

MANAGEMENT OF DIFFICULT AIRWAY BY RETROGRADE ENDOTRACHEAL INTUBATION IN CARDIAC SURGERY PATIENT

Iftikhar Ahmed, Fahmida Akhtar*, Muhammad Zameer**

AFIC Rawalpindi, *IIMC Rawalpindi, **Shifa International Hospital Islamabad

INTRODUCTION

Anesthesiologists rarely encounter patients in their practice in whom tracheal intubation is either extremely difficult or impossible. The problem of difficult intubation and its management is more challenging in cardiac surgical patients who are usually in compromised cardiac and respiratory state and require tackling with minimum haemodynamic upset¹. The importance of pre-operative assessment of anticipated difficulty its, degree and plan to manage can not be over emphasized². Realizing the gravity of the problems, different techniques have been adopted with their merits and demerits³. We report a case of difficult rather impossible intubation by retrograde catheter method in coronary artery bypass grafting.

CASE REPORT

A 48 years old, morbidly obese male with triple vessel coronary artery disease (TVCAD) was referred to our department for pre-anaesthetic evaluation before coronary artery bypass grafting (CABG) surgery. The patient had a body weight of 120kg with a BMI of around 38. Oropharyngeal examination revealed a small oral cavity with a thick tongue, thus falling into modified Mallampati class IV. He had a thyromental distance of just 4.5cm. Anticipating a difficult intubation, all the equipments necessary including Fibre optic Bronchoscope was kept ready in the operating room.

Induction of anaesthesia was achieved with Midazolam 5mg, Nalbuphine 10mg and Etomidate 20mg. After confirmation of mask ventilation, laryngoscopy was performed under the effect of depolarizing muscle relaxant (Suxamethonium 100mg) and Lignocaine

(1mg/kg I/v). On laryngoscopy, there was a small oropharyngeal cavity and thick tongue, and it was impossible to visualize the tip of epiglottis. Two attempts to visualize the glottic opening with Fibre optic Bronchoscopy also failed. The most experienced anaesthesiologist was called for help.

Retrograde Intubation was decided. Cricothyrotomy was done with the help of 18 Gauge Touhey's needle. Retrograde Epidural catheter was passed through the needle and was successfully recovered through the mouth. A 6.5mm ID endotracheal tube was passed over the catheter into the glottic opening and finally below the vocal cords and the catheter was removed from the endotracheal tube. The tube was secured after verification of equal bilateral air entry on auscultation. Post-operatively, the patient was extubated in the fully awake state, to avoid any chance of upper respiratory obstruction.

DISCUSSION

When oral or nasotracheal intubation is difficult under direct laryngoscopy, the difficulty is usually specific, reproducible and progressive from mild to infinite.

Airway may be very subtle. There are some easy to perform pre-operative tests, to assess difficulty in airway management. These include assessment of relative tongue pharyngeal size (Mallampati Classification)⁴ (Figure); atlanto-occipital extension in assuring sniff or Magil position⁵ assessed by Wilson Risk Sum (Table); and Thyromental or hyomental distance to assess mandibular space (space anterior to larynx) with a ruler⁶.

Inability to visualize glottic opening with Fibre optic Bronchoscope in our patient, was probably due to very small oropharyngeal space that either restricted the maneuverability or resulted in disproportionate movement of the tip of the bronchoscope.

The Cook Retrograde Intubation set has been designed to assist in the placement of an

Correspondence: Col Iftikhar Ahmed, Classified Anaesthetist, Armed Forces Institute of Cardiology, Rawalpindi

Email: iftikhar477@hotmail.com

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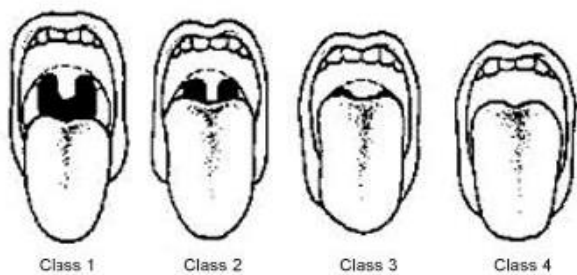


Fig: Modified Mallampati Classification
(Reprinted with Permission from Author)⁹

Table: Wilson risk sum

Risk factor	Level	Score
Weight	<90 kg	0
	90-110 kg	1
	> 110 kg	2
Head and neck movements above	90°	0
	About 90° (i.e., +/- 10°)	1
	Below 90°	2
Jaw movement	IG ≥ 5cm or SLux > 0	0
	IG > 5cm or SLux = 0	1
	IG < 5cm or SLux < 0	2
Receding mandible	Normal	0
	Moderate	1
	Severe	2
Buck teeth	Normal	0
	Moderate	1
	Severe	2
IG = Inter-incisor Gap		

Endotracheal tube during difficulty or emergency situation, where visualization of the vocal cords is not possible. Contraindications for use are: on-going coagulopathy, obscure cricothyroid anatomy, infection of cricothyroid membrane or mass. To avoid post-operative bleeding from nasal mucosa because of subsequent anticoagulation during Cardio Pulmonary bypass, oral intubation is preferred in patients undergoing cardiac surgery.

Retrograde intubation by fluoroscope-aided placement of guide wire for tracheal intubation in patient, with limited mouth opening has been done at different centers⁷. In

facio-maxillary trauma Retrograde Intubation by Pharyngeal loop technique is being carried out at different centers⁸. In the impossible airway this is the only successful technique in the experienced hands.

A Radiologist is an important member of the team managing a difficult airway. In a pre-operative assessment radiologist is of help in diagnosing different types of syndromes radiologically by imaging of cervical spine, mandible and temporomandibular joint. These syndromes such as Pierre Robin, Goldenhar, craniofacial dysostosis are common causes of difficult airway. During intubation especially retrograde, a Radiologist is of great help with image intensifier in operation theatre.

CONCLUSION

When a difficult intubation is anticipated good planning is vital if anaesthesia is to be carried out successfully. In unanticipated difficult intubations, a set protocol for such cases with complete preparation of difficult intubation trolleys can be life-saving.

REFERENCES

- Riaz MN, Islam MZ. Management of difficult intubation in cardiac surgical patients. *PJC* 1995, 6, 47-52.
- Islam MZ, Management of difficult intubation. *J Bangladesh, JOC Anaesth* 1990, 1:21-5.
- Brain AJJ, The laryngeal mask a new concept in Airway management. *Br J Anaesth* 1993;55:801-5.
- Mallampati Sr, Gatt SP, Wargas B, Frieberg DD et al. A clinical sign to predict difficult tracheal intubation, A prospective study. *Canadian J Anaesth*, 1995, 32:429-34.
- Bellhouse CP, Dore C, Criteria for estimating likelihood of difficulty of Endotracheal with Macintosh laryngoscopy. *Anaesth Intensive Care*, 1988; 16:329-37.
- Caplan RA, Benumof H, Berry FA Practical guideline for management of difficult airway. *Anaesthesiology*, 1992; 78: 597-9.
- P. Bhattacharya, B.K. Biswas, S. Joshi, U.R. Tulldhar and S. Baniwal Fluoroscope-aided retrograde placement of guidewire. *Br. J. Anaesth*, January 1, 2005;94(1):128-31.
- V.K. Arya, A. Kumar, S.S. Makkar, R.K. Sharma. Retrograde Submental Intubation by Pharyngeal loop technique in a Patient with Facio-maxillary Trauma and Restricted Mouth Opening. *Anaesth. Analg*, 2005; 100(2):534-7.
- Siddiqi R, Kazi WA. Predicting difficult intubation-a comparison between mallampati classification and wilson risk-sum. *JCPSP* 2005, 15 (5): 253-6