

Sleep-related Breathing Disorder: A Rare Complication Following Coblation Adenotonsillectomy

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ABSTRACT

Sleep-Disordered Breathing (SDB) encompasses a wide range of respiratory conditions, from primary snoring to Obstructive Sleep Apnoea (OSA). OSA is widely recognised as a potential cause of significant morbidity in children. We describe the case of a five-year-old girl who underwent coblation adenotonsillectomy to treat a Sleep-Related Breathing Disorder (SRBD). However, three months after surgery she experienced severe apnoeic episodes. Further investigation uncovered a polypoid-like growth in the upper posterior nasopharynx, which was effectively treated with a second surgery. This case highlights the importance of postoperative monitoring and thorough evaluation in patients who undergo adenotonsillectomy for SRBD. Despite initial surgery, the persistence or recurrence of severe symptoms, such as apnoeic episodes, may indicate underlying issues, such as polypoid lesions, that require further intervention. Successful management in this case was achieved through revision surgery, emphasising the need for vigilance and comprehensive follow-up in paediatric patient with SRBD.

Keywords: Apnoea, Adenoid tissue, Granulation tissue, Sleep related breathing disorder

CASE REPORT

A five-year-old female child with a history of coblation adenotonsillectomy three months back presented with persistent mouth breathing and gasping for air during sleep. Parents reported severe choking on breaths with marked chest indrawing over the last two weeks. On examination, bilateral mucopurulent discharge was observed from the nares, persisting for two months despite medical treatment. Flexible nasal endoscopy revealed a pedunculated, polypoid lesion attached to the posterior superior nasopharynx, moving with respiration [Table/Fig-1a-c]. Differential diagnoses included residual adenoid tissue, adenoid regrowth, nasopharyngeal polyp, granulation tissue, scar tissue, and infectious or inflammatory lesions.

The patient had no symptoms of bleeding or infection, and considering the recent history of adenotonsillectomy, Computed Tomography (CT) scan was not recommended. After two months of persistent symptoms despite medical treatment, revision surgery was performed: transnasal coblation-assisted excision of the pedunculated polyp. The excised polyp was sent for histopathological examination.

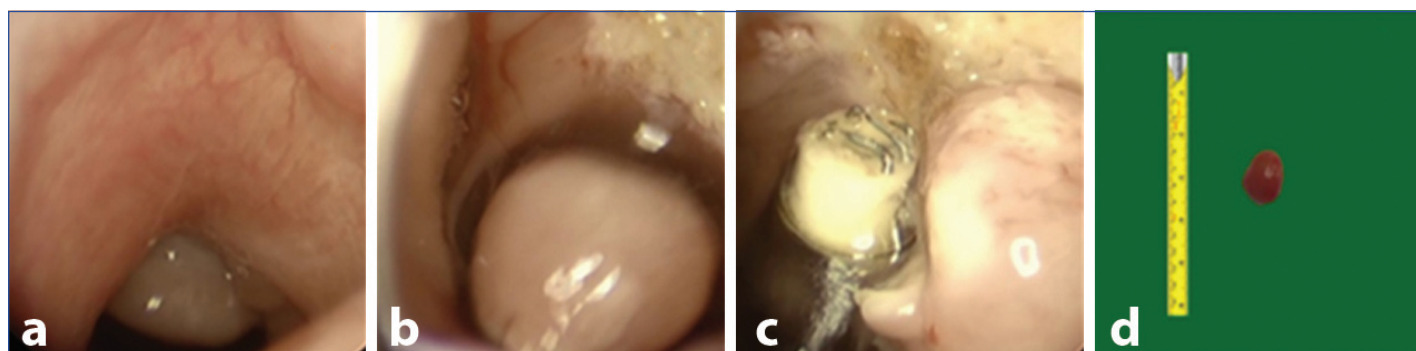
Gross examination revealed a globular soft-tissue piece measuring 2×1.5×1 cm with a soft consistency [Table/Fig-1d]. Histopathology demonstrated proliferation of blood vessels and fibroblasts with inflammatory cell infiltrates, suggestive of granulation tissue formation [Table/Fig-2].

Postoperatively, at the one-week follow-up, the patient demonstrated complete resolution of apnoeic symptoms. She was scheduled for monthly follow-up and repeat endoscopy. On follow-up, there was complete resolution of the polyp and of sleep-disordered breathing symptoms.

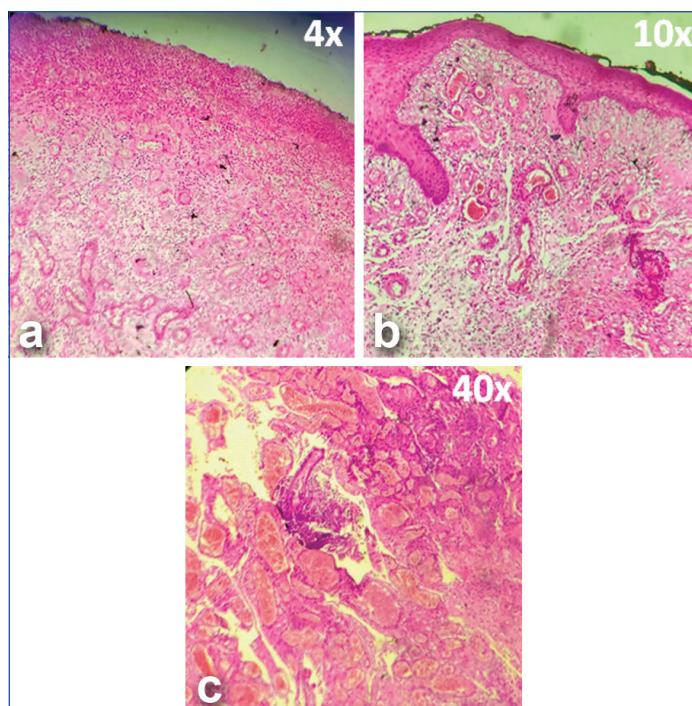
DISCUSSION

The SDB encompasses a wide range of respiratory conditions, from primary snoring to OSA. OSA is widely recognised as a potential cause of significant morbidity in children [1]. The prevalence of OSA varies markedly during childhood (approximately 1-5%), with age, gender, and ethnicity as major contributors [2]. It is the most common indication for Adenotonsillectomy (AT) in children [2]. OSA in children is associated with various health issues, including neurobehavioural deficits and cardiovascular morbidity, poor quality of life, and increased health care utilisation. These factors highlight the need for early and prompt recognition, diagnosis, and treatment [3]. AT is not curative in all cases, but is generally successful in improving respiratory parameters [4].

The American Academy of Paediatrics (AAP) recommends routine screening for OSAS during medical visits. The diagnosis should be considered in children presenting with typical symptoms such as snoring, restless sleep, or daytime hyperactivity, or in those with risk factors such as craniofacial, neurologic, or genetic disorders [5]. It can be confirmed with overnight polysomnography [5]. Risk factors for persistence include age over 7 years, severe disease,



[Table/Fig-1]: a-c) Showing endoscopic appearance of polypoid lesion in the nasopharynx; and d) show excised specimen.



[Table/Fig-2]: Histopathological appearance of granulation tissue formation with numerous blood vessels and fibroblasts: a) Scanner view; b) Low power; and c) High power view.

chronic asthma, and obesity [5]. Surgical procedures beyond AT are typically reserved for children with comorbidities, obstruction at multiple levels, or for children with persistent OSAS following AT. Causes of airway obstruction include regrowth of adenoids, turbinate hypertrophy, nasal septal deviation, redundant palatal tissue, enlarged base of tongue, or lingual tonsil hypertrophy [5]. Some rare complications that can arise during adenotonsillectomy include pneumothorax, subcutaneous emphysema, nasopharyngeal stenosis, cerebrospinal fluid leak, posterior plica perforation, atlantoaxial subluxation (Grisel syndrome), pseudoaneurysm of the lingual artery, and tongue haematoma [5].

Literature review yielded case reports, including the presence of a pseudoaneurysm in the facial artery following tonsillectomy presenting with bleeding, in which granulation tissue formation was managed with endovascular embolisation [6]. Another case described an inflammatory pseudotumour following adenoidectomy in a four-year-old child [7]. She presented with a recurrence of obstructive nasal symptoms four months after adenoidectomy. Computed Tomography (CT) showed a non-enhancing, broad-based 2x2 cm mass arising from the postero-superior wall of the nasopharynx and impinging on the posterior choanae. Under general anaesthesia, direct nasopharyngoscopy using a 4 mm Hopkins telescope (0° and 30°) revealed a yellow, soft, multi-lobulated, movable mass attached to the postero-superior wall of the roof of the nasopharynx by a broad base. There was no erosion of the nasopharynx, vomer, or lateral nasal walls, and it completely blocked the choanae. The aetiology of this lesion remains unclear, but its removal resolved the child's SRBD symptoms [7]. The probable causes may be related to iatrogenic trauma during surgery. Multiple post-adenoidectomy complications have been described in the literature. Among the common and major complaints is significant palate or tongue oedema during or after the procedure, which may encroach on the airway and lead to obstruction, especially in children three years of age or younger [8].

The rate of recurrence following conventional adenoidectomy via curettage is more than six times higher than that of endoscope-assisted adenoidectomy [8]. Several guided techniques have been introduced to lower these recurrence rates [9,10]. These guided methods enhance the visibility of the surgical area and assist in preventing injury to the Eustachian tube [9]. Both transnasal and

transoral approaches can be utilised to examine the nasopharyngeal region during the procedure. The most commonly used method for indirect visualisation of adenoid tissue in the transoral approach involves a laryngeal mirror and a headlight; this technique is straightforward and effective when performed by someone with experience [11,12]. The transoral, endoscope-assisted approach yields favourable results and has a relatively low incidence of complications [9]. The transnasal Hopkins 00 telescope can be used to examine the nasopharyngeal region [13].

Nasopharyngeal healing proceeds through several stages. The first stage is the acute healing stage, which occurs in the immediate postoperative period up to 24 hours and is characterised by haemorrhage and oedema. The second stage (24-72 hours) involves fibrin clot formation and granulation tissue formation. This is followed by the subacute healing stage up to 14 days, during which epithelialisation and collagen synthesis occur, and then by the chronic phase, in which scarring and tissue remodelling occur, lasting up to six weeks. The formation of granulation tissue is a natural response to tissue injury and plays a crucial role in restoring tissue integrity. However, the presence of granulation tissue may be associated with chronic inflammation, fibrosis, and neovascularisation, which can lead to complications such as scarring and stenosis of the nasopharyngeal airway [14].

Clinically and radiographically, the appearance of a nasopharyngeal mass following adenoidectomy presents a real challenge to the otolaryngologist. Differential diagnoses include recurrence of adenoid tissue, antrochoanal polyp, granulation tissue, scar tissue, infectious or inflammatory lesions, and other possible etiologies that should be excluded.

CONCLUSION(S)

This literature review emphasises the importance of thorough postoperative follow-up and flexible nasal endoscopy in evaluating recurrent SRBD symptoms. Surgeons should consider rare complications such as granulation tissue formation, nasopharyngeal polypoid lesions, and inflammatory pseudotumours in the differential diagnosis.

REFERENCES

- [1] De G, Pachêco-Pereira C, Aydinov S, Bhattacharjee R, Tan HL, Kheirandish-Gozal L, et al. Adenotonsillectomy complications: A meta-analysis. 2015;136(4):702-18. Doi: 10.1542/peds.2015-1283.
- [2] Bluestone CD. Current Indications for tonsillectomy and adenoidectomy. *Annals of Otolaryngology, Rhinology & Laryngology*. 1992;101(1_suppl):58-64.
- [3] Nixon GM. Sleep [middle dot] 8: Paediatric obstructive sleep apnoea. *Thorax [Internet]*. 2005;60(6):511-16. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1747440/>.
- [4] Chia C, Haran S, Wong T, Lam K, Nixon GM, Paul E, et al. Predicting respiratory complications in paediatric adenotonsillectomy: A risk stratification protocol. *Australian Journal of Otolaryngology*. 2020;3:21-21. Doi: 10.21037/ajo-19-75.
- [5] Bitners AC, Arens R. Evaluation and management of children with obstructive sleep apnea syndrome. *Lung*. 2020;198(2):257-70. Doi: 10.1007/s00408-020-00342-5.
- [6] Choi KJ, Cheng T, Cobb MI, Sajisevi MB, Gonzalez LF, Ryan MA. Recurrent post-tonsillectomy bleeding due to an iatrogenic facial artery pseudoaneurysm. *Acta Oto-Laryngologica Case Reports*. 2017;2(1):103-06. Doi: 10.1080/23772484.2017.1330122.
- [7] Hadi U, el-Bitar M, Zaatari G. Post-adenoidectomy inflammatory pseudotumour. *PubMed*. 2001;39(3):176-79. Doi: 10.4193/Rhinology.
- [8] Abdel-Aziz M. Endoscopic nasopharyngeal exploration at the end of conventional curettage adenoidectomy. *European Archives of Oto-Rhino-Laryngology*. 2011;269(3):1037-40.
- [9] El-Badrawy A, Abdel-Aziz M. Transoral endoscopic adenoidectomy. *International Journal of Otolaryngology*. 2009;2009:949315.
- [10] Wan YM, Wong KC, Ma KH. Endoscopic-guided adenoidectomy using a classic adenoid curette: A simple way to improve adenoidectomy. *Hong Kong Med J*. 2005;1:42-44.
- [11] Elluru RG, Johnson LB, Myer CM. Electrocautery adenoidectomy compared with curettage and power-assisted methods. *The Laryngoscope*. 2009;112(S100):23-25.
- [12] Stanislaw P, Koltai PJ, Feustel PJ. Comparison of power-assisted adenoidectomy vs adenoid curette adenoidectomy. *Archives of Otolaryngology- Head & Neck Surgery*. 2000;126(7):845.

[13]

Somani SS, Naik CS, Bangad SV. Endoscopic adenoidectomy with microdebrider. Indian Journal of Otolaryngology and Head & Neck Surgery. 2010;62(4):427-31.

[14]

Watelet J-B, Bachert C, Gevaert P, Cauwenberge PV. Wound healing of the nasal and paranasal mucosa: A review. American Journal of Rhinology. 2002;16(2):77-84.

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