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RAPID SEQUENCE OROTRACHEAL INTUBATION – LITERATURE REVIEW

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ABSTRACT

Objective: The main objective of performing the orotracheal intubation procedure in rapid sequence is to prevent regurgitation of this content followed by bronchial aspiration. The definition of the term rapid sequence is summarized in the administration of the following medications: analgesia + hypnotic + fast-acting neuromuscular relaxant followed by orotracheal intubation. In this case, positive pressure ventilation under a face mask does not occur to avoid gastric distention and the dreaded consequence: bronchoaspiration. It is necessary for the doctor to know the technique, medications and complications of the procedure. **Method**: The aim of this study is a literature review of the rapid sequence orotracheal intubation technique. Articles were selected by searching the Scielo and Pubmed databases and Medline sources. The search in the databases was performed using keywords such as orotracheal intubation and rapid sequence. The search for articles was carried out between August 2022 and September 2022. **Conclusion**: Knowledge of the airway access technique is essential for the doctor who works in urgency/emergency and needs to be aware of the rapid sequence for lower risks of complications and better outcome.

KEYWORDS: Orotracheal intubation, direct laryngoscopy, rapid sequence intubation.

1. INTRODUCTION

Anesthetic induction by the rapid sequence technique is mainly used to protect the airways when there is a risk of aspiration of gastric contents. This concept of rapid sequence in orotracheal intubation aims at gastric protection and undesirable effects, whose objective is to obtain control of the airways in the shortest possible time after the abolition of protective reflexes. (Moro ET, 2004).

Casey JD, 2019 in their article defines that hypoxemia is the most common complication during tracheal intubation of critically ill adults and can increase the risk of cardiac arrest and death. The use of positive pressure ventilation with a bag-mask device (bag-mask ventilation) during tracheal intubation of critically ill adults prevents hypoxemia, however whether or not the risk of bronchoaspiration increases remains controversial.

In critically ill patients, orotracheal intubation is considered one of the main potentially life-saving procedures. Its main indication is in situations in which there is damage to the maintenance of airway permeability. As in any other procedure, there are risks and complications that can be avoided if it is done with the correct technique (Yamanaka C.S.et.al., 2010).

Orotracheal intubation (OTI) is a medical procedure and, regardless of specialty, everyone needs to be able to perform the procedure.

2. OBJECTIVE

The objective is a narrative review that addresses the topic in rapid sequence induction, a method that reduces the risk of aspiration of gastric contents, avoiding positive pressure ventilation and aerophagia, until the orotracheal tube is correctly positioned in the trachea, with the cuff inflated.

Rapid sequence induction (RSI) also facilitates successful endotracheal intubation with the use of a potent sedative and neuromuscular blocking agent, causing complete relaxation of the patient's musculature and better access to the airway.

3. THE SEQUENCE

Higgs A. et.al, 2018 describes some necessary criteria that precede intubation, such as: preparing the multidisciplinary team and the environment, positioning for initial airway management, pre-oxygenation and oxygen supply during intubation, hemodynamic management, induction of rapid sequence, ideal laryngoscopy. A pre-intubation checklist should be performed.

The pre-intubation sequence that Higgs et.al. proposes is described below:

- **Positioning for initial airway management:** position the head and neck. The lower cervical spine is flexed and the upper cervical spine extended in extension. Optimal positioning improves upper airway permeability and access, increases functional residual capacity, and may reduce risk of aspiration.
- **Monitoring:** Standard monitoring should include oximetry, waveform capnography, blood pressure, heart rate, electrocardiogram and, when available, end-tidal oxygen concentration (PetCo2).
- **Pre-oxygenation:** In the absence of respiratory failure, pre-oxygenate using a tight-fitting face mask at 10 to 15 liters/min with 100% oxygen for 3 min. In hypoxemic patients, CPAP may be beneficial as it reduces atelectasis. Pre-induction oxygenation can be difficult in agitated patients; a sedative may be administered to allow preoxygenation prior to induction. Patients who are already receiving CPAP should undergo tracheal intubation immediately when it becomes apparent that these modalities are failing; delay can lead to profound hypoxemia during intubation.
- **Peroxygenation:** With the onset of apnea and neuromuscular block, derecruitment occurs and, if untreated, will lead to hypoxemia. Delivery of oxygen via a standard nasal or buccal cannula at 15 liters min produces high concentrations of oxygen during apnea and is still partially effective at intrapulmonary shunt levels of up to 35%.
- **Induction of anesthesia:** intravenous induction and rapid onset neuromuscular blocking agent (NMB), for precautions against pulmonary aspiration. Gastric insufflation during mask ventilation is reduced by applying cricoid force, which aims to prevent gastric reflux.
- **Choices of induction drugs:** The choice of induction drug is dictated by hemodynamics; ketamine is increasingly favored. Co-induction with fast-acting opioids allows for the use of lower doses of hypnotics, promoting cardiovascular stability and minimizing intracranial pressure. The use of a neuromuscular blocker reduces intubation complications in critically ill patients, improves intubation conditions, face mask ventilation, abolishes upper airway muscle tone, including laryngospasm, optimizes chest wall compliance, reduces the number of attempts to intubation and reduce complications. Avoiding NMB is associated with greater difficulty.
- **Laryngoscopy:** Difficult laryngeal vision is associated with multiple intubation attempts and failure; is associated with severe hypoxia, hypotension, esophageal intubation, and cardiac arrest. The goal is to achieve timely and atraumatic tracheal intubation with minimal attempts. The number of attempts is limited to three. After a failed intubation attempt, we recommend maneuvers to improve laryngoscopic vision or facilitate intubation in a correctly positioned and adequately paralyzed patient.
- **Videolaryngoscopy in the critically ill patient:** If during direct laryngoscopy there is poor visualization of the larynx, subsequent attempts at laryngoscopy should be performed with a videolaryngoscope.
- **Confirmation of intubation:** It is mandatory to use waveform capnography to confirm intubation; Auscultation and observation of chest wall motion are unreliable signs, particularly in critically ill patients.

4. THE TECHNIQUE

Vieira LP., 2017 describes in his book MAVIT some observations for the success of the orotracheal intubation technique, which he calls the Optimal Intubation Attempt. Among them are: 1. olfactory position (improves alignment of the axes: oral, laryngeal and pharyngeal); 2. adequate pre-oxygenation; 3. presence of muscle tone; 4. optimal external laryngeal pressure; 5.size and type of blade; 6. Check equipment and venous access.

Below is the full description of Vieira Technique 2017, step by step:

1° The doctor must articulate the laryngoscope with the blade chosen according to the patient's airway, holding it with the left hand;

2° Place the patient in an olfactory position, that is, place a cushion in the occipital region, which has the purpose of flexing the neck. The olfactory position is neck flexion + head extension, thus aligning the airway axis;

3^{o} Introduction of the chosen blade (according to the patient's characteristics) through the right side of the patient's mouth, with the tongue moving to the left. Slowly following the anatomical path, until the visualization of the epiglottis and centralization of the blade. At the end of this movement, the blade must be centered on the median axis of the mouth, as shown in figure 1:

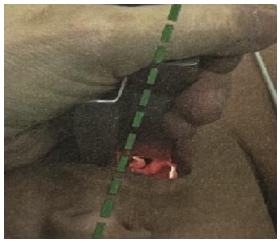


Figure 1 - Centering of the laryngoscope blade to the median axis of the mouth.
Source: Airway management and tracheal intubation, MAVIT, 2018; ch.10; p.49

4° When identifying the epiglottis, the vallecula must be reached with the tip of the laryngoscope and the glossoepiglottic fold will be pressed, observing the indirect elevation of the epiglottis, according to figure 2:

Figure 2 - Identification of the epiglottis.
Fonte: Manejo de vias aéreas e intubação traqueal, MAVIT, 2018; cap.10; p.50

5° Conduct the procedure with the "piston" movement upwards (anterior) and towards the feet (caudal), seen in figure 3. This movement allows subluxation of the temporomandibular joint and leads to displacement of the tongue over the retromandibular space. After performing these maneuvers, the three axes are congruent: oral, pharyngeal and laryngeal, visualizing the upper larynx. Then the tracheal tube is handled with the right hand and inserted through the right side of the mouth, following a line between the tip of the laryngoscope blade and the glottis. This technique aims to introduce the tube with less difficulty and visualize the upper larynx.

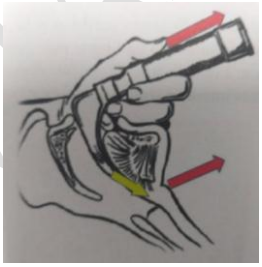


Figure 3 - Congruence of the three axes (oral, pharyngeal and laryngeal)
Source: Airway management and tracheal intubation, MAVIT, 2018; ch.10; p.50

6º The visualization of the structures of the larynx, according to Cormack-Lehane, for passing the tracheal tube directly, can be divided according to figures 4, 5 and 6 below:

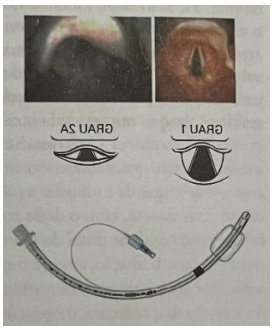


Figure 4 - In the Cormack-Lehane Classification – Grade 1 / Grade 2A: pass the tube directly.
Source: Airway management and tracheal intubation, MAVIT, 2018; ch.10; p.51

Figure 5 – In the Cormack-Lehane classification - Grade 2B / Grade 3A: First pass the Bougie (malleable guide wire) and after passing the tracheal tube.
Source: Airway management and tracheal intubation, MAVIT, 2018; ch.10; p.51

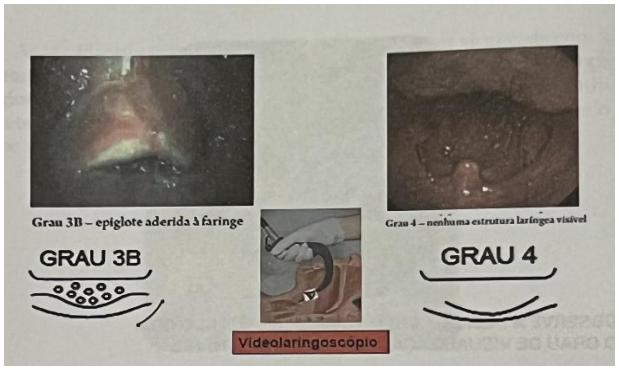


Figure 6 – In the Cormack-Lehane classification - Grade 3B / Grade 4: It is necessary to use an optical device (videolaryngoscope), evaluate the supraglottic device.
Source: Airway management and tracheal intubation, MAVIT, 2018; ch.10; p.52

5. DISCUSSION

Indications for endotracheal intubation may include protection for patients with inability to maintain airway patency, respiratory distress, undergoing sedation for medical and surgical procedures, trauma, and neuromuscular disease. (Mason MA, 2013)

The purpose of RSI is to prevent: aspirations, increased systemic blood pressure and tachycardia, plasma catecholamine release, increased intracranial pressure; and eliminates the normal protection of airway reflexes. It also aims to decrease or eliminate the discomfort that occurs with intubation and patient recall (Ross W, 2016).

In conclusion, Casey JD, 2019 cites in their multicenter, randomized trial involving critically ill adults undergoing tracheal intubation, patients receiving mask ventilation during the interval between induction and laryngoscopy had higher oxygen saturation and lower rates of severe hypoxemia than those who do not receive ventilation.

A serious consequence is related to the harmful effects resulting from bronchoaspiration, causing chemical pneumonitis, also known as Mendelson syndrome described in 1946 (Moro ET, 2004).

Heidegger T., 2021 cites in his article some examples of laryngoscopy difficulties. Below are listed some examples:

Table 1: Causes of laryngoscopy difficulty, according to Heidegger T., 2021:

- limited mouth opening
- blood or vomit in the oropharynx
- narrow dental arch
- limited mandibular protrusion
- short thyromental distance
- Mallampati class III or IV
- increased neck circumference
- obesity
- operator inexperience

A difficulty described by doctors is the choice of blade. The basic difference between the techniques using the curved and straight blade is that the curved blade would have greater control of the tongue in the procedure, in addition, the curved blade presses the glossoepiglottic ligament to flex the epiglottis anteriorly while the straight blade directly elevates the epiglottis. epiglottis. (Tallo FS, 2011)

Many situations can cause difficulty in laryngoscopy, large tongue, reduced volume of the oral cavity and mandibular space, fibrotic tongue due to pathological situations can cause difficulty in tongue displacement. There is evidence that the straight blade can be an alternative to the curved blade in case of intubation failure. (Tallo FS, 2011)

The Society of Internal Medicine, in its book FCCS – Essentials of Intensive Support, lists the indications for orotracheal intubation:

Table 2: Indications for Orotracheal Intubation.

1. Airway protection,
2. relief of obstruction;
3. Provision of mechanical ventilation and oxygen therapy;
4. Respiratory failure;
5. Shock;
6. Hyperventilation for intracranial hypertension;
7. Reduction of the work of breathing;
8. Facilitation of lung suction

Silva LAL, 2014 also describes the following situations for RSI: situations in which the patient is considered to have a "full stomach", that is, when there is no adequate fasting time, pregnant women, stomach cancer, megaesophagus, morbidly obese, diabetics with gastroparesis, history of gastroesophageal reflux disease, trauma, alcohol intoxication and those who will remain in the lithotomy position during the surgical procedure.

The patient should receive blood pressure monitoring, cardioscopy, venous access for drug administration and pulse oximetry, and the use of waveform capnograph is always desirable. Assess the clinical situation such as hemodynamic status and intravascular volume, preoxygenation with 02 100%, elevated position between 20-30 degrees, Assessment of the airway anatomy and its functionality to estimate the degree of intubation difficulty. (Tallo FS, 2011)

The Sellik maneuver consists of compressing the cricoid cartilage, increasing the tone of the upper esophageal sphincter, but decreasing that of the lower one, which suggests the presence of mechanoreceptors in the pharynx that would promote reflex relaxation of this sphincter. This effect, however, does not seem to cause gastroesophageal reflux. (Tallo FS, 2011).

A force of 10 Newtons is applied with the assistant's thumb and index finger, increasing to 30N shortly after loss of consciousness (10N is the equivalent of 1kg of pressure). This pressure is maintained until endotracheal intubation is confirmed. Cricoid pressure should be reduced or released if laryngoscopy is difficult or if a vomiting episode occurs, in order to reduce the chance of esophageal rupture from vomiting. (Ross W, 2016)

Figure 8 – Ross W, 2016 shows the correct way to perform the Sellik Maneuver:
Source: Fast Sequence Induction. In: World Federation of Societies of Anaesthesiologists. 2016. Tutorial (331):1-8.

However, new guidelines no longer recommend Sellik's maneuver, except as a means of positioning the glottis in view during laryngoscopy. significantly different between patients with complicated and uncomplicated OTI, whereas it is recommended in emergency situations and/or in patients with a full stomach.

The ideal conditions for performing the rapid sequence technique include analgesia, hypnosis, neuromuscular blockade and the autonomous response to laryngoscopy, with sedation without altering cardiorespiratory stability. Laryngospasm, bronchospasm and hemodynamic instability should be avoided. (Tallo FS, 2011)

Ross W, 2016 reinforces the need to prepare both equipment and team members. Anticipating a difficult airway and defining plans for oxygenation in ISR are essential. In his article he cites an example of an intubation checklist used in emergency surgery, as shown in Figure 9, below:

CHECKLIST PARA INTUBAÇÃO DE EMERGÊNCIA

PREPARAR PACIENTE	PREPARAR EQUIPAMENTOS	PREPARAR PARA DIFICULDADES	PREPARAR GRUPO
• **Monitorização** ➢ Oxímetro de pulso ➢ PA (cada 2 min) ➢ Capnografia ➢ ECG • **Posicionamento ideal** ➢ Posição em rampa em pacientes obesos ➢ Elevação da cabeceira em 30° se trauma cranioencefálico ➢ Imobilização do pescoço para suspeita de lesão de medula espinhal • **Bom acesso IV com fluido correndo** • **Pré-oxigenação adequada**	• **Fornecimento de oxigênio** • **Equipamento de via aérea** ➢ Máscara facial ➢ Adjuvantes de via aérea ➢ Balão auto-inflável ➢ 2 laringoscópios ➢ Tubos endotraqueais apropriados ➢ Bougie ou estilete ➢ Aspirador ➢ Fita para fixar tubo ou laço • **Medicações** ➢ Drogas para ISR ➢ Vasopressor ➢ Manutenção da sedação e paralisia	• **Preparação para via aérea difícil, se antecipada** ➢ Videolaringoscópio ➢ Máscara caríngea ➢ Kit para cricotireoidostomia • **Presença do carrinho de via aérea difícil** • **Plano de oxigenação em caso de falha na intubação** • **Outros problemas específicos previstos?**	• **Confirmar funções** ➢ Intubação ➢ Drogas ➢ Pressão cricoide ➢ Estabilização e alinhamento (lesão de medula espinhal) • **Ajuda sênior disponível**

PROSSEGUIR PRA ISR QUANDO TODOS OS ITENS ESTIVEREM CONFIRMADOS

Figure 9: Checklist used in preparing for intubation in emergency surgery to ensure that all drugs and equipment are available and that all team members are aware of their roles (Ross W, 2016). The figura is in Portuguese language.
Source: Fast Sequence Induction. In: World Federation of Societies of Anaesthesiologists. 2016. Tutorial (331):1-8.

Etomidate was the most common hypnotic agent used in the study by Jaber S, 2006 and has become the induction agent of choice in many institutions because of its hemodynamic safety profile. Ross W, 2016 also describes the very limited hemodynamic effects of etomidate being a good choice in cases of instability, but its use has been limited by concerns of adrenal suppression. There is much discussion in the literature about the effect of etomidate on the adrenal gland. (Yazbeck MF et al., 2011)

Succinylcholine was the most used neuromuscular blocker, allowing the patient to breathe spontaneously after 3 to 5 minutes (Moro ET, 2004). This drug causes brief contractions of fasciculation produced by the spontaneous firing of isolated motor units that often occur after its administration. Some have postulated that fasciculations could potentially increase ICP, intraocular and intragastric pressures and is contraindicated in intracranial injury and hyperkalemia. (Yazbeck MF et al., 2011)

Contraindications to suxamethonium lead to the use of an alternative neuromuscular blocker such as high dose rocuronium (0.9 to 1.6 mg/kg. The prolonged duration of action must be taken into account in cases of probable difficult airway and specific reversal agents such as sugammadex, binds to rocuronium leaving it unavailable

to bind to the neuromuscular junction, reversing its effect (Ross W, 2016)

Rocuronium provides succinylcholine-like intubation conditions and can be antagonized with a commercially available reversal agent sugammadex. (Higgs A. et.al, 2018). There is also a sedative known as dexmedetomidine that has its specific indications. Esmolol has also been used as a pre-induction agent, being preferentially used for neurosurgical patients with increased intracranial pressure, known to be synergistic with fentanyl. (Mace SE. et.al, 2008).

Table 3: Drugs Used for Orotracheal Intubation (in Portuguese language).

Droga	Dosagem	Benefícios	Precauções
Fentanil	0,5-2 μg/kg IV bólus com intervalo de alguns minutos, titulado pelo efeito sedativo	Início rápido de ação Menor duração Reversível com naloxona	Rigidez torácica quando administrado rapidamente Depressão respiratória Não inibe a consciência do paciente durante o procedimento
Midazolam	0,1-0,3 mg/kg bólus com intervalo de alguns minutos, titulado pelo efeito sedativo	Desencadeia amnésia Início rápido de ação Curta duração Reversível com flumazenil	Causa depressão respiratória adicional quando combinado com opiáceos Não proporciona analgesia
Etomidato	0,1-0,3 mg/kg em um único bólus IV	Proporciona hipnose Deve ser preferido em lesões encefálicas Não há efeitos adversos cardiovasculares	Pode induzir mioclonia incluindo trismo leve (considerar pré-medicação com 50 μg de fentanil) Não há agente de reversão Supressão adrenal transitória
Lidocaína	1-1,5 mg/kg IV bólus a cada 2-3 minutos antes da laringoscopia	Atenua a resposta hemodinâmica e traqueal à intubação Pode reduzir as elevações da pressão intracraniana durante a laringoscopia	Não deve exceder a dose total de 4 mg/kg devido à neurotoxicidade (convulsões)
Cetamina	1-4 mg/kg IV bólus	Início rápido de ação Não há efeitos adversos cardiovasculares (exceto em casos de insuficiência cardíaca congestiva severa) Curta duração	Pode aumentar a pressão intracraniana Pode gerar alucinações ao despertar Considere o uso de baixas doses de benzodiazepínicos (midazolam 0,5-1 mg IV) como complemento
Propofol	1-2 mg/kg IV bólus	Início rápido de ação Curta duração Gera amnésia	Hipotensão severa em pacientes com depleção de volume Não promove analgesia Depressão respiratória

Source: Stensive Support Foundations – FCCS, 2018; chap.2; p.28.

Tallo FS, 2011 adds that the combination of opioids such as alfafentanyl (30 mcg/kg), fentanyl (2-10 mcg/kg), associated with propofol (2.5 mg/kg) or thiopental has allowed good orotracheal intubation conditions with good control of hemodynamic response.

In his study Moro ET, 2004, defends better intubation conditions with the use of alfafentanyl at a dose of 30 mcg/kg associated with propofol 2.5 mg/kg, which provided good intubation conditions and suppression of the cardiovascular response, even without the use of neuromuscular blockers. . The use of a benzodiazepine as a preanesthetic 2 minutes before the administration of alfafentanyl and propofol improved conditions mainly due to suppression of the cough reflex.

Care with drug doses is more important than drug choice. In a shock patient, a very modest dose of hypnotic may be sufficient, as these drugs can easily lead to circulatory collapse and cardiac arrest. Medications for cardiopulmonary resuscitation should be readily available. (Ross W, 2016)

Casey JD, 2019 compared rapid sequence endotracheal intubation with conventional induction in critically ill patients. The result showed that patients induced with rapid sequence had a higher incidence of hypoxemia due to apnea time after muscle relaxant use compared to conventional induction. In contrast, patients who received positive pressure ventilation did not have a high incidence of bronchoaspiration. It is concluded that providing bag-mask ventilation between induction and laryngoscopy would prevent severe hypoxemia, and despite aerophagia, it does not increase the risk of bronchial aspiration.

6. IOT COMPLICATIONS

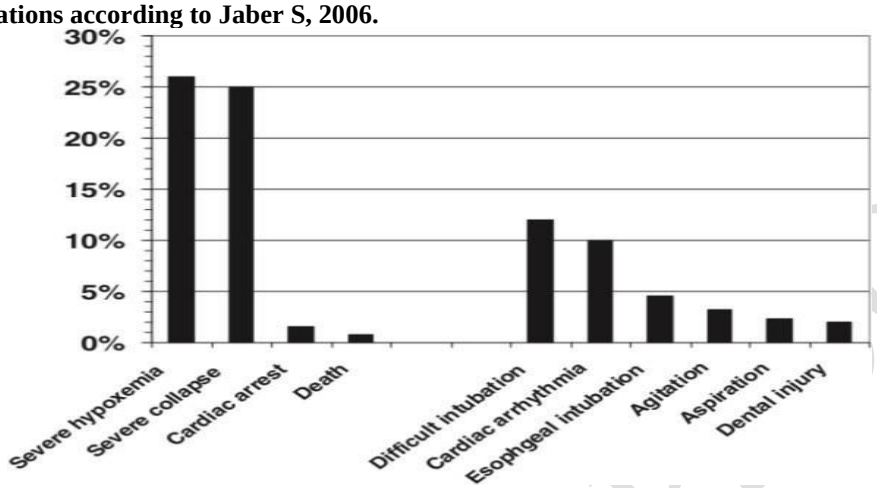
The use of rapid sequence intubation has been increasingly recommended as it facilitates the procedure and presents fewer complications. In table 2, Jaber S, 2006 shows the incidence of complications of orotracheal intubation in two groups. He separated immediate complications (occurring within 30 min after OTI) into two categories: severe and mild/moderate. In his study he showed the incidence of complications that occurred in 71 OTI procedures, with severe hypoxemia

and severe hemodynamic collapse being the most relevant.

According to Jaber S, 2006, the incidence of the two categories of endotracheal intubation complications are divided into two groups:

Group 1: severe complications (severe hypoxemia, severe collapse, cardiac arrest, and death)
Group 2: mild to moderate complications (difficult intubation, cardiac arrhythmia, esophageal intubation, agitation, aspiration, and tooth injury)

Table 4: Complications according to Jaber S, 2006.



Source: Clinical practice and risk factors for immediate complications of endotracheal intubation in the intensive care unit: a prospective, multiple-center study, 2006 Vol.34.No9.

As Jaber S, 2006 reported, he considers that being a novice doctor supervised by a more experienced doctor (i.e. two operators) was considered the only protective factor for the occurrence of complications, while hypotension/shock and acute respiratory failure were considered risk factors, being also the two main indications for OTI in this study.

7. CONCLUSION

The purpose of rapid sequence is to increase the success rate and decrease intubation complications. A key component of the rapid and successful intubation sequence is adequate pre-oxygenation and the physician's technical knowledge/skills.

All healthcare professionals, especially physicians, regardless of their specialty, must be qualified and know the procedure for rapid sequence intubation.

The patient's hemodynamic and ventilatory status should be evaluated to reduce the risk of complications such as severe hypoxemia, cardiac arrhythmias, hemodynamic collapse, and cardiac arrest. Assessing the level of consciousness, protective airway reflexes, drive and work of breathing are important care to ensure appropriate ventilatory support.

Patients who are oxygenated with bag-mask-ventilation during the interval between induction and laryngoscopy had higher oxygen saturation and lower rates of severe hypoxemia than those who do not receive ventilation, avoiding complications from hypoxia. Care must be taken to avoid bronchoaspiration, but the risk exists when ventilating with positive pressure.

The success of the procedure depends on the adequate preparation of the environment, the team and the patient.

Further studies should aim to better define intubation protocols and team training to make this procedure safer.

REFERENCES

1. Caro D. Tyler k. Sedative induction agentes. In: Walls RM, Murphy MF, eds. Manual of Emergency Airway Management. 4th ed. Philadelphia. 2012:242.251.
2. Casey JD, et.al. Bag-Mask Ventilation during Tracheal Intubation of Critically Ill Adults. N Engl J Med, 2019 Feb 28; 380(9): 811-821. doi: 10.1056/NEJMoa1812405.
3. Heidegger T. Management of the Difficult Airway. In: N Engl J Med, 2021 May 13; 384(19): 1836-1847. doi: 10.1056/NEJMra1916801.
4. Higgs A. Guidelines for the management of tracheal intubation in critically ill adults. In: British Journal of Anaesthesia, 120 (2): 323e352 (2018). doi: 10.1016/j.bja.2017.10.021
5. Jaber S, et.al. Clinical practice and risk factors for immediate complications of endotracheal intubation in the intensive care unit: a prospective, multiple-center study. Crit Care Med. 2006 Sep;34(9):2355-61. doi: 10.1097/01.CCM.0000233879.58720.87
6. Mace SE. Challenges and advances in intubation: rapid sequence intubation. Emerg Med Clin North Am. 2008 Nov; 26(4): 1043-68; doi: 10.1016/j.emc.2008.10.002.
7. Mason MA, Weant KA, Baker SN. Rapid sequence intubation medication therapies: a review in light of recent drug shortages. In: Adv Emerg Nurs J. 2013

Jan-Mar; 35(1): 16-25; doi: 10.1097/TME.0b013e31827fb706.
8. Moro E.T, et. al. Indução Anestésica com a Técnica de Sequencia Rápida. In: Rev Bras Anestesiol. 2004; 54(4): 595-606.
9. Ross W, et.al. Indução em Sequencia rápida. In: World Federation of Societies of Anaesthesiologists. 2016. Tutorial (331): 1-8.
10. Silva LAL, Watanabe SS. Indução e intubação em sequência rápida. Rev. Med. Res., 16(2): p.127-131, abr./jun.2014
11. Stollings JL, Diedrich DA, Oyen LJ, Brown DR. Rapid-sequence intubation: a review of the process and considerations when choosing medications. Ann Pharmacother, 2014 Jan; 48(1): 62-76. doi: 10.1177/1060028013510488.
12. Society of Critical Care Medicine. In: Fundamentos de Suporte Intensivo. 6ªed. São Paulo, Brasil, 2018; 406 p. cap. 2, p.21-29.
13. Tallo FS, et al. Intubação orotraqueal e a técnica da sequencia rápida: uma revisão para o clinico. In:Rev.Bras.Clin.Med. São Paulo, 2011 mai-jun; 9(3): 211-7.
14. Vieira LP., et al.. MAVIT: manejo de vias áereas e intubação traqueal; 2.ed.; Belo Horizonte (MG); Somiti health: Letramento, 2017; 200p.
15. Yamanaka C.S.et.al. Orotracheal intubation: physician's knowledge assessment and clinical practices in intensive care units. In: Rev Bras Ter Intensiva, 2010; 22(2): 103-111.
16. Yazbeck MF et al., Rapid Sequence Intubation: Overview and Myths Versus Facts. In: Intensive Care and Emergency Medicine 2011. DOI 10.1007/978-3-642-18081-1.