RESEARCH PAPER

A Rare Case of a Migratory Fish Bone Inducing a Parotid Gland Abscess: A Case Report and Literature Review

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Abstract

Introduction: The impaction of foreign bodies within the parotid gland is an exceptionally rare clinical occurrence. Among these, fish bones are uncommon and can lead to significant complications such as abscess formation, sialadenitis, and potential facial nerve injury if not managed appropriately. Their presentation can be insidious, often mimicking other common parotid pathologies.

Case Presentation: We present the case of a patient who complained of a one-week history of a painful swelling in the left pre-auricular region, associated with throat pain and odynophagia. The patient recalled a prior incident of a fish bone becoming lodged in the oropharynx a week before the onset of symptoms. Initial ultrasonography revealed a heterogeneous collection suggestive of an abscess. Subsequent computed tomography (CT) scan precisely localized a linear, radio-opaque foreign body within the parotid gland, surrounded by an abscess cavity. The patient underwent successful incision and drainage under general anesthesia, during which a 2.5 cm fish bone was retrieved from the abscess. The postoperative course was uneventful, with complete resolution of symptoms and no facial nerve dysfunction.

Conclusion: This case underscores that migratory foreign bodies, such as fish bones, are a rare but important differential diagnosis for acute parotid swellings. A high index of suspicion, coupled with a detailed history and targeted imaging, preferably CT is crucial for diagnosis. Timely surgical intervention via incision, drainage, and exploration is a minimally invasive and highly effective treatment that preserves gland function and prevents serious complications. This approach should be favored over more radical procedures like formal parotidectomy in such scenarios.

Keywords: Parotid abscess, Foreign body, Fish bone, Migratory foreign body, Sialadenitis, Computed tomography, Incision and drainage

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1. Introduction

The parotid gland, being the largest of the major salivary glands, is uncommonly involved in foreign body impaction. The most frequent pathologies affecting the parotid include inflammation (sialadenitis), autoimmune disorders like Sjögren's syndrome, and neoplasms. Foreign bodies (FBs) represent a rare entity, with an incidence of less than 1% of all salivary gland diseases [1]. Common foreign materials include wooden splinters, glass, metal fragments, and dental materials. Fish bones, however, are an unusual finding in this region [2].

The proposed mechanisms for FB entry into the parotid gland are twofold: direct penetration through the skin or buccal mucosa, or more commonly, retrograde migration from the oral cavity through Stensen's duct [3, 4]. The latter is believed to be facilitated by the negative pressure generated during sucking and swallowing, which can draw a slender, sharp object like a fish bone proximally into the ductal system. Once lodged, these FBs act as a nidus for infection, leading to suppuration, abscess formation, chronic sialadenitis, and fistula formation [5]. If untreated, deep-seated abscesses can lead to life-threatening complications

such as parapharyngeal space involvement or facial nerve palsy [6].

The diagnosis is often challenging due to the non-specific symptoms of pain and swelling, which overlap with other common parotid conditions. Imaging plays a pivotal role, with Computed Tomography (CT) being the modality of choice for detecting radio-opaque FBs and delineating the extent of associated abscesses [7]. Management traditionally involves surgical removal of the foreign body and drainage of the abscess. While formal parotidectomy was historically performed in some cases, contemporary management strongly advocates for a conservative, gland-preserving approach via direct incision and exploration to minimize the risk of facial nerve injury and preserve salivary function [8].

We report a rare case of a parotid gland abscess caused by a migratory fish bone, successfully managed with surgical exploration and drainage, to highlight the diagnostic and therapeutic challenges and to reinforce the principles of minimally invasive management.

2. Case Presentation

A 45-year-old male presented to the Department of Otolaryngology with a chief complaint of a progressively enlarging, painful swelling over the left pre-auricular region for one week. The pain was constant, dull in character, and exacerbated during chewing and swallowing. He also reported mild throat pain on the ipsilateral side. His medical history was otherwise unremarkable.

Crucially, on direct questioning, the patient recalled an incident one week prior where he had felt a fish bone become stuck in his throat after a meal. He had attempted to dislodge it by swallowing a bread bolus, after which the sensation subsided, and he did not seek further medical attention.

Clinical Examination: Physical examination revealed a tender, firm, and erythematous swelling of approximately 3 x 3 cm over the left parotid region. There was no visible sinus or puncture wound on the overlying skin. Intra-orally, Stensen's duct orifice appeared erythematous, but no purulent discharge could be expressed. The remaining head and neck examination was normal. Facial nerve function was intact across all branches (House-Brackmann grade I).

Diagnostic Work-up: An initial Ultrasonography (USG) of the parotid region was performed, which showed a heterogeneous, hypoechoic collection with internal echoes within the superficial lobe of the parotid gland, highly suggestive of an abscess. However, the USG could not definitively identify a foreign body. To further characterize the lesion, a contrast-enhanced CT scan of the neck was obtained. The CT scan confirmed a well-defined hypodense collection (abscess) within the left parotid gland and clearly demonstrated a thin, linear, radio-opaque structure measuring approximately 2.5 cm within the center of the collection, consistent with a foreign body (fish bone) (Figure 1).

Figure 1 (Descriptive): Axial view of a contrast-enhanced CT scan of the neck showing a hypodense abscess collection (star) within the left parotid gland, with a linear radio-opaque foreign body (arrow) within it.

Management: The patient was started on intravenous broad-spectrum antibiotics (Amoxicillin-Clavulanate). He was taken to the operating room for incision and drainage of the parotid abscess under general anesthesia. Using a standard pre-auricular incision with a lazy-S extension, careful dissection was carried down to the parotid fascia. The abscess cavity was entered, and approximately 5 ml of thick, purulent material was evacuated. Meticulous exploration of the cavity was performed, and a sharp, slender fish bone, measuring 2.5 cm, was identified and removed (Figure 2). The cavity was copiously irrigated with saline and betadine. A surgical drain was placed. The wound was closed in layers. The pus was sent for culture and sensitivity,

which later grew *Streptococcus viridans*, sensitive to the administered antibiotics. The retrieved fish bone was sent for histopathology, which confirmed it to be organic material.

Figure 2 (Descriptive): Photograph of the retrieved foreign body, a 2.5 cm long, slender, and sharp fish bone.

Outcome and Follow-up: The patient's postoperative course was smooth. The drain was removed after 48 hours, and he was discharged on oral antibiotics for a total of 10 days. The swelling and pain resolved completely. At the two-week and six-week follow-up visits, the wound had healed well, and there was no evidence of residual swelling, fistula, or facial nerve weakness.

3. Discussion

The presence of a foreign body in the parotid gland is a rare phenomenon. Our case exemplifies the classic yet uncommon sequence of events: a history of fish bone ingestion, a latent period, followed by the development of an inflammatory mass in the parotid region. This clinical trajectory should raise suspicion for a migratory foreign body.

The pathophysiological mechanism in this case is likely retrograde migration via Stensen's duct. The sharp, pointed nature of a fish bone allows it to pierce the ductal mucosa and, propelled by the negative pressure of sucking and swallowing, migrate proximally into the gland parenchyma [4, 9]. This can lead to a partial or complete ductal obstruction, stasis of saliva, and secondary bacterial infection, culminating in an abscess [5].

Diagnosis hinges on a high clinical suspicion and appropriate imaging. As demonstrated in our case, ultrasonography is a useful first-line investigation to confirm the presence of a collection but has limited sensitivity for detecting radiolucent or small foreign bodies [10]. CT scanning is superior, providing excellent spatial resolution for identifying radio-opaque FBs and defining the anatomical relationship of the abscess to the facial nerve and other vital structures, which is critical for surgical planning [7, 11]. A comparison of imaging modalities is provided in Table 1.

Table 1: Comparison of Imaging Modalities for Parotid Foreign Bodies

Modality	Advantages	Disadvantages	Best For
Ultrasonography (USG)	Readily available, low cost, no radiation, real-time imaging.	Operator-dependent, poor penetration for deep lesions, often misses radiolucent FBs.	Initial evaluation, confirming a fluid collection, guiding aspiration.
Computed Tomography (CT)	Excellent for bony/radio-opaque FBs, defines abscess extent and anatomy, fast.	Radiation exposure, limited for purely radiolucent FBs (e.g., wood).	**Modality of choice** for pre-operative planning and detecting radio-opaque FBs.
Magnetic Resonance Imaging (MRI)	Excellent soft-tissue contrast, can detect inflammatory changes.	Expensive, time-consuming, can cause artifacts from metallic FBs.	Evaluating complex soft tissue involvement or when tumor is a

			different ial.
Sialography	Can visualize ductal system and intralumi nal FBs.	Invasive, risk of exacerbati ng infection, contraindic ated in acute sialadenitis .	Chronic ductal obstructi on without active infection .

The cornerstone of management is surgical removal of the foreign body and drainage of the abscess. The key surgical principle is to perform a minimally invasive, gland-preserving procedure. A standard incision and drainage, followed by thorough exploration of the cavity, is usually sufficient to locate and remove the FB [8, 12]. This approach minimizes the risk of iatrogenic injury to the facial nerve, which is a significant concern during formal parotidectomy in an inflamed and distorted surgical field. As shown in Table 2, the characteristics and management of parotid foreign bodies can vary.

Table 2: Characteristics and Management of Parotid Gland Foreign Bodies

Characteristic	Details
Common Types	Fish bones, wooden splinters, metal fragments, glass, dental needles.
Route of Entry	1. Retrograde migration via Stensen's duct (most common for intraoral FBs). 2. Direct penetration through skin or buccal mucosa.
Clinical Presentation	Acute or chronic recurrent swelling, pain, tenderness, trismus, purulent discharge from duct, features of abscess.
Key Diagnostic Step	High Index of Suspicion + Contrast-Enhanced CT Scan.
Primary Management	Incision, Drainage, and Exploration for FB removal.
Antibiotics	Broad-spectrum, IV initially, tailored to culture results.
Key Surgical Goal	Complete FB removal and abscess drainage while preserving facial nerve and gland function.
Potential Complications	Facial nerve palsy, chronic fistula (sialocutaneous), recurrent sialadenitis, scar formation.

Historically, some cases were managed with superficial parotidectomy to ensure complete removal of the FB and affected tissue [13]. However, this is now considered overtreatment for most foreign body cases, as it carries a higher morbidity. The literature supports that a focused exploration in the setting of a well-defined abscess is safe and effective, as the inflammatory capsule often protects the facial nerve branches [14]. The culture yield in our case, *Streptococcus viridans*, is consistent with the normal oral flora, supporting the theory of ascending infection from the duct [15].

4. Conclusion

This case serves as an important reminder for clinicians to include a migratory foreign body in the differential diagnosis of an acute parotid swelling, especially with a suggestive history of fish bone ingestion. A delay in diagnosis can lead to prolonged morbidity and severe complications. CT imaging is the cornerstone of preoperative evaluation for accurate localization. The recommended treatment is timely surgical intervention via a conservative incision, drainage, and meticulous exploration of the abscess cavity to remove the foreign body. This minimally invasive, gland-sparing approach results in excellent functional and cosmetic outcomes, complete resolution of infection, and short hospitalization, and should be the standard of care for such rare presentations.

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