

Ethmoidal Polyposis, Adenoid Hypertrophy and Tympanic Membrane Perforation—A Case Report

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Abstract

Background: Ethmoidal polyposis coexisting with adenoid enlargement and tympanic membrane perforation is a rare condition in otolaryngological practice. Evidences have shown that antrochoanal polyp often times coexists with adenoid enlargement especially in the young which was in sharp contrast to ethmoidal polyposis occurring in the presence of adenoid enlargement. Moreover, the hidden location of nasopharynx housing the adenoids, coupled with the masking effect of bilateral sinonasal polyps, leads to inadvertent misdiagnosis of this complex pathology with subsequent difficulty in providing effective management. **Case Presentation:** A 24 year-old lady presented with recurrent bilateral nasal obstruction that became persistent associated with nasal discharge and anosmia. She also had recurrent right otorrhoea with associated hearing loss. Diagnostic rigid nasal endoscopy revealed mucoid discharge with bilateral polypoid masses filling both nasal cavities. Otoendoscopic finding revealed a small (about 5%) central tympanic membrane perforation. A clinical assessment of chronic rhinosinusitis with nasal polyposis complicated by chronic suppurative otitis media (CSOM) was made. A non-contrast CT scan of the paranasal sinuses showed isodense lesions in the nasal cavities, all paranasal sinuses and the entire nasopharynx. She had endoscopic sinus surgery and a nasopharyngeal clearance biopsy. The nasal, paranasal and nasopharyngeal masses had histologic confirmation of inflammatory nasal polyps and lymphoid (adenoid) hyperplasia respectively. Her condition improved remarkably with subsequent medical treat-

ment. She was followed up for 8 months and no recurrence was observed. **Conclusion:** Sinonasal polyposis can coexist with adenoid hypertrophy and middle ear disease as a single pathological condition. Hence, a high index of suspicion and thorough evaluation become necessary for making timely diagnoses and instituting effective management.

Keywords

Sino-Nasal Polyps, Adenoid Enlargement, Rhinosinusitis, Otitis Media, Endoscopic Sinus Surgery

1. Background

Sinonasal polyposis forms part of chronic rhinosinusitis spectrum which occasionally may coexist with other pathologies. [1] [2] [3]

A literature search shows that ethmoidal polyposis coexisting with adenoid enlargement is a rare occurrence in sharp contrast with antrochoanal polyp which often times coexists with adenoids, especially in the young. [2] [4]

Adenoid enlargement is uncommon or underestimated in adults [5] while common in children. [2] [4] [6] [7] It is reported that adenoid enlargement commences in early childhood up to the age of 6 years, then slowly atrophies at 8-10 years and completely disappears by the age of 16. [4] [7] [8]

The primary symptoms of sinonasal polyposis are nasal obstruction and nasal discharge. In addition to these, adenoid enlargement and other nasopharyngeal growths present with mouth breathing, snoring, sleep apnea, and hyponasal speech. [6] [7] [8] Thorough history, nasendoscopy, x-ray postnasal space or computed tomography (CT) scan are essential for making the diagnosis. [9] [10] [11] Although, magnetic resonance imaging (MRI) may occasionally be required for further evaluation. [6] [12]

The main objective of this article is to evaluate a rare occurrence of ethmoidal polyposis, adenoid enlargement and tympanic membrane perforation in an adult.

2. Case Presentation

A 24 year-old lady presented with recurrent bilateral nasal obstruction, nasal discharge and anosmia of 2 years duration. There was an associated history suggestive of nasal allergy, occasional headache and facial pain. She had intranasal polypectomy once on account of similar symptoms 4 years prior to presentation. She had no history of epistaxis or nasal trauma. She also had a history of recurrent right otorrhoea with associated hearing loss but no otalgia, tinnitus, vertigo or facial weakness.

She had a diagnostic rigid nasal endoscopy which revealed mucoid discharge with bilateral polypoid masses filling both nasal cavities. (**Figure 1(a)**, **Figure 1(b)**) Probing the nasal cavities revealed insensitive glistening masses, with no contact bleeding, appeared to arise from the roof and lateral wall of both nasal

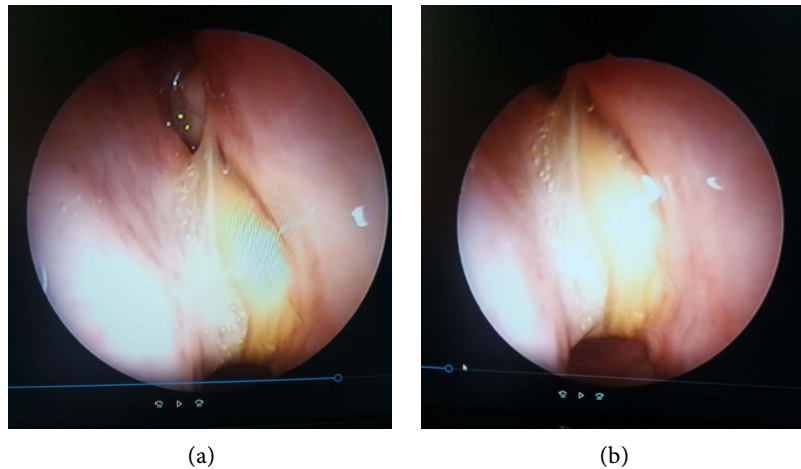


Figure 1. (a) Showing extensive sinonasal polyposis (right nasal cavity); (b) Showing extensive sinonasal polyposis (left nasal cavity).

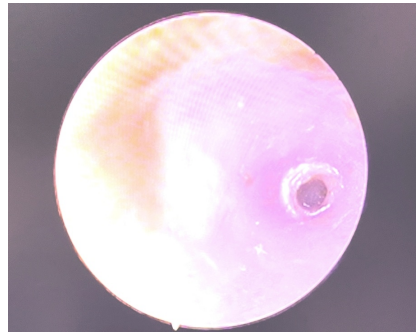
cavities. Further rigid endoscopic nasal examination was not feasible. Otoendoscopy revealed a small central tympanic membrane perforation (about 5%). (**Figure 2(a)**) Pure tone audiogram showed a right moderate conductive hearing loss (**Figure 2(b)**).

A non-contrast computed tomography (CT) scan of the paranasal sinuses revealed isodense lesions involving nasal cavities, maxillary antrum, ethmoidal air cells, sphenoid, frontal cells and the nasopharynx. (**Figures 3(a)-(c)**)

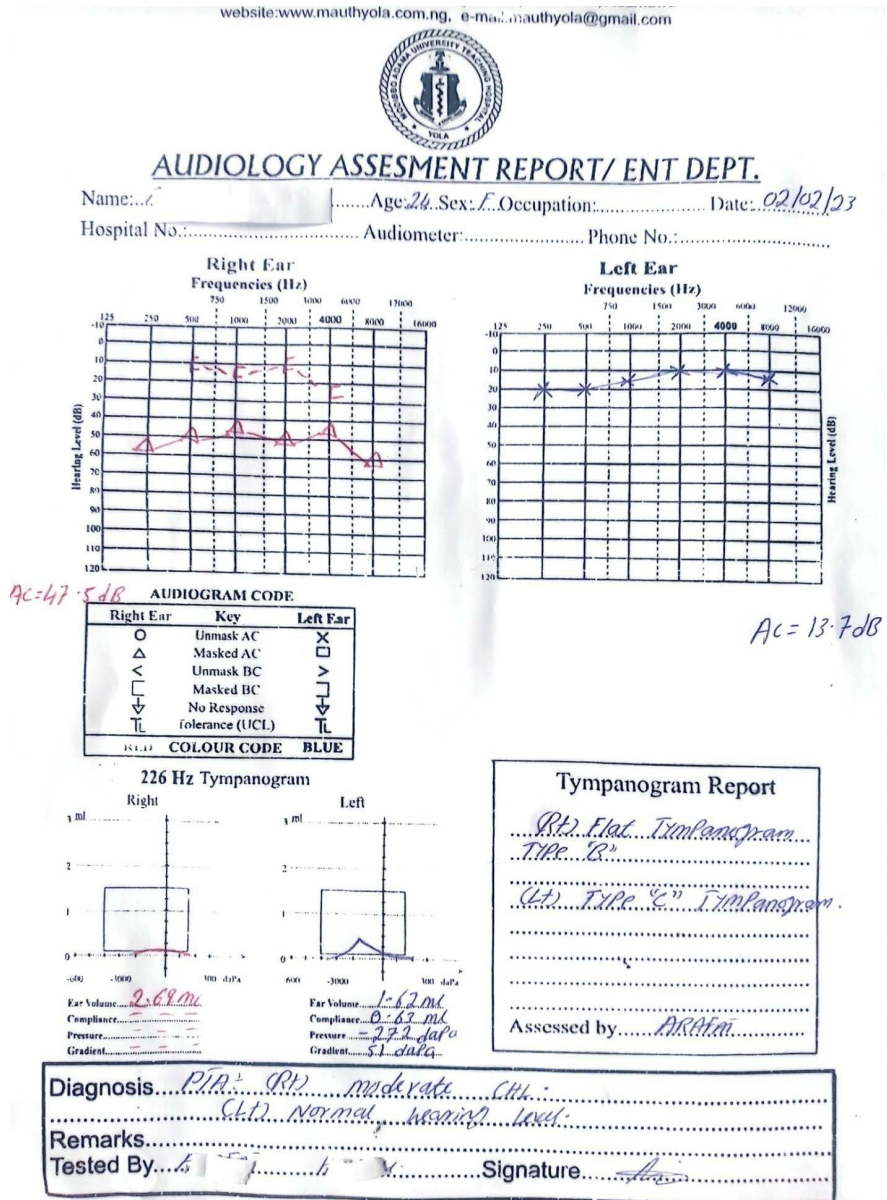
Endoscopic sinus surgery (ESS) was planned after taking an informed consent, while the tympanic membrane perforation repair was planned for a second stage procedure.

The ESS was done using a 0° Hopkins of 4 mm nasal endoscope (Karl Storz, Tuttlingen, Germany) for the most part of the procedure; while angled telescopes were used to visualize the maxillary antrum. An electric-powered microdebrider was used to clear the polyps with the occasional use of cold steel ESS instruments during the procedure (**Figure 4**). After excision of nasal polyposis, bilateral middle meatal antrostomies, ethmoidectomy and sphenoidectomy, a distinct nasopharyngeal pathology came into view. Close inspection confirmed to be an enlarged adenoid. (**Figure 5(a), Figure 5(b)**) Adenoidectomy was then carried out using an adenoid curette. Procedures were successfully completed, and the tissues were sent for histology. The result revealed inflammatory polyps and reactive hyperplasia of the adenoid tissues in keeping with the intraoperative diagnosis. (**Figure 6(a), Figure 6(b)**)

Postoperatively, the patient received antibiotics (Amoxicillin and clavulanic acid 625 mg bid * 7 days), oral decongestants (Actifed I nocte * 10 days), and subsequently commenced on steroids (Oral Prednisolone 10 mg tds * 2 weeks, Avamys nasal spray 2 puffs tds * 4 weeks) which apart from treating the polyps could potentially relieve the symptoms of adenoid disease. [12] [13] Saline nasal irrigation and douching were also recommended. Eight months follow-up revealed no recurrence. (**Figures 7(a)-(d)**).



(a)

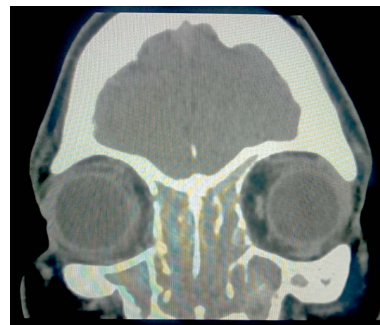


(b)

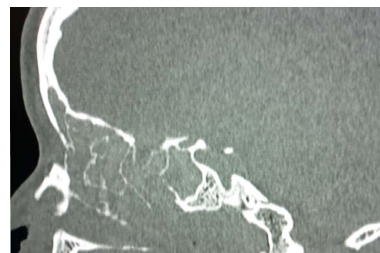
Figure 2. (a) Right small central tympanic membrane perforation; (b) An audiogram showing right conductive hearing loss. Note type B tympanogram on the right and type C on the left.



(a)



(b)



(c)

Figure 3. (a) A non-contrast (axial) CT-Scan of the paranasal sinuses showing isodense lesions involving nasal cavities, maxillary antrum, and ethmoidal air cells. Note the opacity in the right mastoid antrum (yellow star); (b) coronal view showing the involvement of paranasal sinuses converting them into a continuous cavity; (c) Saggital view. It shows the posterior extension of the lesion with thinning and erosion the sphenoid wall.



Figure 4. Microdebrider-assisted endoscopic sinus surgery.

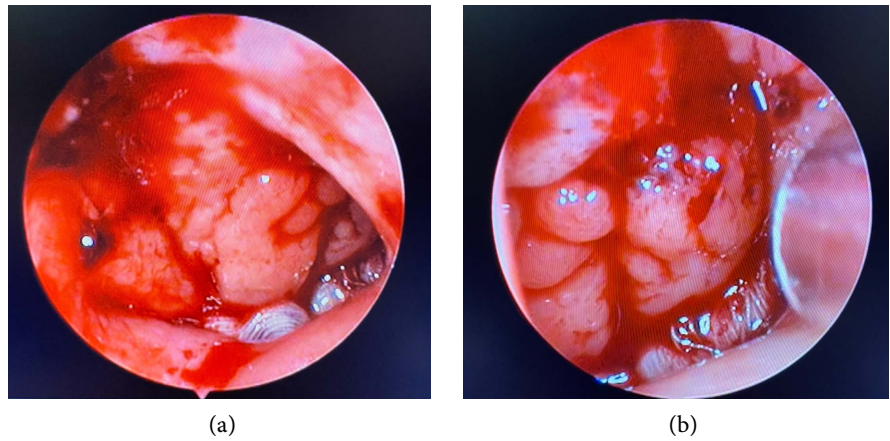


Figure 5. (a) Nasopharynx through the right nasal cavity showing enlarged adenoid. Note the Eustachian tube opening; (b) Nasopharynx through left nasal cavity showing enlarged adenoid.

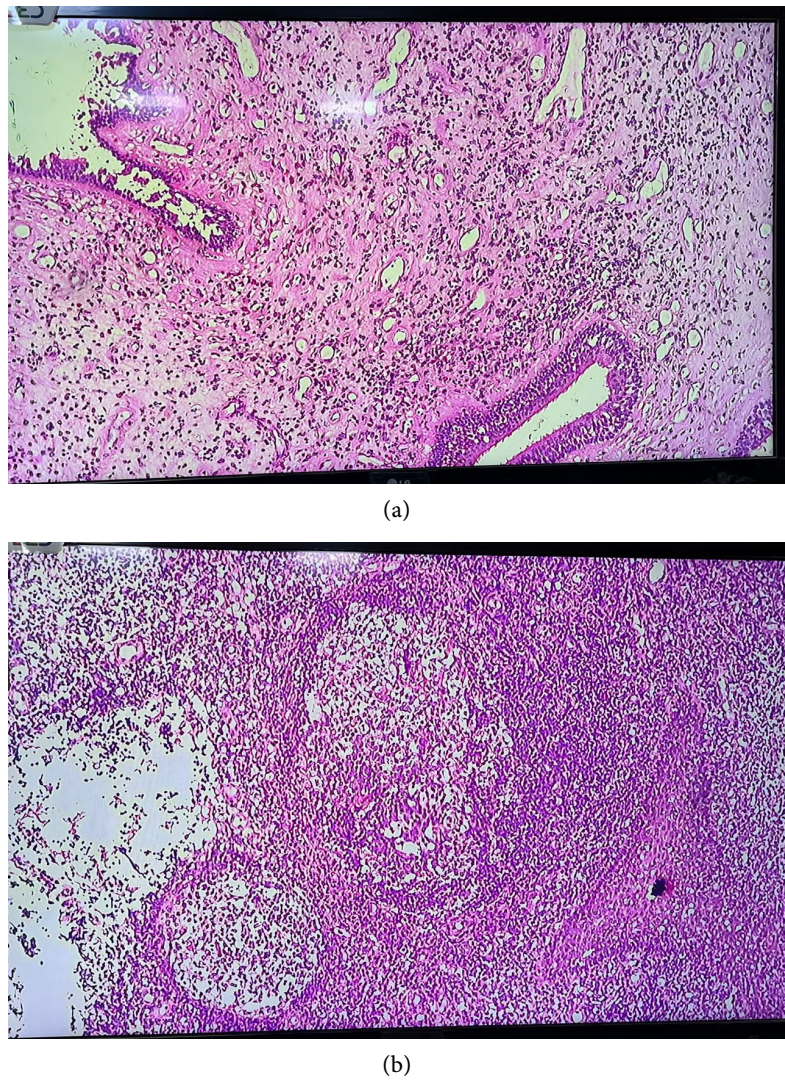


Figure 6. (a) Showing inflammatory hyperplasia of the sinonasal polyps; (b) Showing adenoid hyperplasia. Note the circular structures in keeping with lymphoid tissues.

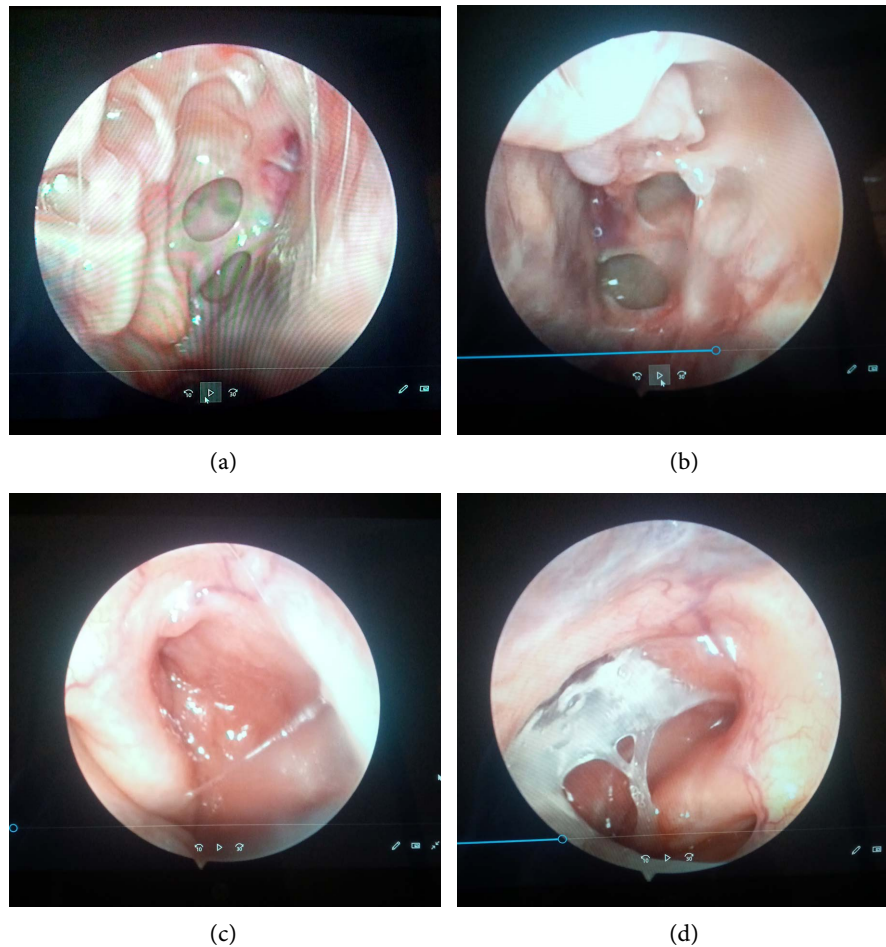


Figure 7. (a) Eight months post op. (right posterior ethmoidal/sphenoid area); (b) Eight months post-op. (left posterior ethmoidal/sphenoid); (c) Eight months post-op. (right nasopharynx); (d) Eight months post-op. (left nasopharynx). Note the mucus overproduction.

3. Discussion

Ethmoidal polyposis coexisting with adenoid enlargement is a rare pathology, especially in adults, unlike antrochoanal polyp which relatively coexists with adenoid enlargement. [2] [4] [8] More challenging is the tripartite occurrence of ethmoidal polyposis, adenoid enlargement (in retroviral negative adults) and tympanic membrane perforation concurrently in an adult. The sinonasal polyposis's bilateral nature considerably masked the view of the nasopharynx, thus obscuring the visualization of the adenoid enlargement, initiating the cascade of diagnostic dilemma.

Studies have shown that adenoids occasionally fail to regress or re-proliferate in response to infections or allergies, and are sometimes seen in individuals with deficient immune systems [4] [7] leading to the development of rhinosinusitis, recurrent otitis media, and otitis media with effusion. [7] [8].

Further studies have demonstrated that adenoid enlargement is implicated in the development of rhinosinusitis and the subsequent appearance of polyps due

to biofilm accumulation that leads to chronic mucosal inflammation and mucus retention cysts in the paranasal sinuses. [2] [3] This suggests that adenoid enlargement could be the likely aetiologic factor for both the polyposis and tympanic membrane perforation in the index patient. [10] [14] However, debate is still ongoing regarding the exact pathophysiology of sinonasal polyposis in the setting of adenoids though relatively settled for otitis media and subsequent tympanic membrane perforation. [3] [12]

Researchers have shown that unlike the management of adenoid enlargement which appears to be relatively straightforward, [3] management of rhinosinusitis with sinonasal polyps remains a daunting task in otolaryngological practice due to the high recurrence rate, making an effective long-term treatment elusive. [3] [10] [12] [15]

A recent review done by Chin & Harvey suggested that the goal of sinus surgery in chronic rhinosinusitis with nasal polyp is to create permanent wide access for long-term topical therapy rather than for relieving sinus obstruction [16] which was our aim in this index patient hoping that it will go a long way in relieving the patient's recurrent symptoms. She also had an additional benefit of adenoidectomy with potential decrease in adenoid-related symptoms.

In their study of predictive parameter for post-surgical recurrence, Brescia *et al.* [17] opined that despite appropriate surgical therapy, a significant number of patients with chronic rhinosinusitis with (sino) nasal polyps experience recurrences, probably due to presence of other conditions in addition to rhinosinusitis and sinonasal polyposis as witnessed in the index patient. The constellation of these multiple pathologies would greatly have an impact on the overall success of the treatment.

4. Conclusion

Sinonasal polyposis can coexist with adenoid hypertrophy and middle ear disease as a single pathological condition. Hence, high index of suspicion and thorough evaluation become necessary for making accurate and timely diagnoses and instituting effective surgical and medical management.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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