International Journal of Biomedicine 16(1) (2026) 59-63
http://dx.doi.org/10.21103/Article16(1)_OA7

ORIGINAL ARTICLE

Otorhinolaryngology

INTERNATIONAL JOURNAL OF BIOMEDICINE

Nature of Nasal Polyps among Adults in Al Kharj City: A Retrospective Study

Ali Hassan A. Ali[1*], Wafaey Badawy[2], Turki Aldriweesh[3], Soltan Emad Eldeen H. Alkhaldi[4], Saud Lafai Alsulami[4], Abdullah F. Alanazi[4], Ahmed Eidhah Almalki[4], Mohammed Abdullah Alharbi[4], Saleh Abdullatif Almunyif[4], Raghad Abdullah Aldosari[4], Shouq Bader S. Alotaibi[4], Rasil Nasser Alqahtani[4], Mohammed Ahmed Saad Almalki[5], Raghad Shudayyid R. Almutairi[6]

[1]*Basic Medical Science Department, College of Medicine, Prince Sattam bin Abdulaziz University, Al-Kharj 11942, Saudi Arabia*
[2]*Department of Pathology, Military Industries Hospital, Al-Kharj, Saudi Arabia*
[3]*Department of Otolaryngology-Head and Neck Surgery College of Medicine, Prince Sattam bin Abdulaziz University, Al-Kharj 11942, Saudi Arabia*
[4]*College of Medicine, Prince Sattam bin Abdulaziz University, Al-Kharj 11942, Saudi Arabia*
[5]*College of Medicine, Imam Mohammed Ibn Saud Islamic University, Riyadh, Saudi Arabia*
[6]*Faculty of Medicine, Almaarefa University, Riyadh, Saudi Arabia*

Abstract

Background: Clinical and radiographic criteria are used to diagnose nasal polyps, but histopathologic examination is necessary for a definitive diagnosis. There are numerous categories for the histological classification of nasal polyps. The aim of this study was to identify the histological subtypes of nasal polyps in adult patients in Al Kharj city.
Material and Methods: Fifty-one individuals who had surgery to remove nasal polyps between January 2024 and June 2025, and whose diagnoses were verified by histological analysis, were the subject of a retrospective study based on hospital information. Males made up more than half (58.8%) of the patients. Inflammatory or allergic polyps were found in most cases (52.9%). Inverted papilloma was found in 21 cases (41.2%). Of the 51 cases, only 3 were malignant.
Conclusion: Uupon histological inspection, the nasal polyps primarily exhibit an inflammatory or allergic pattern. Histopathological examination of a resected nasal polyp is often necessary to establish the definitive diagnosis, as it is challenging to detect the pathology of a nasal mass clinically.(**International Journal of Biomedicine. 2026;16(1):59-63.**)

Keywords: nasal polyps • histopathology • retrospective study

For citation: Ali AHA, Badawy W, Aldriweesh T, Alkhaldi SEEH, Alsulami SL, Alanazi AF, Almalki AE, Alharbi MA, Almunyif SA, Aldosari RA, Alotaibi SBS, Alqahtani RN, Almalki MAS, Almutairi RSR. Nature of Nasal Polyps among Adults in Al Kharj City: A Retrospective Study. International Journal of Biomedicine. 2026;16(1):59-63. doi:10.21103/Article16(1)_OA7

Introduction

Nasal polyposis is a benign hyperplastic growth of the nasal mucosa. It is the outcome of a complicated process that some people experience. Some people have it, including those with cystic fibrosis, rhinitis, and chronic sinusitis. Clinical and radiographic criteria are used to diagnose nasal polyps, but histopathologic examination is crucial for precise diagnosis.[1] Nasal polyposis is present in 25–30% of patients with chronic rhinosinusitis and in 1%–4% of the general population.[2] Numerous pathologic processes and etiologic factors have been implicated in the development of nasal polyps. The causes of nasal polyps remain unclear. Nasal polyps have a complex etiology, including allergies, primary ciliary dyskinesia, cystic fibrosis, persistent infections, and some systemic vasculitides. Aspirin sensitivity and asthma are well known to be associated

***Corresponding author:** Prof. Ali Hassan A. Ali. E-mail: alihassan3750@yahoo.com, a.ali@psau.edu.sa*

with the development of nasal polyps.[3] Every nasal polyp excised during surgery should be routinely referred for histological analysis. Currently, otolaryngologists cannot agree on the necessity of routinely examining nasal polyps. Pathological findings often alter patient management, and microscopic analysis of nasal polyp specimens typically aligns well with prior clinical impressions. It was discovered that the accumulation of extracellular fluid, a moderate inflammatory process, and the growth of mucosa and submucosa within the turbinates or paranasal sinus were the causes. Nasal polyps are more common in adults than in children.[4]

Polyps originating from the mucosa can be sessile (no stalk), sessile-semipedunculated, or pedunculated (with a stalk). These benign, painless, and often translucent, grey-colored growths are usually found near the ethmoid sinuses. There are inflammatory or granulomatous polyps, linked to a persistent naso-sinusoidal infection, and the other types, linked to nasal allergy and multiple eosinophilic infiltrations of the stroma.[5]

Nasal obstruction, congestion, anosmia, nasal discharge, rhinorrhea, facial pain, and headache are all clinical signs of nasal polyps.[6] The complete knowledge of stromal alterations and of epithelial cells, particularly of several populations of inflammatory cells implicated in the pathophysiology of this disease, is made possible by histological examination.[7] Accurate classification of nasal polyps is challenging due to their overlapping histological features.

The aim of this study was to identify the histological subtypes of nasal polyps in adult patients in Al Kharj city.

Materials and Methods

The research design used in this study was a retrospective design. The Military Industries Hospital served as the location. This study comprised the hospital records of every patient who had nasal polyp removal surgery at the histopathology department at Al Kharj Military Industries Hospital between January 2024 and June 2025. Histopathological analysis was performed on all nasal polyp specimens obtained from patients of various ages and genders during the study period. Patients with nasal polyps who were older than 12 and whose diagnosis was verified by histological examination met the inclusion criteria. Nevertheless, only instances with sufficient tissue samples and comprehensive clinical data were taken into consideration for analysis. Additionally, patients with congenital nasal polyps and a history of previous surgery were not involved in the research study. The pathology department's histopathology section received all of the specimens in 10% formalin along with significant clinical data, including age and sex. The usual biopsy processing protocol for paraffin-embedded sections was followed for all tissue sections. Eosin and hematoxylin stains were applied following the fabrication of sections that were three to five microns thick. To ensure diagnostic consistency, each slide was examined under a light microscope by two separate trained pathologists. They used standard morphological criteria to categorize the polyps as allergic, inflammatory, and other forms based on their histological characteristics. For this study, information was gathered from patients' medical records. Data analysis was done using SPSS statistics 22.0.

Results

Males accounted for more than half (58.8%) of patients, and 21 (41.2%) were female. The patients ranged in age from 12 to 76. The largest proportion (23/45.1%) of participants in the current study were aged 31-40. The next most frequent age group affected was 41 to 50 years old (Table 1)

Table 1.

Lesion distribution according to histology, age, and gender (n=51).

Parameter	Category	N	Percentage
Gender	Male	30	58.8%
	Female	21	41.2%
Age	12-30	3	5.9%
	31-40	23	45.1%
	41-50	18	35.3%
	51-60	5	9.8%
	≥61	2	3.9%
Type of lesion (Polyp)	Non-neoplastic		
	Inflammatory or allergic	27	52.9%
	Neoplastic		
	Benign inverted papilloma	21	41.2%
	Malignant lesion	3	5.9%

Only 3 of the 51 instances were malignant; 27 were non-neoplastic (52.9%), and 24 were benign neoplastic polyps (47.1%). Nearly all cases had varying numbers of eosinophils, in addition to other inflammatory or allergic polyps. Sheets of mononuclear cells and eosinophils were also visible. All allergic and inflammatory polyps exhibited edema and a noticeable alteration in vascularity. The stroma of these polyps also contained fibroblasts, inflammatory cells, and fluid that formed pseudocystic gaps. There was typically a moderate number of inflammatory cells. Additionally, dilated arteries and hyperplasia of seromucinous glands were discovered. (Figures 1A,B,C,D & 2A,B,C,D)

A benign epithelial growth in the nasal cavity and the paranasal sinuses' underlying stroma is called an inverted papilloma. In 21 (41.2%) cases, it was identified. Histological analysis revealed polypoid tissue coated in pseudostratified columnar ciliated epithelium with mixed mucocytes in the hematoxylin and eosin-stained section. (Figures 3A,B,C,D & 4A,B,C,D)

An 18-year-old patient had a little nasal nodule. It typically manifests in early childhood or at birth. solitary skin-colored papule with a maximum size of less than 1 cm. It displays more developed vellus hair follicles in close proximity. (Figure 5A,B,C,D)

It was determined that the malignant specimen was nasopharyngeal cancer. A biopsy performed in the clinic revealed that the three patients' unilateral nasal tumors were nasal polyps. Histologically, nasopharyngeal carcinoma was identified as a nonkeratinizing undifferentiated type, characterized by clusters of tumor cells with vesicular nuclei, large central nucleoli, and indistinct cell borders. Plasma cells and background lymphocytes were frequently observed. (Figure 6A,B,C,D)

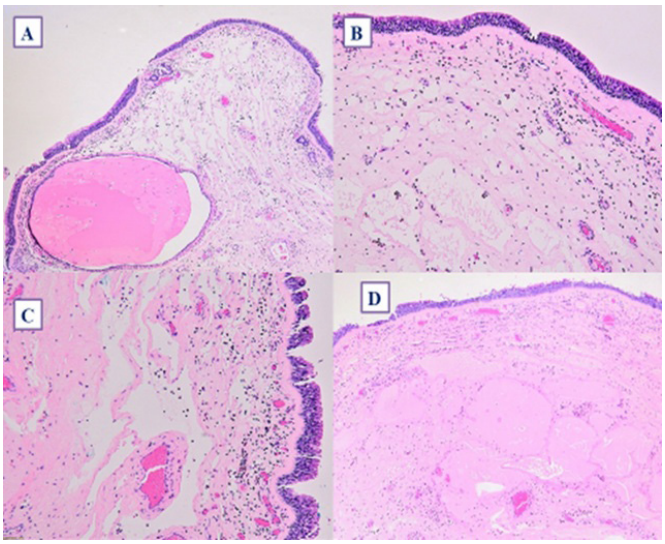

Fig. 1. *Different images of allergic and inflammatory nasal polyps stained with Hematoxylin and Eosin. A) Thrombotic stratification is observed in cavernous-like structures.B) Acute and chronic inflammatory cells, together with a few fibroblasts and tiny blood vessels, are mixed together in the edematous stroma. C) The respiratory epithelium exhibits stromal edema hyperplasia in a polyp with seromucinous gland hyperplasia, and the basal membrane that divides the epithelium from the edematous stroma thickens. D) The surface is covered in pseudostratified columnar epithelium, and the stroma is loose and edematous. (A, B X 200). (C, D X 400)*

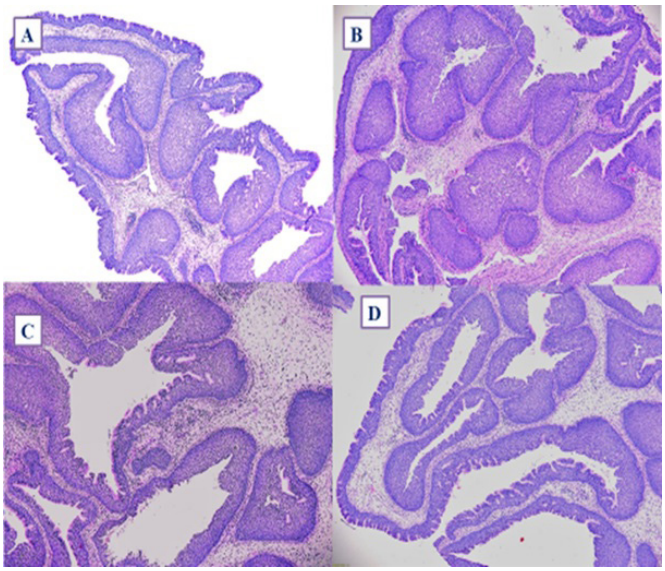

Fig. 3. *Different images of inverted papillomas stained with Hematoxylin and Eosin. A) demonstrates an endophytic or inverted growth pattern with noticeably thicker squamous epithelial proliferation that descends into the connective tissue stroma underneath. B) Has an inverted growth pattern with pseudostratified ciliated columnar epithelium that is noticeably thicker and grows downward into the underlying stroma. C) Low-power inverted papilloma. Typical form and pattern that should not be mistaken for common nasal polyps. D) Noticeable downward endophytic proliferation of smooth-surfaced, spherical to long, linked epithelial nests. (A, B, C & D X 200)*

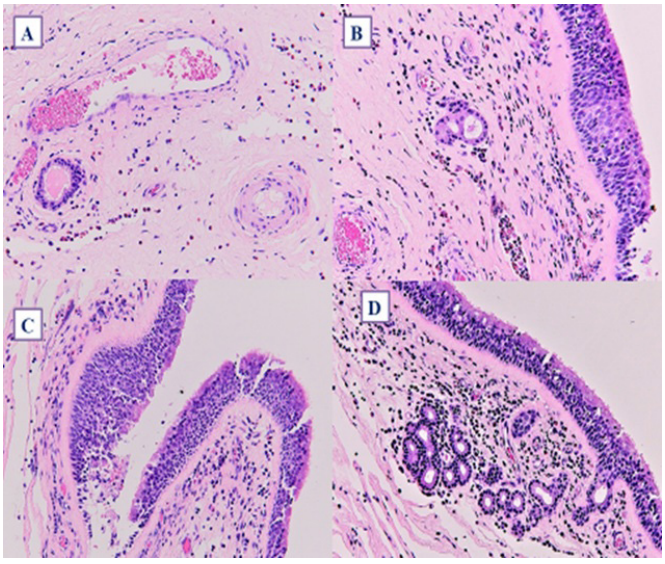

Fig. 2. *Different images of allergic and inflammatory nasal polyps stained with Hematoxylin and Eosin. A) Inflammatory cell infiltration, including eosinophils, lymphocytes, and plasma cells. B) Neutrophil transmigration is observed with stroma edema, and the epithelium is hyperplastic and of a squamous type. C) There are tiny intraepithelial mucin cysts. Both an exophytic and an inverted growth pattern are present in these polyps. D) Many seromucinous glands and ductal structures in an edematous stroma are visible in polyps with seromucinous gland hyperplasia. (A, B, C & D X 400)*

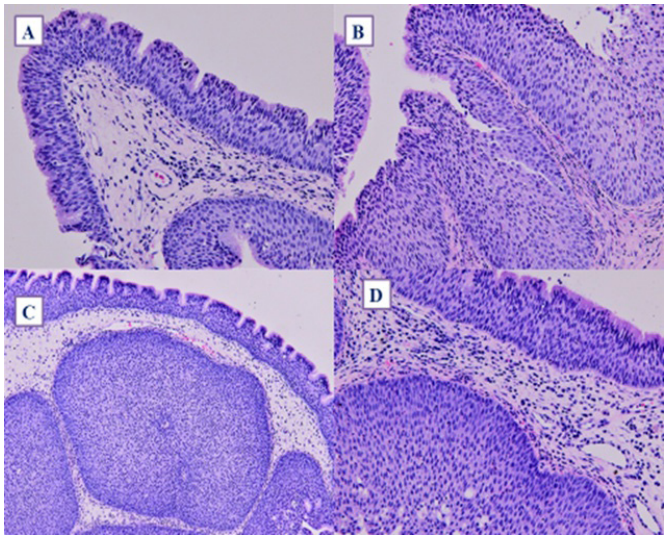

Fig. 4. *Different images of inverted papillomas stained with Hematoxylin and Eosin. A) High magnification reveals that the epithelium is made up of intraepithelial mucin microcysts and pseudostratified columnar cells intermingled with mucocytes (goblet cells). B) Markedly thickened squamous epithelial proliferation. C) Multiple layers of eosinophilic columnar cells, occasionally ciliated, make up the epithelium. D) Sinonasal papilloma, inverted type, ethmoid. The squamous mucosa has dysplasia. (A, B, C & D X 400)*

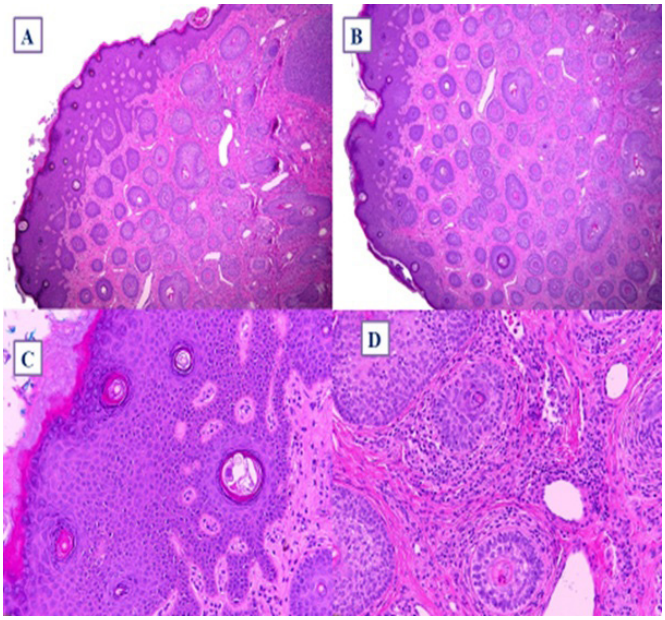

Fig. 5. *Different images of nasal ala small nodule in the vestibule stained with Hematoxylin and Eosin. A) Lower power magnification of mesoderm-derived fibroadipose tissue surrounded by pilosebaceous units and squamous epithelium derived from ectoderm. B) Epidermal stratified squamous epithelium with sebaceous glands and hair follicles. C) Aberrant squamous cells encroaching on the surrounding tissue. D) Increased numbers of closely spaced mature vellus hair follicles are seen at high magnification. (A, B X 200). (C, D X 400).*

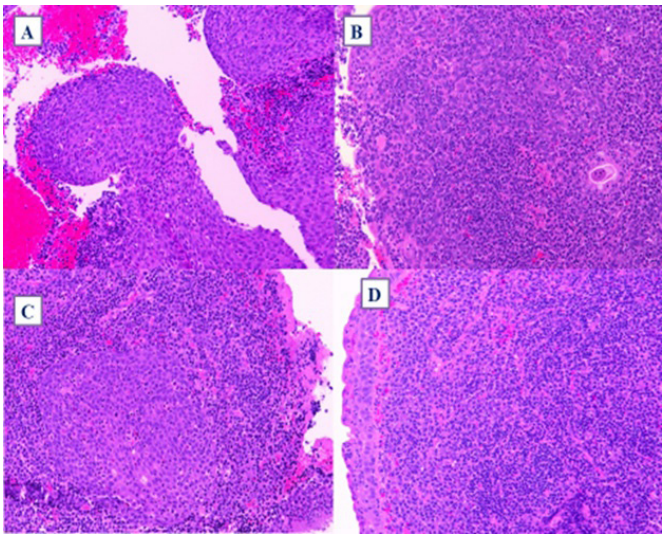

Fig. 6. *Different images of nasopharyngeal cancer stained with Hematoxylin and Eosin. A) Sheets of undifferentiated cancer cells with necrotic patches invade the mucosa. B) A concentrated build-up of lymphocytes, plasma cells, and epithelioid cells without necrosis. C) Undifferentiated nonkeratinizing carcinoma. D) Keratinizing squamous cell carcinoma (A, B X 200). (C, D X 400).*

Discussion

A range of disorders, from benign to malignant nasal lesions, can also present as nasal polyps; however, most nasal polyps submitted for histology are inflammatory, attributable to infection, allergy, or idiopathic causes. It has been suggested that allergies and inflammation contribute to nasal polyps, and approximately 30% of patients with nasal polyps test positive for environmental allergens.[8] We discovered that men are impacted more often than women. It was consistent with a prior study that found a higher frequency among men.[9,10] The histopathological variety of nasal polyps has important clinical implications in addition to helping with accurate diagnosis. Every nasal polyp excised during surgery should be routinely referred for histological analysis. Currently, otolaryngologists cannot agree on the necessity of routinely examining nasal polyps. If all tissues retrieved from the sinonasal tract after surgery are not sent for histological analysis, the diagnosis may be missed, and the proper course of treatment may be delayed.[11] A simple nasal mass might be mistaken for a number of illnesses, from benign lesions to malignant nasal tumors. Therefore, it is nearly impossible to diagnose a nasal mass clinically.

To arrive at the correct diagnosis, histopathology and nasal endoscopy should be used in tandem. As a result, the real diagnosis is often dependent on the histological analysis of a resected nasal polyp. According to earlier research, middle-aged men are most likely to have nasal polyps. Patients in the fourth and fifth decades are often more likely to have non-neoplastic nasal masses, but those in the fifth or sixth decades are more likely to have neoplastic masses.[12,13] More allergic and inflammatory polyps were found in the current investigation. This result is consistent with another study that found that 60.32% of nasal polyps were allergy-related. [9] Three malignant nasopharyngeal carcinoma lesions were found in the current investigation. Rarely, malignant tumors of the sinonasal region account for about 3% of all upper respiratory tract cancers.

Conclusion

Upon histological inspection, the nasal polyps primarily exhibit an inflammatory or allergic pattern. Histopathological examination of a resected nasal polyp is often necessary to establish the definitive diagnosis, as it is challenging to detect the pathology of a nasal mass clinically.

Competing Interests

The authors declare that they have no conflicts of interest.

Acknowledgements

The authors are grateful to the Deanship of Scientific Research, Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia, for its support and encouragement in conducting the research and publishing this report.

Ethical Approval

All steps implemented in this study complied with the Ethics Committee of the Institutional Review Board of Prince Sattam bin Abdulaziz University (SCBR-501/2025).

References

1. Allen JS, Eisma R, LaFreniere D, Leonard G, Kreutzer D. Characterization of the eosinophil chemokine RANTES in nasal polyps. Ann Otol Rhinol Laryngol. 1998 May;107(5 Pt 1):416-20. doi: 10.1177/000348949810700510. PMID: 9596221.
2. Fokkens WJ, Lund VJ, Hopkins C, Hellings PW, Kern R, Reitsma S, et al. European Position Paper on Rhinosinusitis and Nasal Polyps 2020. Rhinology. 2020 Feb 20;58(Suppl S29):1-464. doi: 10.4193/Rhin20.600. PMID: 32077450.
3. Fan Y, Jiao Q, Zhou A, Liu J. [Correlation between chronic sinusitis subtypes and basophil levels in peripheral blood]. Lin Chuang Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2023 Apr;37(4):293-296;301. Chinese. doi: 10.13201/j.issn.2096-7993.2023.04.011. PMID: 36987961; PMCID: PMC10406586.
4. Hellings PW, Borrelli D, Pietikainen S, Agache I, Akdis C, Bachert C, Bewick M, Botjes E, Constantinidis J, Fokkens W, Haahtela T, Hopkins C, Illario M, Joos G, Lund V, Muraro A, Pugin B, Seys S, Somekh D, Stjärne P, Valiulis A, Valovirta E, Bousquet J. European Summit on the Prevention and Self-Management of Chronic Respiratory Diseases: report of the European Union Parliament Summit (29 March 2017). Clin Transl Allergy. 2017 Dec 27;7:49. doi: 10.1186/s13601-017-0186-3. PMID: 29299230; PMCID: PMC5745781.
5. Lathi A, Syed MM, Kalakoti P, Qutub D, Kishve SP. Clinico-pathological profile of sinonasal masses: a study from a tertiary care hospital of India. Acta Otorhinolaryngol Ital. 2011 Dec;31(6):372-7. PMID: 22323848; PMCID: PMC3272868.
6. Valera FC, Anselmo-Lima WT. Evaluation of efficacy of topical corticosteroid for the clinical treatment of nasal polyposis: searching for clinical events that may predict response to treatment. Rhinology. 2007 Mar;45(1):59-62. PMID: 17432072.
7. Enache I, IoniȚĂ E, Mitroi M, Anghelina F, MogoantĂ C, Ciolofan S, CĂpitĂnescu A, Stepan A, Simionescu C. Histopathological Features of Chronic Rhinosinusitis with Nasal Allergic Polyps. Curr Health Sci J. 2020 Jan-Mar;46(1):66-71. doi: 10.12865/CHSJ.46.01.09. Epub 2020 Mar 31. PMID: 32637167; PMCID: PMC7323723.
8. Bernstein JM, Gorfien J, Noble B. Role of allergy in nasal polyposis: a review. Otolaryngol Head Neck Surg. 1995 Dec;113(6):724-32. doi: 10.1016/s0194-5998(95)70012-9. PMID: 7501384.
9. Abdulla MS, Janardhan K, Lakshmi VP, John R. A Retrospective Study on Histomorphological Analysis of Sinonasal Polyps at A Tertiary Care Centre in A Rural Area of South India. Int J Trop Med. 2024 May 2;18:83-9.
10. Lanza DC, Kennedy DW. Current concepts in the surgical management of nasal polyposis. J Allergy Clin Immunol. 1992 Sep;90(3 Pt 2):543-5; discussion 546. doi: 10.1016/0091-6749(92)90182-2. PMID: 1527347.
11. Chen SH, Wu CS, Chan KH, Hongh YT, Shun CT, Liu CM. Primary sinonasal non-Hodgkin's lymphoma masquerading as chronic rhinosinusitis: an issue of routine histopathological examination. J Laryngol Otol. 2003 May;117(5):404-7. doi: 10.1258/002221503321626483. PMID: 12803794.
12. Kirtsreesakul V. Nasal polyps: the relationship to allergy, sinonasal infection and histopathological type. J Med Assoc Thai. 2004 Mar;87(3):277-82. PMID: 15117044.
13. Kitapçi F, Muluk NB, Atasoy P, Koç C. Role of mast and goblet cells in the pathogenesis of nasal polyps. J Otolaryngol. 2006 Apr;35(2):122-32. doi: 10.2310/7070.2005.5004. PMID: 16527032.