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Blind Nasal Intubation Technique In Parotid Carcinoma Patient: A Case Report

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Abstract

Introduction: Airway difficulties are a major concern for anesthesiologists. Patients with head and neck cancer have approximately 10% risk of anatomical abnormalities in the aerodigestive tract, which increases the risk of encountering difficulties in airway management. Although fiberoptic intubation is a widely accepted method for managing difficult airways, there are situations where it cannot be performed, such as airway pathology or equipment unavailability in various institutions.
Case presentation: We encountered difficult airway management in a 60-year-old woman with a Mallampati score of 4 due to a parotid tumor T3N0M0 undergoing radical parotidectomy surgery. The patient's current anatomical condition and surgical plan mandates an awake blind nasal intubation. Due to lack of fiberoptic equipment, a pre-curved endotracheal tube that had been frozen overnight was inserted blindly using only topical anesthesia in the nasal cavity and transtracheal block. Intubation was successful on the first attempt without complications.
Conclusions: Blind nasal intubation with a pre-curved tube is an effective and safe procedure to perform on patients with difficult airways when advanced airway equipment such as video laryngoscopy and fiber optics are not available.

Keywords: Difficult airway; Blind nasal intubation; awake intubastion

1. Introduction

Patients with head and neck cancer have an approximately 10% risk of anatomical abnormalities in the aerodigestive tract, which increases the risk of encountering difficulties in airway management.[1] Initial assessment is crucial to identify potential difficult airways, which will influence the choice of appropriate anesthesia techniques. The 2022 American Society of Anesthesiologists (ASA) guidelines on the management of predicted difficult airways recommend endotracheal intubation using fiberoptic laryngoscopy with the patient awake and cooperative.[2,3] However, in situations with limited resources and equipment, blind nasal intubation is an effective and safe anesthesia option for cases of difficult airways. This case report describes the technique of blind nasal intubation in a patient with parotid carcinoma.

2. Case presentation

We report a case of a 60-year-old female patient (height: 150 cm, weight: 53 kg) who complained of a lump on the right cheek since 2013, which had been removed surgically in 2014. By the end of 2019 the lump re-grew, reaching 20 x 13 x 8 cm. Internal growth caused destruction of right maxilla and encroached into the right maxillary sinus. The patient was diagnosed with right parotid carcinoma T3N0M0 and subsequently scheduled for elective radical parotidectomy. Upon pre-anesthesia examination, we found that the tumor's traction caused limited mouth opening (width of max 2 cm) but did not cause ventilation difficulties. Mentohyoid distance was 3 cm, thyromental distance was 2 cm, and Mallampati score of 4 [Figure 1], indicating a potential intubation challenge. There were no additional breath sounds, Spo2 98% on room air, no neurological deficit that may indicate intracranial involvement, and there were no laboratorial abnormalities. CT scan showed the presence of a mass in the parotid gland without any disturbances or damage to the upper airway structures [Figure 2]. The unavailability of fiberoptic laryngoscopy facilities at that time led us to plan awake blind nasal intubation technique to secure the airway.

Figure 1 Clinical Photo of The Patient

The patient was given informed consent for the various stages of the awake nasal intubation procedure, as this was crucial to ensure her cooperation. The endotracheal tube (ETT) to be used had been pre-curved and stored in the freezer overnight to maintain its curvature [Figure 3]. Anesthesia management was started by preparing the airway block. Topical anesthesia was achieved by 4 means: [1] nasal spray of lidocaine 10% and the vasoconstrictor oxymetazoline, [2] nebulized lidocaine 2% to block the posterior nasal cavity and nasopharynx, [3] gargling with 1% lidocaine to block the glossopharyngeal nerve that innervates the oropharynx, and [4] transtracheal injection of 2% lidocaine was performed, confirmed by the patient's cough reflex, ensuring the spread of anesthesia throughout the trachea. After waiting for 3-5 minutes for the block to take effect, a sized 7.0 non-reinforced ETT was inserted through the nasal cavity, approaching the inferior turbinate, with the bevel directed toward the nasal septum. After the ETT reached the nasopharyngeal region, it was then rotated caudally (supraglottic direction). The patient's breath through the ETT served as a guide, confirming that it was on the correct path. After attempting both forward and backward insertion, along with the BURP maneuver, the ETT was successfully placed into the trachea [Figure 4]. The ETT's position was confirmed using capnography and visually by expansion of the reservoir bag following the patient's spontaneous ventilation. The patient was then induced with 60 mg of propofol, 40 mg of Rocuronium, and inhalational agents were administered. There were no difficulties encountered with mechanical ventilation. At the end of the surgery, the ETT was removed after the patient was fully awake. The total duration of general anesthesia lasted for 8 hours for the radical right parotidectomy procedure, which involved tumor removal and deltopectoral flap. Following the surgery, the patient remained calm with no signs of airway trauma. Additionally, no post-operative bleeding, throat pain, or vocal cord trauma was observed.

3. Discussion

Patients with head and neck cancer have a 10% risk of anatomical abnormalities in the aerodigestive tract, depending on the location, size, and tissue destruction by the cancerous mass.1 Given this risk, initial assessment is crucial in determining the appropriate anesthesia technique.[2] The substantial size and location of the tumor in our case caused ipsilateral traction to the mouth, causing restricted mouth opening. Non-surgical difficult airway management preparation includes: [1] awake intubation, [2] video-assisted laryngoscopy, [3] intubating stylets or tube-changers, [4] supraglottic airway devices such as conventional laryngeal mask airway (LMA) or the intubating LMA, [5] rigid laryngoscopic blades, and [6] fiberoptic-guided intubation.2 Our primary airway strategy for this patient is awake blind nasal intubation.

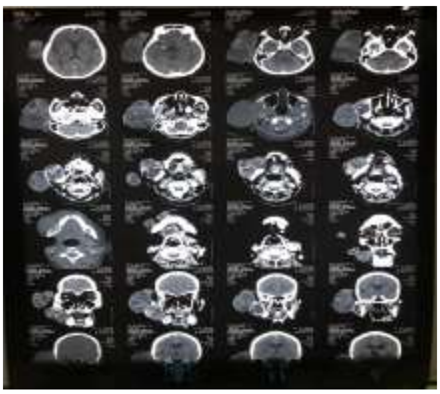

Figure 2 CT Scan Result

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Figure 3 Curved The ETT

Figure 4 Blind Nasal Intubation Process

In difficult airways, awake intubation takes precedence because the patient can maintain protective airway reflexes to reduce the risk of aspiration during maintained spontaneous ventilation.[3] With the emergence of fiber optic laryngoscopy as the gold standard for difficult intubation cases, the skill of blind nasal intubation has become less relevant.[6] Studies with observational findings indicate that awake fiberoptic intubation is successful in 88–100% of difficult airway patients.[2] However, in situations with limited resources and equipment, blind nasal intubation can be a valuable option for intubating spontaneously breathing patients with or without sedation.[4] At present, blind nasal intubation is performed in situations where direct laryngoscopy is challenging or not feasible, and general anesthesia and neuromuscular blockade for intubation can be risky.

The patient is positioned supine with the head slightly extended, with the intubating operator standing beside the patient's head. The intubator initiates intubation with the tip of the endotracheal tube in the patient's nasal passage. The nasal mucosa should be gently prepared with mucosal vasoconstrictors and local anesthetics to keep the awake patient comfortable during intubation.[5] This is followed by a transtracheal injection of 5mL lidocaine 2% through the cricothyroid ligament. The patient's reflex cough helps cranial spread of the lidocaine and achieve near-instant anesthesia of the supraglottic area.[3] An appropriately sized regular ETT with a deflated cuff was lubricated. The next stage was inserting the pre-curved ETT by sliding it on the nasal cavity floor beneath the inferior turbinate. The tube was pre-prepared by storing it in the freezer to maintain its curved shape. Upon the tube entering the nasopharynx space, the patient's breathing is detected by feeling her exhalation.[5] The patient was then instructed to take deep breaths. If the tubing has been entered approximately half of its length, it indicates entry into the larynx below the immobile epiglottis and between the areflexic vocal cords. Since the gag reflex is suppressed, unintentional swallowing response and glottis closure is prevented.

These are methods for identifying appropriate nasotracheal intubation once the tube reaches the supraglottic area. The T position (Trachea) is the correct position, characterized by continued breathing sounds through the tube and the tube continue to move forward, if the patient coughs air comes out through the tube. Confirm by auscultation of breath sounds, use of a self-inflating bag, SCOTI device, capnography, or via fiber optic endoscopy. Position A (Anterior) is characterized by the sound of breathing continuing through the tube, but the tube cannot advance any further, and when coughing most of the air passes through the tube. L or R position (Left or right piriformis sinus) is characterized by the absence of breath sounds through the tube and the tube cannot be advanced further and no cough. Lastly is Position E (Esophagus), in this position no breath sounds can be heard at all through the tube but the tube can continue to advance without coughing. This indicates the tube entered the esophagus.[4] Various tools and maneuvers to trachea and nasal intubation can be used, including pre-forming the ETT, slightly flexing placing the patient's head, listening to breath sounds directly through the

ETT or using an extension tube and earpiece, inflating the ETT cuff in the oropharynx to help guide the tubing's tip into the trachea, and using ETCO2 (end-tidal carbon dioxide) detector.[6]

Blind nasal intubation is advantageous over direct laryngoscope for intubation because it can be performed rapidly and is devoid of the stimulation of rigid instrumentation.[6] The average success rate for paramedics using blind nasotracheal intubation with a conventional endotracheal tube is 58.0%-72.2%.[7] The average success rate of blind nasotracheal intubation in oral and maxillofacial surgery patients is 88%. The success rate increases to 100% when using a finger-guided tube technique in the nasopharynx.[8] While unguided nasal intubation has proven to be an effective alternative for managing difficult airways, its potential risks and complications should be kept in mind. The most common complication following this intubation method is epistaxis. The prevalence of epistaxis has been reported in various studies between 12% to 66%. Blood in the airway can disrupt the doctor's view and pose a risk of blood aspiration into the lungs.[9] Subluxation of the cricoarytenoid cartilage and damage to the glottic opening is a rare occurrence during blind intubation.[3] In this case, the use of a pre-curved and frozen endotracheal tube was chosen over a rigid steel wire. This choice allows the tube to follow the curvature of the nasopharynx, and the tip of the ETT can accurately occupy the supraglottic area. The intubation procedure lasted for 2 minutes, and no complications of bleeding or pain were reported in this patient. Similar results were also found in a study by Shimazaki, where the use of a flexible ETT provided better outcomes in terms of intubation duration and post-intubation pain perception.[10] Flex-tip tube is composed of a posterior bevel and an anterior tip so that the tip and bevel are not in contact with the turbinate and septum. In addition, the soft and flex tips are in contact with a wider area and pass smoothly along the curve of the nasopharynx. Therefore, it results in less nasal mucosal trauma and epistaxis and is suitable for nasotracheal intubation.[11]

4. Conclusion

Awake blind nasal intubation is an effective and safe procedure for patients with difficult airways. Initial assessment, the chosen method, and the skill of the operator are crucial for the success of intubation and for preventing complications such as bleeding or airway trauma during ETT placement. If airway block is properly performed and achieves optimal results, blind nasal intubation can be performed smoothly, and the patient can feel comfortable throughout the procedure.

References

1. Ahmed A, Nusrath. Anaesthesia for Head and Neck Cancer Surgery. BJA Education, 2017. 17 (12): p. 383–389
2. Apfelbaum JL, Hagberg CA, Caplan RA. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Anesthesiology **2013**: p. 118:251–70
3. Artime CA, Sanchez A. Preparation of the Patient for Awake Intubation. In: Hagberg CA, Artime CA, Aziz MF, editors. Hagberg and Benumof's Airway Management. 4th ed. Philadelphia: Elsevier, Inc. **2018**: p. 216–34.
4. Marhatta MN, Acharya SP. Blind nasal intubation in a child with ankylosis of temporomandibular joint. Nepal Med Coll J 2008; **10**(4): p. 271-274
5. Yoo Hwanhee, Choi JM, Jo Jun-young. Blind nasal intubation as an alternative to difficult intubation approaches. J Dent Anesth Pain Med 2015. **15**(3): p. 181-184
6. Chauhan C, Acharya G. Nasal intubation: A comprehensive review. Indian J Crit Care Med **2016**: p. 20:662-7.
7. O'ConnorRE, Megarge RE, Schnyder ME. Paramedic Success Rate for Blind Nasotracheal Intubation Is Improved with the Use of an Endotracheal Tube with Directional Tip Control. ANNALS OF EMERGENCY MEDICINE, 2000. **36**: p. 4
8. Hashemi SJ, Shetabi H, Talakoub R. Comparison of Success Rate and Safety of Nasotracheal Intubation by Conventional and Finger-Guided Method in Patients Undergoing Maxillofacial Surgery. Adv Biomed Res **2023**: p. 12:35.
9. Earle R, Shanahan E, Vaghadia H, Sawka A, Tang R. Epistaxis during nasotracheal intubation: A randomized trial of the Parker Flex-Tip nasal endotracheal tube with a posterior facing bevel versus a standard nasal RAE endotracheal tube. Can J Anesth J Can Anesth **2017**: p. 64:370-5.
10. Shimazaki A, Ueshima H, Otake H. Endotrol tracheal tube and McGrath Mac are an effective combination for oraltracheal intubation. Saudi J Anaesth 2018. **12**: p. 72-6.
11. Park DH, Lee CA, Jeong CY. Nasotracheal intubation for airway management during anesthesia. Anesth Pain Med 2021. **16**: p. 232-247