



# Idiopathic Isolated Fungal Ball Within a Destructive Frontal Mucocele

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## Introduction

- Frontal sinus mucocele is the most commonly observed type due to the sinus's complex anatomy, narrowed drainage pathways and high tendency for obstruction.
- The most common etiology of mucocele formation is sinus surgery (around 66-86%), and the interval between surgery and mucocele is 1–19 years; frontal and sphenoid mucoceles occur earlier.
- Fungal ball in frontal sinus is rare, with literature representing only 2 percent. Furthermore, fungal ball within isolated frontal sinus mucocele is extremely rare.
- We are presenting a 69-year-old male patient with no history of nasal surgery or trauma, who presented with a huge destructive frontal sinus mucocele containing fungal ball.

## Method

Retrospectively reviewed a case at a tertiary medical university hospital in southern Taiwan .

## Case Presentation

- Initially, this patient went to ophthalmologist for progressive symptoms of diplopia, bulging of right eye, and pressure sensation at the frontal region. Non-contrast sinus computed tomography (CT) showed a huge expansile mass downward compression of orbital cavity with bony remodeling at frontal sinus area.
- The patient received endoscopic sinus surgery with navigation system.
- During surgery, after removing uncinate process, and enlarged maxillary natural orifice, fungal like debris was found to occupy the space of ethmoid sinus; the frontal recess was totally obstructed and sealed with hard thick bone. 60 degree cutting burr was used to drill out the covered bony portion and the floor of the mucocele was found. Large amount of mucopurulent, cheesy, clay-like material suggesting fungal ball was seen in the frontal mucocele. The fungal ball and mucous secretion were successfully removed and the inferior outlet of the frontal sinus was widened enough to maintain patency.
- Histopathological examination of the cheesy, clay like material was confirmed with fungal ball.
- The patient's diplopia and eye position improved immediately after the operation, and the pressure sensation over his forehead had resolved. He was subsequently followed up at our outpatient department (OPD).

## Image



Figure 1. Sinus CT (-) showed Severe frontal sinusitis with inferior protrusion in the right orbital cavity; (A) Coronal View (B) Sagittal view (C) Asymmetric facial expression, exophthalmos and hypotropia of right eyes was noted (pre operation )

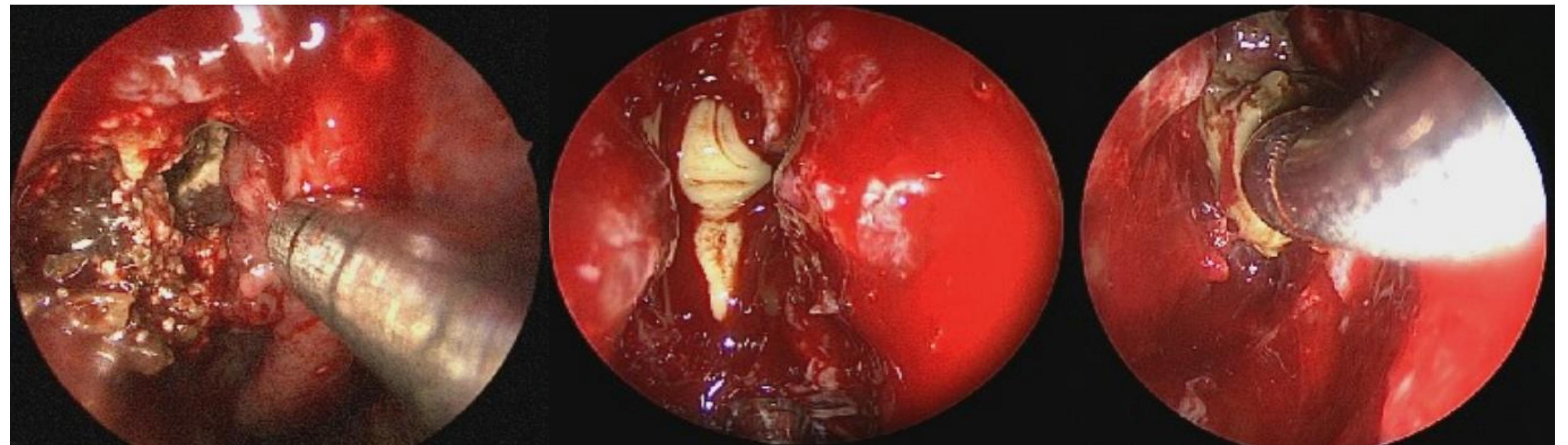


Figure 2 . Intraoperation (A) fungal ball was noted at ethmoid sinus (B) mucopus seen after incision of the mucocele(C) fungal ball was accumulated inside the mucocele at the frontal sinus

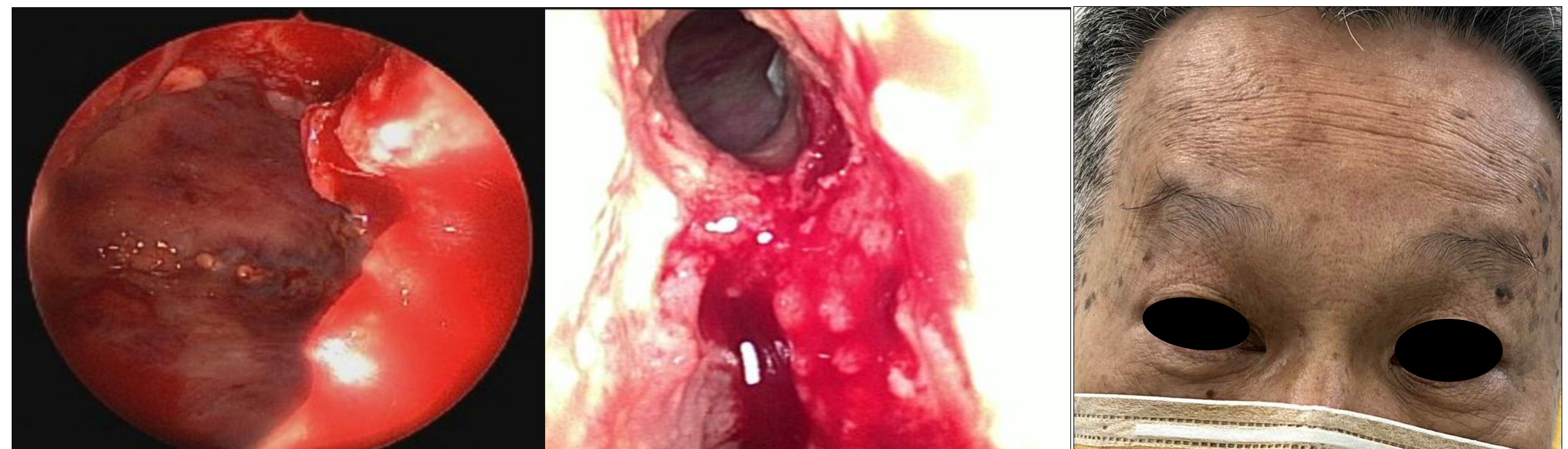


Figure 3. (A) After removing the fungal ball inside frontal sinus mucocele, frontal bone was drilled out to the margin of nasal skin (B) Post operation 1 month sinuscope at OPD (C) Post operation 6 month, facial appearance showed symmetric without displacement of right eyes

## Conclusions

Frontal sinus is least susceptible to fungal sinusitis because of its ostium is located in the anterior-superior part of the nasal cavity, which is least accessible to inhaled spores. Paranasal fungal sinusitis can be suspected on CT scan in the presence of expansile heterogeneous opacity with central hyperattenuation areas, (ie. microcalcifications and/or 'metallic dense spots') associated with sclerosis of the bony wall imply the presence of a fungus ball. The typical imaging characteristics of fungus ball are considered important criteria defining this entity. Meanwhile, mucocele present in image with typical expansile cyst-like mass lesions, but physician should be aware of the possible differential diagnosis : allergic fungal sinusitis, cholesterol granuloma, and cystic schwannoma. Reviewing the literatures, mucoceles with superimposed fungal infections are extremely rare. The coexistence of a fungus ball within a mucocele can be explained by the hypothesis that the fungus ball within the sinus causes recurrent infections, which leads to obstruction of the sinus ostium and the development of a mucocele. Diagnosis of this disease correctly remains a challenge even in the era of multiple advanced radiological image tools. The treatment of choice for fungus balls within a mucocele is drainage and restoration of sinus ventilation. Hence, we provide a case, in which its first appearance may be misinterpretation as a tumorous lesion, and review literature on the epidemiological characteristics of this condition.

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