Successful Management of an Anticipated Difficult Intubation in a Patient with Misaligned Mandibular Incisors and Canines

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ABSTRACT

The case of a 48-year-old female posted for elective surgery for cholecystitis with a history of previous failed intubation is reported. She had misaligned mandibular incisors and canine teeth, reducing the interincisor distance to 8 mm. Proper preoperative assessment and evaluation of the difficult airway helped to achieve successful uneventful intubation.

Keywords: Airway management, Anticipated difficult intubation, Fiberoptic bronchoscopy.

BACKGROUND

Airway-related complications are the commonest cause of anesthesia-related morbidities and mortalities. Proper airway management is one of the most pivotal patient safety concerns in the perioperative period, thus highlighting the need for careful preoperative assessment and anticipation of difficult airway.1 Awake fiberoptic intubation is a safe and popular mode used to bail out anesthesiologists in cases of anticipated difficult intubation.2 A case of an anticipated difficult airway with previous history of failed intubation posted for elective laparoscopic cholecystectomy is presented.

CASE REPORT

A 48-year-old female with gallstone disease, planned for laparoscopic cholecystectomy, attended the outpatient department for preoperative evaluation and optimization. The patient had history of previous failed intubation, following which the procedure was abandoned in another hospital. The patient had no associated comorbidities and her medical, surgical, and drug history were not significant.

Systemic examination revealed no abnormal findings. All hematological and biochemical investigations showed no abnormality. Chest X-ray and electrocardiogram were within normal limits. Airway assessment revealed hyomental distance 6 cm, mentothyroid distance 7 cm, and sternomental distance 13 cm, with interincisor distance of 0.8 cm and with misaligned teeth and adequate neck extension (Figs 1 and 2). Mallampati gradation could not be assessed. Bilateral temporomandibular joint...
had neither pain nor tenderness or restriction of movement. We anticipated difficult intubation and opted for an awake fiberoptic intubation. After discussing and counseling the patient regarding plan of management of anticipated difficult airway using fiberoptic bronchoscope (FOB) and need for surgical airway if required as an emergency life-saving procedure, the patient was accepted as American Society of Anesthesiologists (ASA) grade I. Since high-risk procedure and complications were involved, an informed written consent was obtained.

**Anesthetic Management**

The patient was nebulized with 5 mL of 2% lignocaine and gargled with 4% lignocaine viscous in the preparation room. She was then taken to the operating room. The standard ASA monitors were attached recording $\text{SpO}_2$ 97% in room air, heart rate 82/min (R), respiration rate 20/min, and BP 139/78 mm Hg. Intravenous cannulation was done and Inj. Glycopyrrolate 0.001 mg/kg intravenous (IV) antialagogue, midazolam 0.05 mg/kg IV as anxiolytic, and injection paracetamol 1 gm IV were administered. Xylometazoline 0.1% drops were instilled in both nostrils and 10% lidocaine was sprayed twice in the hypopharynx with the help of a tongue depressor to provide topical anesthesia to the posterior pharyngeal wall. About 1 mL of 2% lignocaine each was injected just caudal to greater cornue of hyoid bone on either side to block the superior laryngeal nerve. Another 2 mL of the same drug was injected through the cricothyroid membrane for providing topical anesthesia to the posterior pharyngeal wall. About 1 mL of 2% lignocaine each was injected just caudal to greater cornue of hyoid bone on either side to block the superior laryngeal nerve. Another 2 mL of the same drug was injected through the cricothyroid membrane for providing topical anesthesia to the posterior pharyngeal wall. After preoxygenating 15 minutes the FOB (Pentax-FI-16RBS; Fig. 3) with external diameter 5.2 mm at the tip was made ready for use. A No. 7.0 polyvinyl chloride cuffed endotracheal tube (ETT) was lubricated with water-based jelly. The bronchoscope was then passed through the nose, pharynx, and vocal cords. Just before passing through the vocal cords, another 3 mL of lignocaine was sprayed through the scope in the “spray-as-you-go” technique. The FOB was advanced through the vocal cords and after the carina was visualized the ETT was railed over the scope (Fig. 4), scope removed, and the capnometer was attached to the tube to confirm endotracheal intubation. Bilateral air entry was ensured clinically; thereafter, induction of anesthesia was done with 2 mg/kg of propofol, 2 µg/kg fentanyl, and 0.6 mg/kg of atracurium, and thereafter maintenance was done with air:oxygen (50:50) titrated dose of muscle relaxant sevoflurane 2 to 3% with multimodal analgesia. Intraoperative hemodynamic stability was maintained. The surgical procedure was uneventful. Reversal was done with glycopyrrolate 0.001 mg/kg and neostigmine 0.05 mg/kg. The patient was extubated after complete reversal of muscle relaxants, confirmation of adequate spontaneous ventilation, and return of protective airway reflexes.

**DISCUSSION**

The aim of the anesthetic approach in difficult intubation is to achieve a safe airway using appropriate techniques and preventing the potential airway complications that might lead to lethal catastrophe. Shiga et al. reported that incidence of difficult intubation due to anatomical causes ranges between 1.5 and 20.2%, quoting that 600 patients die annually due to difficult and failed intubation. They concluded that the anticipation of difficult airway during the preanesthetic checkup by the anesthesiologist allows optimal plan for the difficult intubation; proper selection of airway devices, equipments, and techniques; priming the ancillary services; and arranging adequately skilled helping hands for the procedure.

This patient had misaligned mandibular incisors and canines, reducing the interincisor distance to 0.8 cm. In this difficult airway scenario, the available options were blind nasal intubation, retrograde intubation, and an awake fiberoptic intubation. The success rate of intubation with fiberoptic scope after an anticipated airway or failed intubation exceeds 90%. Being a visually assisted technique, airway stimulation and trauma are minimal.
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with FOB, hence we opted for awake FOB-assisted intubation in our case. Though more reliable, an awake intubation technique needs patient cooperation. Thus, we initially counseled her in the preoperative period, described the procedure, and used midazolam as an anxiolytic to get her best cooperation. Chances of symptomatic overactivity, laryngospasm, and bronchospasm were prevented by appropriate topical anesthesia of the airway.

CONCLUSION

The proper preanesthetic assessment and intubation technique helped us in managing difficult intubation in a patient, with misaligned mandibular incisors and canines. This article highlights the importance of comprehensive preoperative evaluation of a patient with difficult airway in order to achieve successful intubation by choosing an appropriate technique and customizing the airway device.

REFERENCES