

Case Report

# Varied Presentation and Management of Tracheal Polyps in Children

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## ABSTRACT

Tracheal polyps are benign, uncommon tumors in pediatric age group with varied presentations, making diagnosis difficult. The symptoms may vary from respiratory distress, recurrent cough and cold to stridor, recurrent pneumonia and hemoptysis. Management varies and could include steroid treatment, bronchoscopic removal and surgical removal.

We are presenting two cases of tracheal polyps which were managed surgically. In both bronchoscopic removals was attempted.

**Key words:** Tracheal polyps, children, inflammatory myofibroblastic tumour, bronchoscopic removal, surgical removal.

## INTRODUCTION

Benign tumors of tracheobronchial tree are uncommon, the most frequent being respiratory papillomatosis. Others include hemangiomas, lipoma and fibromas. Endotracheal polyps are exceedingly rare in pediatric population. Petterson first described a case of tracheal polyp in 1930 and since then at least 40 cases have been described in literature. Drenan and Douglas classified tracheal polyps into three main categories - multiple papillomatosis, solitary polyps and inflammatory polyps.

## CASE REPORT

**Case 1:** 5 years and 2 months old male child with complaints of recurrent cough and wheeze was being treated as an asthmatic for three years and used to present with a recurrent wheeze in spite of regular treatment. All the investigations done ruled

out possibility of tuberculosis or COPD. Due to the severity and persistence of symptoms, CT chest was done to rule out interstitial lung disease which picked up a space occupying lesion near the carina (Fig 1).



Fig 1: CT scan

For further evaluation bronchoscopy was planned which showed a large polyp almost occluding the entire lumen. Removal of polyp was attempted but the large size precluded the snare going around the stalk

of polyp and the polyp started to bleed. With no measures maintain distal airway and prevent bleeding the procedure was stopped and decision was made to remove the polyp with open surgery.

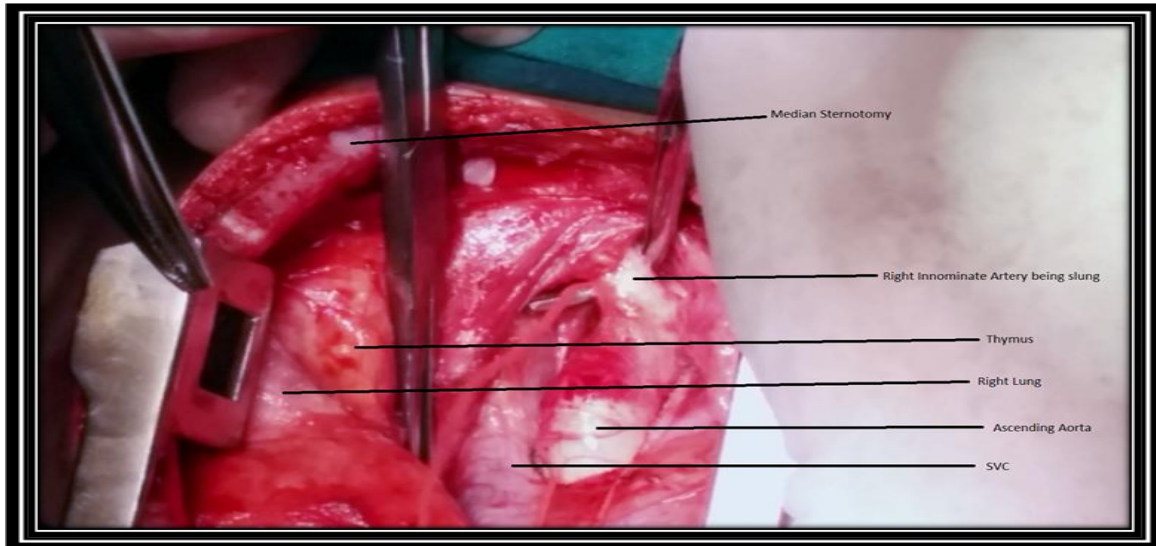


Fig 2: Intraoperative picture

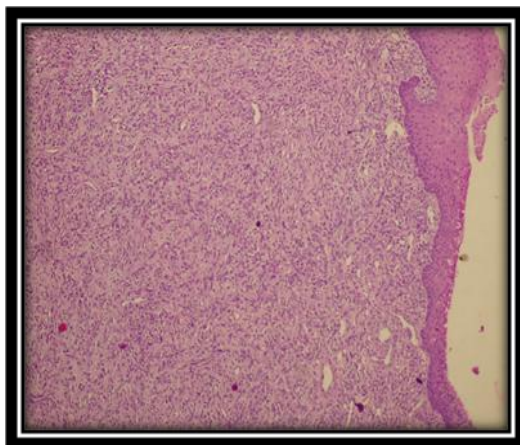


Fig 3a: Histopathology

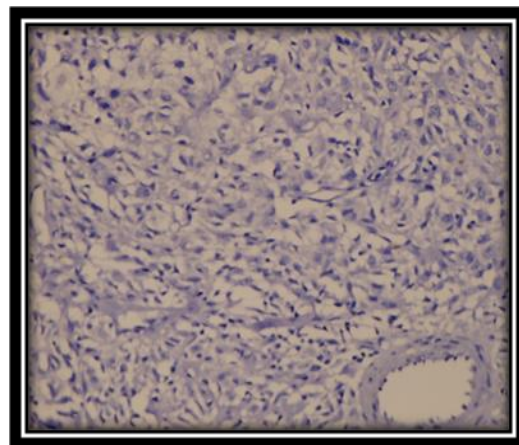


Fig 3d: Desmin

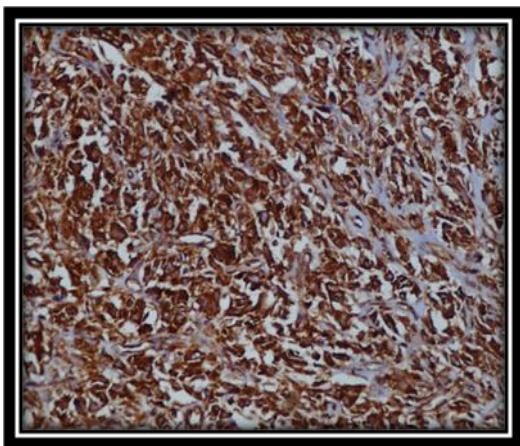


Fig 3c: Vimentin

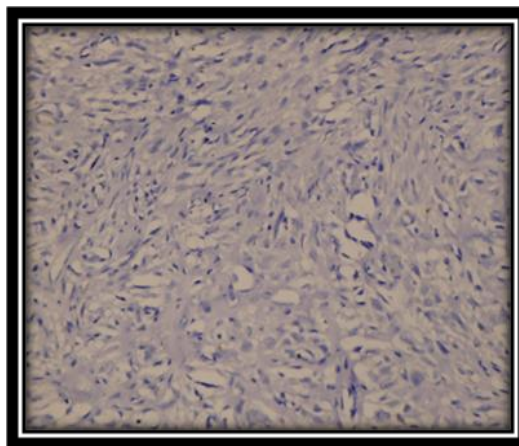


Fig 3b: Actin

It was then decided to further take up the child for median sternotomy, tracheotomy and polyp excision with anticipated problems of airway management intraoperatively which were adequate pressure maintenance for positive pressure ventilation once the trachea is open and control of bleeding distal to polyp.

Child underwent median sternotomy, tracheotomy and polyp excision, withstood the procedure well and required no ventilatory support post procedure (Fig 2).

The histopathology of the polyp was that of an inflammatory myofibroblastic tumour of the trachea (Fig 3a) further confirmatory tests were done in the form of smooth muscle actin (Fig 3b) and vimentin (Fig 3c) which were positive for the tumor and desmin (Fig 3d) which was negative. He is currently under follow up for recurrence of tumor or occurrence of narrowing and stenosis.

**Case 2:** 2 year old female child with history of respiratory and feeding difficulty since birth. She had stormy course with prolonged intubation could not be extubated and had undergone tracheostomy and fundoplication. In spite of tracheostomy she continued to have respiratory distress and respiratory tract infections and several failed attempts at

decannulating her. Feeds were started gradually and any feed given orally could be recovered from the tracheostomy. Dynamic swallowing study showed dye entering the larynx. This brought the suspicion of possibility of H shaped TEF vs. Laryngotracheoesophageal cleft.

Keeping this in mind bronchoscopy was performed which showed a tracheal polyp above the site of tracheostomy with laryngotracheal cleft but no fistula. This polyp was probably the cause of her multiple failed attempts at decannulation. She underwent tracheotomy and excision of polyp with repair of the cleft (Fig 4). The common wall between the trachea and esophagus was incised so that the resultant suture lines for anterior wall esophagus and posterior wall of trachea won't overlap each other. Tracheostomy tube still in place after the surgery and rehabilitation was started towards decannulating the same. She is also on speech therapy.

The histopathology of the polyp revealed it to be a fibrosed granulation tissue (Fig 5) probably secondary to prolonged intubation during neonatal period. Follow up bronchoscopy advised to look for healing of repair.

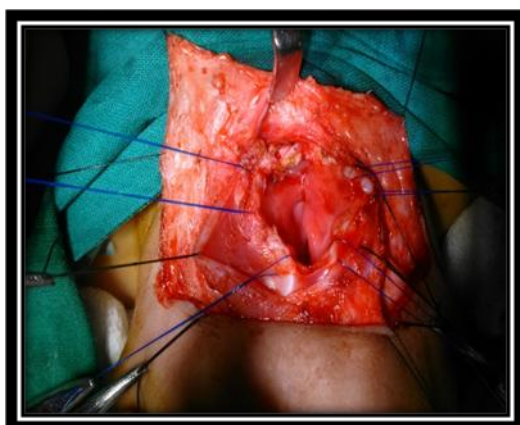


Fig 4: Intraoperative picture

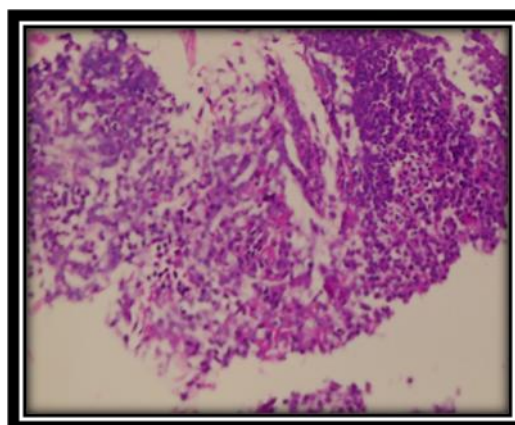


Fig 5: Histopathology

## DISCUSSION

Primary endotracheal tumors are uncommon in children, and there is very little literature available. Approximately 65 % of primary tracheal tumors are malignant, the remainder consisting of benign lesions,

among which are recurrent papillomatosis (most frequent), lipoma, fibroma, leiomyoma, hemangiomas, and polyps. <sup>(1)</sup>

Although endotracheal polyps are rarely found, they should be included in the

differential diagnosis of partial or complete obstruction of the tracheobronchial tree. <sup>(1,2)</sup>

Regarding the clinical status, patients can be seen with wide spectrum of presentation from being completely asymptomatic to presenting with dyspnea, which might be progressive in nature, occurring only upon exertion, or be intermittent.

Generally, dyspnea upon exertion occurs when the tracheal lumen is smaller than 8 mm and at rest when it is smaller than 5 mm. <sup>(3)</sup>

Individuals with endotracheal polyps are often misdiagnosed as suffering from obstructive pulmonary diseases such as asthma or COPD and are treated for long periods, with less than satisfactory clinical results. <sup>(3)</sup>

Being an airway symptom the first investigation often ordered is X ray of chest which is rarely diagnostic unless large polyp obstructing the airway significantly to cause decreased air entry on one side. CT scan would help pick up polyp which may be single or multiple obstructing the lumen of trachea. But the gold standard investigation is bronchoscopy which can be both diagnostic and therapeutic, which allows the lesion to be biopsied for histopathological evaluation and treatment planning. <sup>(3,5)</sup>

Management of tracheal polyp depends on the size of the lesion, presence and severity of symptoms and viability to perform bronchoscopic procedure. <sup>(1)</sup>

Small lesions provoking few symptoms can be treated with corticosteroids and antibiotics. <sup>(1-5)</sup>

In most cases, lesions of larger size that provoke more symptoms can be managed through bronchoscopic procedures, such as curettage, laser, electrocauterization, or cryosurgery. <sup>(3,5)</sup>

Surgery (thoracotomy or sternotomy) is rarely necessary for those polyps which are very large to be managed with bronchoscopic procedures and which are distal polyps. <sup>(1,3,6)</sup>

Surgical intervention performed in the first case had several anticipated

problems like risk of airway compromise once the trachea was opened and further risk of bleeding into the bronchi on excision of the polyp. Steps carried out to negotiate these anticipated problems were separate Endobronchial tubes in case of airway was compromised upon opening trachea which was not necessary in our case and the base of the polyp was cauterized with bipolar after removal. The histopathology of polyp was inflammatory myofibroblastic tumour of trachea which is a rare solid lesion (0.04-0.7% of all lung and airways tumors) especially in pediatric population. Generally a benign, reactive lesion, characterized by proliferation of myofibroblastic cells associated with a variable number and type of inflammatory cells. The most accredited pathogenetic hypotheses imply an inflammatory reaction to a trauma, an autoimmune reaction or an infectious process. Although considered benign local recurrence rates are high because of which regular follow up is advised which could include a bronchoscopic evaluation.

In case of laryngotracheal cleft the position of the polyp above the tracheostomy tube precluded the multiple attempts at weaning off tube. In this case surgical excision was sought to treat both cleft and polyp at the same time. The cleft was reconstructed by dividing the common wall into anterior wall of esophagus and posterior wall of trachea making sure the sutures don't overlap each other. Fibrin glue was used to reinforce the suture lines further. In our case it was not necessary to interpose surrounding tissue between the two layers. Anterior wall of trachea was then closed with non-absorbable sutures. The histopathology of the polyp was fibrosed granulation tissue probably due to long term tracheal intubation or post tracheostomy.

## CONCLUSION

Tracheal polyps are rare in occurrence in children and it is this incidence and varied presentation which makes it difficult for it to be picked up

early. While it can be managed with bronchoscopy seldom it also requires management in the form of open resection. Small and proximal polyps can be managed with bronchoscopy alone while large and distal polyps require surgical excision which could either be a tracheotomy or median sternotomy depending on the location of the polyp. Histopathology of the polyp further guides the course of the treatment and need for close follow up.

**Abbreviations:**

TEF- Tracheo-esophageal Fistula, COPD- Chronic obstructive airway disease, CT scan- Computerized tomography

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