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Hidden Cartilage in the Tonsil: A Rare Case of Cartilaginous Choristoma

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Abstract

Background: Choristomas are benign proliferations of histologically normal tissue in ectopic locations. While osseous and cartilaginous choristomas are known in the oral cavity, their occurrence in the palatine tonsil is exceptionally rare. This report highlights a rare case of tonsillar cartilaginous choristoma with osseous metaplasia —an uncommon finding with diagnostic implications.

Case presentation: A 38-year-old male presented with recurrent sore throat and fever, consistent with chronic tonsillitis. Bilateral tonsillectomy was performed. Gross examination revealed grey-white glistening tissue with firm-to-hard consistency. Histopathology of both tonsils showed lymphoid tissue with acanthotic stratified squamous epithelium and follicular hyperplasia. Within the fibrocollagenous stroma, mature hyaline cartilage lobules were observed along with foci of calcification and osseous metaplasia—hallmarks of a cartilaginous choristoma with endochondral ossification.

Discussion: Cartilaginous choristoma of the palatine tonsil is rarely reported, with fewer than 10 cases documented in the literature. Theories for its pathogenesis include developmental anomalies from the second pharyngeal arch or reactive mesenchymal proliferation due to chronic inflammation. Differentiation from neoplastic lesions is crucial, as misdiagnosis can lead to overtreatment. This case highlights the importance of routine histopathological evaluation of tonsillectomy specimens, even in seemingly benign conditions.

Conclusion: This case adds to the limited literature on tonsillar choristomas and highlights the potential for osseous differentiation within these lesions. Early recognition is essential to avoid diagnostic pitfalls and ensure appropriate patient management.

Key words: Tonsillar Choriostoma with Osseous Metaplasia, Palatine Tonsil, Tonsillitis

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Introduction

Choristoma is a histological anomaly defined as an island of normal tissue occurring in an abnormal or aberrant location.[1–5] The term "choristoma" itself implies a tumour-like mass, differentiating it from "heterotopia," which refers to displaced tissue that is not necessarily a swelling or neoplasm.[4,6] These lesions are benign and are thought to originate from defects during embryological development. [3,4,6]

The first description of cartilaginous choristoma was made by Berry in 1890.[2–4,6] In the head and neck region, choristomas have been documented in various sites, including the pharynx, hypopharynx, oral cavity, and middle ear.[1,3,4,6] The oral cavity can host several different tissue types as choristomas, such as cartilage, bone, glial tissue, salivary gland, and thyroid tissue.[1,2,5,6] Among these, osseous choristomas are the most frequently observed in the oral cavity, often found in the tongue.[1,5] Cartilaginous choristomas are also frequently seen in the tongue, followed by the buccal mucosa and soft palate.

The occurrence of cartilaginous choristoma in the tonsil is exceptionally rare, with less than 10 cases reported to date in some sources.[1,3,6] Clinically, these rare tonsillar choristomas often present as chronic tonsillitis with persistent tonsillar enlargement.[1,3,4,6] Characteristically, cartilaginous choristomas elsewhere in the body may appear as painless, firm nodules, particularly in young adults and sometimes with a predilection for females.[1–3,6] However, in palatine tonsils, some sources suggest no specific sex predilection.[4] The age of diagnosis for these patients varies widely, ranging from 10 to 80 years.[1,2,4,6]

Despite their benign nature, the clinical symptomatology associated with tonsillar choristomas, such as recurrent sore throat, pain, fever, difficulty in swallowing, snoring, and halitosis, often leads to tonsillectomy.[1,3,5–7] It is crucial to note that routine histopathological examination of tonsillar tissue, even in the absence of alarming clinical symptoms, is vital for understanding and identifying various hidden entities like choristoma.[1–4,6]

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The exact pathogenesis of cartilaginous choristoma remains largely undefined. However, two primary theories prevail: the developmental anomaly theory and the reactive or post-traumatic theory.[1,2,5] The developmental theory posits that tonsillar choristoma may be a developmental anomaly linked to the second pharyngeal arch, where any developmental anomaly can lead to the formation of aberrant mesenchymal tissue within the tonsil.[1–3,5,6] Another perspective suggests that extra skeletal proliferation of cartilage in oral and maxillofacial soft tissue reflect the multipotential nature of primitive mesenchymal cells, stimulated by trauma, irritation, or inflammation.[1,2,4–6] This distinction is critical for understanding the origin of these rare lesions.

This case report details a rare presentation of a cartilaginous choristoma of the tonsil, notable for the presence of osseous metaplasia and calcification.

Case Description

A 38-year-old male presented to the Ear, Nose, and Throat (ENT) Outpatient Department with a history of recurrent episodes of sore throat and fever, suggestive of chronic tonsillitis. During the clinical evaluation, an X-ray revealed a prominent styloid process. Given the persistent symptoms and the clinical diagnosis of recurrent tonsillitis, a bilateral tonsillectomy was performed, and the excised specimens were sent for histopathological examination.

On **gross examination**, both the right and left tonsil specimens measured approximately 2.5 cm x 2 cm x 1 cm. The cut surface was observed to be greyish white with glistening areas, and firm to hard areas were noted near the base.

Microscopic examination of sections from both tonsils showed lymphoid tissue lined by acanthotic stratified squamous epithelium with focal hyperkeratosis. This epithelial lining, was invaginating into deeper tissues forming crypts.[1] The lymphoid tissue exhibited follicular hyperplasia and the intervening fibro collagenous tissue showed a mixed inflammatory cell infiltrate, which is often associated with chronic inflammatory processes like tonsillitis.[6]

Deeper within this tissue and admixed with it, lobules of mature cartilage were clearly visible (Figure 1). These islands of mature cartilage, often hyaline cartilage, embedded in fibro collagenous tissue, are the defining characteristic of cartilaginous choristoma.[1–4,6] The chondrocytes within these lobules appeared normal.

Significantly, foci of calcification were noted within the cartilaginous lobules. The presence of calcification has been observed in some cartilaginous choristomas of the tonsil.[4] Furthermore, foci of osseous metaplasia with endochondral ossification were also identified (Figure 2). This finding of osseous metaplasia, alongside cartilaginous elements, makes our case particularly interesting and adds to the understanding of the lesion's complexity. Some choristomas can indeed present with a mixture of lipo cartilaginous and osteocartilaginous elements.[2] The occurrence of osseous metaplasia indicates a further transformation or developmental potential within the lesion. [4]

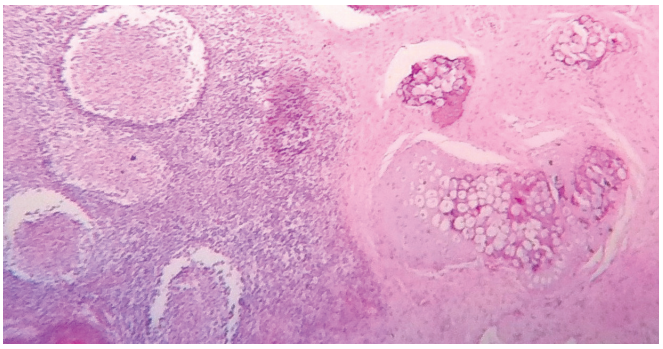

Figure 1: Histopathology showing islands of cartilage adjacent to follicular hyperplasia in tonsil (H&E stain, ×100)

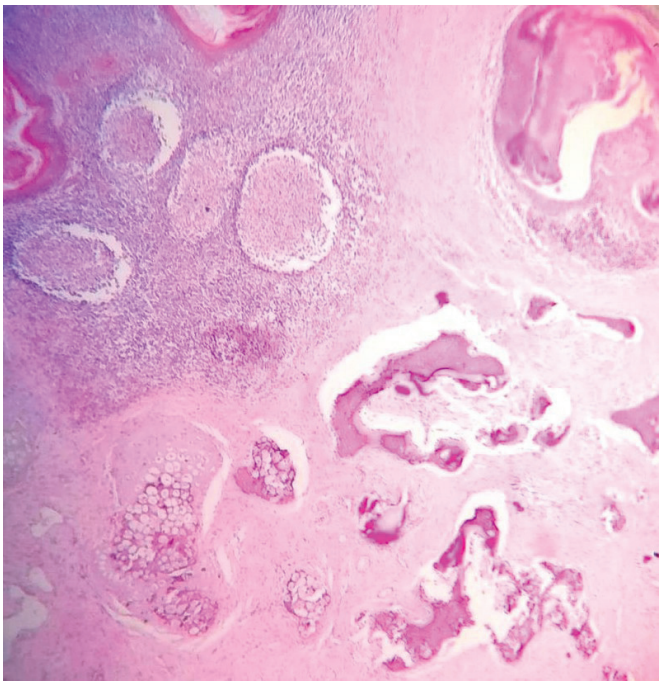

Figure 2: Foci of osseous metaplasia with endochondral ossification were also noted (H&E stain, ×100)

Based on these comprehensive histopathological findings, the diagnosis of cartilaginous choristoma with osseous metaplasia and calcification was accurately established.

While the prominent styloid process was a specific finding in this patient's X-ray, the causes do not directly link it to the pathogenesis of tonsillar choristoma, although chronic irritation is a proposed stimulus for choristoma development in a broader sense.[1,2,4–6] This highlights the importance of thorough investigation and histopathological analysis in all cases of persistent tonsillar pathologies.

Discussion

This case highlights a rare instance of cartilaginous choristoma of the palatine tonsil, further complicated by the presence of osseous metaplasia and calcification.[6] Choristomas, by definition, are aggregates of normal cells or tissues in abnormal locations, and their occurrence in the tonsil is exceptionally uncommon.[1–3,5] This rarity underscores the academic and diagnostic significance of reporting such cases.

The pathogenesis of cartilaginous choristomas in the tonsil is still largely debated. One prominent theory suggests a developmental anomaly related to the second pharyngeal arch.[1–3,5] The palatine tonsil develops in relation to the lateral part of the second pharyngeal pouch, and any anomaly during this development could result in the formation of aberrant mesenchymal tissue within the tonsil.[1,6] The presence of enchondral ossification and calcification in our case suggests either a more diverse developmental defect or an additional reactive process. Another hypothesis for the origin of extraskeletal cartilage or bone in the oral cavity and maxillofacial soft tissue points to the multipotential nature of primitive mesenchymal cells, which may be stimulated to grow by trauma, irritation, or inflammation.[2,4–6] While the patient presented with a prominent styloid process, a direct causal link between this finding and the development of the choristoma in this specific context is not explicitly supported by the provided literature; however, it is important to document such concurrent findings.

It is crucial to differentiate cartilaginous choristoma from cartilaginous metaplasia. Cartilaginous metaplasia typically occurs in soft tissues, often beneath ill-fitting dentures or due to trauma or neoplastic degeneration, and is histologically characterised by diffuse deposits of calcium and cartilaginous cells arranged in various stages of maturation.[2–4,6] In contrast, a choristoma consists of mature cartilage that is not a normal constituent of the tonsil. [3,4,6] Our case clearly demonstrated mature cartilaginous lobules, with areas of both calcification and true osseous metaplasia through endochondral ossification, signifying a more complex developmental anomaly rather than a simple metaplastic change. The identification of mature cartilage and bone, non-native to the tonsillar tissue, firmly establishes the diagnosis as a choristoma.[3,4]

The differential diagnosis for tonsillar lesions presenting as masses or hypertrophy is broad and includes various benign and malignant conditions.[2,7] Benign conditions to consider include pleomorphic adenoma, chondroma, neurofibroma, papilloma, ectomesenchymal chondromyxoid tumour, and granular cell tumour. Malignant cartilaginous neoplasms, such as primary chondrosarcoma or metastatic chondrosarcoma, must also be ruled out.[2] Histopathological examination is paramount in distinguishing choristomas from these other entities. In our case, the presence of well-formed, mature cartilage and osseous tissue, without features of cellular atypia, pleomorphism, or infiltrative growth characteristic of malignancy, allowed for the definitive diagnosis of a benign choristoma. The absence of epithelial or other mesenchymal components helped rule out pleomorphic adenoma, and the mature nature of the cartilage distinguished it from conditions like ectomesenchymal chondromyxoid tumours or chondromas.[2]

The treatment of choice for choristomas is surgical excision, which is considered both curative and diagnostic.[2,4–7] In the context of tonsillar choristoma, this typically involves tonsillectomy. While recurrence has generally not been documented for head and neck choristomas, some extraoral cases have been reported to recur, highlighting the importance of complete excision, including the perichondrium if present, as it may have the potential to develop new cartilage.[1,4–6] However, cartilaginous choristomas of the tonsil are expected to follow a benign course, similar to normal cartilage found elsewhere in the body.[1,3,4,6]

Conclusion

In conclusion, this case of tonsillar cartilaginous choristoma with osseous metaplasia and calcification underscores the heterogeneous nature and rare occurrence of choristomas in the oropharyngeal region. Despite their rarity, clinical suspicion, combined with meticulous histopathological examination, is essential for accurate diagnosis and to prevent misdiagnosis as more serious neoplastic conditions.

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