

Evidence-based Guide to Difficult Airway Management

Manuel Ángel Gómez-Ríos
André van Zundert
Editors

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 Springer

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Foreword

“Clickbait” rules supreme in the current world, and yes, there’s no lack of information and opinion about airway management available on social media. What’s often lacking in that arena, though, is valid peer review: a sober second opinion on what’s being claimed, no matter the face validity of the “expert” (or how many “likes” they have). Therein lies the value of formally peer-reviewed publications. In the case of a textbook, this responsibility falls largely to the editors, and in *Evidence-Based Guide on Difficult Airway Management*, the reader can rest assured that the editors are world class in their airway pedigrees. Dr. Van Zundert has an extensive track record of research and publication about airway devices—especially supraglottic airways. Editor-in-chief Dr. Gómez-Ríos has been heavily involved in developing airway management guidelines: how to put airway devices to good and safe use, if you will. Collectively, their expertise spans much of the realm of airway management.

I’m happy to report that I know many of the text’s chapter authors personally or by reputation, and I’m privileged to count some as friends as well as professional colleagues. These and other of the text’s authors are regular speakers at national, international, and indeed, world congresses on airway management and/or anesthesia. And with good reason: they’re knowledgeable, they’re well-spoken, and they can eloquently put pen to paper. Perhaps most importantly, though, they’re *enthusiastic* about airway management.

There are many other textbooks on airway management, and especially in the era of search engines and artificial intelligence, it must be asked what exactly a new text of airway management might have to offer. Well, reading this one, the answer is plenty. The reader of this text will be a clinician who recognizes how fast knowledge is evolving and equally how frequently new airway management devices are being introduced. The value of a textbook such as this is that both the foundations of airway management and recent developments can be presented in juxtaposition, thus offering value to early-career and experienced clinicians alike.

We now have good insight into what is causing us trouble in managing patients’ airways, informed by published closed legal claims related to airway management, as well as airway-related morbidity and mortality database studies. The Internet bears further testament to what can go wrong, offering up coroner’s reports of tragic

cases, in the public domain. Unfortunately, the areas causing us grief have remained stubbornly persistent over the decades, so it's gratifying to see these themes being addressed in dedicated chapters and being *re-visited* in many other chapters. For example, anchored by an excellent chapter on the topic, video laryngoscopy is a pervasive theme in many (and indeed, most) other chapters throughout this text—emphasizing, for example, its role in increasing first-attempt and overall tracheal intubation success; predictors of difficulty with its use, role in helping avoid unrecognized oesophageal intubation, as well as need for advocacy for its universal use to facilitate all tracheal intubations.

We know that there are substantial “human factors” issues involved in most adverse airway outcomes, yet it's a difficult topic to address well. Talks I've heard on the subject are often entertaining, but I've sometimes struggled to identify take-home points that I can apply the next day to make my patient safer. It's an important subject, and I'm happy to report that it's masterfully handled in the chapter on the topic and that it includes plenty of practical advice.

Human factors are front and center during the often-chaotic management of a cardiac arrest, of course, but another challenge, at least for me, has been to remain current on the latest outcome-based research on how best to manage the airway of an arrested patient. The chapter on this topic is an excellent synthesis of the currently available evidence base.

Ultrasound now helps with almost everything, it seems. It certainly helps identify the location of the cricothyroid membrane before managing an anticipated difficult airway—otherwise often unsuccessful if relying on external palpation. The senior author of the chapter on ultrasound was an early adopter of using ultrasound for this purpose and has continued to write and speak on the technique around the world, often with elegant and practical accompanying instructions and illustrations—as with this chapter. Appropriately, other applications of ultrasound in airway management are also addressed in this and other chapters, as another contemporary theme running through the text.

The chapter on documentation is one of the most comprehensive and well-written pieces I've read on the topic. While perhaps a slightly dry topic in airway management, often relegated to the end of an airway guideline or textbook, given that we now know that one of the best predictors of a difficult airway is a history of previously documented difficulty, it's also one of the most important.

Not a dry topic is airway management of the critically ill patient: regardless of your practice environment, who hasn't had a sick patient who made your heart rate exceed theirs? And with good reason, given a published cardiac arrest rate of 3% or more during airway management in that population. The concept of the “physiologically difficult airway” is relatively new, but arguably, it's low hanging fruit if seeking to decrease airway-related morbidity and mortality. The chapter on airway management in the critically ill patient is very instructive on how to avoid bad outcomes in this population and is written by a master on the topic. Parenthetically, in addressing use of video laryngoscopy in the critically ill patient, this chapter contains my favorite sentence in the entire text, which advises making “purchasing decisions [that] reflect the needs of the most junior operators...rather than

idiosyncratic individual preferences of influential senior members of the department.” Good advice indeed, and on that note, this quite possibly idiosyncratic and definitely senior writer will sign off. I hope that you enjoy your time reading all the chapters of this very engaging text as much as I did.

Halifax, Canada

J. Adam Law

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About the Editors



Manuel Ángel Gómez-Ríos, MD, PhD is a senior anesthesiologist, clinical researcher, and academic leader based in A Coruña, Spain. He is internationally recognized for his contributions to airway management, perioperative medicine, and patient safety, with a particular focus on videolaryngoscopy and the integration of human factors into clinical practice.

He works in the Department of Anesthesiology and Perioperative Medicine at the University Hospital Complex of A Coruña. He currently serves as Vice President of the Clinical Management Section of the Spanish Society of Anesthesiology, Resuscitation, and Pain Therapy (SEDAR) and is Co-founder of the Ibero-American Airway Society. He is also affiliated with the Cell Therapy and Regenerative Medicine Group at the University of A Coruña (UDC) and INIBIC and serves as Visiting Professor at Medical University of Łódź (Poland).

Dr. Gómez-Ríos has an extensive academic portfolio, with numerous peer-reviewed publications and active involvement in international collaborations and clinical guideline development. He holds editorial roles in journals such as *BMC Anesthesiology*, *Journal of Clinical Anesthesia*, and the *Spanish Journal of Anesthesiology and Resuscitation* and regularly reviews for high-impact journals.

His research focuses on airway management, perioperative risk assessment, and the application of artificial intelligence in healthcare. He has led and participated in clinical trials and innovative projects.

In addition to his research, he is actively engaged in postgraduate education and mentorship, supervising doctoral and master's students. His work integrates clinical excellence, scientific innovation, and leadership to advance safer, evidence-based anesthesiology worldwide.



André van Zundert is a double-boarded anesthesiologist-intensivist who worked in Eindhoven, The Netherlands, for 30 years and relocated to Brisbane, QLD, Australia, in 2013, where he was asked to set up an academic department. Besides working at the Royal Brisbane and Women's Hospital, he holds professorial appointments at the University of Queensland, Queensland University of Technology, Queensland Brain Institute, and Udayana University (Denpasar, Indonesia). Recently, he was honored to lead the newly established "André van Zundert Research and Education Center" at the Shenzhen Institute of Advanced Technology and the Chinese Academy of Sciences.

Professor van Zundert's scholarly output includes some 150 airway-related scientific publications (out of a total of 550), including world guidelines on videolaryngoscopy. He is recognized as one of the "top ten world experts in airway management," contributing to the revolution in airway management. He is one of the foundational figures of videolaryngoscopy, moving the speciality "from mirrors to monitors." By championing the transition from "blind" clinical techniques to "vision-guided" precision, he achieved a monumental leap in patient safety. His clinical vision further led to the introduction of videolaryngeal mask airways into routine practice, providing clinicians with unprecedented control and positioning accuracy during difficult airway management.

In addition, Professor van Zundert pioneered safety in obstetric and regional anesthesia. The formula he proposed for safe and effective pain relief during childbirth is now a staple of clinical practice worldwide. He is one of the founders of the combined spinal-epidural regional anesthesia and introduced the segmental thoracic spinal anesthesia technique. Beyond clinical tools, Professor

van Zundert is at the forefront of unravelling the molecular mechanisms of general anesthesia, including researching new reversal agents that counteract general anesthetics. His scientific work has been recognized by dozens of (inter)national awards. He supervised more than 50 PhD-Doctorates, which he considers his most important legacy.

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Chapter 7

Preparation Before Airway Management



Samuel Ern Hung Tsan

Highlights

- Proper planning and preparation before airway management significantly impact success and reduce emergencies.
- Effective teamwork, clear communication, and role assignment enhance efficiency in critical situations.
- Backup strategies and familiarity with rescue devices are essential to manage unexpected difficulties.
- Regular training and simulation improve decision-making and confidence in airway management.
- Structured decision-making enhance performance in high-pressure scenarios.

7.1 Introduction

Benjamin Franklin once said, “*By failing to prepare, you are preparing to fail.*” This wisdom holds true in all high-acuity scenarios, particularly in airway management. Optimal preparation is key to successful airway management, ensuring effective oxygenation of the patient without adverse effects. This becomes even more critical when a difficult airway is anticipated.

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7.2 Use of a Checklist

One key aspect of preparation before embarking on the management of the difficult airway is the use of a checklist. The 4th National Audit Project (NAP4) of the Royal College of Anaesthetists recommends using an intubation checklist in critically ill patients. This checklist ensures proper preparation of the patient, drugs, equipment, team roles, and backup plans [1]. This recommendation has been adopted by the “2018 Guidelines for the management of tracheal intubation in critically ill adults,” published by the Difficult Airway Society (DAS), the Intensive Care Society, the Faculty of Intensive Care Medicine, and the Royal College of Anaesthetists.

Several single-centre observational studies have shown that preintubation checklists provide clear benefits. In a prospective study involving 141 Emergency Department patients, Smith et al. [2] found that the use of a preintubation checklist reduced intubation complications, shortened intubation time, and improved safety measures. Two additional studies that evaluated preintubation checklists as part of an intubation bundle-of-care also reported increased patient safety during intubation in the Emergency Department [3, 4]. Conversely, a randomized controlled trial by Janz et al. [5] found no significant differences in oxygen saturation, blood pressure, laryngoscopy attempts, or complications when comparing preintubation checklists to standard care in critically ill patients. However, this study was criticized for methodological limitations, and the lack of a comprehensive checklist [6, 7]. A recent systematic review and meta-analysis found that using a checklist reduced the incidence of hypoxia during tracheal intubation. However, no significant differences were observed in rates of oesophageal intubation, hypotension, or first-pass intubation success, possibly due to underpowered subgroup analyses [8].

Managing the airway in critically ill patients is also known as managing the physiologically difficult airway. It is a high-stress scenario with a high risk of cognitive overload. Based on evidence and recommendations from critically ill patient management, preintubation checklists are a valuable tool in difficult airway situations. In fact, the 2022 American Society of Anesthesiologists (ASA) Practice Guidelines for Management of the Difficult Airway recommended the first step in their airway management algorithm as reviewing the airway strategy. This functions as a mental checklist, ensuring the patient’s airway and physiological status are assessed, equipment and monitoring devices are checked, team roles are assigned, and backup plans are in place [9]. Thus, the use of a preintubation checklist adds an extra layer of safety to a complex procedure, enhancing error prevention. Table 7.1 summarizes essential items that should be included in a preintubation checklist.

Table 7.1 Preintubation checklist: essential items (non-exhaustive list)

Preparation of the patient	Consent and explanation Positioning Preoxygenation (<i>discussed in another chapter</i>)
Preparation of equipment and drugs	Monitoring equipment Airway equipment and adjuncts Drugs
Preparation of the team	Role allocations Human factors (<i>discussed in another chapter</i>)
Preparation of backup plans	Airway strategy in the event of failure (<i>discussed in another chapter</i>) Management of anticipated complications

7.3 Preparation of the Patient

7.3.1 Consent and Explanation

Management of the difficult airway carries multiple risks for patients, including, but not limited to, death, brain injury, cardiopulmonary arrest, airway trauma, and dental damage. Therefore, patients or their responsible caregivers have the right to be informed of these risks, in accordance with the ethical principle of autonomy. The latest 2022 ASA Practice Guidelines for Management of the Difficult Airway recommended that patients undergoing tracheal intubation be informed of the specific risks and procedures involved. If the patient is underage or incapacitated, the responsible person of the patient should be informed. Among 174 expert consultants surveyed on this statement, 74% strongly agreed, 21% agreed, 3% were neutral, and 2% either strongly disagreed or disagreed [9].

7.3.2 Positioning

For most of the last 100 years, the widely accepted head position for laryngoscopy and tracheal intubation has been the supine sniffing position, achieved by flexion of the lower cervical spine and extension of the head at the atlanto-occipital joint from the horizontal plane. This technique is credited to Sir Ivan Magill, who first described it in 1936 as “a man standing in the normal erect position when he scents the air” [10]. The DAS 2015 Guidelines for Management of Unanticipated Difficult Intubation in Adults recommended this position for most patients, except for obese patients, who should be placed in the ramped position [11]. However, recent evidence suggests that the head-elevated position should be the standard for all tracheal intubations, not just for obese patients. This position can be achieved using pillows, blankets, or specialized devices. One of the simplest methods for head elevation is the bed-up-head-elevated (BUHE) position, which uses the bed control to elevate the head of the bed until the patient’s sternal angle aligns with the external auditory meatus (by adjusting the bed at the hip level) (Fig. 7.1).

Fig. 7.1 Bed-up-head-elevated position



7.3.2.1 Improved Glottic Views with the Head-Elevated Position

The head-elevated position has been shown to improve glottic views during laryngoscopy. Lee et al. [12], in a randomized controlled trial (RCT), showed that this position improves the glottic view by nearly 25% compared to the supine position. Another RCT found that the head-elevated position significantly increases the rate of Cormack-Lehane grade 1 or 2 views, reducing the occurrence of grades 3 or 4 views [13]. A more recent RCT demonstrated that laryngoscopy in the head-elevated position was non-inferior to videolaryngoscopy in terms of glottic view [mean difference -6.3% , 98% confidence interval (CI) -13.2% to 0.6% , non-inferiority limit -15% at the lower 98% CI limit]. Additionally, the glottic view improved by up to 25.8% in the head-elevated position compared to the supine sniffing position [14]. These findings were confirmed by a systematic review and meta-analysis, which found that in patients undergoing tracheal intubation in the operating theatre, there was a significantly higher likelihood of achieving a Cormack-Lehane grade 1/2 view in the head-elevated position compared to the sniffing position (odds ratio 2.05, 95% CI 1.26–3.32, $p = 0.004$, $I^2 = 0\%$) [15]. The improved laryngeal view in the head-elevated position may be attributed to:

- Increased airway dimensions due to gravitational effects on laryngeal structures and the upper thorax.
- A change in biomechanics, where the force applied during laryngoscopy lifts the laryngoscope blade further forward rather than upward, optimizing the laryngeal view [12].

7.3.2.2 Impact on Intubation Success and Safety

Beyond improving glottic visualization, the head-elevated position also enhances tracheal intubation success rates. Lee et al. [13] in an RCT involving patients with anticipated difficult tracheal intubation, found that this position increased the success rate by 21% (defined as successful intubation within the first or second attempt) compared to the supine sniffing position. Observational studies have further shown this position is associated with fewer peri-intubation complications and reduced need for airway manoeuvres [16, 17].

7.3.2.3 Effect on Preoxygenation

Another major advantage of the head-elevated position is enhanced preoxygenation effectiveness. Multiple RCTs have shown that, compared to the supine position, this position prolongs the safe apnoea period, defined as the time taken for oxygen saturation to drop to a specified level during the peri-intubation apnoea period [18–20]. A recently published systematic review and meta-analysis by Tsan et al. [21] found that preoxygenation in the head-elevated position significantly extends the safe apnoea period by up to 61.99 s (95% CI 42.93 s to 81.05 s, $p < 0.00001$, $I^2 = 30\%$), with the authors grading the certainty of evidence as high based on the GRADE criteria. The physiological rationale behind this improvement includes:

- Increased functional residual capacity, as the raised torso position reduces diaphragmatic pressure from abdominal contents.
- Decreased weight of chest wall tissues on the lungs, allowing better oxygen reserve.

When managing patients with an anticipated difficult airway, special attention must be given to optimizing patient positioning to improve success rates and minimize complications. Recent evidence strongly supports the head-elevated position as the optimal choice for intubation due to its multiple benefits, lack of proven complications, and ease of implementation. Hence, it should be the standard position for tracheal intubation.

7.4 Preparation of Equipment

It is widely accepted that immediate access to difficult airway management equipment is essential during the procedure. However, there is a lack of direct clinical evidence evaluating the impact of having such equipment readily available. Despite this, expert opinions from airway management guidelines strongly recommend that essential airway equipment be both available and easily accessible during intubation [9, 22]. In addition, specialized equipment for difficult airway (though only required in specific situations) should be immediately accessible in a portable storage unit [9]. A summary of standard and specialized airway equipment that should be available is provided in Table 7.2.

7.4.1 Stylet

The stylet has been used as an intubation aid for decades due to its ability to pre-shape the endotracheal tube. A recent multicentre pragmatic RCT investigated the success of intubation using an endotracheal tube with a stylet versus an endotracheal tube alone. The study included 999 patients undergoing intubation in

Table 7.2 Airway equipment

Standard airway equipment for all intubations	Specialized airway equipment for difficult airway management ^a
Self-inflating bag-valve-mask	Alternative intubation equipment
Various sizes of face masks	Various sizes of tracheal tubes (including microlaryngeal tubes)
Various sizes of oropharyngeal and nasopharyngeal airways	Different designs and sizes of laryngoscope blades
Various sizes of laryngoscope blades and handles	Specialized tracheal tube guides (semirigid stylets, lighted stylets)
Various sizes of endotracheal tubes	Intubating supraglottic airway
Various sizes of supraglottic airways	Videolaryngoscope with appropriate stylet
Yankauer suction tubes, suction catheters, suction tubing	Optical laryngoscope
Tracheal tube stylets (malleable and rigid)	Intubating video stylet
Tracheal tube introducers (bougie)	Flexible intubating bronchoscope with bite block, topical anaesthetic, and equipment
Equipment for emergency invasive airway management	Aintree catheter
Magill forceps	Alternative/rescue ventilation equipment
Water-soluble medical lubricant	Various sizes of oropharyngeal and nasopharyngeal airways
Nasal cannula	Various types (at least 2) and sizes of supraglottic airways
Oxygen face masks	High-flow nasal cannula
Video laryngoscope with appropriate stylet	Emergency airway equipment
Standard AAGBI monitoring equipment [23]	Equipment for emergency invasive airway management
Anaesthetic induction, maintenance, and rescue medications	Jet ventilation equipment
	Miscellaneous
	Various sizes of airway exchange catheters
	Multiple exhaled carbon dioxide detectors
	Laminated version of difficult airway algorithm/ cognitive aid/checklist
	Defogger

^aAvailable and accessible in a portable storage unit

Abbreviation: AAGBI Association of Anaesthetists of Great Britain and Ireland

intensive care units, with the first-pass intubation success rate as the main outcome. The results showed a first-attempt intubation success rate of 78.2% in the stylet group, compared to 71.5% in the endotracheal tube alone group (relative risk 1.10, 95% CI 1.02–1.18, $p = 0.01$). The number needed to treat (NNT) to prevent an intubation failure was 14.8. Importantly, no significant differences were reported between groups regarding intubation-related complications or serious peri-intubation adverse events [24]. Given the evidence supporting its effectiveness as an adjunct, the stylet should be readily available during tracheal intubation, if not used as the primary approach.

7.4.2 *Bougie*

The tracheal tube introducer, commonly known as the gum elastic bougie, has proven to be an effective rescue device in unanticipated difficult tracheal intubations [25]. Evidence suggests that using a bougie may improve first-pass intubation success in patients with difficult laryngoscopy or intubation features. A large RCT by Driver et al. [26], involving 757 patients undergoing emergency intubation in the emergency department, compared bougie-assisted intubation versus endotracheal tube with stylet for first-pass intubation success. First-attempt intubation success was significantly higher in the bougie group (98%) compared to the endotracheal tube and stylet group (87%) (absolute difference 11%, 95% CI 7–14%). Among 380 patients with at least one difficult airway feature (defined as obscured laryngeal view, airway oedema or obstruction, obesity, short neck, large tongue, small mandible, facial trauma or cervical spine immobility), the bougie group had a higher first-attempt intubation success rate (96% vs. 82%, absolute difference 14%, 95% CI 8–20%, $p < 0.001$). First-attempt intubation success without hypoxemia was also higher in the bougie group (82% vs. 69%, absolute difference 12%, 95% CI 3–21%, $p = 0.006$). In recent times, a new class of tracheal tube introducers, widely known as dynamic introducers, has emerged. Dynamic bougies consist of articulated bougies and may include a fiberoptic bronchoscope when used as an introducer during direct or indirect laryngoscopy. A recent meta-analysis showed that the usage of dynamic bougies in patients with difficult airways reduced the time required for intubation and had a higher rate of first-attempt intubation success [27]. All these findings reinforce that the bougie is a valuable tool in the airway management armamentarium, particularly when a difficult airway is anticipated.

7.4.3 *Continuous Capnography*

Unrecognized oesophageal intubation can lead to hypoxaemia, cerebral injury, and even death. According to NAP4, the incidence of unrecognized oesophageal intubation leading to severe harm is estimated to be 1:1,000,000 for tracheal intubations during anaesthesia, 1:15,000 in the intensive care unit, and 1:10,000 in the emergency department [1]. Commonly used clinical tests to confirm tracheal intubation include the presence of misting, lung auscultation, and five-point auscultation. A systematic review and meta-analysis evaluated the accuracy of these clinical tests. They found that misting or auscultation has false positive rates that are too high to be considered safe. There was also insufficient evidence to conclude on the use of bougie “hang-up” or chest rise to confirm tracheal placement [28]. To prevent oesophageal intubation and confirm tracheal tube placement, multiple expert guidelines have recommended the use of continuous capnography as the “gold standard” to confirm successful endotracheal intubation [9, 11, 22, 29]. The 2022 consensus guideline from the Project for Universal Management of Airways for preventing

unrecognized oesophageal intubation states that exhaled carbon dioxide monitoring should be used for all airway management procedures [29]. Several observational studies have demonstrated the effectiveness of continuous capnography to determine correct tube placement, with a 100% detection rate for oesophageal intubation [30–33]. Furthermore, continuous capnography has been shown to have 100% sensitivity and specificity even in low perfusion states, such as in patients experiencing cardiac arrest [34]. Taken together, the evidence strongly supports the use of continuous capnography during tracheal intubation to ensure correct endotracheal tube placement.

7.5 Preparation of the Team

7.5.1 Role Allocations

The airway, particularly a difficult airway, should be managed by appropriately trained operators. Role allocation should be procedure- and expertise-specific, rather than based on seniority. For instance, an anaesthetist with more airway management experience is designated as the team leader, while an otorhinolaryngology (ENT) surgeon may be on standby for emergency front-of-neck access.

Role allocations should be determined during the preparation phase, ideally as part of the team briefing. Establishing clear roles beforehand can help minimize confusion and cognitive overload in crisis scenarios. When each team member understands their designated responsibilities, decision-making becomes more efficient, and patient safety improves.

The 2022 ASA Guidelines for difficult airway management included a survey of 174 airway expert consultants, in which 94% strongly agreed, and 5% agreed that a skilled individual should be present or immediately available when managing a known or suspected difficult airway [9].

Effective leadership and communication are essential in crisis management. The team leader should ensure clear communication, facilitate real-time role adjustments if needed, and maintain situational awareness to optimize patient outcomes.

7.6 Prepare for Failure

7.6.1 Airway Strategy

One of the clinical themes identified in the NAP4 regarding complications in airway management was poor planning. When managing a known or suspected difficult airway, the NAP4 authors emphasized that an airway strategy, rather than a simple airway plan, should be developed. An airway plan typically refers to a single

technique for securing the airway. An airway strategy, in contrast, consists of a coordinated series of contingency plans aimed at ensuring adequate oxygenation and minimizing complications [1]. A crucial element of an airway strategy is the incorporation of fail-safe measures for failure to intubate or failure to oxygenate. This was another clinical theme highlighted in the NAP4, where lack of backup plans often led to an uncoordinated response and ultimately poor patient outcomes [1]. Given these risks, multiple airway management guidelines strongly recommend developing structured backup plans before airway intervention. Preparation should include:

- Team coordination, ensuring clear role assignments in case of failure scenarios.
- Availability of alternative airway devices, such as supraglottic airways, video laryngoscopy, bougies, and front-of-neck access equipment.
- Predefined escalation pathways, ensuring rapid transition to emergency airway interventions if needed.

More detailed strategies for managing difficult airways will be discussed in later chapters.

Recommendations

- A preintubation checklist should be considered before managing an anticipated difficult airway to improve the success of endotracheal intubation (Table 7.1) (grade C).
- The patient or their responsible caregiver should be informed of the risks and procedures involved in managing a difficult airway (grade D).
- Patients undergoing tracheal intubation should be placed in the head-elevated position due to its multiple benefits and absence of complications (grade A).
- Standard airway management equipment should be immediately available during the intubation process. Specialized airway equipment should be available in a portable storage unit nearby in the event of a difficult airway scenario (grade D).
- The stylet should be immediately available during the endotracheal intubation procedure (grade A).
- The tracheal tube introducer (bougie) should be immediately available during the endotracheal intubation procedure (grade A).
- Continuous capnography should be used during tracheal intubation to confirm correct tracheal tube placement (grade B).
- Appropriately skilled personnel should be present or immediately available during the management of a known or suspected difficult airway (grade D).
- When managing a known or suspected difficult airway, an airway strategy should be devised during the preparation phase. The strategy must include plans for failure to intubate or oxygenate (grade D).

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