

# Laryngeal papillomas: Not so innocent! C- MAC D-blade to the rescue

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Laryngeal papillomatosis is a rare throat infection which is potentially fatal without treatment as it leads to varying degrees of airway obstruction. CO<sub>2</sub> LASER removal is the most common mode of treatment used. Anaesthesia for laser surgery entails two major complications, namely airway fires and difficult ventilation. The C-Mac D-blade is a valuable new addition to the anaesthetist's armamentarium to overcome critical events like sudden airway obstruction by laryngeal papillomas.

**Keywords:** laryngeal papillomas; airway obstruction; C-Mac D-blade

## Introduction

Laryngeal papillomatosis is a rare medical condition caused by HPV (Human Papilloma Virus types 6 and 11) infection of the throat. It is potentially fatal without treatment as uncontrolled growth of papillomata could obstruct the airway. Papillomas recur frequently and may require repetitive surgery and antiviral therapy.<sup>1,2</sup>

Symptoms in adults are a hoarse or strained voice dictated by the size and placement of the tumors. In small children breathing difficulties occur more commonly and symptoms include a weak cry, difficulty in swallowing, noisy breathing, and chronic cough.<sup>1,3,4</sup> The diagnostic confirmatory method is a biopsy done under general anaesthesia followed by histopathology for HPV. Laryngeal papillomatosis is most often misdiagnosed as asthma, croup, or chronic bronchitis with serious consequences. Papillomas partially obstructing the airway cause these symptoms and should be removed immediately. Carbon dioxide laser removal is the most common method used.<sup>4,5</sup>

## Case Report

We present the case of a robust 50year old, 60kg Nepali Police Officer. His presenting complaint was change of voice for the last 6 months. He was a chronic alcoholic, and a known diabetic and hypertensive for the past 10 years. There was no history suggestive of obstructive sleep apnoea. His airway was assessed as Mallampati grade III. Rhinophyma was an incidental finding. Direct fiberoptic laryngoscopy by the ENT surgeon

revealed a small polypoidal growth seemingly amenable to laser excision.

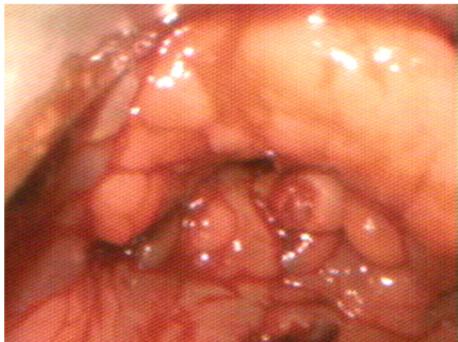
The patient was premedicated with midazolam 1mg i.v. five minutes before induction. A 6.5mmID microlaryngeal surgery (MLS) tube was made laser proof by wrapping an aluminium foil ribbon. Inhalational induction with sevoflurane was commenced and intravenous fentanyl 60µg was given. Once assisted ventilation was assessed to be adequate, 30mg atracurium was given intravenously. Suddenly, the patient's airway got obstructed, manual ventilation became ineffective and the pulse oximeter displayed a decreasing saturation. The C-Mac D-Blade was used to visualize the larynx where a large ominous – looking pedunculated polyp was seen acting like a ball- valve. On its either side minor papillomas were seen, three on the right and two on the left side (Figure 1).



**Figure 1** View of laryngeal inlet prior to intubation

Before waiting for the single twitches to disappear on the peripheral nerve stimulator the MLS tube was introduced into the trachea, without pushing the polyp inwards, resulting in prompt relief of the airway obstruction. The MLS tube cuff was inflated with methylene blue dye and its position confirmed by auscultation and capnography. During Laser excision oxygen concentration was reduced to 25% in air and sevoflurane. Hydrocortisone 100mg was given intravenously. Prior to reversal a direct laryngoscopy was performed with a McIntosh laryngoscopic blade and all secretions were cleared. The airway was Cormack and Lehane grade 3. After reversal of neuromuscular blockade the patient was spontaneously inspiring a tidal volume of 350ml per breath with a respiratory rate of 15-16bpm.

On extubation, the patient developed stridor. On visualization with a C-Mac D-blade (without an anaesthetic) there were numerous small stumps as well as a whole pedunculated papilloma obstructing the larynx (Figure 2).



**Figure 2** View of laryngeal inlet after extubation

The trachea was immediately intubated with a cuffed endotracheal tube. A percutaneous dilatational tracheostomy was then performed as a temporary measure. Two days later the patient was subjected to laser excision of remaining laryngeal papillomas. The tracheostomy tube was removed after five days and the patient was able to maintain his airway adequately.

### **Discussion**

Laser surgery offers several advantages to the surgeon and patient: microscopic precision, a bloodless operative field, and sterility. A preoperative visit to determine the degree of

existing airway obstruction is mandatory in deciding the safest anaesthetic technique for microlaryngeal surgery.<sup>6,7</sup> Assessment of the degree of obstruction is typically accomplished clinically by evaluating the patient's use of accessory muscles, quality of voice, respiratory rate, and resting oxygen saturation. Elective tracheostomy is avoided to limit the spread of the virus. A surgical airway is still part of the emergency airway algorithm for these patients.<sup>5,6</sup> Continued communication and cooperation between the surgeon and anaesthesiologist throughout the procedure will help minimize the conflicting needs for airway access and ventilation.

The recently introduced D-blade (Karl Storz, Tuttlingen, Germany) was essentially designed for the management of a difficult airway.<sup>8,9,10</sup> It extends the assortment of different blade forms adaptive for the videolaryngoscopic C-Mac system and shows a pronounced angulation of 40°. Like all C-Mac blades, the D-blade incorporates a small camera chip with an embedded optical lens with an aperture angle of 80°, located laterally in the distal third of the steel blade. The D Blade's camera and light socket is located nearer (40mm) to its tip, which is bent for another 20°. A high power LED serves as a light source.<sup>9,10</sup> Presence of the rhinophyma prompted us to choose inhalational induction using C-Mac D-blade over awake nasal fiberoptic intubation.

Two serious events occurred in the management of this case. Firstly during induction, we encountered an inability to ventilate situation despite having assessed ventilation prior to administering a long acting relaxant. The existence of a large pedunculated polyp was missed by the surgical colleagues during their assessment. The C-Mac videolaryngoscopy helped to examine the laryngeal inlet in an already difficult airway (Mallampati III) and also helped in intubating with precision.

Secondly, during the reversal and subsequent extubation we encountered airway obstruction. This time it was due to inadequate laser removal of the polyps which had been pushed deeper beyond the vocal cords by the MLS tube on intubation and had reemerged on extubation, along

with the tube. A subsequent intubation with the C-Mac D-blade followed by a percutaneous dilatational tracheostomy helped to tide over the crises.

### Conclusion

The C-Mac D-blade proved to be an asset during both critical events leading to airway obstruction, as the exact nature of the obstructing lesion was magnified and displayed clearly on the screen. Videolaryngoscope can also prove to be a useful learning tool by recording such rare critical events for future reference.

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