



Case Report

## Frontochoanal Polyp with Atypical Intralesional Dystrophic Calcification: A Rare Entity Presenting with Post-Traumatic Features

Dr Mohamed Farook<sup>1</sup>, Dr. Seema Monga<sup>2</sup>, Dr. Deepti Agarwal<sup>3</sup>, Dr. Sanajeet Singh<sup>4</sup>, Dr Abhinav Jain<sup>5</sup>,  
Dr Kritika Suhag<sup>6</sup>

<sup>1</sup> Resident, Department of ENT & Head and Neck surgery, Hamdard Institute of Medical Sciences and Research.

<sup>2</sup> Professor & HOD, Department of ENT & Head and Neck surgery, Hamdard Institute of Medical Sciences and Research.

<sup>3</sup> Assistant professor, Department of ENT & Head and Neck surgery, Hamdard Institute of Medical Sciences and Research.

<sup>4</sup> Professor, Department of ENT & Head and Neck surgery, Hamdard Institute of Medical Sciences and Research.

<sup>5</sup> Professor and HOD, Department of radiology, Hamdard Institute of Medical Sciences and Research.

<sup>6</sup> Resident, Department of ENT & Head and Neck surgery, Hamdard Institute of Medical Sciences and Research.

 OPEN ACCESS

### Corresponding Author:

**Dr. Deepti Agarwal**

Assistant professor, Department  
of ENT & Head and Neck surgery,  
Hamdard Institute of Medical  
Sciences and Research.

Received: 22-12-2025

Accepted: 13-01-2026

Available online: 23-01-2026

Copyright © International Journal of  
Medical and Pharmaceutical Research

### ABSTRACT

**Introduction** Frontochoanal polyps (FCPs) are rare benign lesions arising from the frontal sinus, significantly less common than antrochoanal polyps due to the restrictive frontal drainage pathway. Diagnosis becomes complex when atypical radiological features, such as calcification, mimic aggressive pathologies like Allergic Fungal Sinusitis (AFS).

**Case Report** A 21-year-old male presented with right-sided forehead swelling and nasal obstruction one year following blunt trauma. Computed Tomography (CT) revealed a mass with internal calcifications, initially favouring a diagnosis of AFS. However, Contrast-Enhanced Magnetic Resonance Imaging (CEMRI) demonstrated T2 hyperintensity, confirming the lesion was an edematous polyp rather than desiccated fungal disease. The calcification was determined to be dystrophic, a secondary change resulting from the trauma and chronic inflammation. The patient underwent Functional Endoscopic Sinus Surgery (FESS) adhering to Draf IIA principles to completely excise the polyp and its stalk.

**Conclusion** Dystrophic calcification in FCPs can simulate fungal sinusitis on CT. This case underscores the critical role of T2-weighted MRI in distinguishing benign inflammatory polyps from AFS, preventing misdiagnosis and ensuring appropriate surgical management.

**Keywords:** Nasal Polyps; Frontal Sinus; Calcinosis; Magnetic Resonance Imaging; Endoscopic Sinus Surgery.

### INTRODUCTION

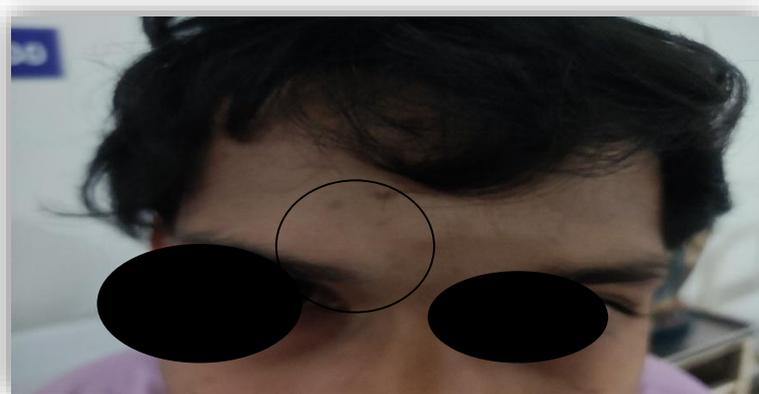
Choanal polyps represent a category of solitary, benign mucosal growths causing unilateral nasal obstruction. Antrochoanal polyps (Killian's polyp), arising from maxillary sinus mucosa, account for approximately 4-6% of all nasal polyps in the general population, with higher incidence in pediatric demographics [1]. In contrast, the Frontochoanal Polyp (FCP) originating from the frontal sinus or frontal recess is an extremely rare entity, with published literature consisting predominantly of isolated case reports [2]. This rarity reflects the narrow drainage pathway of the frontal sinus, which makes mucosal herniation significantly less common than through the maxillary ostium.

The etiopathogenesis of choanal polyps remains incompletely understood, but prevailing theories indicate a localized, non-systemic inflammatory process rather than a systemic atopic condition [3]. Unlike diffuse ethmoidal polyposis associated with allergy and eosinophilia, choanal polyps frequently manifest in non-atopic individuals, suggesting chronic localized irritation as a primary trigger [4]. The formation mechanism involves mucosal retention cyst development within the sinus, likely triggered by chronic inflammation or ostial obstruction, followed by cyst prolapse through the narrow sinus ostium driven by gravity, airflow turbulence, or negative pressure dynamics (the Bernoulli phenomenon) [5].

This case presents an atypical FCP complicated by internal calcification and a preceding history of blunt forehead trauma. The combination of an exceptionally rare disease entity with unusual radiological features and traumatic history required integrated multimodality imaging interpretation to exclude potentially aggressive pathologies such as Allergic Fungal Sinusitis (AFS) and benign but locally invasive neoplasms.

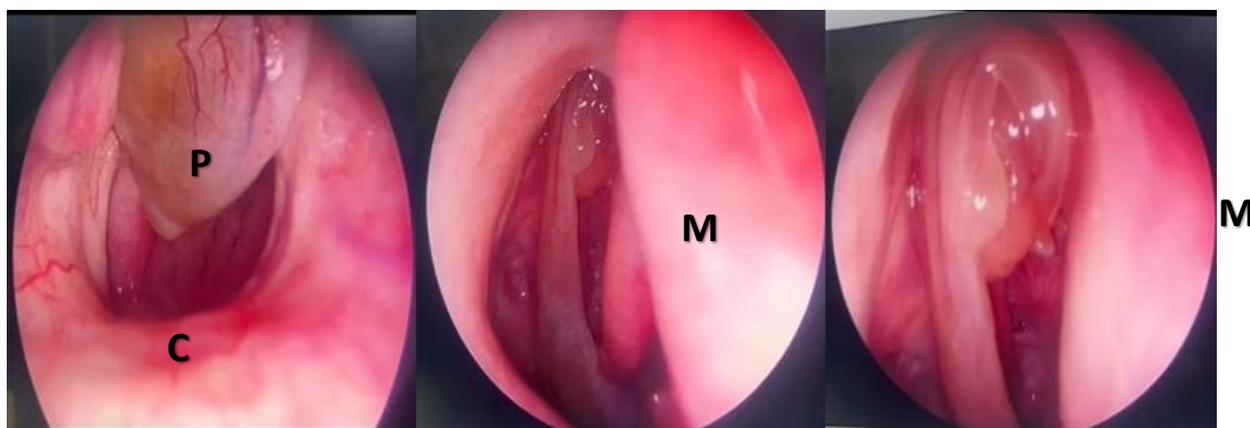
### Case Presentation

A 21-year-old male from India presented to the ENT department with gradual-onset right-sided forehead swelling (fig-1) developing over one year, accompanied by localized pain in the forehead and right nasal region. The patient reported intermittent right-sided nasal blockage and a significant history of blunt forehead trauma approximately one year prior to symptom onset. Associated features included recurrent upper respiratory tract infections, while review of systems revealed no history of asthma, aspirin sensitivity, or prominent allergic diathesis.



**Fig :1 Forehead swelling**

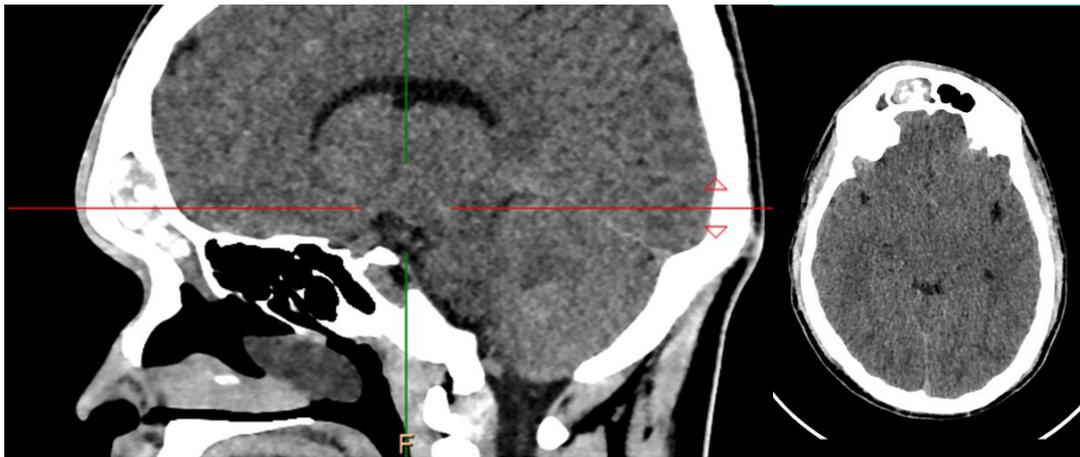
Diagnostic Nasal Endoscopy (Fig-2) revealed anatomical variations including deviated nasal septum on the left and basal spur on the left. Single polypoidal lesion lateral to middle turbinate descending from the frontal recess area extending posteriorly towards choana, partially filling it. Maxillary sinus ostia were wide patent with no evidence of polyposis.



**Fig-2: Diagnostic Nasal Endoscopy (M: Middle turbinate, C: concha, P: polyp)**

### Radiological Assessment

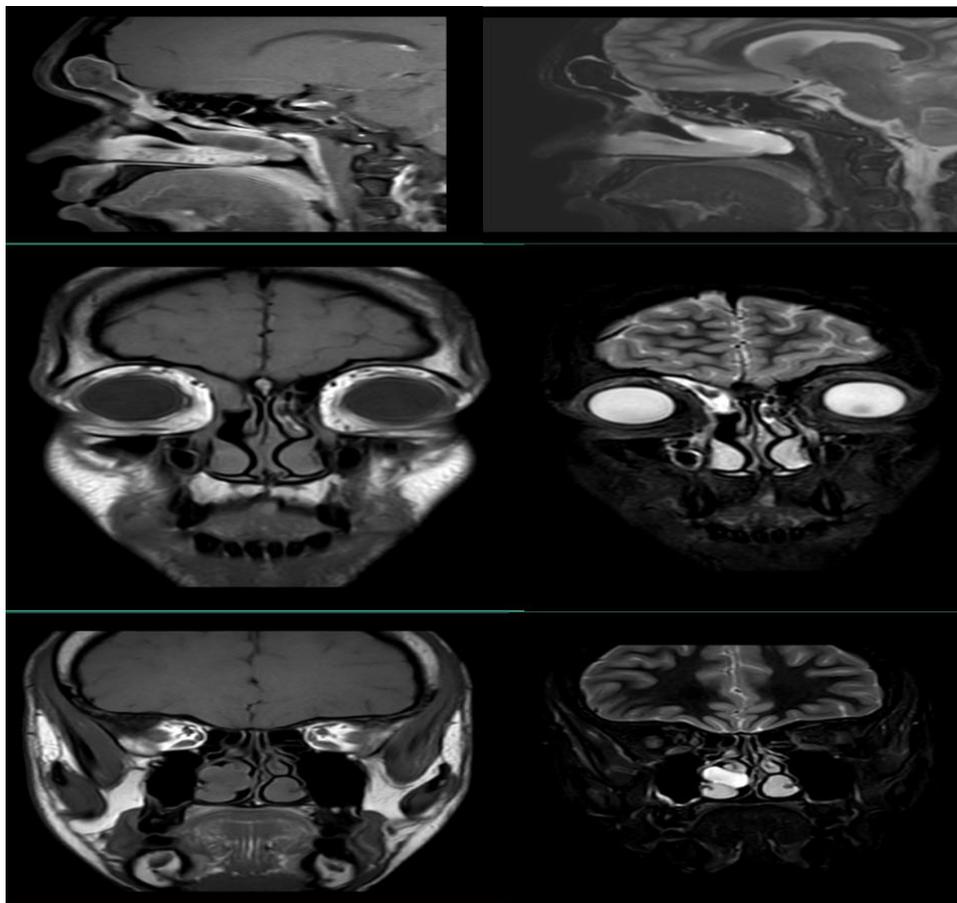
Non-contrast Computed Tomography (NCCT) of the paranasal sinuses demonstrated soft tissue opacification extensively filling the right frontal sinus and extending into the anterior ethmoidal air cells. Critically, internal calcifications were present within the mass. While the radiological impression initially suggestive of Allergic Fungal Sinusitis (AFS), benign neoplasms including ossifying fibroma could not be definitively excluded. The NCCT also showed mucosal thickening in the right nasal cavity extending into the nasopharynx consistent with the choanal component.



**Fig-3: Internal calcifications were present within the mass suggestive of Allergic Fungal Sinusitis (AFS)**

Contrast-Enhanced Magnetic Resonance Imaging (CEMRI) proved decisive for diagnosis. The lesion was identified as a well-defined, smoothly margined, elongated mass showing T1 hypointensity and T2/STIR hyperintensity. A clear stalk was traced from the right anterior ethmoidal air cells/frontal recess, projecting posteriorly into the nasopharynx, establishing definitive localization of the disease origin. Critically, MRI confirmed absent gross bony remodeling, thinning, or erosion.

The T2 signal characteristics allowed critical differential refinement. Allergic Fungal Sinusitis typically presents with central T2 hypointensity due to desiccated fungal concretions and heavy metal accumulation. The confirmed T2 hyperintensity indicated high water and edema content, characteristic of benign inflammatory polypoid lesions rather than fungal disease. This finding redirected focus away from AFS and toward secondary dystrophic calcification within an inflammatory mass. The absence of bony remodeling and expansile features excluded frontal sinus mucocele diagnosis, while the smoothly margined lesion lacking aggressive enhancement and destruction patterns precluded neoplastic etiology.



**Fig-4 MRI showing T1 hypointensity and T2 hyperintensity**

## DISCUSSION

The Frontochoanal Polyp represents a specialized category of sinonasal pathology due to its superior anatomical origin. Choanal polyps develop where sinus ostia are narrow, facilitating localized obstruction and pressure dynamics promoting extrusion [5]. The frontal recess, representing the drainage pathway of the frontal sinus, is significantly more restrictive than the maxillary ostium, explaining the marked rarity of FCP compared to antrochoanal variants.

In this case, chronic localized inflammation, potentially exacerbated by recurrent upper respiratory tract infections and anatomical complexities of the frontal recess (including agger nasi cells and frontal recesses), triggered retention cyst development. Pressure subsequently forced the cystic lesion through the frontal recess, creating the characteristic pedicle and allowing distal expansion into the nasal cavity and nasopharynx [5].

The diagnostic challenge centered on resolving the conflict between NCCT calcification findings and MRI T2 hyperintensity. This analysis proved critical for steering diagnosis away from aggressive or fungal pathologies. Allergic Fungal Sinusitis remained a high-priority differential because CT calcification is associated with fungal disease in humid regions [6]. However, MRI findings provided definitive counter-evidence. The pronounced T2 hyperintensity established the lesion as a benign, edematous inflammatory entity incompatible with the desiccated fungal mucin required for AFS diagnosis. Frontal sinus mucoceles, while presenting with similar pain and swelling, represent static retention cysts confined within the sinus cavity with characteristic bony remodeling and expansion [7]. The identified stalk extending posteriorly into the nasopharynx is pathognomonic for choanal polyp and excludes mucocele diagnosis.

The internal calcification observed on NCCT must be understood as a secondary pathological change within a benign inflammatory polyp. Dystrophic calcification involves passive deposition of calcium and magnesium salts in areas of damaged or necrotic tissue, often occurring secondary to chronic inflammation, injury, or vascular compromise [8]. The history of blunt forehead trauma one year prior provides a plausible mechanism. Trauma-induced localized chronic inflammation, hemorrhage, or microvascular injury within frontal sinus mucosa could have initiated or exacerbated the inflammatory process [9]. The narrow pedicle characteristic of choanal polyps, combined with subsequent growth, often leads to vascular compromise, hemorrhage, and organizing hematoma within polypoid tissue [10]. The internal calcifications likely represent late sequelae of an organizing hematoma or chronic localized inflammatory reaction initiated by blunt trauma, followed by passive calcium salt deposition.

## Surgical Management

Definitive management of choanal polyps requires complete surgical excision, ensuring total removal of the sinus-based component to minimize recurrence. Simple polypectomy is associated with unacceptably high recurrence rates [11]. Functional Endoscopic Sinus Surgery (FESS) has become the preferred modality for achieving this objective.

The surgical approach included uncinectomy, maxillary ostium widening, and bulla widening to establish frontal recess access [12]. Meticulous inspection confirmed the polyp stalk arising from the frontal sinus cavity. The entire polyp, including its origin within the frontal sinus, was successfully removed. Complete clearance of the maxillary antrum confirmed frontal sinus localization, eliminating need for more invasive procedures. Both anterior and posterior ethmoidal compartments were visually confirmed clear, establishing the solitary, localized nature of pathology.

Securing the polyp base within the frontal sinus demanded meticulous attention to frontal recess anatomy. The surgical clearance technique aligned with Draf IIA procedure principles (Nasofrontal Approach II), which focuses on removing ethmoidal cells obstructing the frontal ostium and establishing wide patency to the frontal sinus floor [13]. Ensuring radical clearance of the frontal recess mucosa where the FCP originated proved vital for long-term success. The extent of frontal sinusotomy plays a crucial role in maintaining frontal sinus health and preventing recurrence.

## CONCLUSION

This case of a 21-year-old male presenting with a rare Frontochoanal Polyp (FCP) serves as an example in complex sinonasal pathology. FCP should be considered when unilateral nasal obstruction is accompanied by symptoms suggesting superior sinus involvement, such as frontal pain and swelling.

The presentation was complicated by atypical internal calcification detected on Non-contrast Computed Tomography (NCCT). Successful diagnosis required the integrated interpretation of multimodality imaging to resolve the primary diagnostic conflict: CT calcification versus T2 hyperintensity on Contrast-Enhanced Magnetic Resonance Imaging (CEMRI). The definitive T2 hyperintensity signature established the lesion as a benign, edematous inflammatory entity, effectively negating the suspicion of aggressive pathologies like Allergic Fungal Sinusitis (AFS). This allowed the calcification to be accurately attributed to a secondary dystrophic process, highly plausible due to the preceding localized blunt trauma and chronic inflammation.

Curative surgical intervention utilized Functional Endoscopic Sinus Surgery (FESS). The critical surgical principle emphasized was the complete removal of the pathology, particularly the mucosal origin and stalk within the frontal recess. Ensuring radical, unobstructed clearance of the sinus component, aligned with Draf IIA principles, remains non-negotiable for preventing the high recurrence rates common to choanal polyps and ensuring optimal long-term outcomes

### Summery

This case report describes an exceptionally rare Frontochoanal Polyp (FCP) originating from the frontal sinus or frontal recess in a 21-year-old male. FCPs are significantly less common than Antrochoanal Polyps due to the narrow frontal drainage pathway. The patient presented with unilateral nasal obstruction and forehead swelling, approximately one year after sustaining blunt forehead trauma.

The central diagnostic difficulty arose from atypical internal calcification observed on Non-contrast Computed Tomography (NCCT), raising initial suspicion of aggressive pathologies like Allergic Fungal Sinusitis (AFS). Diagnosis hinged upon integrated multimodality imaging. Contrast-Enhanced Magnetic Resonance Imaging (CEMRI) was decisive, showing T2 hyperintensity. This confirmed the lesion was a benign, edematous inflammatory entity, directly contradicting the T2 hypointensity expected for desiccated fungal mucin in AFS.

The calcification was attributed to a secondary dystrophic process, likely initiated by chronic localized inflammation, microvascular injury, or hemorrhage related to the preceding trauma. Definitive treatment was Functional Endoscopic Sinus Surgery (FESS). Complete surgical removal of the entire polyp, especially its mucosal origin and stalk within the frontal recess, was non-negotiable to prevent the high recurrence rates common to choanal polyps, requiring meticulous technique aligned with Draf IIA principles.

### REFERENCES

1. Freitas MR, Giesta RP, Pinheiro SD, Silva VC. Antrochoanal polyp: a review of sixteen cases. *Braz J Otorhinolaryngol.* 2006 Nov-Dec;72(6):831-5. doi: 10.1016/s1808-8694(15)31052-1. PMID: 17308838; PMCID: PMC9442086.
2. Erkan AN, Cakmak O, Bal N. Frontochoanal polyp: case report. *Ear Nose Throat J.* 2009 May;88(5): E1. PMID: 19444775.
3. Tae Young Jang M.D, Pathogenesis of Nasal Polyps, *J Rhinol.* 1999;6(1):5-11. Published online May 31, 1999
4. Bhuta S, Rasuli B, Kogan J, et al. Antrochoanal polyp. Reference article, Radiopaedia.org (Accessed on 12 Nov 2025) <https://doi.org/10.53347/rID-9044>
5. Erkan AN, Cakmak O, Bal N. Frontochoanal polyp: case report. *Ear Nose Throat J.* 2009 May;88(5): E1. PMID: 19444775.
6. Nemattalla W, Kumar K, Rogalskyi V, et al. Allergic fungal sinusitis. Reference article, Radiopaedia.org (Accessed on 12 Nov 2025) <https://doi.org/10.53347/rID-18487>
7. Liong R, Molinari A, Yap J, et al. Frontal mucocele. Reference article, Radiopaedia.org (Accessed on 12 Nov 2025) <https://doi.org/10.53347/rID-81756>
8. Yoon JH, Na DG, Byun HS, Koh YH, Chung SK, Dong HJ. Calcification in chronic maxillary sinusitis: comparison of CT findings with histopathologic results. *AJNR Am J Neuroradiol.* 1999 Apr;20(4):571-4. PMID: 10319962; PMCID: PMC7056005.
9. Salaria N, Sharma N, Garg U, Saluja SK, Agarwal R. Inflammatory Septal Nasal Polyp. *Iran J Otorhinolaryngol.* 2015 Jul;27(81):319-23. PMID: 26788482; PMCID: PMC4710886.
10. Bhuta S, Rasuli B, Kogan J, et al. Antrochoanal polyp. Reference article, Radiopaedia.org (Accessed on 12 Nov 2025) <https://doi.org/10.53347/rID-9044>
11. Yaman H, Yilmaz S, Karali E, Guclu E, Ozturk O. Evaluation and management of antrochoanal polyps. *Clin Exp Otorhinolaryngol.* 2010 Jun;3(2):110-4. doi: 10.3342/ceo.2010.3.2.110. Epub 2010 Jun 30. PMID: 20607082; PMCID: PMC2896733.
12. Ji J, Zhou M, Li Z, Wang T, Cheng Y, Wang Q. Frontal sinus surgery anterior to the ethmoid bulla. *Int Surg.* 2013 Apr-Jun;98(2):149-55. doi: 10.9738/CC37. PMID: 23701151; PMCID: PMC3723169.
13. Eviatar, Ephraim & Katzenell, U & Segal, S & Shlamkovitch, N & Kalmovich, Limor & Kessler, A & Vaiman, Michael. (2006). The endoscopic Draf II frontal sinusotomy: Non-navigated approach. *Rhinology.* 44. 108-13.