Research Article

Comparison of Truview PCD and Trupti blade laryngoscope in adult patients of anticipated difficult Intubation

Kamla Mehta[1], Prashant Bhoya[1], Hiren Parmar[2]

[1]Department of Anaesthesia, Smt. NHL Municipal Medical College, Ahmedabad, Gujarat, India.
[2]Department of Surgery, GMERS Medical College, Gandhinagar, Gujarat, India.
Correspondence to: Hiren Parmar, E-mail: drhirenparmar@gmail.com

Received October 15, 2015. Accepted October 30, 2015

Abstract

Background: The Truview PCD and Trupti blade provide better view of vocal cords and do not require the proper alignment of the oral, pharyngeal, and laryngeal axes as required with the Macintosh blade.

Objective: To compare the laryngeal view and hemodynamic response to laryngoscopy and intubation with Truview PCD and Trupti blade in cases with single or multiple predictors of difficult intubation (PDI).

Materials and Methods: Sixty adult patients of both sexes who were scheduled to undergo general anesthesia with endotracheal intubation were divided into two groups. Laryngoscopy was performed with Truview blade in group A and with Trupti blade in group B. Laryngeal view was graded by the Cormack–Lehane classification after laryngoscopy. Hemodynamic response during laryngoscopy and intubation was compared in both the groups.

Results: Truview PCD was found to have better Cormack–Lehane glottic view and less hemodynamic response. The time required for the tracheal intubation was higher with Truview PCD blade than that with Trupti blade.

Conclusion: The Truview PCD and Trupti blade both are better for intubation in adult patients having less than three PDI.

KEY WORDS: Difficult airway, Truview PCD, Cormack–Lehane classification, Trupti blade

Introduction

Truview laryngoscope blade has been developed by Truphatek International® of Israel as an alternative to the conventional laryngoscopes to overcome their shortcomings in difficult intubation (DI) situations. Truview has an attached optical assembly based on prism principle to provide image of an object situated at an angle to straight line of vision. Hence Truview should be able to view glottic structures normally not visible to naked eye vision under direct laryngoscopy. Moreover, it has other added features such as compatibility to endoscopic camera for enlarged view on a monitor, oxyport to provide continuous oxygen insufflations, and fiber-optic light channel. The Truview PCD is a newly introduced Truphatek product. It still awaits sufficient clinical evaluation and critical acclaim by end users. The Truview blade is based on a combination of an optical system with a specially profiled 12.8-mm slim steel blade. The optical apparatus provides a 42° angled deflection view through a 15-mm eyepiece. The angle of view facilitates vision in patients with limited neck extension. The Truview eyepiece can be connected to an endoscopic camera head with a monitor, allowing audience viewing of the procedure for training purposes. Besides, the Truview blade has a port that connects to the auxiliary oxygen flow meter of the anesthesia machine, which prevents misting and clears secretions from the lens and provides continuous oxygen insufflations during intubation The Trupti blade laryngoscope (Penlon) was introduced in 1993. It is based on the standard Macintosh blade with a hinged tip operated by a lever mechanism on the back of the handle, which allows for elevation of the epiglottis while reducing the amount of force required.

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2016.15102015215	

It has been designed to facilitate tracheal intubation when the patient's head is in a neutral position. It has also been shown to reduce the stress response to laryngoscopy, probably as a result of the reduction in the required force The main objective of this study was to compare the laryngeal view and hemodynamic response to laryngoscopy and intubation with Truview PCD and Trupti blade in cases with single or multiple predictors of difficult intubation (PDI).

Materials and Methods

After obtaining approval from the institutional review board and written informed consent from each individual, patients of either sex, within the age group of 20–60 years, ASA grade I or II undergoing elective surgery requiring general anesthesia and endotracheal intubation were considered for the study. The study was conducted at Smt. SCL Municipal General Hospital, Ahmedabad, Gujarat, India, between August 2013 and August 2015. Exclusion criteria were Mallampati grade I and IV, emergency surgery, full stomach, and coagulopathy.

All patients were evaluated for three PDI—modified Mallampati test in sitting position with fully protruded tongue, thyromental distance (in centimeters) from the mentum to the thyroid notch while patient's neck is in full extension, and head and neck movement. Selected cases underwent routine preanesthetic checkup and laboratory investigations as per institutional protocol. Total 60 patients were divided into two groups: Group A (laryngoscopy performed with Truview PCD [n = 30]) and Group B (laryngoscopy performed with Trupti blade [n = 30). Eight hours of fasting was recommended, and premedication with tablet alprazolam 0.5 mg on night prior to surgery was prescribed to all cases. Standard monitoring was employed in the operating room. Premedication was done with Inj. glycopyrrolate 0.2 mg, Inj. fentanyl 1.0 mg/kg, and midazolam 1 mg after 3 min of preoxygenation with 100% oxygen. Induction was done with Inj. thiopental 5–7 mg/kg and after-check ventilation and Inj. succinylcholine 2 mg/kg. Patients who cannot be ventilated with ease were excluded from the study. Truview laryngoscopy or laryngoscopy with Trupti blade was conducted after 90 s and the Cormack–Lehane classification was evaluated and graded from monitor view. Endotracheal tube, either no. 7 or no. 8 (Portex, cuffed), depending on female or male patient, mounted on a stylet with preformed curve (as provided by Truview manufacturers) was negotiated under Truview vision. Any attempt requiring more than 1-min time was terminated as failed attempt and alternative method for tracheal intubation applied immediately. Time taken for intubation was noted (as the time from passing the tip of the laryngoscope blade through the incisor gap till appearance of capnographic tracing). Hemodynamic monitoring was observed and compared in both the groups up to 20 min after intubation. Complications such as sore throat; hoarseness of voice; and injury to teeth, gums, and tongue were noted. Data were analyzed using SPSS software. Mean ± SD and p-value were calculated. p-Value of less than 0.05 was considered to be significant.

Results

Findings of the study are depicted in Tables 1 and 2.

Discussion

In this study, we aimed to evaluate and compare the relative efficacy and hemodynamic response during laryngoscopy and intubation between two laryngoscopy blades—Truview and Trupti blade when used in DI. Both Truview and Trupti blades offer better glottic view and lesser force exerted during intubation when compared with the standard Macintosh laryngoscope. The Intubation Difficulty Scale (IDS) is a quantitative scale incorporating multiple indices of intubation difficulty that objectively quantifies the complexity of tracheal intubations. IDS score was developed by Adnet et al.[1] IDS is significantly low with the Truview laryngoscope (mean of 0.3 with standard deviation of 0.5) than with the McCoy laryngoscope (mean of 1.2 with standard deviation of 1.2), with a p-value of less than 0.001, which shows its high significance in the study of Joseph et al.[2] In this study also IDS is less in Truview compared to Trupti blade.

In the study by Malik et al.,[3,4] IDS was significantly low with the Truview laryngoscope when compared with the Macintosh laryngoscope. They evaluated the effectiveness of the Pentax Airway scope, Glide scope, and Truview EVO2 in comparison with the Macintosh laryngoscope in 120 patients (30 in each group). IDS was lowest with the Pentax Airway Scope. In this study, the Cormack–Lehane glottic view is significantly better with the Truview laryngoscope than with the Trupti blade laryngoscope (p = 0.01). Mallampati classes of the patients studied were comparable in both groups. Studies by Laurent et al.[5] and Gabbot et al.[6] showed a significantly better glottic view with the Trupti blade laryngoscope when compared with the Macintosh laryngoscope, and cardiovascular response to laryngoscopy and intubation were significantly higher with the Trupti blade group than with the Truview group. But in this study, hemodynamic responses were less in both groups. This less may be due to the lesser force applied to the base of the tongue. The lifting force is very minimal with Truview when compared with Trupti blade. In the study by Rashid et al.,[7] the hemodynamic response to laryngoscopy and intubation was significantly less with the Truview laryngoscope when compared with the Macintosh laryngoscope. The duration of intubation was significantly less with the Trupti blade laryngoscope (mean of 22.9 s with standard deviation of 8.5) than with the Truview PCD laryngoscope (mean of 33.2 s with standard deviation of 12.3), with a p-value of less than 0.05, showing that it is highly significant. In this study, duration of tracheal intubation with Truview PCD was 35.4 s, which is more as compared to Trupti blade (21.8 s). The main reason for increased duration of tracheal intubation with Truview is the difficulty experienced in advancing the tube through the lateral side of the patient's mouth, which was also reported by Malik et al.[3] and Barak et al.[8] Another problem with Truview is fogging, which hinders visualization of the cords.

Table 1: Mean time of tracheal intubation

Time (s)	Group A (*n* = 30)	Group B (*n* = 30)
<20	5	9
21–30	7	21
31–60	18	0

Table 2: Hemodynamic monitoring

Time	Group A		Group B	
	Pulse	Mean arterial pressure	Pulse	Mean arterial pressure
Before intubation	80.3 ± 6.5	106.4 ± 6.8	76.1 ± 8.3	112.2 ± 4.2
1 min after intubation	84.7 ± 4.2	110.4 ± 6.3	82.3 ± 6.8	116.4 ± 6.6
3 min after intubation	88.6 ± 6.2	114.6 ± 4.5	84.3 ± 6.4	110.4 ± 8.3
5 min after intubation	78.7 ± 4.1	108.4 ± 4.3	74.3 ± 4.7	108.3 ± 4.6
10 min after intubation	76.5 ± 3.6	110.2 ± 6.7	70.4 ± 6.5	104.6 ± 6.4
20 min after intubation	82.4 ± 3.8	104.2 ± 8.7	74.2 ± 4.1	106.6 ± 6.8

To overcome this, we used oxygen at the flow rate of 6 L/min. There was no intubation failure in any group. There was no incidence of dental or more severe airway laceration with any group. However, a limitation to this study is the requirement of prior experience with Truview and Trupti blade. Most anesthetists use Macintosh blade in day-to-day practice. Subjective expertise to use Trueview blade and/or Trupti blade will also affect the outcome. In a developing country like India, cost-effectiveness is also a major concern. The positive aspect is that it should be used only in DI and so it is really helpful in critical situations.

Conclusion

This study concludes that Truview and Trupti blade are better for intubation in adult patients having less than three PDI.

References

1. Adnet F, Borron SW, Racine SX, Clemessy JL, Fournier JL, Plaisance P. The Intubation Difficulty Scale (IDS); proposal and evaluation of a new score characterizing the complexity of endotracheal intubation. Anaesthesiology 1997;87:1290–7.
2. Joseph J, Sequeira T, Upadya M. Comparison of the use of McCoy and Truview EVO2 laryngoscopes in patients with cervical spine immobilization. Saudi J Anaesth 2012;6(3):248–53.
3. Malik MA, Maharaj CH, Harte BH, Laffey GJ. Comparison of Macintosh, Truview EVO2, Glidescope and Airwayscope laryngoscope use in patients with cervical spine immobilization. Br J Anaesth 2008;101(5):723–30.
4. Singh I, Khaund A, Gupta A. Evaluation of Truview evo2 laryngoscope in anticipated difficult intubation: a comparison to Macintosh laryngoscope. Indian J Anaesth 2009;53:164–8.
5. Laurent SC, de Melo AE, Alexander Williams JM. The use of the McCoy laryngoscope in patients with simulated cervical spine injuries. Anaesthesia 1996;51:74–5.
6. Gabbot DA. Laryngoscopy using the McCoy laryngoscope after application of a cervical collar. Anaesthesia 2007;51:812–4.
7. Khan RM, Maroof M, Jain S, Khan FR, Madhulika M. Truview Evo-2 vs Macintosh laryngoscopy: study of cardiovascular responses and POGO scoring. J Anaesthesiol Clin Pharmacol 2008;24:3113–4.
8. Barak M, Philipchuck P, Abecassis P, Katz Y. A comparison of the Truview blade with the Macintosh blade in adult patients. Anaesthesia 2007;62(8):827–31.

How to cite this article: Mehta K, Bhoya P, Parmar H. Comparison of Truview PCD and Trupti blade laryngoscope in adult patients of anticipated difficult Intubation. Int J Med Sci Public Health 2016;5:1384-1386

Source of Support: Nil, **Conflict of Interest:** None declared.