Antrochoanal polyp

By

Dr T Balasubramanian
**Synonyms:** Antrochoanal polyp, Killian's polyp, Nasal polyp.

**History:** In 1753 Palfyn first described an antrochoanal polyp in a female patient. The polyp was found filling the nasopharynx extending up to the uvula of the patient. Palfyn believed that this polyp arose from the choana. It was Killian in 1906 who demonstrated that this polyp arose from the maxillary sinus antrum.

**Definition:** Antrochoanal polyp is a benign solitary polypoidal lesion arising from the maxillary sinus antrum causing opacification and enlargement of antrum radiologically without any evidence of bone destruction. It exits the antrum through the accessory ostium reaches the nasal cavity, expands posteriorly to exit through the choana into the post nasal space.

**Incidence:** It commonly affects children and young adults.

**Etiopathogenesis:** This disease is commonly seen only in non atopic persons. Its etiology is still unknown. In fact this disorder is not associated with nasal allergy. Proetz theory: Proetz suggested that this disease could be due to faulty development of the maxillary sinus ostium, since it was always been found to be large in these patients. Hypertrophic mucosa of maxillary antrum sprouts out through this enlarged maxillary sinus ostium to get into the nasal cavity. The growth of the polyp is due to impediment to the venous return from the polyp. This impediment occur at the level of the maxillary sinus ostium. This venous stasis increases the oedema of the polypoid mucosa thereby increasing its size.

**Bernoulli's phenomenon:** Pressure drop next to a constriction causes a suction effect pulling the sinus mucosa into the nose.

**Mucopolysaccharide changes:** Jakson postulated that changes in mucopolysaccharides of the ground substance could cause nasal polyp.

**Infections:** Recurrent nasal infections have also been postulated as the cause for nasal polyp

**Mill's theory:**

Mills postulated that antrochonal polyp could be maxillary mucoceles which could be caused due to obstruction of mucinous glands.

**Ewing's theory:**

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Ewings suggested that an anomaly which could occur during maxillary sinus development could leave a mucosal fold close to the ostium. This fold could later be aspirated into the sinus cavity due to the effects of inspired air causing the development of antrochonal polyp.

**Vasomotor imbalance theory:** This theory attributes polyp formation due to autonomic imbalance

Polypoidal tissue from the maxillary antrum exits out through the accessory maxillary sinus ostium according to some workers. This accessory sinus ostium is placed posteriorly, which could be the reason for the polyp to present posteriorly. The accessory sinus ostium widens progressively, ultimately at one stage merging with the natural ostium of the maxillary sinus forming one huge opening into the maxillary antrum.

**Infection / Inflammation:**
This theory suggests that acinous mucous glands within the maxillary sinus cavity gets blocked due to infection / inflammation involving the mucous lining of the sinus cavity. This leads to the formation of a cystic lesion within the maxillary sinus cavity. This cyst gradually enlarges to occupy the whole of the maxillary sinus cavity. It exits the sinus cavity by enlarging the accessory ostium and enters the nasal cavity. Usually these cysts arise from the antero inferior / medial wall of maxillary antrum.

**Possible reasons for migration of antrochoanal polyp in to the post nasal space:**

1. The accessory ostium through which the polyp gets out of the maxillary antrum is present posteriorly.

2. The inspiratory air current is more powerful than the expiratory air current thereby pushes the polyp posteriorly.

3. The natural slope of the nasal cavity is directed posteriorly, hence the polyp always slips posteriorly.

4. The cilia of the ciliated columnar epithelial cells lining the nasal cavity always beats anteroposteriorly pushing the polyp behind.

**Histology:** Shows respiratory epithelium over normal basement membrane. The interstitial layer is grossly oedematous, with no eosinophils. The interstitial layer contains other inflammatory cells.

**Clinical features:** Since the disorder is unilateral (commonly) the patient always present with

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1. Unilateral nasal obstruction
2. Unilateral nasal discharge
3. Headache (mostly unilateral)
4. Epistaxis
5. Sleep apnoea
6. Rhinolalia clausa due to presence of polyp in the post nasal space
7. Difficulty in swallowing if the polyp extends into the oropharynx

![Figure showing antrochoanal polyp exiting out of accessory ostium](www.drtbalu.com)

**Figure showing antrochoanal polyp exiting out of accessory ostium**

Anterior rhinoscopy may show the polyp as glistening polypoidal structures. They will be insensitive to touch. This feature helps to differentiate it from a hypertrophied nasal turbinate.

Postnasal examination will show the polyp if extending posteriorly at the level of

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choana. If it fills up the nasopharynx it will be visible there.

Xray paranasal sinuses will show a hazy mazillary antrum.

CT scan of paranasal sinuses is diagnostic. It will show the polyp filling the maxillary antrum and exiting out through the accessory ostium into the nasal cavity.
The antrochoanal polyp is dumb bell shaped with three components i.e. antral, nasal and nasopharyngeal.

**Treatment:**

This is a surgical problem. Formerly it was treated by avulsion of the polyp transnasally. This method led to recurrences. A caldwell luc approach was preferred in patients with recurrences. In caldwell luc procedure in addition to the polypectomy, the maxillary antrum is entered via the canine fossa and the antral component is completely excised.
**Endoscopic approach:** With the advent of nasal endoscope this approach is the preferred one. Using an endoscope it is always easy to completely remove the polypoid tissue. The uncinate process must also be completely excised. Endoscopic approach has the advantage of a complete surgical excision with negligible recurrence rates.

![Endoscopic view of an antrochoanal polyp](image)

Picture showing the choanal component of antrochoanal polyp

Differences between antrochoanal polyp / Ethmoidal polyp

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<table>
<thead>
<tr>
<th>Antrochoanal polyp</th>
<th>Ethmoidal polyp</th>
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<tr>
<td><strong>Solitary</strong></td>
<td><strong>Multiple</strong></td>
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<tr>
<td>Arises from maxillary antrum</td>
<td>Arises from ethmoidal sinus</td>
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<tr>
<td>Has three components</td>
<td>Has only one component</td>
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<tr>
<td>Infection plays a role in pathogenesis</td>
<td>Allergy is supposed to play a role</td>
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<td>Common in young adolescents</td>
<td>Common in adults / elderly</td>
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Recent advances:

Current research involving Nitric oxide has thrown light into the possible etiopathogenic factors involved in the genesis of antrochonal polyp. Nitric oxide have been shown to play a major role in nonspecific immune reactions and inflammation in a variety of tissues. Endogenous nitric oxide is synthesized from L-argenine by the effect of nitric oxide synthase. This all important nitric oxide synthase exists in three forms:

1. Endothelial nitric oxide synthase
2. Neuronal nitric oxide synthase
3. Inducible nitric oxic synthase

Out of these three types the Inducible nitric oxide synthase has been detected not only in epithelium but also in macrophages, fibroblasts, neutrophils, endothelium and vascular smooth muscle.

Studies have revealed that antrochoanal polyp tissue contained more nitric oxide than normal tissues. Increased nitric oxide production could be from epithelial / inflammatory cells. Among inflammatory cells eosinophils play an important role in production of nitric oxide. Studies have also revealed that Inducible nitric oxide synthase play an important role in the pathogenesis of antrochonal polyp.