

Rare Association of an Ectopic Tooth and Maxillary Fibrous Dysplasia Presenting as Chronic Sinusitis

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Abstract

Background: Ectopic teeth located within the maxillary sinus are rare and are most commonly associated with odontogenic cysts, trauma, or supernumerary dentition. Fibrous dysplasia is a benign fibro-osseous disorder that may involve craniofacial bones but rarely affects the maxillary sinus. The coexistence of an ectopic tooth within fibrous dysplasia of the maxilla is exceptionally uncommon.

Case Presentation: We report the case of a 50-year-old woman presenting with persistent unilateral facial pain and recurrent chronic sinusitis unresponsive to medical therapy. Computed tomography (CT) of the paranasal sinuses demonstrated a characteristic ground-glass lesion involving the left maxilla consistent with fibrous dysplasia. Within the dysplastic bone, a well-defined hyperdense structure consistent with an ectopic tooth was identified adjacent to the orbital floor, contributing to obstruction of the osteomeatal complex.

Management and Outcome: The patient underwent surgical removal of the ectopic tooth through a Caldwell–Luc approach. Histopathological examination confirmed fibrous dysplasia associated with chronic inflammatory changes of the sinus mucosa. Postoperatively, the patient experienced complete resolution of symptoms.

Conclusion: This case highlights the importance of CT imaging in the evaluation of persistent unilateral sinusitis and demonstrates a rare association between ectopic dentition and fibrous dysplasia within the maxillary sinus.

Keywords: Chronic Sinusitis, Ectopic Tooth, Fibrous Dysplasia, Maxillary Sinus, Computed Tomography, Case Report

Introduction

Ectopic eruption of teeth into non-dentate anatomical locations is an uncommon clinical phenomenon. When present, ectopic teeth may be found in sites such as the nasal cavity, orbit, mandibular condyle, palate, or maxillary sinus. Among these locations, the maxillary sinus represents one of the most frequently reported sites for ectopic dentition [1]. The condition is typically associated with odontogenic cysts, developmental disturbances, trauma, or supernumerary teeth [2]. Although many ectopic teeth remain asymptomatic, they may lead to complications including chronic sinusitis, facial pain, nasal obstruction, or recurrent sinonasal infections [3].

Fibrous dysplasia is a benign fibro-osseous disorder characterized by the replacement of normal bone with fibrous tissue and immature woven bone. The disease results from post-zygotic activating mutations of the *GNAS* gene and may present as either monostotic or polyostotic forms. Craniofacial involvement is relatively common and frequently affects the maxilla, mandible, frontal bone, and sphenoid bone [4]. Radiologically, fibrous dysplasia classically demonstrates a ground-glass appearance on computed tomography (CT), often accompanied by bone expansion and cortical thinning [5].

The coexistence of an ectopic tooth within a region of fibrous dysplasia of the maxilla is exceptionally rare and only rarely reported in the literature. Such an association may complicate both diagnosis and surgical management, particularly when patients present with nonspecific sinonasal symptoms such as chronic sinusitis. We report a rare case of chronic maxillary sinusitis caused by an ectopic tooth embedded within fibrous dysplasia of the maxilla, highlighting the role of CT imaging in diagnosis and the surgical considerations involved in management.

Case Presentation

A 50-year-old female with a background of hypothyroidism presented to our otolaryngology clinic with an eight-month history of progressive left-sided facial pain, recurrent jaw swelling, and persistent postnasal discharge. She reported multiple episodes of recurrent unilateral sinusitis that had been unresponsive to several courses of antibiotics and intranasal corticosteroids. Her symptoms also included nasal congestion, facial pressure, and occasional headache. She denied any history of facial trauma, dental procedures, or congenital craniofacial anomalies.

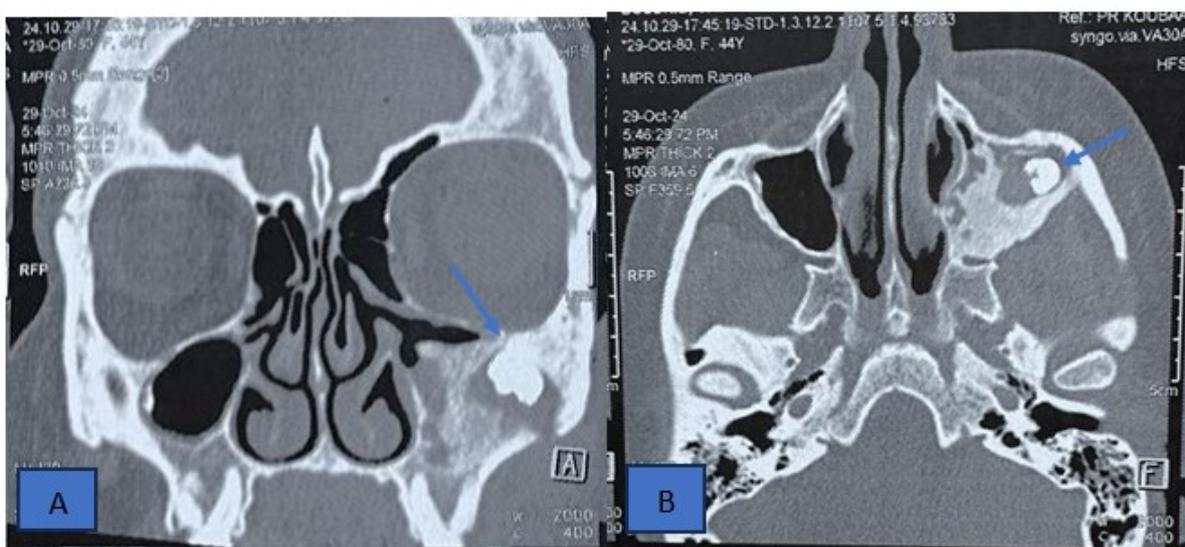


Figure 1: Preoperative maxillofacial CT scan (coronal (A) and axial (B) views) showing a "ground-glass" appearance of fibrous dysplasia in the left maxilla. A radiopaque ectopic tooth (arrow) is visible near the sinus roof, adjacent to the orbital floor.

Physical examination revealed no visible facial asymmetry or tenderness over the maxilla. Intraoral inspection was unremarkable. Nasal endoscopy demonstrated mucopurulent drainage from the left middle meatus, suggestive of maxillary sinus involvement.

A high-resolution CT scan of the paranasal sinuses revealed a ground-glass opacity in the left maxilla, consistent with fibrous dysplasia. Within the dysplastic bone, a radiopaque structure resembling a tooth was visualized near the orbital floor, suggestive of an ectopic tooth [Figure 1]. There was evidence of obstruction of the osteomeatal complex and mucosal thickening of the left maxillary sinus.

Given the symptomatic presentation and imaging findings, the patient underwent surgical intervention under general anesthesia via a Caldwell-Luc approach [Figure 2].



Figure 2: Intraoperative image of the Caldwell-Luc approach showing vestibular incision and osteotomy in the premolar region.

After elevation of the mucoperiosteal flap, the anterior wall of the maxilla was accessed and thinned to expose the sinus cavity. The ectopic tooth was identified within the dysplastic bone and was carefully disimpacted and extracted [Figure 3].



Figure 3: The extracted ectopic tooth from the left maxillary sinus.

Inflamed mucosa and granulation tissue were debrided. Hemostasis was achieved and the wound was closed in layers. The patient tolerated the procedure well, and her postoperative course was uneventful.

Histopathological examination of the excised specimen confirmed chronic active sinusitis characterized by lymphoplasmacytic and neutrophilic infiltration. The bony architecture showed irregular trabeculae of immature woven bone in a fibrous stroma, without osteoblastic rimming, confirming fibrous dysplasia.

At long-term follow-up, the patient remained symptom-free, with resolution of facial pain, postnasal discharge, and sinus congestion. There was no sign of recurrence on clinical exam and endoscopy showed a well-healed surgical site. The patient reported significant improvement in quality of life and required no additional medical or surgical interventions.

Discussion

Ectopic teeth within the maxillary sinus are rare findings and are often discovered incidentally or during the investigation of persistent sinonasal symptoms. In most reported cases, they are associated with odontogenic cysts, developmental abnormalities, trauma, or supernumerary teeth [6]. When symptomatic, patients may present with facial pain, nasal obstruction, or chronic sinusitis caused by impaired sinus drainage [7]. In the present case, the patient initially presented with persistent unilateral facial pain and recurrent sinusitis that had not responded to medical therapy, prompting further radiologic evaluation.

The pathogenesis of ectopic tooth eruption remains incompletely understood. Several mechanisms have been suggested, including abnormal migration of the dental lamina during odontogenesis, pressure from adjacent pathological processes, or disturbances in the normal eruption pathway [8]. In many situations, these teeth remain asymptomatic for long periods and are only detected when complications such as sinus obstruction or infection occur [3].

The diagnostic process in this case was largely guided by imaging findings. Computed tomography revealed the characteristic ground-glass appearance of fibrous dysplasia affecting the maxilla, together with a well-defined hyperdense structure consistent with a tooth embedded within the dysplastic bone. Fibrous dysplasia is a benign fibro-osseous disorder caused by post-zygotic activating mutations of the *GNAS* gene, resulting in replacement of normal bone with fibrous tissue and immature woven bone [5]. Craniofacial involvement is relatively common, particularly in the maxilla and mandible [9]. CT imaging is considered the modality of choice because it clearly demonstrates the altered bone architecture and helps identify associated structural abnormalities [10].

The presence of a ground-glass lesion in the maxilla requires careful consideration of other conditions that may present with similar radiologic features. Differential diagnoses include ossifying fibroma, cemento-osseous dysplasia, Paget's disease, osteoma, and chronic sclerosing osteomyelitis [11]. These conditions may share overlapping imaging characteristics, but differences in lesion margins, bone expansion patterns, and associated systemic findings can help guide the diagnosis. Ultimately, correlation with clinical findings and histopathological analysis remains essential for definitive confirmation.

To the best of our knowledge, the coexistence of an ectopic tooth embedded within maxillary fibrous dysplasia presenting as chronic sinusitis remains extremely rare in the literature. Most cases described in the literature report ectopic teeth associated with odontogenic cysts or developmental anomalies rather than fibro-osseous lesions [12]. It is possible that abnormal bone remodeling in fibrous dysplasia interferes with the normal eruption pathway of developing teeth, leading to their displacement into the maxillary sinus. In addition, expansion of dysplastic bone may contribute to obstruction of the osteomeatal complex, thereby predisposing the patient to chronic sinus inflammation [3].

From a surgical perspective, removal of symptomatic ectopic teeth is generally recommended. Endoscopic sinus surgery is of-

ten preferred because it is minimally invasive and associated with faster recovery. However, open approaches such as the Caldwell–Luc procedure still have an important role in selected cases [13]. In our patient, the ectopic tooth was deeply embedded within dysplastic bone near the orbital floor, and the maxillary wall was expanded due to fibrous dysplasia. Under these circumstances, the Caldwell–Luc approach provided direct access to the sinus cavity and allowed safe extraction of the tooth together with adequate removal of inflamed mucosal tissue.

Overall, this case illustrates how an uncommon anatomical abnormality may present with relatively common symptoms such as chronic sinusitis. It also highlights the importance of careful radiologic evaluation in patients with persistent unilateral sino-nasal complaints, as structural abnormalities such as ectopic teeth or fibro-osseous lesions may be overlooked without detailed imaging.

Conclusion

This case illustrates a rare association between an ectopic tooth and fibrous dysplasia within the maxillary sinus presenting as refractory chronic sinusitis. Computed tomography played a key role in identifying both conditions and guiding appropriate surgical management. Clinicians should consider structural anomalies such as ectopic dentition and fibro-osseous lesions in the differential diagnosis of persistent unilateral sinusitis.

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