

# Assessment of nasal obstruction with flexible nasal endoscopy

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## ABSTRACT

**Objective:** To report the value of nasal endoscopy as an outpatient procedure in the diagnosis of posterior nasal obstruction.

**Methods:** Over one year period, from March 2002 to March 2003, we evaluated 130 adult patients that attended the Ear, Nose and Throat Department of Sohag University Hospital in Egypt with persistent nasal obstruction via anterior rhinoscopy and flexible nasopharyngoscopy. We reported the cause and site of obstruction in relation to the choanae. We confirmed the diagnosis by CT scanning, rigid endoscopic examination under general anesthesia, and histopathological analysis of biopsies taken.

**Results:** Forty-six percent of our cases had posterior nasal obstruction, 43.5% due to post-choanal lesions (mainly adenoid), 33% due to pre-choanal lesions (mainly choanal polyps), and 23.5% due to choanal lesions (mainly choanal adenoid).

**Conclusion:** We conclude that flexible nasal endoscopy is superior to visual examination in the evaluation of nasal obstruction; hence, we recommend its routine use.

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Nasal obstruction is one of the common symptoms, which drive the patient to seek medical consultation. In some patients, it may be severe, needing urgent intervention. The cause may be congenital or acquired. The congenital causes include choanal atresia, mucus cyst, angiofibroma, rhabdomyosarcoma, or nasopharyngeal teratoma. The acquired causes include posterior septal deviation, antrochoanal polyp, choanal adenoid or adenoid, neuroblastoma, lymphoma, choanal stenosis, and stenosis of the nasopharyngeal isthmus among others. Fixed unilateral nasal obstruction suggests a deviated nasal septum, choanal atresia or choanal adenoid. In some cases of nasal obstruction, sleep apnea may occur, if associated with oropharyngeal obstruction. X-ray examination of the postnasal space to provide

information about the postnasal airway correlates poorly with the size of soft tissue shadow at operations.<sup>1</sup> It is not the absolute size of the adenoid which is important, but the size relative to the postnasal space and the airway that are remaining. Large adenoids can partially or totally obstruct nasal respiration causing snoring, hyponasal speech, and forcing the child to breathe through the mouth. Unfortunately, there are other causes of nasal obstruction and mouth breathing and adenoidectomy is of no value in these patients causing persistence of symptoms following surgery.<sup>2</sup> Blind adenoidectomy also has the risk of leaving some obstructive tissue behind, particularly in the choanae, so called choanal adenoid.<sup>3</sup> The use of the flexible fiberoptic endoscope to examine the physical state and dynamics of the upper airway is extremely

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valuable in documenting both physical and functional airway obstruction. The nasal cavity, postnasal space, velopharyngeal sphincter and hypopharynx and larynx are examined in turn.<sup>4</sup> Computerized tomography provides much more information but it is expensive, has its ionizing radiation effect and requires care in its interpretation. Anterior rhinomanometry and acoustic rhinometry provide a good idea about objective nasal obstruction, but do not give us an idea what the type or the site of obstruction, and they are expensive tests and non available in most ENT clinics. The posterior nose is defined clinically as that part of the nose that cannot be visualized on anterior rhinoscopy. It includes the choanae and adjacent parts of the nasal cavity. The choanae is the opening on the back of the nose into the nasopharynx. Its margins can be seen endoscopically.<sup>5</sup> The aim of this study is to report the value of nasal endoscopy as an outpatient procedure in the diagnosis of posterior nasal obstruction.

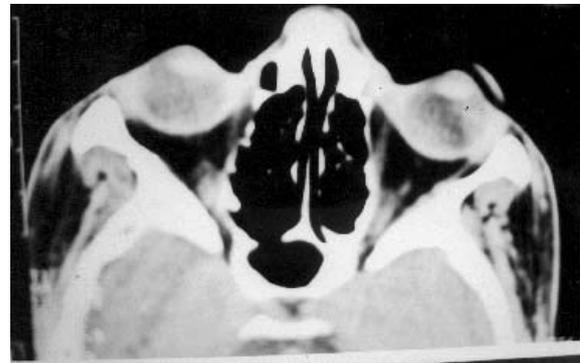
**Methods.** Over one year period, March 2002 to March 2003, 130 patients attended the Ear, Nose and Throat Department of Sohag University Hospital in Upper Egypt with persistent nasal obstruction. We carried out a full ENT history and examination. As anterior rhinoscopy could not visualize the cause for the obstruction, we evaluated the patients with flexible nasopharyngoscopy. We reported the cause and site of the obstruction in relation to the choanae, and confirmed the diagnosis by CT scanning, rigid endoscopic examination under general anesthesia, and histopathological analysis of biopsies taken.

**Results.** Out of the 130 adult patients presenting with persistent nasal obstruction over a year, 60 (46%) had posterior nasal obstruction with an age range of 16–75 years and equal male to female distribution. Forty-three and half percent (26 out of 60), were due to post-choanal lesions, mainly adenoid (13 cases), with nasopharyngeal malignancy in 12 cases, 33% (20 out of 60) were due to choanal lesions [mainly choanal adenoid in 8 cases (**Figure 1**), unilateral choanal atresia in 5 cases (**Figure 2**), and hypertrophied posterior end of inferior turbinates in 7 cases (**Figure 3**)], and 23.5% (14 out of 60) were due to pre-choanal lesions, mainly choanal polyps; 11 antrochoanal polyps, 2 sphenchoanal polyps and one posterior deviated septum attached to turbinates (**Figure 4**).

**Discussion.** Direct visualization of the whole nasal cavity and nasopharynx using flexible nasopharyngoscope ensured accurate diagnosis of the cause and site of persistent nasal obstruction. Posterior



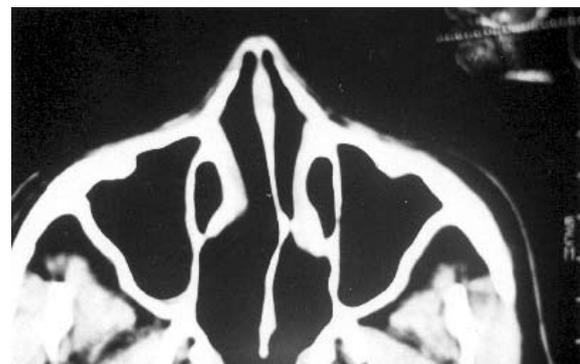
**Figure 1** - Choanal adenoid.



**Figure 2** - Unilateral bony choanal atresia.



**Figure 3** - Hypertrophied posterior end of turbinate.



**Figure 4** - Deviated septal spur touches inferior turbinate.

nasal obstruction was the cause of 46% of cases presenting with persistent nasal obstruction. Post-choanal lesions represented 43.5% of posterior nasal obstruction causes. The adenoid constituted 35% of posterior obstruction cases (21 out of 60), and 16% of all cases (21 out of 130). Our results are slightly higher than reported by Sayed and Ahmed<sup>6</sup> who found 12.5% of their adult cases having adenoid as the cause of nasal obstruction. We can attribute the increased recognition of adenoid in adults in recent years to the use of nasal endoscopy.<sup>6-8</sup> Choanal lesions came second as they represented 33% of cases. We detected choanal adenoid in 8 out of 21 cases of adenoid (38%). The roof and lateral boundary of the choana were the sites of involvement in these cases. Pearl and Manoukian<sup>9</sup> observed choanal adenoid in 9.4% of their studied children who had adenoidectomy. Orntoft and Bonding<sup>10</sup> found obstructing ectopic adenoid tissues inside the choana in a series of 19 patients, many of them had repeated adenoidectomy.<sup>10</sup> The use of transnasal forceps under endoscopic visualization is the only way to remove such adenoid tissue. Hypertrophied posterior end of inferior turbinate was the cause of obstruction in 7 cases (12%), and unilateral choanal atresia was the cause in 5 cases (8%). We also detected a case of choanal stenosis secondary to rhinoscleroma with patent nasal airway elsewhere in our study. Pre-choanal lesions come third in order for causes of posterior nasal obstruction. By far antrochoanal polyp was the most common variety of choanal polyps constituting 85%. However, we detected sphenochoanal polyps in 2 cases. Choanal polyps with unusual sites of origin were reported in 16% of choanal polyps in a published series.<sup>11</sup> They were sphenochoanal, ethmochoanal, and choanal polyps with double site of origin. Lopatin et al<sup>12</sup> in their series of 20 cases reported antrochoanal polyps in 11 cases, sphenochoanal polyps in 3 cases and ethmochoanal polyps in 6 cases.<sup>12</sup> Nasopharyngeal malignancy was a common cause of adult posterior nasal obstruction. It constituted 20% of cases (12 out

of 60). We found lymphoma in 9 cases, and 3 cases of nasopharyngeal carcinoma. This is because lymphoma usually presents as an exophytic mass obstructing the choanae, while carcinoma is infiltrative without obstructive symptoms.

We conclude that flexible nasal endoscopy is superior to visual examination in the evaluation of nasal obstruction, and we recommend its routine use. Endoscopic guided adenoidectomy ensures complete removal of adenoid tissue, avoiding missing choanal adenoid and injury of the eustachian tube.

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