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Videolaryngoscopy, the Current Role in Airway Management

Tatjana Goranović

Abstract

Videolaryngoscopy has emerged not only as an alternative to direct laryngoscopy for airway intubation in adults and children but also as a new diagnostic and therapeutic tool in head and neck surgery. Videolaryngoscopy has a great advantage over direct laryngoscopy because it has been proven to reduce difficult views of the laryngeal opening (glottis). The success of intubation with a videolaryngoscope depends on both the type of device used and the experience of the operator. Technical details, such as the device's size and blade choice, properly reshaping the endotracheal tube, and customized hand-eye coordination, are all particularly important for targeting the endotracheal tube toward the glottis. Besides its clinical role in airway management, videolaryngoscopy is an excellent tool for education and medicolegal recording.

Keywords: airway management, videolaryngoscopy, direct laryngoscopy, anesthesia, intensive care medicine, emergency, history, education

1. Introduction

Videolaryngoscopy represents a significant improvement in endotracheal intubation and thus an improvement in airway safety. Namely, it is well known that to increase airway safety, it is necessary to apply the appropriate concept of airway visualization on which airway strategies and airway algorithms are based [1]. It is generally believed that improving the visualization of the laryngeal opening (glottis) as the most important airway structure for intubation significantly increases the success of intubation.

The classic concept of endotracheal intubation by direct laryngoscopy is based on the alignment of three axes (oral, pharyngeal, and laryngeal) to expose the laryngeal opening (glottis) to the external observer's eye, who places the tube through the glottis under the full control of eyesight [2]. This requires an appropriate head and neck position, a laryngoscope, and a precise laryngoscope application technique [3]. Often, the position adjustment should be instituted in case of poor visualization of the glottis [4]. Videolaryngoscopy uses optical technology to improve glottis visualization without the need to align the three axes of the airway, which might be especially useful in neck mobility limitations when it is not possible to extend the neck [5, 6]. In addition to better visualization of the glottis, videolaryngoscopy has proven to be a very successful intubation technique in operators with little or no experience [7–9], involves all airway team members [10–12], and is an important tool for perioperative airway assessment, airway care education, and medicolegal intubation recording [12, 13].

2. History of videolaryngoscopy

Although videolaryngoscopy as a technique of airway management has been an extremely popular topic for the last decade, the fact is that the principle of indirect airway visualization, on which it is based, is older than direct laryngoscopy. In 1829, Benjamin Guy Babington (1794–1866) described the first “glottoscope” or “glottiscope,” which consisted of a speculum to displace the tongue (a tongue depressor) and a system of mirrors to visualize the larynx, with sunlight for illumination [14–16]. Yet since 1895, when Alfred Kirstein (1863–1922) developed the “autoscope” that had an external electrical light source, the developmental pathway of laryngoscopy has focused on direct laryngoscopy [15, 16]. Consequently, since the 1940s, when the Macintosh and Miller blade were introduced [17], direct laryngoscopy has been the gold standard of endotracheal intubation.

In 1998, Markus Weiss incorporated fiberoptic fibers into a direct laryngoscope with a Macintosh blade [18]. In 2001, John Pacey introduced the first videolaryngoscope called the Glidescope[®], and since then the number of different devices using videolaryngoscopy has grown [17]. In 2013, the American Society of Anesthesiologists (ASA) suggested the use of videolaryngoscopy as the first choice in airway management in its algorithm of airway management [19]. The Difficult Airway Society (DAS), in the 2015 algorithm, recognized the use of videolaryngoscopy as part of the airway management and suggested to all anesthesiologists the adoption of the videolaryngoscopy skills [20]. It is recommended that videolaryngoscope should be immediately available for all obstetric general anesthetics [21]. In 2017, DAS presented videolaryngoscopy as an equivalent technique to direct laryngoscopy in the first attempts of intubation in the airway management algorithm in intensive care units (ICUs) [22].

3. Technique of videolaryngoscopy

The technique of videolaryngoscopy depends on the type of device used.

Table 1 lists some of the videolaryngoscopes. The division of videolaryngoscopes into the channeled and non-channeled devices has practical implications as the technique of videolaryngoscopy also differs significantly whether it is channeled or non-channeled one (**Figures 1–3**).

Non-channeled devices are further divided depending on the type of blade, which can be of the Macintosh, Miller, or hyperangular type, which also further influences the choice of technique (**Figure 4**). Blades can be manufactured from plastic for a single use or from metal for a multiple use. The screen can be on the device itself (**Figure 5**) or on a separate external monitor (**Figure 6**), which can be placed on the side or above the patient’s chest. The position of the monitor does not significantly affect the technique, but it requires good eye-hand coordination like all endoscopic techniques.

It is important to note that videolaryngoscopy, in broader meaning, includes all devices that assist laryngoscopy by video technology. Besides the above described videolaryngoscopes, it includes different video intubating stylets and videoendoscopes, too. These devices are equipped with an inbuilt camera and light source [23, 24]. Compared to the older versions of videostylets which were designed as rigid linear rods, the newer intubating stylets are often S-shaped and semiflexible with deflectable tips [25, 26]. The devices can have an eyepiece at their end or can be attached to monitor to allow watching at the screen. **Table 2** lists some video intubating stylets.

Type	Blade type	Name	Manufacturer
Channeled	N/A	Airtraq [®]	Prodol, Vizcaya, Spain
		Pentax AWS [®]	Pentax-AWS, Ambu Glen Burnie MD, USA
		King Vision [®]	King System, Nobesville, IN, USA
		Airway Scope [®]	Pentax, Tokyo, Japan
		Res-Q-Scope II	N/A
Non-channelled	Angulated blade	Storz V-MAC [®] /C-MAC [®]	Karl Storz, Tuttlingen, Germany
		McGrath MAC [®]	Aircraft Medical, Edinburgh, Scotland
		Glidescope [®] Core [™] , Titanium [™] Spectrum [™]	Glidescope, Verathon, WA, USA
		APA [™] MAC	Venner Medical, Singapore, Singapore
		Infinium ClearVue [®]	QuadMed, Inc. Jacksonville, FL, USA
		AP Venerscope [®]	Intravent Direct, Maidenhead, UK
		Truview PCD [™] -R	Truphatek International Limited, Netanya, Israel
	Hyperangulated blade	C-MAC D-blade [®]	Karl Storz, Tuttlingen, Germany
		McGrath Series 5 [®]	Aircraft Medical, Edinburgh, Scotland
		Glidescope [®] Core [™] , Titanium [™] Spectrum [™]	Glidescope, Verathon, WA, USA
		APA [™] DAB & U-DAB	Venner Medical, Singapore, Singapore
		Infinium Clear Vue [®]	Quamed, Inc. Jacksonville, FL, USA

N/A, not applicable.

Table 1.
Channeled and non-channelled videolaryngoscopes [10, 15, 23, 24].



Figure 1.
Airtraq[®] as an example of the channeled videolaryngoscope (own photography).

3.1 Technique of videolaryngoscopy with a channeled videolaryngoscope

The tube is placed in the dedicated groove of the device (**Figure 7**). The tube or the channel on the device can be lightly lubricated to reduce friction. During this preparation, make sure that the lubricant does not obscure the light source and the outer glass of the screen. The size of the tube should be adjusted to the size of



Figure 2.
Storz C-MAC D blade[®] as an example of the non-channeled videolaryngoscope with a metal reusable blade (own photography).

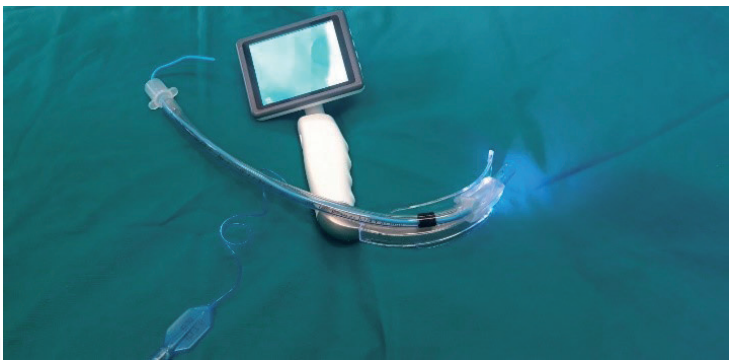


Figure 3.
Infinium ClearVue[®] as an example of the channeled videolaryngoscope with a plastic single use blade (own photography).

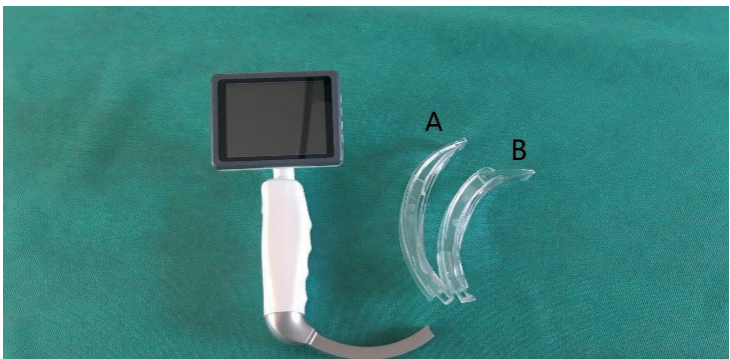


Figure 4.
Different single use plastic blades of the videolaryngoscope (A) Macintosh and (B) hyperangular (own photography).



Figure 5.
An incorporated screen of the videolaryngoscope on a device itself (own photography).



Figure 6.
The screen of the videolaryngoscope on an external monitor (own photography).

the channel. Namely, these devices differ in size, and the size of the channel is also different. When placing the tube, the top of the tube is displayed on the visible screen as a crescent. The entire device with the tube placed in this way is carefully embedded through the open mouth deep into the pharynx with the dominant hand, paying attention to the structures in the mouth (lips, teeth, and palate). If external resistance

Videostylets	Name	Manufacturer
With fixed tip	Bonfils®	Karl Storz, Tuttlingen, Germany
With flexible tip	Rigid and flexible laryngoscope (RIFL)	AI Medical Devices Inc., Williamston, MI, USA
	SensaScope®	Acutronic Medical Systems AG, Hirzel, Switzerland
	C-MAC® VS Video Stylet	Karl Storz, Tuttlingen, Germany

Table 2.
Videostylets [23–26].

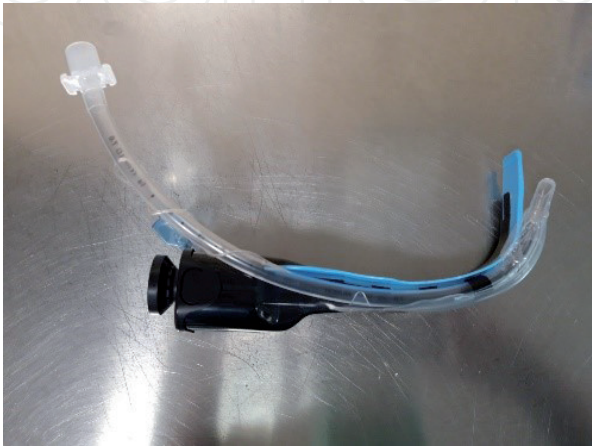


Figure 7.
Tube placed in a dedicated groove in a channeled videolaryngoscope (own photography).

is encountered due to large breasts, etc., the device can be turned with the concave side toward the palate firstly, then it can be placed in the mouth and when it reaches the level of the soft palate, it can be rotated to cover the base of the tongue (similar to positioning a Guedel tube). The device is then grasped with the left hand, the eye of the operator is brought closer to the eyepiece or the gaze is directed to the external screen and the whole device is pulled out vertically to the axis of the pharynx so that the glottis is displayed in the middle of the eyepiece or external screen. A slight rotation of the device to the left or to the right by 90 degrees can also help. When the glottis is displayed in the middle of the screen, the tube is carefully pushed through the channel with the free right hand, targeting the glottis. When the tube passes the vocal cords, the tube is displaced from the channel laterally and separated from the whole device carefully. The whole device is carefully removed from the pharynx and the mouth, taking care not to accidentally pull the tube from the trachea.

3.2 Technique of videolaryngoscopy with a non-channeled videolaryngoscope

The technique of videolaryngoscopy with a non-channeled device largely differs depending on the type of the blade.

If a Macintosh blade (slightly curved) is used (**Figure 8**), the video laryngoscopy technique is similar to direct laryngoscopy with a Macintosh blade, except for watching the progression of the blade and later a tube indirectly on the screen and not directly through the mouth. The mouth is opened, the laryngoscope is taken by the left hand (**Figure 9**), and the tip of the blade is inserted into the right corner of the patient’s lip. This step should be watched directly to avoid injuries of the lips and teeth. When the blade is placed in the right corner of the patient’s lip, the operator moves his/her gaze toward the screen and from then on keeps watching the screen.

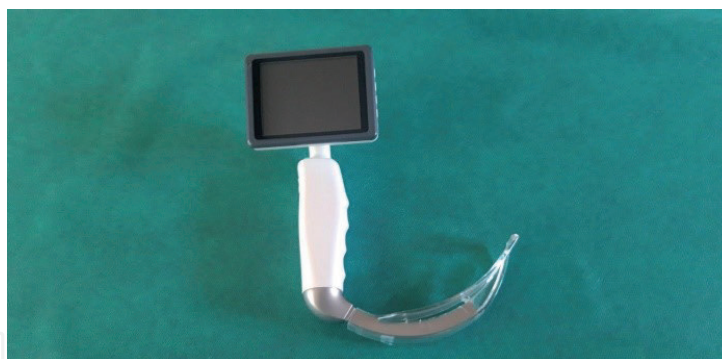


Figure 8.
A videolaryngoscope with a Macintosh blade (own photography).



Figure 9.
Grasping a videolaryngoscope with the left hand; a tube is handled with the right hand (own photography).

The lateral left side of the blade encloses the patient's tongue, moving it medially from the buccal mucosa. The moment the tip of the blade reaches the base of the tongue, the blade is straightened in the medial line and the operator should try to display the uvula to be positioned in the middle of the lower edge of the screen. The entire laryngoscope is then gently moved up and forwarded at a 45-degree angle to display the epiglottis and glottis, and the tip of the blade is directed into the vallecula. It is important to position the glottis in the middle of the screen, and if possible, to visualize the space around the glottis including the surrounding lateral wall of the pharynx, without getting too close to the glottis. The tube should be performed with a stylet in such a way that the curve of the tube follows the curve of the blade. The preformed tube with the stylet is lowered with the right hand down the groove of the spatula targeting the opening of the glottis. If it is not possible to reach the opening in this way, then the tube is grasped more freely with the right hand and, regardless of the groove of the blade, is directed at any angle to the laryngeal opening. In order to be able to control the direction of the tube beyond the groove and rotate it in different directions if necessary, it is important to have a wider field of view on the screen; that is, in addition to seeing the glottis, it is advisable to see the cavity of the pharynx and the tip of the tube itself. Instead of a tube, a bougie can be used in the described manner, and when it passes the vocal cords, the tube is pulled over the bougie according to the principle of the Seldinger technique.

If a Miller (straight) blade is used, the video laryngoscopy technique is similar to direct laryngoscopy with a Miller blade. The mouth is opened, the laryngoscope is taken in the left hand, and the tip of the blade is entered into the right corner of the patient's lip. The lateral left side of the blade encloses the tongue, moving it medially from the buccal mucosa. The moment the tip of the blade reaches the base of the tongue, the spatula straightens in the medial line and tries to display the uvula to be positioned in the middle of the lower edge of the screen. The entire laryngoscope

is then gently moved up and forward at a 45-degree angle in an effort to display the epiglottis and glottis, and the tip of the blade is directed below the epiglottis to lift it and better display the glottis. The further procedure is as described above.

If a hyperangular blade is used (**Figure 10**), then, unlike the procedures described above, the blade is immediately placed medially in the mouth and progressively directed toward the base of the tongue along the medial line of the tongue. At this point, lifting the base of the tongue attempts to visualize the uvula and place it similar to the one described above by displaying the uvula to the middle of the lower edge of the screen. The further procedure is as described above. To avoid the possible situation of obviously seeing the glottis but not being able to pass the tube through it, it is important to carefully preform the tube according to the hyperangular blade (**Figure 11**). If necessary, a metal stylet can



Figure 10.
A videolaryngoscope with a hyperangular blade (own photography).

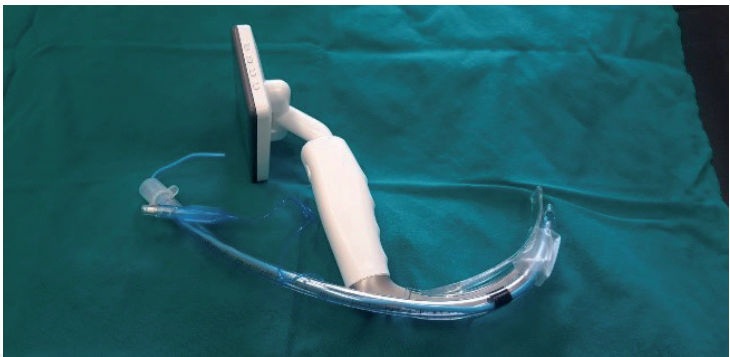


Figure 11.
Preforming a tube by a stylet to adjust the curve of the tube to the hyperangular blade (own photography).



Figure 12.
A metal stylet (own photography).

be used too (**Figure 12**). And again, instead of a tube, a bougie, which is more plastic, can be used in the described manner, and when it passes the vocal cords, the tube is pulled over the bougie according to the principle of the Seldinger technique.

4. Usage of videolaryngoscopy

4.1 Clinical usage of videolaryngoscopy

4.1.1 Single lumen tube orotracheal intubation

The primary use of videolaryngoscopy is the intubation guiding after the induction of general anesthesia in operation theaters, intensive care units, and emergency departments. Various specific pathologies that complicate intubation and represent possible situations of difficult airway management have been successfully overcome by using videolaryngoscopy.

Meta-analyses have shown that videolaryngoscopy compared with direct laryngoscopy reduces impossible intubations in expected difficult intubation in adults [27]. Among individual videolaryngoscopes, regardless of the subjective impressions of clinicians, there is no evidence that a single videolaryngoscope is better than others except specifically only the C-MAC Macintosh blade [27]. Evidence further suggests that videolaryngoscope versus direct laryngoscopy facilitates intubation, improves glottis visualization, and reduces the number of impossible glottis visualizations and reduces laryngeal airway trauma [27]. Cochran's 2016 systematic analysis did not prove that videolaryngoscopy reduces the number of intubation attempts. There were insufficient data to establish a temporal comparison of videolaryngoscopy and direct laryngoscopy of the impact of videolaryngoscopy on hypoxia and respiratory complications, the impact of obesity, and the impact of the site and circumstances of intubation (intensive care unit, emergency medicine) [27]. In children, in contrast to adults, the evidence shows that the number of intubation attempts using videolaryngoscopy is increased compared to direct laryngoscopy, the success of first attempt intubation is not increased, and moreover, the intubation time is extended [28, 29].

Although videolaryngoscopy improves visualization, evidence suggests that traditional direct laryngoscopy is a sufficiently successful method of airway management in intensive care units. Moreover, some evidence suggests that the number of complications when using videolaryngoscopy in intensive care units is higher, especially if used by inexperienced operators [30]. Therefore, for routine airway management in intensive care units, direct laryngoscopy is still recommended as first choice, but videolaryngoscopy is also recommended in a situation of unsuccessful direct laryngoscopy or in the case of expected difficult intubation in the hands of experts [31, 32]. There is a positive trend of using videolaryngoscopy in pediatric ICUs, particularly in older children and those with the positive history of difficult airway. However, there is still no demonstration that this trend has decreased the rate of severe tracheal intubation adverse events or lowered multiple attempts at endotracheal intubation [33].

4.1.2 Double lumen tube orotracheal intubation

Videolaryngoscopy can be used successfully for guiding a double lumen tube. Admittedly, according to some, it prolongs intubation time but improves visualization [34, 35].

4.1.3 Nasotracheal intubation

Although videolaryngoscopy does not improve the overall success of intubation in nasotracheal intubation, it has been shown to improve the success of the first attempt and shorten the intubation time [36].

4.1.4 Intubation of cervical spine pathology

In a clinical scenario of immobilized cervical spine, specifically McGrath®, C-MAC® D- blade, and Airtraq® [37] increase intubation success [38].

4.1.5 Awake intubation

Videolaryngoscopy is proving to be a successful alternative to fiberoptic bronchoscopy in awake intubation because it shortens intubation time, although intubation success and safety profile are indistinguishable [39, 40]. This benefit is recognized for bariatric patients [41, 42] and patients with cervical trauma [43].

4.1.6 Intubation of the patients with suspected or proven COVID-19

Due to less direct contact of the operator with the generated aerosol during the intubation, videolaryngoscopy has been recommended in recent airway management algorithms for the patients with suspected or proven COVID-19 [44]. When this is feasible, it is preferred to use disposable blades and protective shields over the devices to avoid their contaminations and possible cross-transmission of the virus SARS-CoV-2 [45].

4.1.7 Conduit for flexible fiberoptic bronchoscope [video-assisted flexible intubation (VAFI) techniques]

The combined use of flexible bronchoscopy with rigid videolaryngoscopy benefits from the strengths of both techniques in normal and difficult airways. Although first associations were reported for specific videolaryngoscopes [46, 47], this concept seems to be independent of the specific brand or type of videolaryngoscope and flexible bronchoscope [48].

4.1.8 Insertion of different devices into oropharynx

Videolaryngoscopy can be particularly useful for guiding and correcting malposition of different devices through oropharynx such as nasogastric or orogastric tube [49], esophagoscopes, gastroscopes, or transesophageal echocardiography probe [50]. In addition, it can be useful when placing throat packs in oral and maxillofacial surgery. In thyroid surgery, it is useful for the visualization the proper placement of electromyographic tube since the sensor mark on the tube should be placed exactly at the level of vocal cords [51, 52].

4.1.9 Diagnosis and recording of upper airway pathology

In addition to intubation, videolaryngoscopy has been shown to be successful for diagnostic and therapeutic surgical interventions in head and neck surgery. It has shown even superiority compared to videolaryngostroboscopy in diagnostic of different vocal pathologies [53]. Videolaryngoscopy can assist or replace traditional direct laryngoscopes for diagnostic of vocal pathology and small therapeutic

procedures such as vocal polypectomies [54]. In addition, it can be used as an assistance device for small procedures involving the tongue base, such as biopsies, foreign body removal like coins, fish bones, etc., and radiofrequency treatment of obstructive sleep [55–57]. Using the C-MAC and a pair of Magill forceps, some authors reported to be able to successfully remove the duodenal stent dislodged in proximal esophagus [58]. Videolaryngoscopy, in combination with apnoic technique with spontaneous ventilation, was shown to be effective in pediatric cases for a safe, speedy, and successful removal of the foreign body with respect to an unprotected airway, wherein tracheal intubation was not a viable option [59].

4.2 Educational and research usage of videolaryngoscopy

Videolaryngoscopy is an excellent tool for teaching because it allows unhindered supervision of the intubation procedure [60]. In practice, it proves to be a particularly useful tool for introducing beginners to intubation procedures. Moreover, depending on the choice of blade and type of device, it allows the education of different advanced intubation techniques comparable to direct laryngoscopy, including a combination of different techniques [61]. The supervisor follows the procedure performed by the student in a real time with possibility to guide the student verbally or manually with prompt feedback of what has been done. To gain an expertise in situations of unexpected difficult airway, it is necessary to learn how to manage expected difficult airway during routine intubations. Evidence suggests that using videolaryngoscopy during intubation significantly helps in mastering the intubation technique by the trainees even in the most sensitive populations for intubation such as newborns [62, 63].

As a relatively new technique with plenty of new innovative devices, videolaryngoscopy is currently a fruitful subject for the researchers interested in airway management. However, as the indications for its use spread, videolaryngoscopy may be used as an auxiliary tool for the other static and dynamic researches that include visualization of oropharynx and the upper airway.

4.3 Medicolegal usage of videolaryngoscopy

The possibility of recording the videolaryngoscopy procedure and subsequent reviewing of the recorded material offers the possibility of a thorough analysis of the procedure, which itself lasts a limited short time. The first such application was described in 1987 with the purpose of recording the vocal cords during vocal therapies [64]. Recorded material during videolaryngoscopy can be reproduced multiple times, which can be useful in subsequent analyzes that can be done for various medicolegal purposes (Video 1, Video 2, Video 3, and Video 4). It is especially useful to use archived images and videos as the part of preoperative preparation in patients for whom difficult intubation is expected. Another practical indication could be the examination of vocal cords after thyroid surgery and recording for medicolegal issues.

5. Limitations and complications of videolaryngoscopy

Despite the advantages and widespread use of videolaryngoscopy, there are some limitations that may be viewed as absolute or relative contraindications [13]. The only real absolute contraindication for videolaryngoscopy is the significant limitation of opening a mouth which does not allow to insert the blade. In this situation, retromolar intubation with videostylets or fiberoptic intubation, that are comparably smaller devices, may be a good alternative.

Fogging and secretions may obscure view, but they can be solved. Newer devices have additional antifogging adds and one should be aware about it during airway intubation. Adding oxygen may help in antifogging too, while successive early aspiration of secretion may be effective.

The most frustrating situation is when the passage of tube may be difficult despite great view (“laryngoscopic paradox”) [13, 24]. However, one must be aware of his/her understanding of the basic videolaryngoscopy concepts. Indeed, as the acute angle is often very sharp, an acutely angled stylet is necessary. In addition, depth perception is lost with a two-dimensional video image, and sometimes, operators may become fixated on the video screen and may not directly observe where the laryngoscope blade or endotracheal tube is being placed [24]. The consequences of this unawareness of the situation are injuries of soft tissues such as soft palate, tonsillar, or pharyngeal wall perforation [65–68]. According to one study female gender, right tonsillar pillars and soft palate were the most frequently injured [69]. The most common repair of these soft tissues’ injuries was simple surgical closure with no long-term harm [69].

Additional limitations of videolaryngoscopy are as follows: the need of experience and the time demand for the operator to learn how to use them properly, the rapid deterioration of their display in the presence of a swelling or a secretion, and the fact that they are rather complicated and expensive devices [70].

There are few useful tips that can be practiced to avoid complications. It is particularly important to prepare the tube with the stylet to follow the angle of the blade. As a mnemonic aid, one can remember the abbreviation “CCLL”: (1) Choose the right tube, (2) Check the endotracheal tube cuff, (3) Lubricate the stylet and the endotracheal tube (but spare the camera and the light source), and (4) Load the stylet (i.e., band it according to the angle of videolaryngoscopy blade).

To gain great maneuverability with the tube, it is advisable to hold the tube closer to its connector, not to be too close with the view to the glottis (back it up), and in the case of difficulty, passing through the glottis to use the bougie [71]. In addition, some propose to view videolaryngoscopy as a four-step procedure: First step is to look in the mouth and insert the videolaryngoscopy blade under direct vision. The next step is to look at the screen while gently advancing with the blade toward epiglottis to get the best glottic view. The third step is to move the look again to the mouth while inserting the tube under the direct vision to avoid trauma of soft tissues. And finally, the fourth step, is again to look at the screen to complete intubation. This step will probably need extra rotations and angulations of the tube. It is important that the stylet removal and the tube adjustments are done under direct visualizations [72].

6. Conclusion

Videolaryngoscopy can be used effectively in situations of expected and unexpected difficult airway management. There are several devices for videolaryngoscopy, which differ technically, but with a thorough knowledge of the technical specific details, the success of the use of different videolaryngoscopes in intubation is similar. The choice of a specific videolaryngoscope depends on the individual patient, local resources, and the expertise of the operator. The simplicity and benefits of using videolaryngoscopy lead enthusiasts to entitle videolaryngoscopy as the miracle solution for all possible situations where airway visualization and airway management is required. But, in clinical reality, videolaryngoscopy, like any airway management technique, has its advantages and disadvantages. Its great advantage is that even its shortcomings can be learned faster and more efficiently,

because the procedure is widely visible to a larger number of participants gathered in the airway care team in a real time. Therefore, videolaryngoscopy is not only an excellent teaching tool for mastering the airway management with its use but also with other airway devices which can be used as single or in various combinations. In addition, videolaryngoscopy has proven to be a useful technique in other clinical situations besides intubation, such as diagnostics of upper airway and small laryngeal surgeries. Finally, videolaryngoscopy is also an important medicolegal tool for all topics related to airway care as it allows immediate and delayed post-procedure analysis by reproducing its recordings.

Nowadays, many societies' guidelines recommend to use videolaryngoscopy early in intubation attempts in order to aim first-pass intubation success. It is possible that even in close future, it will replace direct intubation as the gold standard. However, for such an evolution, it is necessary for the clinicians to master the videolaryngoscopy technique by daily practicing.

Good preparation makes half of the technique. It is important to be aware of the device characteristics, especially technical details such as the resolution and fogging of the screen, the size and the angle of the blade, and the need to use preformed tube by stylet. During the process of videolaryngoscopy, it is advisable to think about it as a four-step procedure with alternately looking in the mouth and at the screen. Direct and indirect visualization of the upper airway should be complemented with customized hand-eye coordination. If accepted, these routine tips can minimize majority of traumatic complications. *Primum nil nocere*.

Conflict of interest

The author declares no conflict of interest.

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