Three-Dimensional Imaging of Stafne Bone Cavity Proximal to the Mandibular Canal A Case Report

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Abstract

Stafne Bone Cavity (SBC) is a rare pseudocyst occurring below the mandibular canal near the angle of the mandible.

We report to you a case of SBC occurring in close proximity to the mandibular canal in a 27-year-old male. We have also highlighted the multiplanar and three-dimensional visualization of the SBC using the CBCT scan.

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Introduction

Stafne bone cavity (SBC), is an asymptomatic pseudocyst found in the mandible.[1] SBCs usually develop as a consequence of a pressure atrophy from the adjacent salivary gland on the lingual surface of the mandible.[2] SBCs usually located below the mandibular canal.[3] On rare occasion researchers have reported of SBCs in the lingual surface of anterior mandible and buccal aspect of the mandibular ramus.[4] In conventional radiographic techniques they appear as unilocular, circular radiolucent areas with well-defined corticated border, varying in size from 1-3 centimeters.[5] Conventionally panoramic radiography was commonly used for the detection of SBCs. Recently Cone Beam Computerized Tomography CBCT has gained vast popularity.[6,7] In the contemporary literature there are very few reports of cone beam CBCT based evaluation of SBCs.[8] We are presenting a case-report with multiplanar imaging of SBC using Cone Beam Computerized Tomography (CBCT).

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Case Report

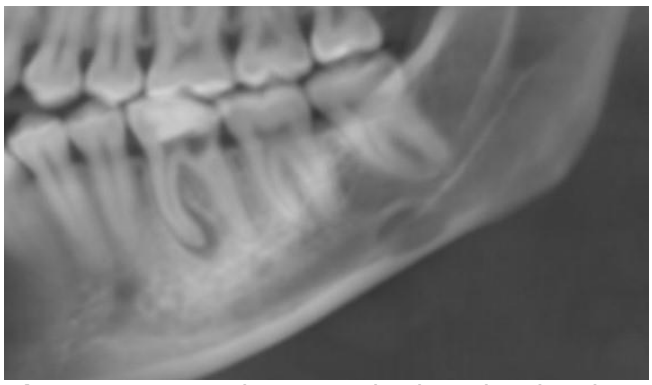

Figure 1. Cropped panoramic view showing the presence of well-defined radiolucent area in the path of the mandibular canal on the left side.

A 27-year-old male patient was referred to the dental radiography unit of the University Dental Hospital, Thumbay Medicity, Ajman for routine panoramic radiography. On evaluation of the panoramic radiograph a radiolucent area measuring about 2 centimeters in diameter was observed on the left side of the body of the

mandible along the path of the mandibular canal (Figure 1). The radiolucency was located in between the root apices of the second and third molars. The radiolucent area had well defined margins and was located 2 millimeters above the inferior border of the mandible. A linear radiopaque line could be traced within the radiolucent area in a horizontal direction indicating the path of the mandibular canal. The area surrounding the radiolucency was normal. There was no radiographic evidence tooth displacement or root resorption.

A CBCT was made for detailed radiographic examination of the region of interest. Coronal sections revealed presence of a smooth depression (indentation) of the lingual aspect of the ramus of the mandible, located apical to the mesial root of lower left wisdom tooth. The bony depression abutting the mandibular canal which was located in the bucco-superior aspect. Inferiorly the bony depression was extending to the lower border of the mandible. No resorption or pressure effects are seen on the surrounding bone and teeth roots; however, the inferior border of the mandible shows mild thinning at the lingual most inferior border. No change in the course of the inferior dental canal is noted (Figure 2).

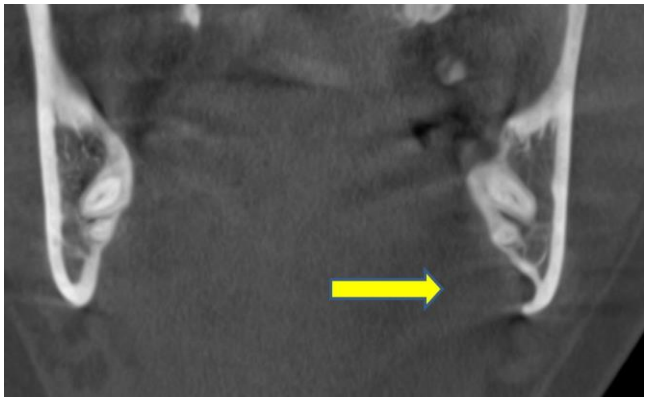

Figure 2. Coronal CBCT section showing bony depression in the submandibular area on the left side in close proximation with the mandibular canal.

Sagittal sections revealed the location of the depression between the root apices of mandibular 2nd and 3rd molars. Marked thinning of the inferior border of the mandible is noted. Only a thin (2 mm) margin of the inferior border of the mandible could be visualized. The pathway of the mandibular canal could partially be traced (Figure 3).

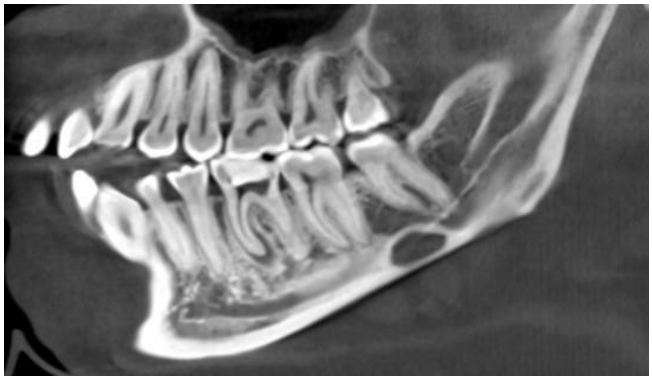

Figure 3. Sagittal CBCT showing interradicular location of the bony depression, above the inferior border of the mandible.

Figure 4. Axial CBCT section showing the lingual location of the bony depression.

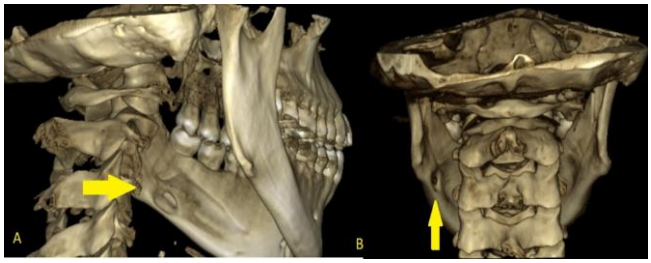

Figure 5. A-Oblique and B-Posterior view of the SBC depression.

The axial section confirms of the lingual location of the bony depression and its relationship with the mandibular canal (Figure 4).

The 3D reconstructed image showed an indentation on the lingual surface of the bode of the left mandible. The indentation was located apical to the mesial root of the left lower wisdom tooth inferior to the submandibular glad fossa. Marked thinning of the inferior border of the mandible is noted, no evidence of fracture r discontinuity of the inferior border is noted (Figure 5A and 5B).

Based on these imaging findings a diagnosis of Safne Bone Cavity in the left mandibular body region was made. The patient was advised to keep a periodic radiographic follow up.

Discussion

SBCs are accidentally discovered in most of the cases as they are asymptomatic.[3] Radiographically they classically display an ovoid, well defined radiolucent area.[9] The detection of SBC in our case was accidental and had an ovoid radiolucent appearance.

SBCs are usually classified into anterior and posterior variants; the latter is more common in occurrence. The posterior variants are usually located between the mandibular angle and first mandibular molar tooth below the mandibular canal.[10] In our case the cavity was were situated in the posterior region below the mandibular canal on the left side.

Based to their relationship to the buccal cortical plate, SBCs are classified into three types. In type I, the cavity does not extend up to the buccal cortex, whereas in type II, extends till the buccal cortex but does not cause any cortical expansion. Type III variety is characterised by the buccal cortex expansion.[11] In our case the cavity could be categorised under type II variety. SBC is seen more commonly in men between the age of 50 and 70 years.[12] A range of investigative modalities have been used or recommended for the diagnosis of SBC. Panoramic radiography, computerised (CT) or Magnetic Resonance Imaging (MRI), sialography are some of the modalities used, CBCT is now gaining significance because of the multiplanar imaging and comparatively low radiation dose.[13] CBCT has been used for a range clinical dental conditions like evaluation of jawbone density, supernumerary tooth, periapical lesions, root fractures, root canal configuration and perforation.[14-17] Axial CT image examinations have revealed similarities in the densities between submandibular gland and inner content of SBC defect.[18] Some researchers have advocated MRI over CT in imaging SBC because of higher radiation exposure and greater risk of contrast reactions. MR images of SBC appear isointense with, the submandibular gland in proton density–and T1-weighted sequences.[19] If there is a lack of characteristic soft-tissue contrast in the MR images, intravenous contrast may be used.[20] Sialography can be used as an imaging option to determine the presence of glandular tissue within the defect.[21]

In the present report the patient was a 27-year-old male. Since SBC is asymptomatic treatment is not required. Surgical exploration or biopsy is only performed in atypical cases or a suspected of cyst or tumor.[22] We have recommended periodic follow up for our patient since the cavity was asymptomatic and CBCT scans showed no evidence of pathological changes.

Conclusions

Conventional imaging modalities like panoramic radiographs are usually adequate for the diagnosis of SBC, however advanced imaging modality like CBCT, CT or MRI is required when the presentation is atypical. In our case the cavity seemed to overlap the mandibular canal giving it atypical radiographic presentation. Multiplanar imaging with CBCT not only provided 3D the information about the extent of the lesion but also its relationship with the mandibular canal

Declaration of Interest

The authors report no conflict of interest.

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