

Murphy's Eye: A Last Moment Saviour for Anaesthesiologist In Case of Surgery for Recurrent Vocal Cord Polyposis.

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ABSTRACT

Securing the airway in Juvenile papillomas of the vocal cords and trachea is sometimes hazardous and potentially lethal. In our case, when such patient was planned under GA, her right sided chest developed decreased air entry with varying degree of severity, while her left side chest presented as silent chest gradually during surgery. On exploration, the possible reason for ventilation on the right side was found to be the presence of Murphy's eye, which functioned as a vent, when the primary distal opening of an ETT became occluded.

Keywords: Juvenile papillomas, vocal cords and trachea, stridor, bronchoscopy, endotracheal tube (ETT), Murphy's eye, General Anesthesia (GA).

INTRODUCTION

Juvenile papillomas are benign neoplasm that appears as wart like lesions growing on the vocal cords and also into the trachea presenting as the laryngeal obstructive disease. The prevalence rate among children is 4.3 per 100,000 and among adults is 1.8 per 10,000^[1,2] Vocal cord papillomas are caused by HPV with type 6 and 11 strains being the most common^[1, 2]. Because of its recurrent nature, it is not uncommon for an individual to have as many as 20 surgical or laser procedures to remove the papillomas and maintain a patent airway.^[3] Patient's voice quality is characterized by hoarseness of different severity, either a very deep pitch or an intermittently high-strained pitch associated with breathiness. Voice therapy is essential to maintain vocal flexibility, because multiple surgical procedures tend to form scar tissue that stiffens the mucosa.^[3] Such patients whenever require surgery, may impose risk of securing the airway to the anaesthesiologists. Here, we are presenting a case of juvenile papillomas posted for its surgical removal.

margin of the aryepiglottic folds with transglottic extension. Glottic chunk is markedly reduced. Subglottic region and lungs were clear [Figure 1].

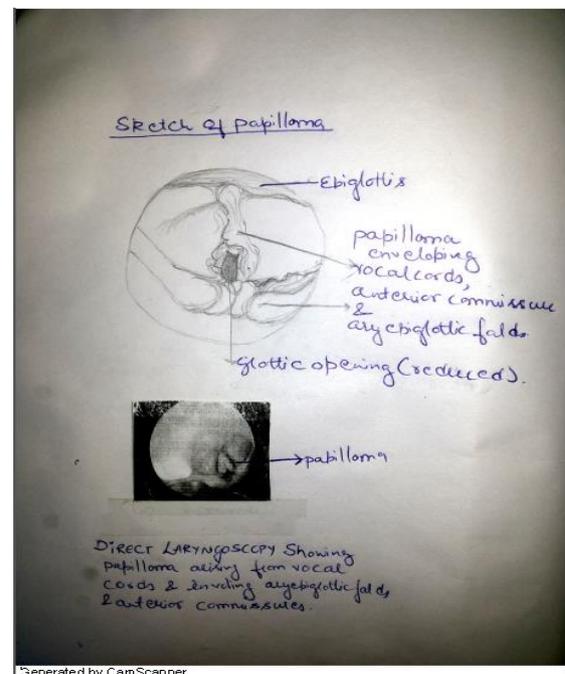


Figure 1: Indirect laryngoscopy showing polypoidal mass involving bilateral true vocal cord, anterior commissures, anteromedial margin of the aryepiglottic folds with transglottic extension, markedly reducing glottic chunk.

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CASE REPORT

A nine years old, emaciated girl (15 kg) with high-strained pitch voice, stridor with breathlessness came for surgical fitness. She had been suffering from this problem since four years of age and had already been undergone for surgical removal thrice before this. Indirect laryngoscopy showed reddish multiple polypoidal mass involving bilateral true vocal cord, anterior commissures, anteromedial

Pre-operatively, her heart rate was 104/min and SpO₂ was 88% on room air. Intravenous line and peri-operative non-invasive monitoring was initiated. Premedication was given with inj Glycopyrrolate 0.02 mg/kg, inj. dexamethasone 2 mg, inj. ketamine 4 mg and inj. midazolam 0.5 mg IV. Analgesic diclofenac 20 mg was given as an IV infusion. Before proceeding for endotracheal intubation, difficult airway cart was kept ready. In our case, almost the whole glottic aperture was obscured by the polyp leaving no space for

endotracheal tube insertion on indirect/direct laryngoscopy through which intubation could be done (grade IV C-L view). So, we decided to attempt an awake intubation with a fiberoptic bronchoscope guided endotracheal intubation and it was intubated with 5 mm micro laryngeal tube successfully without airway trauma and potential bleeding. GA was induced with 10 mg of propofol and 0.08 mg/kg of inj. vecuronium.

Surgery was going on smoothly when suddenly air entry on left side of chest started decreasing. Bronchoscopy revealed a blood clot was removed by chest physician. Positive pressure ventilation was initiated for a while but was not much more effective. After sometime, again left sided air entry started decreasing to an extent to make it silent sometimes, while on right side decreased air entry with varying degree of severity was present. Oxygen saturation (SpO₂) decreased below 90% even with 100% O₂. These episodes continued throughout the surgery with varying severity for a period of almost 1 hour. However, we were bound to continue surgery, as surgery was midway and no cause for this situation was apparent. SpO₂ varied between 80-92% with positive pressure ventilation in an attempt to ventilate both the lungs. At the end of surgery, patient was extubated and on examination of ETT, almost one cm of distal lumen was obstructed with blood clot.

DISCUSSION

Vocal cord papillomas are the most common benign neoplasms making up approximately 84% of lesions.^[1] If the mother is infected with genital HPV a child has a 200 fold increased risk of acquiring vocal cord papillomas at birth.^[1] The juvenile onset form tends to be more aggressive with bulky, exuberant tissues resembling “clusters of grapes” present on the anterior portion of the true vocal cords.^[1,4] Juvenile laryngeal papillomatosis is a rare disease which can pose airway management difficulties, sometimes they might be hazardous and potentially lethal.^[5,6]

In our case, almost the whole glottic aperture was obscured by the polyp leaving no space for endotracheal tube insertion on indirect/ direct laryngoscopy. So, we decided to attempt awake oral intubation with fiberoptic bronchoscope guided endotracheal intubation. In the literature orotracheal intubation, tracheostomy or cricothyroidotomy had been chosen for the airway management during the operation for the gigantic laryngeal polyps.^[7-10] Tracheotomy was not attempted by ENT surgeon because of the fear of spreading the papillomas distal to tracheotomy site.^[11] Considering the potential difficulty with intubation associated with large polyps prompts anaesthesiologist to insert an endotracheal tube

with minimal trauma, to avoid tearing off the polyp into the trachea.

On exploration, the possible reason for ventilation on the right side was found on the right side of the bevel of the ETT-presence of Murphy's eye [Figure 2]. The “Murphy eye” is the eponymous name for a hole on the side of most endotracheal tubes (ETTs) that functions as a vent, and prevents the complete obstruction of the patient's airway, should the primary distal opening of an ETT becomes occluded.^[12] Considering example of our case, presence Murphy's eye in ETT ventilated the lungs throughout the surgery even when distal lumen of ETT was blocked with blood clot. So we can say that the Murphy's eye is the last moment saviour for anaesthesiologist in case of surgeries like recurrent vocal cord polyposis where high possibility of ETT tip obstruction is expected. Her respiration became normal following surgery and rest of the postoperative period was uneventful.



Figure 2: “Murphy eye” is the eponymous name for a hole on the side of most endotracheal tubes.

CONCLUSION

The management of laryngotracheal obstructive disease is a team effort, which involves experienced otolaryngologists and anesthesiologists. So, sometimes in spite of being normal airway, securing airway during anaesthetic management becomes difficult because of pathology around it. The use of endotracheal tubes with Murphy's eye should be recommended whenever possible in such cases. The whole procedure should be well planned and fiberoptic guided intubation should be timed during the inspiratory phase of respiration to avoid injury to the polyp and its distal migration into the airway.

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