments in Advanced Cardiovascular Life Support have demonstrated the high effectiveness of pocket - valve - mask use in cardiac arrest prior to endotracheal intubation [5]. Studies lack evidence that endotracheal intubation is superior to bag - valve - mask ventilation or modern airway devices in terms of overall safety or better neurologic outcome [5]. Many conditions can escalate in an emergency so doctors must be skilled in airway management. Technological advances in airway management have greatly improved the quality of emergency management aspects; Not only specialization, but also a proper understanding of using the right equipment and an adequate understanding of new technologies [6].

1.2 Endotracheal Intubation

Endotracheal intubation in the emergency setting is always necessary for airway management, because it is impossible to predict the emergency and its complications. This procedure can be difficult to perform in an emergency situation due to the lack of detailed patient history and clinical examination [7]. In cases of maxillofacial and airway trauma, it is important to determine airway management. There are six specific conditions in maxillofacial trauma that affect the airway [2]:

- a) Shift in the posteroinferior position of the maxillary fracture parallel to the oblique plane of the skull base so that it can obstruct the airway in the nasopharynx.
- b) Bilateral fracture of the anterior mandible causes fracture of the symphysis and tongue which then shifts and obstructs the oropharynx when the patient is in a lying position.
- c) chipped teeth, bone fragments, vomit, blood and mucus, and foreign objects, such as dentures, bullets, which pose a risk of obstructing the airway anywhere in the oropharynx and larynx area.
- d) Bleeding from blood vessels in open wounds or severe nose bleeding due to rupture of blood vessels in the nose can also cause airway obstruction.
- e) Soft tissue swelling and edema caused by head and neck trauma can lead to airway obstruction.
- f) Trauma to the larynx and trachea has the risk of causing swelling and damage to structures such as the epiglottis, arytenoid cartilages, and vocal cords, thereby increasing the risk of airway obstruction in the cervical area.

1.3 Clinical Evidence Related to Airway Management

Scientific evidence indicates that the procedure in emergency endotracheal intubation is performed only in cardiac arrest conditions [7]. Ventilation using a bag valve mask is an important element in performing airway management in an emergency situation. The technique of using both hands tightly covering the oxygen mask has been shown to provide greater volume compared to using only one hand [4, 7]. Based on the recommendations of Advanced Trauma Life Support in the management of patients with serious injuries that endanger the patient's life, airway management with strong spinal fixation is the top priority and the first action taken in the initial airway management. Endotracheal intubation is the best procedure

that can be done. [2]. If effective pre - oxygenation is given, it can prolong the time thereby reducing the risk of hypoxaemia in patients [2.8].

Complications of pneumonia in patients who underwent invasive airway management procedures both before hospital admission and during hospitalization were not statistically significant [9]. Patients in critical condition with acute respiratory, neurological, or cardiovascular insufficiency who may require invasive mechanical ventilation are at high risk for difficult intubation and may develop organ dysfunction associated with complications of intubation and anesthesia such as hypotension and hypoxemia.

In this condition, the complication rate increases with the number of intubations performed and using video laryngoscopy is a technique that increases the success rate of endotracheal intubation [10]. Several preventive measures have been shown to minimize the frequency and worsening of complications in intubation, namely: anesthetic drugs given are proven to be safe, rapid intubation management in emergency conditions; the use of rapidly acting neuromuscular blocking drugs such as succinylcholine or rocuronium for use in intubation management procedures reduces the risk of aspiration of gastric contents; Preoxygenation performed at least 3 minutes if necessary using non - invasive ventilation management, adequate fluid resuscitation, and additional vasopressors should be started early to ensure more hemodynamic stability [10]. Recent scientific evidence has raised awareness about the increased mortality associated with adrenal secretion deficiency and with the use of etomidate. In recent years, studies have shown that ketamine and propofol (known as cetofol) are an alternative combination that can provide sufficient sedation but maintain hemodynamic stability [11].

2. Conclusion

The conclusion is that endotracheal intubation is the treatment of choice for clinicians, however, the technique of using two hands tightly covering the mask while administering oxygen has been shown to produce a greater tidal volume and higher efficiency compared to the technique of using only one hand in an emergency setting. . Studies evaluating airway interventions in emergency conditions in maintaining the airway, with the aim of increasing patient safety rates are important in clinical renewal.

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Author Profile



Julian Welly received the BM and MD degrees in Faculty of Medicine – Krida Wacana Christian University, Indonesia in 2014 and 2016 respectively. He is interested in anesthesiology, it has been his passion since worked in a hospital as ER doctor