

**AN UNEXPECTED IMPROVEMENT IN CORMACK LEHANE GRADE BY USE OF
STYLET IN A CASE OF DIFFICULT AIRWAY**Shweta Jain¹, Saurav Agarwal*², Megha Arora³, Vikram Bedi⁴, Hemraj Tungria⁵ and Snigdha Singh⁶¹Senior Resident, Department of Anaesthesiology, R.N.T. Medical College, Udaipur, Rajasthan, India.^{2,3,6}Junior Resident, Department of Anaesthesiology, R.N.T. Medical College, Udaipur, Rajasthan, India.⁴Associate Professor, Department of Anaesthesiology, R.N.T. Medical College, Udaipur, Rajasthan, India.⁵Assistant Professor, Department of Anaesthesiology, R.N.T. Medical College, Udaipur, Rajasthan, India.***Corresponding Author: Dr. Saurav Agarwal**

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ABSTRACT

Failed intubation is always a major concern for anaesthesiologist because of devastating outcomes associated with it. Here we present a case of 50 year old patient posted for perforation peritonitis. On airway assessment patient had inter incisor gap of 3 finger breadth, adequate neck flexion and extension and Mallampatti class III. We describe how we emergently secured the airway with endotracheal tube (ETT) of size 8mm internal diameter after introducing a stylet blindly into the trachea and on removing suddenly Cormack and Lehane laryngoscopic view changed from grade III to I without any external manipulation. This incidental finding may be very useful in anticipated and unanticipated difficult airway scenarios. The essence of this case report is about the preparation for facing unanticipated difficult airway and measures to tackle them when we face them.

KEYWORDS: Difficult airway, Endotracheal tube, Stylet.**INTRODUCTION**

Managing the airway has always been a challenge to anaesthesiologists whether it is anticipated or an unanticipated difficulty. It becomes safe when we are able to identify potential airway problems preoperatively, enabling us to implement difficult airway protocols timely.^[1] A combination of various tests should be used for early identification of difficult airway with higher sensitivity and specificity results. Here we present a case of difficult airway who had Mallampatti class III and which on laryngoscopy proved to be Cormack & Lehane grade III. With the use of stylet, Cormack & Lehane grade III suddenly improved to grade I after removing the stylet and we were able to successfully intubate the patient.

CASE REPORT

A 50 year old male patient (weight 60 kg, height 5'8") presented to emergency clinic with complaint of pain abdomen since 2 days which was continuous with tenderness on whole abdomen with no guarding and rigidity. There was no organomegaly. He also had 3 episodes of vomiting (non bilious, non projectile) with associated pyrexia 101°F. Patient was posted for exploratory laparotomy for perforation peritonitis in emergency department. His quick pre anaesthetic check up revealed that he was chronic alcoholic (taking 250 ml per day from last 10 years) and chronic bidi smoker (15 pack years). Airway examination revealed Mallampatti class III (Figure 1) with full range of neck movements (Figure 2, 3), adequate inter incisor gap and thyromental distance 3 finger breadth. His routine investigations were within normal limits.



Figure 1: Mallampatti class III



Figure 2: Full range of neck movements

Patient was conscious and well oriented with BP = 130/90 mmHg, PR = 90 beats/min, SpO₂ = 97% on room air. His systemic examination was within normal limits. As we anticipated difficult airway, we kept the difficult airway cart ready.

In OT, standard monitors (NIBP, pulse oxymeter, ECG, temperature, EtCO₂) were placed. Two 18G I.V. lines were secured and Ringer Lactate infusion started. Patient was premedicated with inj. Ondansetron 4mg, inj. Glycopyrrolate 0.2mg, inj. Midazolam 1mg and inj. Fentanyl 100 mcg i.v. Inj. Lignocaine 2% (preservative free) 4 ml was also given intravenously.

Patient was preoxygenated with 100% oxygen for 3 minutes using Bain's circuit. Anaesthesia was induced with inj. thiopentone 300 mg given in titrated doses. Ability to adequately mask ventilate the patient was confirmed by intermittent positive pressure ventilation. Succinylcholine 100mg i.v. was administered to facilitate endotracheal intubation.

Direct laryngoscopy with McIntosh blade size 3, revealed grade III Cormack Lehane laryngoscopic view. Optimal external laryngeal manipulation was tried but there was no improvement in the Cormack Lehane grading. More than five attempts were taken with alternate size blades 3 and 4, McCoy blade and smaller size of endotracheal tube (ETT) but all the intubation attempts were unsuccessful.

Meanwhile intermittent bag and mask ventilation was done. As in this case bougie would have been helpful but due to the unavailability of bougie in our institution, we decided to introduce a stylet into the glottis (after giving 50 mg Succinylcholine i.v.) and tried to railroad the ETT over it but were unsuccessful due to short length of stylet. Then we removed the stylet and suddenly on laryngoscopy Cormack and Lehane grade III changed to grade I (Figure 3) and we were successfully able to intubate the patient (Figure 4) which was confirmed with bilateral chest auscultation and EtCO₂ tracing. After intubation, Inj. atracurium 25mg i.v. was given and anaesthesia was maintained with oxygen, isoflurane, fentanyl and intermittent boluses of atracurium 5mg.

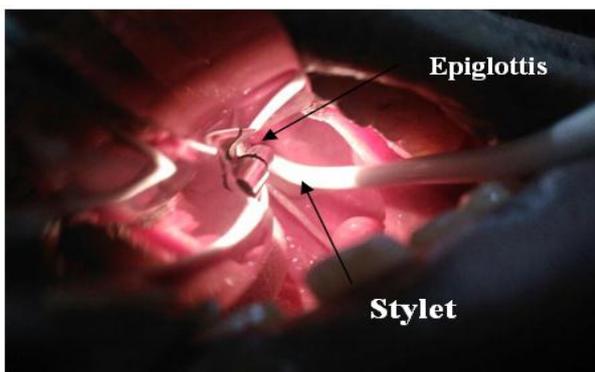


Figure3: Laryngoscopic view showing improved Cormack Lehane grading

Vitals remained stable throughout the surgery with no major blood loss. After the surgery which lasted for 1.5 hrs anaesthesia was reversed and patient was successfully extubated and shifted to surgical ICU.

DISCUSSION

American Society of Anaesthesiologist Task Force defines difficult airway as "the clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with mask ventilation, difficulty with tracheal intubation or both".^[2]

Table 1: Four class of Mallampatti assessment^[3]

Class I	Faucial pillar, uvula, soft and hard palate visible.
Class II	Uvula, soft and hard palate visible.
Class III	Base of uvula or none, soft and hard palate visible.
Class IV	Only hard palate visible.

Table 2: Four laryngoscopic grades of Cormack and Lehane^[4]

Grade I	Visualization of entire vocal cords.
Grade II	Visualization of posterior part of laryngeal aperture.
Grade III	Visualization of epiglottis.
Grade IV	No glottis structures seen.

Airway assessment includes a comprehensive medical history and physical and regional examination. Presence of beard, obesity, abnormal denture, elderly patients and snorers possess difficulty in mask ventilation. No single airway test can provide a high index of sensitivity and specificity for prediction of difficult airway. The most widely used scale is the Mallampatti test which helps in assessing the adequacy of oropharynx. Cormack and Lehane laryngoscopic grade help in assessing the quality of glottic opening visualization during conventional laryngoscopy and intubation.

Difficult airway occurs with a low, but consistent incidence in our anaesthetic practice. Achieving a poor laryngoscopic view of the glottic structures (grade III or IV of Cormack & Lehane) is fairly common (2-8%). Failure to intubate the trachea occurs 1-3 times per 1000 attempts while failure to ventilate the lungs with facemask and bag is likely to occur 1-3 times per 10,000 attempts.^[5,6]

In case of anticipated difficult airway, various non invasive and invasive techniques are available to secure the airway including awake intubation, video-assisted laryngoscopy, intubating stylets or tube-changers, supraglottic airways for ventilation and intubation, fiberoptic-guided intubation, lighted stylets or wands, jet ventilation, retrograde intubation and surgical or percutaneous airway.^[2]

In our case as we were anticipating difficult airway preoperatively, the emergency airway cart was kept

ready (including stylet, rigid laryngoscopic blades of various sizes, LMA, Mc Coy blade, Guedel's airway and tracheostomy kit).

During direct laryngoscopy as the Cormack and Lehane grading was III, all manoeuvres were tried to improve the laryngoscopic view but were unsuccessful.

As in previous studies various procedures can be tried to improve the airway and facilitate intubation like use of bougie and intubating LMA (ILMA).^[5,6] Awake fiberoptic bronchoscopy and intubation prove to be gold standard for such difficult cases. But due to paucity of resources we could not proceed with the above options.^[7,8]

Blind nasal intubation was not tried due to chances of airway trauma which may lead to bleeding and aspiration.^[7] Use of LMA was not feasible as proceeding with laprotomy using LMA may lead to increased chances of aspiration intraoperatively.

Retrograde intubation and tracheostomy were kept as the last resort if endotracheal intubation would not have been possible.^[7,8]

Hence we planned to introduce just the stylet into the trachea and to railroad ETT over it but due to short length of stylet we were unable to railroad the tube and after withdrawing the stylet the airway suddenly improved to Cormack and Lehane grade I and we were successfully able to intubate the trachea. This incidental finding has never been observed by the practitioners and neither quoted in any of the literature as a manoeuvre to improve the airway in difficult cases.

So we found that simply just introducing the stylet can improve the airway grading drastically and help in emergency situations with scarcity of resources like in our case.

CONCLUSION

Proper preoperative airway assessment and preparation is necessary for a positive outcome in difficult airway cases. Prediction of difficult airway is not completely reliable, so anaesthetist should always have a strategy to deal with it. Despite optimal preparation, all measures may prove inadequate and may end up with devastating complications. Newer and easier methods should always be encouraged in managing difficult cases. Our incidental finding of dramatic improvement in airway with simply introduction of an intubating stylet may prove very useful in cases with poor laryngoscopic view of glottic inlet.

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