Case study

Stafne bone cyst in the right mandibular angle region: A case report with literature review

Abstract

Stafne bone cysts (SBC) are rare, small, well-demarcated, and radiolucent lesions that usually occur below the mandibular canal near the mandibular angle. Despite several theories, the etiopathogenesis of SBC remains unknown. As SBCs usually show no clinical signs, radiographic evaluation is the first stage of the diagnostic process. When the lesions are atypical, as in our instance, correct differential diagnosis is critical. This case study presents an unusual type-3 SBC in a 66 year old man and reviews relevant literature.

Keywords (MeSH): Stafne bone defect; Bone Cyst; Mandible; Radiolucency; Panoramic Radiography

Introduction

The stafne bone cyst (SBC) is an uncommon developmental depression on the cortical surface of the mandible, which usually manifests as a small, round or ovoid, well-defined radiolucent lesion [1]. The exact etiology of SBC is unknown; however, one theory posits that mandibular depression is caused by pressure from a hypertrophied submandibular gland [2]. SBC are also known as latent bone cysts, static bone cysts, static bone defects, lingual cortical mandibular defects, and lingual mandibular salivary gland depressions [3].

Most SBCs show no clinical symptoms; therefore, they are usually diagnosed during radiological examination [1, 4]. SBCs are more frequent in men aged 50–70 years [2]. These lesions are

typically 1–3 cm in diameter [5] and are generally observed in the posterior mandibular region. Some SBCs occur in the anterior mandibular region [4] or mandibular ramus [6].

In 1942, Stafne described 35 round or ovoid well-circumscribed radiolucencies at the vicinity of the mandibular angle [1]. Five of the cavities were studied for 5–11 years, and no changes in the size or features of the radiolucencies were observed. This indicated the benign nature of the lesions.

In most cases, treatment is not required because the lesion is asymptomatic and non-progressive [7]. For most lesions, routine clinical examination and radiography are considered sufficient.

Oral mucosal disorders, odontogenic cysts, and tumours are commonly observed in the dental practice. The classic Stafne cyst, on the other hand, is uncommon. Using panoramic radiography and histological examination, this case report with SBCs review attempts to identify the typical features of a large type 3 SBC, and suggests a plan of action for future cases.

Case Report

A 66-year-old asymptomatic man was referred to our department from the Department of Prosthodontics for an orthopantomograph to fabricate fixed partial prostheses with respect to 35–37 and 45–47. An orthopantomograph (OPG) was used for analysis. OPG revealed a well-demarcated, ovoid, unilocular cystic lesion measuring 2 × 1 cm, located anterior to the right mandibular angle, and involving the inferior border of the mandible. The mandibular canal was located superior to the lesion. The patient had no sensory or motor impairments, and was oblivious to the lesion. There was no history of discomfort or swelling of lymph nodes. The

patient had no history of trauma and no significant medical or dental history. No similar findings were observed on the left side of the jaw.

The radiological diagnosis was SBC and idiopathic bone cavity was considered in the differential diagnosis. The final diagnosis was confirmed as SBC based on the clinical and radiological findings. No invasive treatment was administered. The patient was advised to undergo regular follow-ups to check for any changes.

Discussion

Since Edward Stafne first described SBC, many authors have described this lesion in different sizes and its consequences on the adjacent tissues. Whether the defect is congenital or developmental has sparked controversy [7].

Seward *et al.* stated that the presentation, consistency of position, appearance, and occasional presence of the lesion on both sides indicated a congenital etiology [8]. In 1960, Choukas et al. claimed that SBC might be caused by developmental entrapment of the lobes of the submandibular gland, or by pressure from a hypertrophied submandibular gland. D' Eramo et al. performed three age-related studies and suggested that the lesion was developmental. The etiology of this defect is currently understood to be developmental. However, there have been reports of SBC lesions on the lingual bone surface at the mandibular angle, a region where the submandibular gland and lingual bone surface have no opportunity to communicate. Therefore, it is believed that a single etiology for this type of bone abnormality is insufficient [9].

In a literature review of six cases of SBC, the age groups at presentation ranged from 36 to 60 years, with an average of 48 years [10]. Another study included five men with SBC ranging in age from 36 to 57 years, with an average age of 46 [11].

These lesions are generally symptom-free and are diagnosed during routine clinical and radiological examination. Typically, the lesion appears as an ovoid, unilocular, and solitary radiolucency, ranging in size from a few millimeters in diameter. The border is usually well defined and sclerotic [12].

The location and characteristics of these lesions have been meticulously reported. There are two types of classification of SBCs: the first is based on the extent of the lesion, and the second is based on its content [10].

1.1. Classification based on the extension of cavity depth

Type I: The depth of the cavity does not extend to the mandibular cortical plate.

Type II: The depth of the cavity extends to the mandibular cortical plate.

Type III: The depth of the cavity extends to the mandibular cortical plate causing expansion.

1.2. Classification based on cavity content

Type F: Cavity contains fat tissue

Type S: Cavity contains soft tissue such as connective tissue, lymph nodes, and vessels.

Type G: Cavity contains salivary gland tissue

SBC are classified into four types based on the site of occurrence. The mandibular angle is the most common location for SBCs. Most SBC cases reported in the literature (80-90%) occur at this site [13]. Some SBC have been observed above the mylohyoid muscle in the incisor-canine-premolar region of the jaw, which is referred to as the lingual mandibular salivary gland depression in the anterior jaw [14]. SBC can also be found on the lingual surface of the mandibular ramus, directly below the condylar neck and behind the mandibular foramen [3]. The fourth type of SBC is exceedingly unusual, and occurs as a depression on the buccal aspect of the mandibular ramus. Although unilateral SBCs are uncommon, several studies have reported on cases of bilateral SBCs [15].

Radiography is used to diagnose and investigate SBC. In most cases, orthopantomographic scans are adequate for diagnosis. Oikarinen et al. recommended sialography for diagnosis of this defect. Sialography is an invasive technique that exposes patients to radiation. Therefore, it is seldom used for the diagnosis of SBC [16]. CT and MRI can assist in diagnosing SBC and distinguishing it from centrally occurring lesions such as odontogenic keratocysts, salivary gland tumors, and benign neurogenic tumors [17]. When radiographic findings are conflicting or the patient exhibits symptoms, surgical exploration should be performed. Histopathologically, SBC primarily comprises ectopic salivary gland tissues. However, it also contains muscle, fibrous connective tissue, blood vessels, fat, and lymphoid tissue. [15].

Mandibular radiolucency has been observed in several systemic and local pathological conditions. Therefore, when lesions are atypical, proper differential diagnosis should be established. SBC needs to be differentiated from several pathologies such as (1) salivary gland tumors, (2) multiple myeloma (3) aneurysmal bone cysts, (4) ameloblastoma, (5) central giant cell lesion.

This condition does not demand any treatment. Periodic radiological follow-up is generally considered the best long-term option. Any unanticipated change or odd appearance warrants the use of more advanced modalities such as Cone Beam Computed Tomography, Computed Tomography or Magnetic Resonance Imaging.

Conclusion

In conclusion, we suggest that SBC should not be viewed solely as the result of salivary gland-related bone abnormalities. They must be distinguished from bone lesions, such as salivary gland tumors, multiple myeloma, aneurysmal bone cysts, ameloblastoma, and central giant cell lesions. Various tests and investigations such as radiography, advanced imaging modalities, sialography, aspiration, and surgical exploration for biopsy, can limit or eliminate options from this list. Classic asymptomatic SBC lesions should be followed up radiologically on a regular basis.

Ethical Clearance:

Ethical clearance was obtained from the institutional ethical board.

Informed consent:

The authors certify that we have obtained all appropriate patient consent forms from the patient for clinical information to be reported in the journal.

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Legends:

Figure 1: Intra-oral view

Figure 2: Panoramic view of the lesion in the right mandibular region.

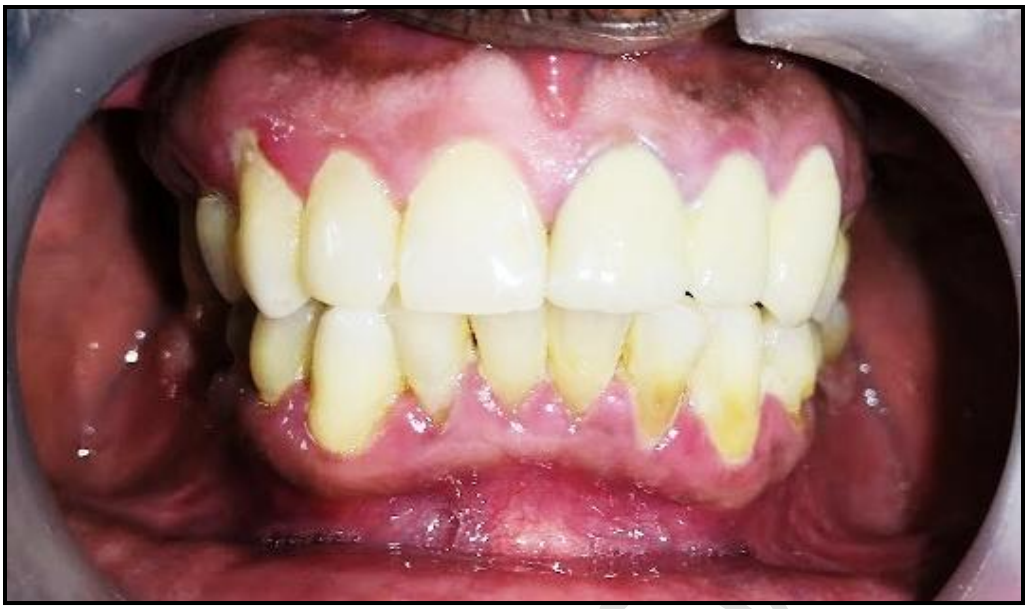

Figure 1: Intra-oral view

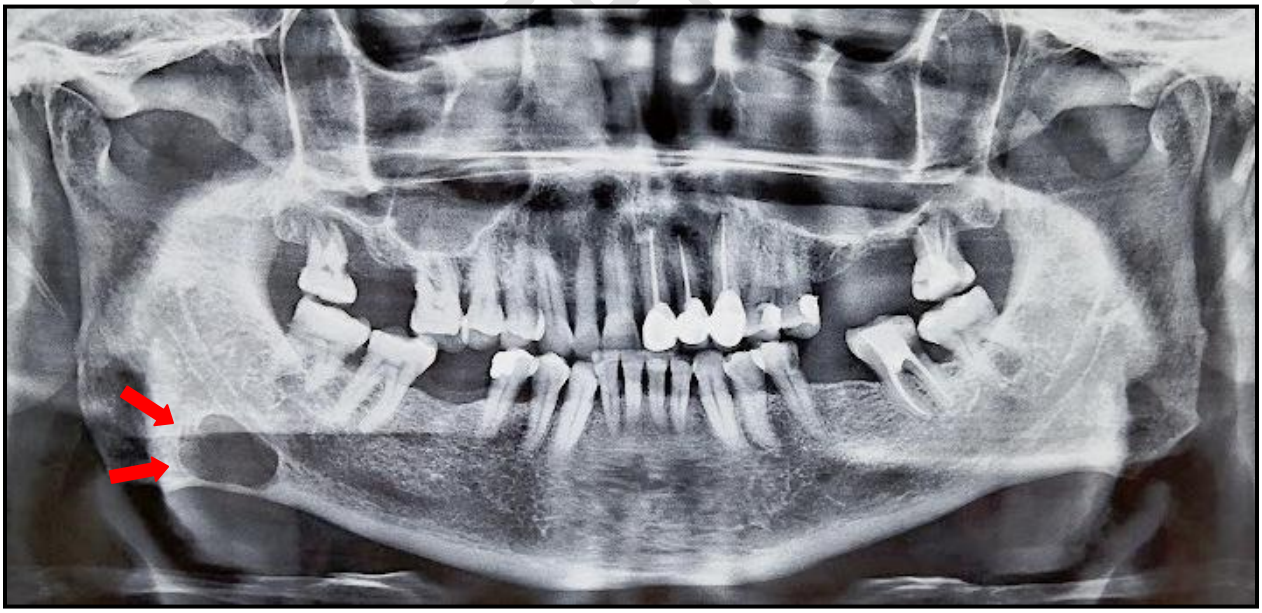

Figure 2: Panoramic radiograph showing a well-defined, unilocular lesion measuring 2 × 1 cm, located anterior to the right mandibular angle and inferior to the mandibular canal.