



Awake Blind Naso-Tracheal Intubation in a Patient with Restricted Mouth-Opening in a Case of Buccal Mucosa Squamous Cell Carcinoma

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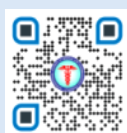
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ABSTRACT

Introduction: Oral Carcinomas being one of the most common cancers in India, surgery is the mainstay of management. Owing to the primary lesion or as a sequelae of radiation these patients often present with a difficult airway and pose a challenge to the Anaesthesiologist with respect to their intubation. The aim of this case report is to determine if Awake nasal intubation is a better and safer option for patients undergoing surgical resection of Oral carcinomas. **Objective:** To report a case of Awake nasal intubation in a patient undergoing wide local excision surgery of Buccal mucosa squamous cell carcinoma. **Method:** Search of relevant references from Pubmed, Elsevier and others with 15 considered relevant by authors were finally selected. **Result:** We present a case of a 40 years old female with a history of 20 years of tobacco chewing diagnosed with Left buccal mucosa squamous cell carcinoma who has undergone wide local excision of tumour under General Anaesthesia and was intubated awake, via the nasal route. **Conclusion:** We conclude that Awake nasal intubation is a safer alternative in patients with difficult airway, without the use of modern airway gadgets and peri-operative tracheostomy.

Keywords: Awake nasal intubation, Oral Carcinoma, Restricted mouth opening, Difficult Intubation.

INTRODUCTION

Carcinoma of the buccal mucosa is the most common cancer of the oral cavity in India. The high incidence of carcinoma buccal mucosa in India is probably attributable to smoking and the usage of tobacco in its various forms [1]. Surgical management is the primary treatment strategy for oral squamous cell carcinoma and may be combined with adjuvant radiation therapy and/or systemic chemotherapy [2]. The sequelae of previous treatment, particularly radiotherapy, may include trismus and reduced mobility of structures such as the tongue and neck due to local fibrosis [3, 4] causing restriction or reduction in the mouth opening. When planned for Surgery, such patients present a challenge to the Anaesthesiologist with respect to their airway management.

The factors responsible for difficult airway during the perioperative period in oral cancer patients are as follows [5]:

- Presence of cancer growth itself,
- Anatomical changes and fibrosis due to prior surgery or radiotherapy,
- Lengthy surgical procedure,
- Bulky flap for reconstruction,

- Oedema around the airway due to surgical manipulations,
- Risk of bleeding, mainly because of surgical causes or multiple attempts of airway manipulation and,
- Risk of pulmonary aspiration [6]

The anaesthetic concerns are as follows:

- A perioral or peri glottic growth: bag and mask ventilation is difficult to impossible.
- Exophytic tumours are friable: they can undergo fracture and dislodge distally with laryngoscopes.
- They are prone to bleed: this hinders further glottic visualisation.
- Unappreciated tumour extension to the base of tongue causes tongue fixation and difficulty in laryngoscopy and intubation.
- Poor dentition as a result of tumour invasion increases the difficulty in laryngoscopy and optimal glottic visualisation. Risk of dislodgement of loose teeth. The incidence of tracheostomy is more likely in oral cancer patients with prior radiotherapy [7].

When planned for surgery, and undergoing General anaesthesia, the nasal route for intubation is often preferred for patients undergoing oral cancer surgery since this provides unrestricted surgical access to the oral cavity and permits unobstructed continuous review of the aesthetic outcome [8]. Additionally, the safest plan for most cases of anticipated airway difficulty is to perform tracheal intubation in conscious patients under topical anaesthesia, that is an Awake Nasal intubation [9].

Considering the above factors, proper detailed preoperative evaluation and anaesthesiologists' skill and judgment will definitely reduce morbidity and mortality.

CASE

A40 years old female, ASA-PS 3[10] with a history of tobacco consumption for over 20 years diagnosed with LEFT buccal mucosa squamous cell carcinoma, posted for Full thickness wide local excision of Left Buccal mucosa with hemimandiblectomy with neck dissection with PMMC reconstruction who presented with complaints of pain in Left buccal region since 15 days associated with a swelling, pain in Left side of the neck and difficulty in chewing.

Medical history: Patient has no other known comorbidities or past surgical history.

Case Findings

Patient is lean thin, with fair general condition. On pre-anaesthetic examination patient was found to be vitally stable. Patient showed normal systemic examination. On airway examination, patient was found to be **Mallampati Score class 4** [11], with a mouth opening of less than one finger. Neck extension and movements were within normal limits. The procedure of awake nasal intubation was explained to the patient and all her questions were answered in an attempt to minimize her anxiety. Patient and her relatives were counselled.



Figure A: The pre-operative images of our patient, displaying significant reduced mouth opening

On HPE: Invasive moderately differentiated keratinising Squamous cell carcinoma.

On CT scan of Neck (plain & contrast): well defined heterogeneously enhancing thickening is seen in left upper buccal mucosa.

It measures 23 x 10 x 19mm (AP x TR x CC). It is not seen reaching upto skin surface or upto ipsilateral RMT (Retromolar trigone) Few enlarged necrotic lymph nodes are seen in left level 1b & 2 region, largest measuring 14 x 11 mm.

Case Management:

Patient's consent for Anaesthesia and surgery was checked. Procedure was explained to the patient. NBM status was confirmed. ICU availability confirmed & availability of adequate blood products was checked.

Lignocaine sensitivity test was performed prior to shifting the patient to the OT- A test dose of 2% plain lignocaine was deposited intradermally to produce a ~5mm diameter wheal to look for local anaesthetic allergy.

Nasal preparation (In the pre-operative room):

1. Adequate nebulization with 5 mL of 4% lignocaine added to a nebulizer, delivered with oxygen for up to 30 minutes.
2. Nasal Patency checked by Cold Spatula test: Nasal patency was checked by holding a cold tongue depressor under the nostrils, the airflow during nasal expiration was assessed. A lack of fogging indicates an inadequate nasal flow or obstruction. Larger fogging indicates more patency [12]. In this patient the left nostril was found to be more patent.
3. Oxymetazoline hydrochloride nasal spray was sprayed in the left nostril.

In the operation Theatre:

Patient was explained the procedure of Awake Intubation, airway preparation procedures and general Anaesthesia.

Difficult Airway trolley [13]

A trolley for anticipated difficult intubation was prepared. It included 4 sections as follows:

Section 1:

1. Laryngoscope handles
2. Laryngoscope blades: Macintosh sizes 3 and 4, McCoy sizes 3 & 4
3. Endotracheal tubes size 6.0, 6.5, 7.0, 7.5
4. Stylet, ventilating bougie
5. Lubrication gel
6. Syringe 10 ml (for cuff inflation)
7. Magill forceps
8. Suction cannula and working suction apparatus
9. Adhesive tape

Section 2:

1. Facemask sizes 3 and 4
2. Oropharyngeal airway of different sizes,
3. Nasopharyngeal airway sizes 4.0, 5.0, 6.0, 7.0, and 8.0
4. AMBU bag

Section 3:

1. Emergency cricothyrotomy catheter set
2. Endotracheal tube size 6.0
3. Scalpel blade 10
4. Tracheostomy set

ENT surgeons were available for emergency tracheostomy & the neck was Painted & draped for the same.

In supine position ASA standard monitors were attached and Baseline vitals noted. IV access was secured in the Right upper limb with a 20 G Cannula. Patient was pre-medicated with Inj. Glycopyrrolate 0.2 mg, Inj Ondansetron 4 mg, Inj Midazolam 1mg and Inj Pentazocine 30 mg IV along with Inj Paracetamol 1gm IV. Inj Pantoprazole 40 mg IV was given. Nasal and oral spray of Lignocaine 10% was given. Patient was administered Trans laryngeal block.

Trans laryngeal Block:

The sensory innervation of the vocal cords and trachea is supplied by the recurrent laryngeal nerves (RLN). They provide motor supply to all the intrinsic muscles of the larynx except the cricothyroid muscle. This nerve is blocked using the trans laryngeal block. In supine position, with the neck extended we identified the midline, then the palpating finger was moved in a caudad direction until the cricoid cartilage was palpated. The cricothyroid membrane lies between these two structures, immediately above the cricoid cartilage. The thumb and third digit of one hand was used to stabilize the trachea at the level of the thyroid cartilage, then a 22 gauge needle was inserted perpendicular to the skin with the aim to penetrate the cricothyroid membrane (above the cricoid cartilage). This was done with continuous aspiration of the syringe, as the appearance of bubbles will indicate that the needle tip is now in the trachea. At this point 2 mL of 2% lignocaine was injected which resulted in coughing, which helped the drug disperse and blocked the RLN (Figure B) [14].



Figure B: Trans laryngeal block

Following the above, patient was pre-oxygenated at 15L/m for 15 minutes during the procedure. Lignocaine jelly was applied over the Left nostril. Lignocaine jelly was also applied on the ETT prior to insertion.

Patient was intubated by the Blind Nasal technique using a 6.5 mm Portex endotracheal tube in the following manner:

1. Patient was positioned with neck flexed and head extended at the Atlantoaxial joint
2. The more patent nostril, here Left nostril was lubricated.
3. Serial dilation of the nostril was done using pliable nasopharyngeal airways.
4. A well lubricated 6.5mm ETT was inserted in the Left nostril facing the bevel towards the septum to reduce trauma to the inferior turbinate.
5. The tube was directed posteriorly along the floor of the nasal cavity with gentle pressure and twisting motion.
6. The other nostril and mouth was closed and the tube was advanced into the hypopharynx towards the glottis, staying in the midline.
7. We paid attention towards the breath sounds, as the sounds got louder while approaching the glottis along with misting of the tube.
8. At one point the breath sounds suddenly stopped and the tube could not be advanced any further. As there was no coughing, on palpation of neck tube could be felt on the right side of the neck.
9. Considering the tube had passed into the Right pyriform sinus, we slightly withdrew the tube to the point where breath sounds through the tube resumed and slowly rotated the tube into midline and advanced it.
10. Once we reached the laryngeal inlet, (when the breath sounds were present and slight resistance was felt) we asked the patient to take a deep inspiration to abduct the vocal cords following which, we intubated the trachea in one smooth motion [15].



Figure C: Blind Naso-tracheal Intubation

Following intubation, ETT misting was seen, Bilateral air entry assessed by observing chest rise and auscultation. Correct tube placement was confirmed with Capnography & inability of the patient to phonate (Figure C).

After safely securing the tube, Inj Propofol 100 mg, and Muscle relaxation with Inj. Atracurium was given 30 mg Intravenously.

Ryles tube 14F was inserted through the opposite nostril & a right subclavian 7Fr triple lumen central line was secured.

Landmark guided Right Subclavian central line:

Central line consent was obtained prior. Thorough painting and draping was done. Under all aseptic precautions, landmarks for subclavian vein cannulation was marked. The vein was cannulated using the Seldinger technique.

Patient was maintained on oxygen, nitrous oxide and Isoflurane with Inj. Atracurium 5 mg top ups. Patient was vitally stable intraoperatively & hemodynamically stabilized with 1PRBC transfusion. Patient was shifted to ICU for gradual weaning.

CONCLUSION

A thorough nasal preparation, patient counselling, Local anaesthetic infiltration/block/ spray techniques and patient's cooperation are of primordial importance to perform an awake nasal intubation. With proper Pre-Anaesthesia evaluation and anticipation of the difficulties in airway management, most cancers of the oral cavities can be managed without the use of advanced airway gadgets. The unnecessary pre-operative creation of tracheostomy stoma could also be avoided.

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Abbreviations	
ASA	American society of Anaesthesiologists
PMMC	Pectoralis major myocutaneous flap
HPE	Histopathology
AP	Antero-posterior
RMT	Retromolar trigone
ICU	Intensive care unit
RLN	Recurrent laryngeal nerve
G	Gauge
ETT	Endotracheal tube
MPC	Mallampati Classification

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