Case report: airway management of a patient with popping pedunculated subglottic laryngeal polyp

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Abstract: Management of airway is a great challenge to anesthesiologists. Sometimes though airway is apparently normal but lesion around it may give a concern for securing airway.

Patient, 52 years, ASA grade I presented to otolaryngology clinic with important complaints of stridor and dyspnoea. There was no comorbidity. Routine investigations were normal. Indirect laryngoscopic examination revealed pedunculated mass (polyp) arising from subglottic region, with a size of 0.7 cm x 0.5 cm and its pedicle was around 1.5 cm long delicate structure. This polyp was not visible during inspiration but it popped out of the vocal cords during expiration. Micro laryngeal surgery was planned to remove this polyp. Intubation of trachea was a great challenge as polyp was visible only during expiration. Tracheal intubation under controlled ventilation and neuromuscular blockade might have caused rupture of polyp pedicle or dislodgement of polyp in the trachea (as its pedicle was quite thin and delicate) which would have resulted in respiratory obstruction in the patient. Fiberoptic guided awake intubation was planned during expiratory phase of spontaneous respiration in order to avoid any injury or damage to the polyp or its pedicle.

Key words: Laryngeal polyp; exhalation; awake intubation.

INTRODUCTION

Management of airway is a great challenge to anesthesiologists. Sometimes though airway is apparently normal but pathological lesion around may have a concern for securing airway during anesthetic management. The site and morphology of such pathology needs to be considered while deciding the technique of airway management. We describe the anesthetic management of a patient with a pedunculated subglottic polyp that was moving with breathing cycle in and out of the glottic opening. Based upon this case report, a new approach for the management of such airway pathology is suggested.

CASE REPORT

A 52-year-old female patient presented to our otolaryngology clinic with important complaints of stridor for last 3 months and dyspnoea of NYHA grade II for 15 days. Her general and systemic examination along with her routine investigations revealed no abnormalities. Indirect laryngoscopic examination revealed a pedunculated laryngeal mass (polyp) of 0.7 cm x 0.5 cm with a long pedicle of around 1.5 cm arising from subglottic region. The unique feature of this polyp was that its visibility varied with different cycles of spontaneous respiration of the patient. It disappeared (sucked in) below the vocal cords during inspiration but it popped (protruded) out of the glottic opening during expiration because of its long pedicle. Micro laryngeal surgery was planned to remove this polyp.

Fiberoptic guided awake endotracheal intubation was planned with a small sized endotracheal tube during expiratory phase of spontaneous respiration. Patient was informed about the procedure.

In the operating room electrocardiogram (ECG), noninvasive blood pressure (NIBP) monitor, pulse oximetry (SpO2) and a precordial stethoscope were attached. Intravenous midazolam 0.03 mg/kg and fentanyl 1 mcg/kg was injected. Airway was anesthetized with lignocaine gargles, nebulization of respiratory tract with lignocaine and...
bilateral superior laryngeal nerve block. Fiberoptic Bronchoscope (FOB) was inserted orally. On visualizing the glottic chink, the patient was instructed to exhale and hold his breath (Fig. 1). FOB with small sized endotracheal tube (5.5 mm ID) was passed along the side of polyp simultaneously visualizing its pedicle in order to avoid any injury while passing the endotracheal tube in to the trachea. Capnograph was attached after securing the airway. So, awake endotracheal intubation was completed safe and successful under fiberoptic guidance during expiratory phase of spontaneous respiration without damaging the pedicle. Standard routine anesthesia was maintained. Surgeons excised the polyp and hemostasis achieved. Patient had an uneventful recovery.

DISCUSSION

Laryngeal polyp is the most common benign lesion of larynx. It usually manifests with hoarseness of voice, cough, foreign body sensation in throat, pain, difficulty in swallowing and breathing. Most commonly it arises from true vocal cords. Microlaryngeal surgery followed by voice rest is the right modality of management.

Intubation was challenging in our patient having subglottic polyp as it was visible only during expiratory phase and disappeared during inspiratory phase of spontaneous respiration. Because of this, intubation had to be done at the time of expiration. This is in contrast to the conventional fiberoptic technique of tracheal intubation in spontaneous breathing patient, where intubation is done in inspiratory phase of respiration. Also we had to intubate trachea in a smooth manner so as to avoid injury to the pedicle to prevent its dislodgement inside the respiratory tract. Vadodaria et al. reported a case of large subglottic polyp rising up through the vocal cords such that the glottic inlet was virtually occluded (1). Anaesthesia was induced with alfentanil, propofol, succinylcholine. After direct Laryngoscopy 3 mm Hunsaker tube was passed and connected to sander’s jet for ventilation. For the choice of this technique, tracheal intubation with a microlaryngeal surgery tube (MLS) tube after intravenous induction with or without a muscle relaxant was not a technique of choice. It is difficult to introduce this size 5uffed tube through the laryngeal opening. Further it may have avulsed the polyp and pushed it more distally raising the risk of a ball valve effect lower in airway and causing bleeding. The polyp being avulsed and pushed to distal airway was also our concern.

During expiration almost whole of the glottic aperture was obscured by the polyp leaving a small chink through which intubation could be done. In case intubation was done during inspiration the polyp would have disappeared below the vocal cords, with a lost view to the operating surgeon. Thus it was decided to preserve spontaneous respiration, as tracheal intubation under controlled ventilation and neuromuscular blockade might have caused rupture of polyp pedicle or dislodgement of polyp in the trachea or bronchus as its pedicle was quite thin and delicate. A pediatric size fiberoptic was chosen as an adult fibreoptic would have been difficult to pass through the chink visible to us and it could have injured the pedicle. We choose to perform awake intubation so that we could ask the patient to control her breathing during our attempt to intubate. She was asked to take deep breaths during performing fiberoptic guided intubation and was asked to hold her breath for few seconds after expiration and before next inspiration in order to keep the polyp visible above the vocal cords.

King et al. reported a 46 yr male, posted for surgery for laryngeal polyp (2). After preoxygenation, anesthesia was induced with propofol and neuromuscular blockade achieved with suxamethonium. Direct laryngoscopy was done and trachea intubated with microlaryngeal tube. But in our case, the polyp was subglottic with varied visibility with different cycles of spontaneous respiration and visible during expiration only. Direct laryngoscopy and tracheal intubation with microlaryngeal tube may avulse the polyp.

Nobuhide et al. reported anesthetic management of macroexcision of a giant laryngeal polyp.

Fig. 1. — FOB view of pedunculated polyp
swinging like a pendulum from upper part of vocal cord. In contrast with our case, this polyp was obstructing the airway (3). So, we need to secure the airway with a cuffed tube to prevent the distal dislodgement of the polyp and also to prevent the lower airway from blood.

Yilmazer et al. reported a patient with two pedunculated polypoid laryngeal masses on the posterior third of each vocal processes (4). Direct laryngoscopy was performed under general anesthesia, and the masses were excised by laryngomicrosurgery. In our patient we had concerns of bleeding of the subglottic polyp in the unsecured airway.

Though the experience with this new method is still very limited, but it may be preferred to avoid trauma to a pedunculated laryngeal polyp which is moving with breathing. It becomes more important when polyp is associated with some vascular tumors. The fiberoptic guided tracheal intubation in such case needs experience and may not be a feasible technique for novice. Also, patients’ cooperation is required to hold his breath in expiration and may not be possible in children or noncooperative patients.

Topical administration of lignocaine has been reported to be effective in reducing postoperative respiratory complications after laryngeal surgery (5). So, the technique of topicalization prior to surgery, as done by us, will be helpful in reducing laryngeal morbidity.

**Conclusion**

To conclude, spontaneous respiration should be preserved during airway securing in patients planned for micro laryngeal surgery for subglottic polyp with a long delicate pedicle which is moving with breath and visible during expiration only. Fiberoptic guided intubation should be timed during expiratory phase of respiration to avoid injury to the polyp and its migration to distal airway. In case the glottic aperture visible to us is small, a pediatric fiberoptic would be a reasonable choice.

**References**