

Anaesthetic Management of a Patient with Palatal Defect

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Abstract

Airway management of an adult patient with palatal defect is a challenging case to Anesthesiologist. We report an adult patient who is an operated case of nasopharyngeal Angiofibroma posted for palatal defect (3.5 × 4.5 cm) repair. It was a major surgery lasted for 10 hours involving free flap from radial aspect of forearm along with radial artery and repositioning on palatal defect and anastomosis with facial artery. Challenges involved in this case management were airway, analgesia and fluid electrolytes. Intraoperative period was uneventful. Patient was electively shifted to ICU for prophylactic ventilatory support with ET Tube in situ post procedure because it being a major surgery with compromised airway with poor pharyngeal reflexes, copious secretions, bite block. Patient was postoperatively managed with adequate analgesia, sedation and relaxation and was extubated on 3rd postoperative day. The details would be discussed later.

Keywords: Anaesthetic management; Palatal defect

Abbreviations: ETCO₂: End Tidal Carbon Dioxide; ECG: Electrocardiogram; ICU: Intensive Care Unit; VCV: Volume Controlled Ventilation; SIMV: Synchronized Intermittent Mechanical Ventilation; RFT: Renal Function Test; LFT: Liver Function Test; BT, CT: Bleeding Time, Clotting Time; PT with INR: Prothombin Time with *International Normalized Ratio*

Introduction

Airway surgery demands a high level of cooperation between surgical and anaesthetic teams. Surgery of an airway is a special endeavour where the airway is shared by the surgeon and the anaesthesiologist [1]. Knowledge of the various techniques for airway management is crucial since it is also necessary to provide the surgeon with a still and non-obstructed field [1]. The population presenting for airway surgery mainly falls into two categories [1]. The first group comprises elderly patients with coexisting respiratory and cardiovascular morbidity resulting from long-term smoking and high alcohol intake. These patients often have malignant lesions and may show side-effects of its treatment (e.g. radiotherapy). They often require invasive intraoperative monitoring and short-acting opioids such as remifentanyl. The second group comprises young children or those with learning difficulties who presented for cleft palate repair surgery and inhale or ingest foreign objects. Psychosocial factors include fear of choking, death, and inability to communicate following tracheostomy [1]. Many patients return for multiple procedures. A hoarse voice or previous prolonged intubation or tracheostomy should alert the clinician to the possibility of a stenotic airway at some level [2]. The combination of several minor physical anomalies may result in a difficult intubation even when no one single factor is severely abnormal. Difficult intubations also occur occasionally for reasons that are unexplained, and none of the available indices predicts all difficult intubations [1,2]. The truly life-threatening problem is the inability to ventilate when intubation is difficult or impossible [2]. Intraoperatively

the anaesthetist must pay special attention to protecting eyes, neck, and teeth while optimizing surgical access in what may be a crowded area [1,2]. Airway management of a patient with palatal defect is a challenging to the anaesthesiologist because these patients presented for airway surgery of long duration which involve the risk of Airway edema, Hypothermia, Pain, Fluid and electrolytes [1,2].

Case Report

A 20-year Male patient coming from lower socioeconomic status presented with chief complains of Difficulty in speech, Occasional nasal regurgitation, and heavy snoring since 10 years. He had a past history of surgery for Juvenile Nasopharyngeal Angiofibroma before 10 years resulting in large defect (3.5 × 4.5 cm) in hard palate; Patient was tracheostomised at that time due to breathing difficulty postoperatively and remains tracheostomised for 10 days. At present patient posted for cleft palate repair. On Examination tracheostomy scar was present over anterior part of neck. Patient was conscious, oriented and follow verbal command, Vitals: Pulse=78/min, BP=110/70 mm of Hg, RR=12-14/min. Indirect Laryngoscopy was done and reveal normal bilateral vocal cord movements. On General Examination Height-170 cm, Weight-64 kg and others were normal, Neck movements were adequate, Airway examination shows Mallampati Grade-I, Mouth opening-4 finger with a defect of 3.5 × 4.5 cm in hard palate, Temporomandibular joints movement normal. Cervical lateral and AP X-ray reveal no abnormality. On Systemic Examination RS, CVS, CNS normal. Investigations including Hemogram, Coagulation Profile, LFT, RFT, and PT with INR, Serum Electrolytes, ECG, and Echocardiogram were within normal limits. After taking Informed and written consent patient shifted to Operation Theatre. On arrival to OT Monitoring ECG, NIBP, SPO₂, ETCO₂ and Urine Output, Temperature applied and two large bore 18 G IV cannula secured. All preparation for difficult intubation kept ready as patient had a history of previous tracheostomy.

General anaesthesia was given. Premedication in form of Inj. Glycopyrrolate 0.04 mcg/kg, Inj. Dexona 0.15 mg/kg and Inj. Fentanyl

2 mcg/kg i.v. 3 minutes before induction given. Preoxygenation for 5 minute done with 100% Oxygen via Bain's circuit. And induction done with Inj. Propofol 2 mg/kg and Inj. Succinylcholine 2 mg/kg i.v. Intubation done with 8.5 mm portex cuffed South Pole oral RAE tube, correct placement of the tracheal tube was confirmed by chest auscultation and capnography and oral packing done. Maintenance of anaesthesia done with 50% O₂, 50% N₂O, Sevoflurane and infusion of non-depolarizing muscle relaxant Vecuronium 0.0001 mg/kg/min. Depth of anaesthesia was maintained with Entropy monitoring. We didn't feel any difficulty during intubation as it was expected due to previous tracheostomy and we didn't have Fiberoptic Laryngoscopy in OT. Intraoperative Vitals were within range of Pulse-70-90/min; BP-100/60-130/80 mmhg. Intraoperative period was uneventful. Intraoperative blood loss around 400 ml. Intraoperative fluids were given to maintain Urine output Of 1ml/kg/hr. Surgery lasted for 10 hours and analgesia was provided with intermittent Fentanyl 300 mcg, Tramadol 100 mg and after surgery oral pack was removed which was soaked with blood.

Postoperatively patient was electively shifted to ICU with ETT in situ for which south pole oral RAE tube is exchanged with oral endotracheal tube using tube exchanger and put on controlled ventilation because it being a prolonged intraoral surgery with airway edema with poor pharyngeal reflexes, copious secretions, bite block for maintaining integrity of anastomosis leading to increased prevention of aspiration of blood oozing from flap margin and anastomosis. In ICU patient was put on controlled ventilation VCV mode of ventilation with sedation Inj. Fentanyl (1 mcg/kg/hr) and Midazolam (0.05 mg/kg/hour), relaxant with Inj. Vecuronium (0.006 mg/kg/hr) using infusion pump in 50 cc infusion for 1day and then put on SIMV mode then T piece trial and extubated on 3rd postoperative day and shifted to ward and discharged after 25 days. In ICU all blood investigation including complete Hemogram, RFT, LFT, PT with INR, BT, CT and all reveal normal. Post-operative oozing present from nasal and oral area so oral, nasal and ET suction done periodically. Perioperative period was uneventful.

Surgical Remarks

- Left forearm radial artery anastomosis with Facial artery and left forearm collateral circulation from ulnar artery checked.
- Free flap from radial side of left forearm repositioned on palatal defect.

Discussion

Surgery of an airway is a special endeavour where the airway is shared by the surgeon and the anaesthesiologist [1]. Hypoxemia and Hypercarbia are potential complications of Laryngoscopy and intubation that are not successful in a reasonable amount of time [1,2]. Careful evaluation of the airway can screen out most patients who cannot be adequately ventilated by mask or intubated. Ideally this type of patients with previous tracheostomy should be intubated with Fiberoptic Intubation so complication of difficult intubation can be

avoided [2-7]. The Pulse oximeter is essential for detecting desaturation during this time. If neither mask ventilation nor intubation can be accomplished, the insertion of a supraglottic airway device such as the LMA or Combitube should be performed with TTJV or a surgical airway reserved for when less invasive maneuvers are unsuccessful [2,7]. Surgery including Airway is challenging to anaesthesiologist mainly in peri operatively. To establish, maintain, and protect the airway is the crucial point during the anaesthesia for palate surgery because the same area we have to share with the surgeon [5,6]. Failure of which leads to Hypoxia, Hypercarbia, Airway bleeding, Arrhythmia, Cardiac arrest and Death [5,6]. Intra-operatively the anaesthetist must pay special attention to protect eyes, neck, and teeth while optimizing surgical access. All instruments to deal with difficult airway should be ready during this type of surgery [7]. Other complications include obstruction of the endotracheal tube, inadvertent extubation during the procedure, bleeding, hypovolemia, airway oedema due to surgical manipulation, hypothermia [5,6]. Following surgery to the airway, there is the risk of laryngeal spasm, aspiration, or airway obstruction due to oedema or haematoma formation. To minimize the risk of laryngospasm, the patients should be positioned semi-sitting and should have their trachea extubated either awake or under deep anaesthesia (to allow airway reflexes to return without the stimulus of the tracheal tube) [1,2]. Post operatively problems like delayed emergence due to prolong anaesthesia, hypothermia, respiratory distress [5,6], Airway oedema leads to obstruction of airway due to manipulation prolong surgery, bleeding, and secretions and Respiratory depression [2,4,5]. Good communication between the surgeon and anaesthesiologist is must as they both share the same airway [5]. Thorough suction of blood and secretion is must without disruption of suture line [5,6]. Combination of airway oedema, closed palate, bleeding, residual anaesthetic effect, hypothermia leads to post-operative airway obstruction and respiratory depression make extubation difficult [2,4,5]. So it will be advisable to shift the patient for elective ventilation as this was a prolonged surgery including airway and manipulation of upper airway till oedema regresses and oozing stops.

References

1. English J, Norris A, Bedforth N (2006) Anaesthesia for airway surgery. *Contin Educ Anaesth Crit Care Pain* 6: 28-31.
2. Thomas J (2009) *Gal. Miller's Anesthesia*. (6th edtn). 3586-3659.
3. Ozkan O, Ozkan O, Coskunfirat OK, Hadimioglu N (2011) Reconstruction of large palatal defects using the free anterolateral thigh flap. *Ann Plast Surg* 66: 618-622.
4. Nath SS, Roy D, Ansari F, Pawar ST (2013) Anaesthetic complications in plastic surgery. *Indian J Plast Surg* 46: 445-452.
5. Steward DJ (2007) Anesthesia for patients with cleft lip and palate. *Semin Anesth Perioper Med Pain* 26: 126-132.
6. Jaffe RA, Samuels S (2009) *Anesthesiologist's Manual of Surgical Procedures*. Lippincott Williams & Wilkins 4: 1417-1418.
7. Collins SR, Blank RS (2014) Fiberoptic Intubation: An Overview and Update. *Respiratory Care* 59: 865-880.