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## NASAL POLYP - IMPORTANCE OF HISTOPATHOLOGICAL EXAMINATION AND MANAGEMENT THROUGH MULTISPECIALITY APPROACH

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### *Abstract*

Nasal polyps are a common cause of nasal obstruction in adults. Due to high recurrence of the nasal polyps their treatment is a challenge to the surgeons. Through this article, we would like to highlight the importance of multispeciality approach for the treatment of nasal polyps. We have also tried to lay stress on coordination between medical and dental specialties that would lead to a better overall quality of treatment provided to the patients. Keeping in mind the increase in medico-legal cases, it is advised that all cases of nasal polyps should be sent for histopathological examination.

### *Keywords:*

*nasal, polyp, polyposis*

### **Introduction**

Nasal polyps are a part of sino-nasal masses and have been a medically recognised condition since the time of Egyptians.<sup>[1]</sup> These are benign lesions which arise from the mucosa of nasal cavity or from the mucosa of nasal sinuses.<sup>[2]</sup> The prevalence of nasal polyps in the population has been grossly estimated as 1-4%. Its incidence increases with age and is likely greatest between 40 and 60 years of age.<sup>[3]</sup>

### **Case Report**

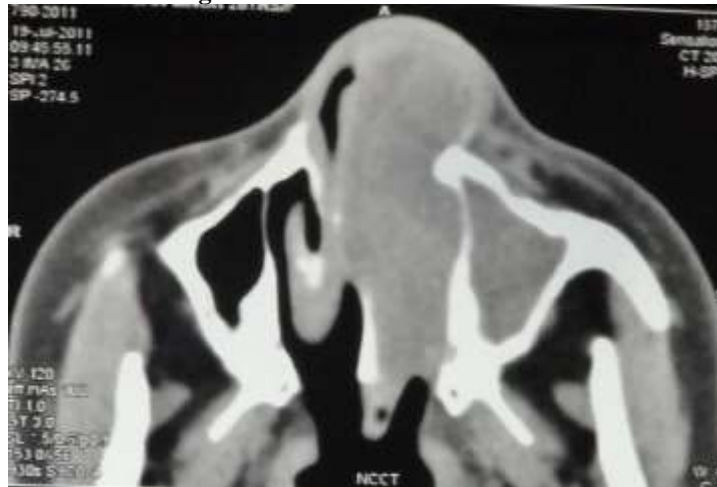
A 17 year old female patient reported with uncontrolled bleeding from left nostril for approximately 48 hours. Patient gave history of episodes of nasal bleeding approximately 2 months back. Bleeding ceased following anterior nasal packing as was evident by her medical records.

A complete haemogram was done and all parameters were found within normal limits. A non-contrast CT scan was performed which depicted a large soft tissue mass suggestive of a nasal polyp almost completely obliterating the external nasal cavity extending superoinferiorly from nasoethmoidal region to the base of nasal cavity and posteroinferiorly from the nasopharynx to the external nare on the left side (Figure 1).

Differential diagnosis of eosinophilic chronic rhinosinusitis, allergic fungal rhinosinusitis and cystic fibrosis were drawn. Taking into consideration the size of lesion which was about 3.5 cm x 7.0 cm, a transfacial approach was planned as a multidisciplinary intervention by the otorhinolaryngologist and the maxillofacial surgeon.

A modified weber fergusson incision was given on the left side without the lip split (Figure 2). Nose was retracted laterally towards the right, nasal mucosa was dissected and the polyp was excised (Figure 3,4). Surgical site was closed in two layers following proper haemostasis (Figure 5). Post operative recovery was uneventful with good aesthetics. Histopathological investigation was done and the findings were suggestive of an inflammatory nasal polyp (Figure 7). A regular follow up of the patient was done every 6 months which was sound and healthy with no signs of recurrence (Figure 6).

**Figure 1: A Non Contrast CT Scan**



**Figure 2: A modified weber fergusson incision**



**Figure 3: *Nose retracted laterally***



**Figure 4: *Excised Nasal Polyp***

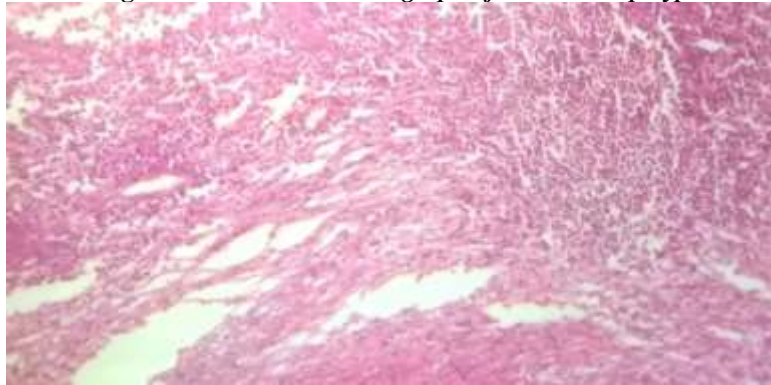


**Figure 5: *Surgical site closed in two layers***



**Figure 6: *Follow up of the patient***



**Figure 7: H&E Photomicrograph of the excised polyp****Discussion**

Nasal polyps are a common cause of nasal obstruction in adults. They present as smooth, round, yellowish to pale glistening structures that are attached to the nasal mucosa or sinus mucosa by a narrow stalk or a pedicle.<sup>[1,4]</sup> The prevalence of these nasal polyps is about 4% in the general population.<sup>[1,5,6]</sup> These nasal polyps have a strong predilection of 4:1 for males as compared to females and affect the age groups between 30 to 60 years.<sup>[1,7]</sup> In the present case, the patient was a 17 years old female. Most of the patients usually complain of a feeling of nasal mass, nasal obstruction, loss of smell, voice changes and epistaxis.<sup>[1,5]</sup> In most of the cases nasal polyps are multiple, bilateral that are clustered in a grape like mass. However, when nasal polyps are unilateral in nature, a histopathological examination should be done to rule out malignancy<sup>[2,4]</sup> as was done in our case. The histopathological features when studied were suggestive of an inflammatory nasal polyp.

**Etiology**

Despite the prevalence and recognition of nasal polyps for about 3,000 years, the etiology is still not clear. Numerous factors are involved in the formation of nasal polyps, but the exact etiology of nasal polyposis is still unknown and many theories have been proposed.<sup>[8]</sup> Few of the suggested theories are as follows:

- (i) According to some theories, nasal polyps are a result of conditions that cause chronic inflammation in the nose and nasal sinuses and are characterized by stromal oedema and cellular infiltrate.<sup>[2]</sup> It was also found that the nasal polyps are more strongly associated with non-atopic disease than the atopic disease as the patients who were found to be non-atopic by skin tests or serum specific IgE had IgE mediated nasal mucosal allergy.<sup>[7]</sup>
- (ii) Many studies have been done to find out the role of interleukine-5 (IL-5) in the pathogenesis of nasal polyps. It was seen that IL-5 was significantly raised in patients with nasal polyps as compared to healthy controls.<sup>[2]</sup>
- (iii) Fungi have also been found to be associated with the pathogenesis of nasal polyps. The fungi that are inhaled become entrapped in the sinonasal mucosa that causes the eosinophils to shift into the lumen from respiratory mucosa. This causes the release of toxic mediators that cause secondary mucosal inflammation and hence, nasal polyp formation.<sup>[2,7]</sup>
- (iv) Genetic etiology is also suspected in the formation of nasal polyps as Luxenburger et al (2000) demonstrated a link between HLA-A74 and nasal polyps.<sup>[2,7]</sup> Cystic fibrosis which is an autosomal recessive disorder characterised by mutation in cystic fibrosis transmembrane regulator also predisposes a person to the formation of nasal polyps.<sup>[7]</sup>
- (v) Free radicals have also been proposed to play a role in the pathogenesis of nasal polyps. These free radicals are highly reactive molecules which in their outer orbit have an unpaired electron. The free radicals that are produced in aerobic organisms are oxygen radicals or reactive oxygen species that are also known as oxidants.<sup>[8]</sup> These oxidants result in alteration in the ion transport mechanism across the nasal epithelium as was shown by Cochrane. He demonstrated that these oxidants cause an impairment of the ion pumps in the cell membranes. This impairment leads to an increase in the level of intracellular Na<sup>+</sup> and a loss of K<sup>+</sup> along with

the movement of  $\text{Ca}^{2+}$  into the cytoplasm from the external medium. All these changes in the function of ion pumps of the cell membranes result from direct action of oxidants on the proteins. There is also increased absorption of  $\text{Na}^+$  and  $\text{Cl}^-$  permeability by the nasal epithelium relative to turbinate epithelia. All these changes cause mucosal oedema in the early stage and epithelial damage in the advanced stage.<sup>[8]</sup>

- (vi) Another theory suggested that nasal polyps have a poor vascularisation with a lack of vasoconstrictor innervations that causes increase in vascular permeability resulting in oedema and polyp formation.<sup>[7]</sup>
- (vii) Bacterial infections have also been postulated in the formation of nasal polyps. However, their occurrence in humans need to be proven.<sup>[7]</sup>

Hence, it can be concluded that nasal polyp is a multifactorial disease and no single etiological factor can explain its pathogenesis.<sup>[7]</sup>

### ***Histology***

Till date there is no consensus among the surgeons on the need for routine histological examination of the nasal polyps.<sup>[4]</sup> The usual practice is to send only the unilateral nasal polyp masses for routine histological examination and not the clinically diagnosed bilateral polyps as many authors feel that all the cases of nasal polyps can be diagnosed clinically. However in today's world of evidence based medicine where medico legal cases are on the rise it is advised that routine histopathological examination of all the cases of nasal polyps should be performed.<sup>[4]</sup> Hellquist H B classified polyps into four different types depending upon their histological features as: (I) Eosinophilic oedematous type characterised by an edematous stroma with a large number of eosinophils; (II) Chronic inflammatory or fibrotic type characterised by large number of inflammatory cells chiefly lymphocytes and neutrophils with less number of eosinophils; (III) Atypical stromal type; and (IV) Seromucinous gland type.<sup>[7]</sup> In the present case report, histopathologically, type (II) nasal polyp was identified showing chronic inflammatory cell infiltrate consisting of lymphocytes, plasma cells and few mast cells.

However these nasal polyps can also be classified as eosinophil and neutrophil dominated inflammation with the eosinophil dominated inflammation being the more common one accounting for about 63% to 95% cases.<sup>[7]</sup>

For practical reasons, Stammberger H classified nasal polyps into five groups, based on endoscopic and clinical criteria, their response to different therapy, association with other diseases as well as light microscopic appearance: (a) Antrochoanal polyp; (b) Large isolated polyps; (c) Polyps associated with chronic rhinosinusitis (CRS), non-eosinophil dominated, non-related to hyper-reactive airway syndromes; (d) Polyps associated with CRS, eosinophil dominated; and (e) Polyps associated with specific disease (Cystic fibrosis, non-invasive/ non-allergic fungal sinusitis, malignancy).<sup>[7]</sup>

A wide variety of transfacial approaches to the maxillofacial region may be utilized as per requirement of the surgical procedure being performed. The prominence, complex neural as well as vascular anatomy of the facial region often makes choices of transfacial approaches a difficult one. The unusual choice of the incision in this case makes it interesting. The location, size of the lesion and the presenting complaint of uncontrolled bleed warranted a wide and clear access. Management was carried out via a multispeciality approach between the ENT surgeon, maxillofacial surgeon, oral pathologist, pedodontist and general pathologist.

### ***Recurrence***

Nasal polyps have a high recurrence rate that makes their treatment a challenge for the surgeons.<sup>[9]</sup> According to the National Health Service Research and Development Health Technology Assessment Programme Evaluation, polyp recurrence was 28% following endoscopic sinus surgery compared with 35% following intranasal polypectomy.<sup>[2]</sup> In the present case, patient was placed on a six monthly follow up and has reported no recurrence till the sixth visit, three years post surgery.

### ***Conclusion***

Nasal polyps which have a prevalence of about 2%,<sup>[10]</sup> have a great impact on the patient's quality of life and causes social and occupational limitations. Affect of nasal polyps on the mental health of patients is much more than its affect on the physical health.<sup>[5]</sup> In our opinion the histopathological examination of nasal polyps especially those

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presenting in an unconventional manner as in the case presented here is a wise choice. A close coordination between the medical and dental specialties would lead to a better overall quality of treatment provided to the patients.

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