

Anterior Stafne bone defect: Literature review and a case series

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Abstract

The study objective was to review the literature and to present 3 cases of the anterior Stafne bone defect (SBD). The electronic databases – MEDLINE via PubMed and Google Scholar – were searched by 2 independent authors, who retrieved 20 articles concerning this pathology. The Stafne bone defect is an asymptomatic bone lesion, diagnosed mostly incidentally through radiological imaging, typically located in the lateral section of the mandible. The anterior SBD is exceedingly rarely observed. So far, less than 40 cases have been described. The hypothesis of the formation of a bone cavity in connection with the sublingual salivary gland has not been confirmed in the literature, considering other tissue structures present within the lesion, including lymphoid or adipose tissues. The anterior variant of SBD can be mistaken for other lesions, considering its atypical location and lower incidence rate. In most cases, it does not require any treatment and the ‘wait-and-see’ strategy is adopted. In the present study, 2 cases of two-chamber and 1 case of single-chamber anterior SBDs were presented. Their course was asymptomatic; however, in 2 cases, increased tension of the suprahyoid muscles on physical examination was reported. The cone-beam computed tomography (CBCT) imaging was employed in each case. There was no need for biopsy, and the monitoring of the lesion was established in each reported case.

Keywords: review, case series, anterior Stafne bone defect

Cite as

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Highlights

- The anterior Stafne bone defect (SBD) is a rare, asymptomatic condition, typically identified as an incidental finding through three-dimensional (3D) imaging.
- The condition is often overlooked in clinical practice, as the incidence of the anterior SBD tends to be underestimated due to the predominance of two-dimensional (2D) imaging in dentistry.
- Although the exact etiology of the anterior SBD remains unclear, some studies suggest that increased suprahyoid muscle tone may play a role in the development of this condition.

Introduction

The Stafne bone defect (SBD), first reported in 1942 by Edward Stafne, has also been described in the literature as the Stafne bone cavity or lingual mandibular depression. It is a rare, asymptomatic bone cavity characterized as a single-focus bone lesion, with the most predominant location being the lateral aspect of the mandible, typically below the inferior alveolar nerve and artery. Less frequently, SBD affects the anterior aspect of the mandible and its ramus, leading to differential diagnostic concerns. Regardless of the location, it is most frequently detected between the 5th and 7th decade of life, and shows a predilection for male sex. The accidental detection of SBD in panoramic radiography occurs in 0.08%–0.7% of cases.^{1–7} The etiopathogenesis of SBD is not fully understood. However, the hypothesis of the sublingual salivary gland and, in case of the ramus location, the deep lobe of the parotid gland ingrowth, or incomplete Meckel cartilage calcification during ossification are most commonly presented.^{7–10} The World Health Organization (WHO) classifies SBD in the same group as pseudocysts.¹⁰

The anterior SBD was first reported in 1957 by Richard and Ziskind.⁹ It is located in the mental section of the mandibular body, in the area of incisors, canines and first molars, and is even a rarer finding. In contrast to the posterior variant of the lesion, it may be difficult to diagnose. The anterior SBDs concern the bone area above the mylohyoid muscle attachment and occur beneath the root apices. They may be seen superimposed over the roots or at the sites of previous extractions. Therefore, they may be misdiagnosed as other radiolucencies.^{2,11}

Over time, there have been several attempts to establish a complementary classification of SBD. One of the first was the classification by Ariji et al., which distinguished 3 types of SBD, depending on its contents: types F, S and G, in which the cavity is filled with fat, soft tissue or submandibular gland tissue, respectively.¹²

The classification introduced in 1993 by Shigematsu et al. was based on radiological evaluation and the location of SBD.¹³ The classification includes 4 types of bone cavity. The first 3 variants concern the lateral location of SBD, distinguishing the location relative to the mandibular canal. The latter variant refers to the anterior location of SBD.

Type I, referred to as a pit, covers the lower mandible margin, below the mandibular canal. Type II, known as intermediate, is located above the lower mandibular margin, albeit below the mandibular canal. Type III, known as a deviation, is deviated from the mandibular canal. Type IV, referred to as the anterior variant, is above the insertion of the mylohyoid muscle, in the mental area of the mandible.¹³ According to this classification, the most common SBD variant is type II. Types III and IV may be observed in the area of dental apices, making an erroneous diagnosis of an odontogenic inflammatory cyst probable.

The newer classification from 2020 focuses on the lingual-buccal extent of the lesion.¹⁴ The lesion can either be a lingual impression and thinning of the cancellous bone (type I), with complete resorption of the bone and no involvement of the buccal cortical plate (type II), or it can additionally cause a buccal bulging of the thinned buccal cortex (type III). In extremely rare, severe cases, a complete loss of the basal bone in the affected area can be classified as type IV.¹⁴

An important aspect in types III and IV is a differential diagnosis, which should exclude salivary gland tumors, odontogenic tumors, such as ameloblastoma (mainly unicystic ameloblastoma (UA)), odontogenic keratocyst (OKC), central giant-cell lesion (CGCL), odontogenic myxoma (OM), and ossifying fibroma (OF). Among the cysts of the jaw, pseudocysts should be eliminated: solitary bone cyst (SBC); and aneurysmal bone cyst (ABC).^{1,15–21}

The current report is a review of the literature on the anterior SBD; it presents 3 cases of the anterior SBD. To the best of our knowledge, this is the first review concerning the anterior SBD. The locations of SBDs were defined based on the radiographic classification from 2020.¹⁴

Methods

Information on sources and search strategies

A search of electronic databases was conducted using MEDLINE via PubMed and Google Scholar. The electronic search was carried out in March 2024 by 2 authors (D.K. and P.K.-R.) with the use of advanced search options. The search terms included all combinations of the

following keywords: ‘Stafne bone defect’ OR ‘Stafne bone cavity’ OR ‘lingual mandibular depression’. The resulting references were exported and duplicates were removed where identified. All the information concerning the anterior variant of SBD was retrieved and collected.

Eligibility criteria

Articles in English describing clinical studies, case reports, case series, or clinical trials on SBD were included in the study. Considering case studies, only reports meeting the CARE (CAse REports) criteria – a clear description of the patient’s demographic characteristics, the patient’s medical history and its presentation as a timeline, current clinical condition, the description of diagnostic tests, a clear description of the treatment provided, if needed, information on the post-intervention clinical condition, and the identification of possible complications – were included in the study.²² Bibliographic reviews, systematic reviews, editorial reviews, meeting/congress abstracts, experimental studies, in vitro or ex vivo studies, studies older than 25 years, and articles in which it was not possible to access the full texts were excluded.

Selection process

The titles/abstracts of all the articles retrieved through the electronic search were read independently by 2 authors (D.K. and P.K.-R.). After the full texts were evaluated, references that met the eligibility criteria were also included (Fig. 1). Differing opinions between the reviewers with respect to inclusion or exclusion were resolved after discussion with the third author (M.D.).

Data extraction

From each article, the following data was exported and analyzed, if available: the authors’ names and the year of publication; the patients’ age and sex; the clinical manifestation of the lesion; the radiological featuring of the lesion; the radiological diagnosis strategy; possible surgical intervention; the suggested contents of the defect; the specification of the follow-up strategy; and the biological behavior of the lesion.

In the case of studies on SBD in different locations, the articles were screened and all the data referring to the anterior variant was also extracted from the study where possible. In the end, 20 articles were included in the review (Table 1).

Risk of bias and certainty assessment

Due to the fact that the vast majority of the hits that met the above criteria were case studies, and consequently had extremely small sample sizes, we were not able to assess the risk of bias, and certainty or confidence.

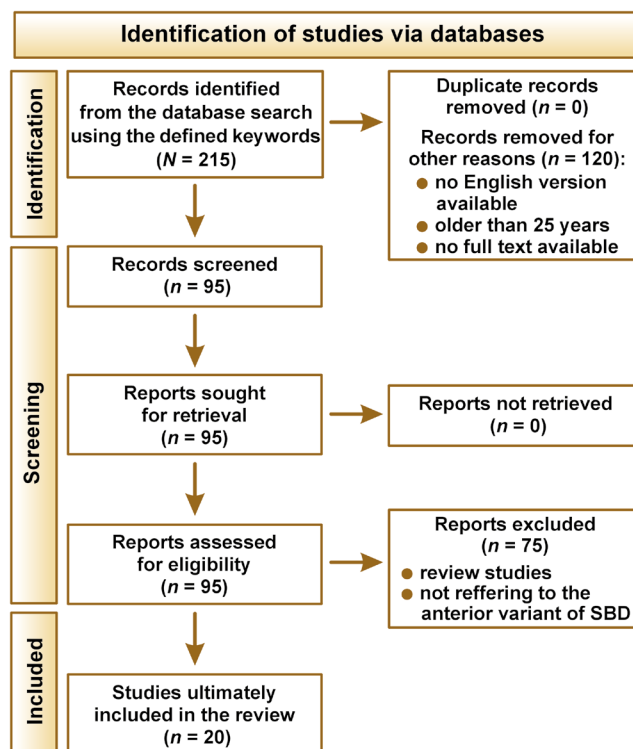


Fig. 1. Flow chart of the study selection process
SBD – Stafne bone defect.

Case presentation

Case 1

A female patient, aged 26 years, visited the dental clinic to start orthodontic therapy. During anamnesis, the patient claimed no constitutional diseases or disturbing focal symptoms within the oral cavity. The patient was subjected to orthodontic treatment. In the extraoral examination, Angle class III (overbite defects) and Steiner skeletal class III (morphological protrusive occlusion) were diagnosed, accompanied by the protrusion of the lower lip and the smoothing of the mentolabial groove. An orthodontic defect from the cross-bite group was also present, occurring on teeth 12, 42 and 43. The patient underwent treatment with the multi-loop edgewise archwire (MEAW) technique, which enabled control over the occlusion plane in 3 dimensions. The intraoral examination revealed a tense oral cavity floor and increased suprahyoidal muscle tone. The mental muscle did not feature increased muscular tone by palpation. The frenulum of the tongue was located in the correct position and no deformations of the tongue were present. Although the panoramic radiograph did not reveal any pathology, the cone-beam computed tomography (CBCT) performed for orthodontic treatment detected a bilateral, single-chamber, well-localized bone defect in the anterior part of the mandible. The shape of the bone defect was elliptical; it extended from the sublingual side in the area of the mental spine. The defect

Table 1. Results of data extraction from articles that met the eligibility criteria

Study	Patients' age [years] and sex	Clinical data	Additional examinations	Radiological manifestation of the lesion	Surgical intervention	Suggested contents	Changes at the follow-up
Hayashi et al. ⁷ 2020	68/M	asymptomatic	MRI within 3 months	unilateral, extending from the lingual side to the buccal side and, at the most recessed point, contiguous to the buccal cortical bone, no continuity between the apex of the adjacent tooth and the cavity, a high-density surrounding line	yes, for other reasons	salivary gland tissue	no
Taysi et al. ¹¹ 2014	56/M	asymptomatic	CBCT	unilateral, the premolar region, the lesion eroded the lingual cortical bone and caused a buccal expansion, leaving a thin layer of bone	biopsy	mixed salivary gland tissue	not mentioned
Friedrich et al. ¹⁴ 2020	12/F	asymptomatic	CBCT	a bilateral enlargement of bone depression in sagittal and transverse directions	no	salivary gland tissue	no
Turkoglu and Orhan ²³ 2010	52/M	mistaken for a periapical cyst	CT	a unilateral cyst-like cavity on the lingual side	no	salivary gland tissue	not mentioned
He et al. ²⁴ 2019	37/F	asymptomatic	MRI	a unilateral, oval radiolucent image	no	adipose tissue	no changes at 2 years
Krafft et al. ²⁵ 2010	46/M	asymptomatic	–	a unilateral, oval radiolucent image	exploration	connective tissue, fatty tissue, striated muscle, bony fragments, and salivary gland tissue	progression at 7 years
Watanabe et al. ²⁶ 2021	10/M	asymptomatic	CT, MRI	oval-shaped depression (6 mm × 5 mm × 3 mm in size) at the lingual apex	exploration	glandular tissue	regression at 1 year
Hisatomi et al. ²⁷ 2019	2 cases	asymptomatic	CT	unilateral, oval, with thin sclerosis on the borders	not mentioned	not mentioned	not mentioned
Asgary and Emadi ²⁸ 2020	40/M	mistaken for a non-odontogenic cyst	CBCT	a unilateral, oval cyst-like cavity	no	sublingual gland tissue	not mentioned
Kati et al. ²⁹ 2022	83/M	asymptomatic	CBCT, MRI	unilateral, oval, accompanied by the posterior variant	no	sublingual gland tissue	not mentioned
Kim et al. ³⁰ 2014	44/F	asymptomatic	OPG	bilateral, oval	biopsy	salivary gland tissue with mixed serous and mucinous cells	not mentioned
Sisman et al. ³¹ 2010	62/F	mistaken for a residual cyst	CT	unilateral, oval	no	not mentioned	not mentioned
Deyhimi et al. ³² 2016	45/M	mistaken for a periapical lesion	OPG	well-defined, unilocular radiolucency below the apices of the left lateral incisor and the left canine	a periapical lesion suspected, no vitality test was done	sublingual gland inflammatory cells, muscle tissue, fat tissue, blood vessels, and nerve bundles	no changes at 3 months
Friedrich et al. ³³ 2012	11/F	class III occlusion	MRI, USG	an oval osteolytic lesion superimposed on the apical parts of mandibular incisors, no sclerotic margin	no	sublingual gland tissue	not mentioned
Ozaki et al. ³⁴ 2015	76/M	asymptomatic	CBCT, MRI	unilateral, oval, accompanied by the posterior variant	exploration to rule out salivary gland tumor	sublingual gland tissue with the infiltration of lymphocytes – chronic sialoadenitis	not mentioned
Bornstein et al. ³⁵ 2009	47/M	asymptomatic	CBCT, MRI	unilateral, mimicking a periapical lesion	no	salivary gland tissue	not mentioned
Bornstein et al. ³⁵ 2009	62/M	before implant therapy	CBCT, MRI	unilateral, mimicking a periapical lesion	no	salivary gland tissue	not mentioned
Vieira Aguiar et al. ³⁶ 2011	60/M	before implant therapy	CT	bilateral, oval, accompanied by the posterior variant	no	salivary gland tissue	not mentioned
Altswaim and Al-Sadhan ³⁷ 2019	17/M	before third molar procedure	OPG, CBCT	oval-shaped depression, with a width of 2.1 cm on the right side and 2.9 cm on the left side	no	not mentioned	not mentioned
de Courten et al. ³⁸ 2002	42/M	mimicking a residual cyst	OPG	radiolucency located on the left side of the mandible, in the region of an absent second premolar and a first molar, above the alveolar canal	biopsy	sublingual gland tissue	not mentioned
Tomrukcu and Kose ³⁹ 2020	45/M	asymptomatic	OPG, CBCT, MRI	a well-defined, unilocular lesion, not related to the tooth roots	no	not mentioned	not-mentioned

M – male; F – female; MRI – magnetic resonance imaging; CBCT – cone-beam computed tomography; CT – computed tomography; OPG – orthopantomography; USG – ultrasonography.

did not come into any contact with the tooth periapical tissues and did not imitate a dental cyst. After the dimensional scope of the bone lesion was established during the CBCT examination, a height of 17.0 mm and a width of 4.0 mm were determined for the defect (Fig. 2). The young age of the patient and the asymptomatic panoramic radiograph did not indicate susceptibility to major bone defects in the presented mandibular area, yet such a defect was present. The alveolar process measured 9.0 mm in its broadest point, while in the area of the defect it was considerably smaller (3.5 mm). The percentage of general bone loss was 38.88%. The bone cavity was diagnosed as the anterior SBD, with no indications for surgical intervention, taking into account the current bone resorption. According to the abovementioned classification of SBD,¹⁴ it was categorized as type II. The patient was referred for a further magnetic resonance imaging (MRI) examination and the routine control of the lesion every 6 months for the next 5 years.

Case 2

A female patient, aged 34 years, visited the dental clinic to consult a bone defect in the anterior section of the lower jaw. The patient's medical history did not reveal any systemic diseases or dental ailments. In the physical examination, the patient had a symmetrical and proportional face. In the upper and lower arches, there were no interdental losses of Angle class I, there was no transposition, and abnormal tooth inclination was observed. The sublingual frenulum was not shortened or thin. No tension or tenderness of the submucosa could be determined in the anterior SBD area. The propylaeum depth was normal. The tongue was the appropriate color, had no defects in the resting position and showed standard mobility. In the area of the suprahyoid muscles, no reduced or increased muscle tone could be found. The first examination in routine clinical practice involved panoramic imaging, which did not show a bone lesion. The additional CBCT examination, for orthodontic purposes, revealed immense bone

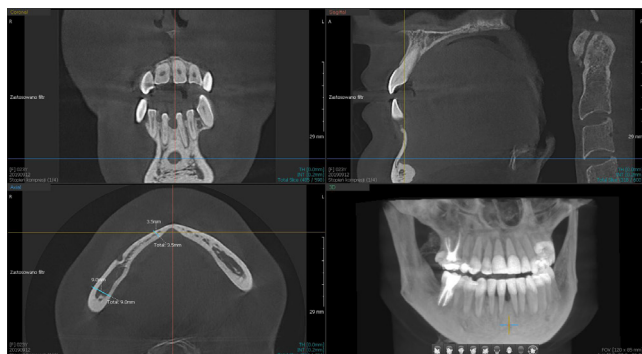


Fig. 2. Case 1: Images collected from the cone-beam computed tomography (CBCT) examination

Visible osseous resorption in the anterior section of the mandible from the lingual side. Bone on the vestibular side is completely retained.

cavities on both sides of the mandible. The change was well-localized and had a circular shape. No contact or displacement of the teeth in the area was reported. The severe bone defect was measured via CBCT in the axial section. The bone lesion height was 16.8 mm and its width was 6.2 mm on the right side. On the left side, the bone cavity was characterized by smaller dimensions, amounting to 10.6 mm in height and 4.0 mm in width (Fig. 3). In its broadest point, the alveolar process beyond the lesion measured 10.1 mm. The amount of bone loss on the right side was 16.83% and 26.59% on the left side. The lesion was qualified as type II SBD (Fig. 4). Due to the relatively large bone defect, the patient was instructed on the need of an uninterrupted follow-up every 6 months for the next 5 years. In addition, the patient was referred for an MRI examination.

Case 3

A female patient, aged 26 years, undergoing orthodontic treatment visited the dental clinic for consultation. According to the medical history, the patient had no chronic diseases. Upon physical examination, Angle class II was diagnosed, and a prominent chin with severe mental muscle tension and activity, as well as the orange peel symptom, were present. The patient did not have interdental or lateral pterygoid deficiencies. The oral cavity floor was significantly tense within the area of the bone lesion.

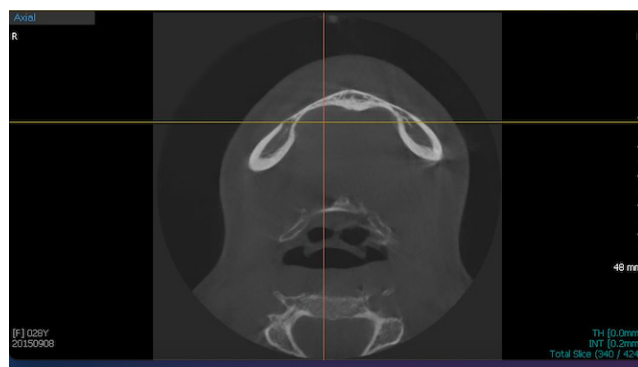


Fig. 3. Case 2: Bone depression in the anterior section visualized in the axial plane (CBCT)

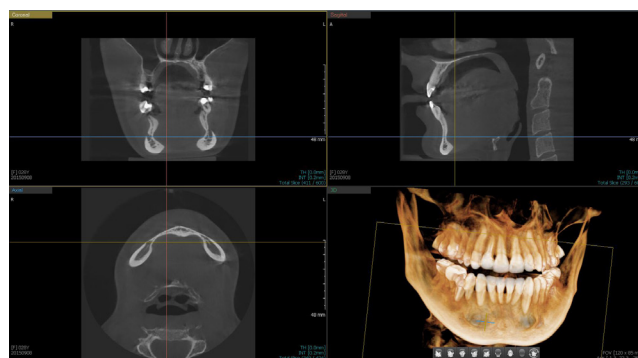


Fig. 4. Case 2: Imaging of well-isolated, bilateral bone defects in the area of the mental spine of the mandible (CBCT)

No hypertrophy or abbreviation of the fibrous sublingual frenulum was found, while the lateral frenula were absent. According to the Placek classification, type II insertion of the upper lip frenulum was diagnosed. The pull syndrome test of the lower lip was performed, which did not reveal symptoms of blanching or tearing. The patient was referred for a CBCT examination for further diagnostics. Cone-beam computed tomography was recommended to assess the volume and morphology of bone tissue in the maxilla and the mandible, to detect potential tooth resorption, and to observe the direction and extent of bone structure displacement. Incidentally, a bilateral pathological bone defect was visualized on the right and left in the anterior region of the mandible (Fig. 5). The tooth viability examination in the anterior section demonstrated a positive reaction. Following the CBCT analysis, the presence of the anterior SBD was confirmed. The lesion had an ovoid shape, with an isolated milieu (Fig. 6). The height of the right defect was 16.3 mm and its width was 7.4 mm. On the left side, bone loss was minimally minor, calculated as having a height of 16.2 mm and a width of 6.2 mm. The amount of bone loss on the more affected side was 21.05%. The lesion was categorized as type III. In the additional examinations, an abnormal level of vitamin D3 was determined (18.9 ng/mL). Surgical treatment was not



Fig. 5. Case 3: Axial view in the CBCT examination illustrating the area transparent for X-rays as bi-chamber erosion on the right side and the left sublingual surface of the mandible

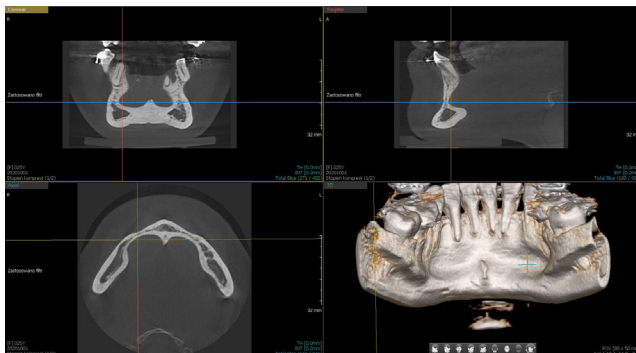


Fig. 6. Case 3: Images of the cross-sections of the anterior Stafne bone defect (SBD) in the frontal, sagittal and axial planes in the CBCT examination, and the three-dimensional (3D) mandible model

required for the current condition and bone penetration was abandoned. The patient was referred for a further MRI examination. The routine control of the lesion every 6 months for the next 5 years was recommended. In addition, vitamin D3 supplementation was prescribed to correct its concentration in the system.

Discussion and literature review

Epidemiology and patient characteristics

The results of our study show that the anterior SBD is an extremely rare condition, as only 22 cases were ultimately included in the review on the basis of the eligibility criteria (Table 1). This finding is in line with other reports estimating the total number of the anterior SBD cases previously described in the literature at several dozen.^{11,39}

It is a well-established fact that SBD is more prevalent in the Asian population. The results of our review study also suggest that the anterior variant of SBD demonstrates a higher morbidity rate in the Asian and Caucasian populations, as the majority of cases in the review came from those geographic regions. The Anterior SBD is most commonly reported in middle-aged people, with a strong predilection for male sex (Table 1).

Clinical manifestation

Similarly to SBD, in the vast majority of cases, the anterior SBD remains asymptomatic and challenging to detect on physical examination. Only in 5 of the reviewed cases did the anterior SBD mimic a jaw cyst (mostly periapical) and was initially diagnosed as such.^{23,28,31,32,38} In the rest of the cases, the anterior SBD was an accidental finding. In contrast to jaw cysts, the anterior SBD eggshell crackling syndrome is usually absent on clinical examination. Observing that sign might be a criterion for differentiating the anterior SBD from an odontogenic inflammatory cyst.^{31,32,38}

Radiological examination and featuring

Most of the anterior SBD cases were initially diagnosed based on the panoramic X-ray. However, authors commonly agree with a strong suggestion that in such cases, diagnosis should include three-dimensional (3D) imaging. Cone-beam computed tomography is proposed as the first choice for the additional examination. Only 3 authors of the articles under review judged the panoramic X-ray to be satisfactory at providing a definite diagnosis of the anterior SBD^{30,32,38}; however, 2 of them decided to additionally carry out biopsy^{30,38} and in one case, the initial diagnosis turned out to be erroneous.³⁸

A CBCT examination usually demonstrates a rounded bone cavity on the lingual side of the mandible, circular

or oval, well-defined depression, reminiscent of cyst-like depression. The size of the defects ranges from 5 mm to 20 mm.^{10–13,15,32,36,37}

Shimizu et al. divided the types of SBD radiological featuring into 2 main kinds.⁴⁰ Typical cases, as in our case series, show continuity from the base of the mandible and make the diagnosis of this defect easy. On the other hand, non-typical cases show an obscure margin and do not show a connection to the mandibular border. In those cases, the additional examinations are more likely to be needed.⁴⁰

Some authors suggest performing an MRI examination in the borderline cases of the anterior SBD. Magnetic resonance imaging is not based on ionizing radiation. Furthermore, it is characterized by high resolution and is suitable for visualizing the tissues filling the anterior bone cavity, especially the lingual region of the mandible.^{8,15} It is more likely to exclude the pathological processes originating from soft structures in the vicinity of the lesion and, in many cases, it can exclude surgical intervention. An MRI examination was recommended in 9 of the cases under review^{7,24,26,29,33–35,39} and it largely allowed surgical intervention to be avoided, as in only one of them was biopsy needed.³⁴

Although we considered the radiological features of our cases to be typical, we referred each patient for a further MRI examination. The reasons for that were the negligible invasiveness of this examination and the extremely rare location of SBD in the anterior aspect of the mandible. Thus, each such case might be generally considered an atypical SBD.

Treatment options

Although the majority of the anterior SBD cases do not need any surgical intervention, in the case of abnormalities in bone structures near the lesion or the tissues of the oral cavity floor, it is necessary to surgically explore the cavity and collect material for a histopathological examination. In the cases under review, biopsy was carried out in less than half of them.^{7,11,25,26,30,32,34,39} Such a procedure is quite difficult due to the proximity of the anatomical structures of the oral cavity floor, the sublingual nerve and artery, as well as the submandibular and sublingual glands. Therefore, it requires general anesthesia and a full-thickness flap from the lingual surface of the mandibular body.^{1,2}

Lesion contents

In the great majority of the cases under review, the suggested contents of the bone cavity based on the imaging examinations was the sublingual salivary gland.^{14,23,28,29,33,35,36} Furthermore, when a biopsy was carried out, the microscopic examination predominantly confirmed sublingual gland tissue.^{7,11,26,34,38} Occasionally,

the salivary gland structure was accompanied by other physiological tissue structure from the direct vicinity of the cavity.^{25,30,32} This might be explained by the biopsy technique and a small operational field, which can lead to the collection of other tissues surrounding the lesion. This finding is in line with other reports on SBD and is an explanation for the “glandular” hypothesis of the pathogenesis of the anterior SBD.^{1,40} According to this hypothesis, during their development, the submandibular or sublingual glands compress the lingual part of the mandible, which is followed by the resorption of the cortical bone, and ultimately develop a defect occupied with glandular tissue. The main limitation of this hypothesis is the fact the vast majority of the anterior SBD cases are reported in the 5th and 7th decades of life, but are relatively rarely reported in the first 2 decades. Being a congenital lesion, it should be represented more frequently in the earlier stages of development.

There are contrary reports to the congenital hypothesis, suggesting other contents and etiology of the anterior SBD. The dehiscence of the muscles (mainly the mylohyoid muscles) and the fascia of the oral floor is one hypothesis for the formation of an anterior bone defect containing muscle tissue.¹⁴ The abnormal mobility and non-physiological dehiscence of the myofascial complex lead to disorders in the correct positioning and functioning of bone structures. They may also impact the growth and development of osseous tissue, particularly in the period of skeletal growth.^{41,42} The salivary gland ingrowth would be the secondary process in such situations. It is worth noting that increased tension of selected muscles in the oral region was reported on physical examination in 2 of the 3 cases presented by us.

Clinical significance

In 4 cases, the anterior variant was diagnosed in edentulous patients,^{31,35,38} which could make the differential diagnosis of a residual cysts based on two-dimensional (2D) imaging challenging.^{32,38,43,44} As mentioned above, the anterior SBD is a rarely detected condition and should be strictly separated from other pathologies, such as sialadenosis, ABC, bone marrow defects, giant-cell granuloma (GCG), or residual cysts. The anterior SBD and residual cysts are asymptomatic. Both have well-defined sclerotic bone margins, which is conducive to misdiagnosis, whereas the radiographic borders of other pathologies would be more undefined. Small to moderate-sized ABC and CGCL are similar to an asymptomatic anterior SBD. However, on radiological imaging, both the abovementioned conditions show more locally aggressive growth, including the resorption of the adjacent anatomical structures, as well as the swelling of the salivary gland in association with acinar hypertrophy and ductal atrophy. Sialadenosis, on the contrary, presents as non-tender swelling that is often bilateral and symmetric. Sialadenosis is usually associated

with systemic metabolic conditions, which is not typical for the anterior SBD.^{1,14,15,19–21,24,45}

The clinical significance of the lesion is acknowledged during implant treatment planning, as the presence of a bone cavity and the possibility of perforating the cortical bone are associated with the possible risk of near-fatal complications.^{46–49} Implant placement in the frontal aspect of the mandible is generally considered a safe procedure, with a relatively low risk of complications.^{50–52} However, intraoperative bleeding in the floor of the mouth can result in a sublingual hematoma obscuring the airway and leading to a life-threatening emergency.

Our experience shows that contrary to SBD, which is easily detected on 2D imaging, the anterior SBD may not be diagnosed through the panoramic X-ray. The assistance of CBCT is generally needed for that purpose. Considering that 2D imaging is still much more popular than CBCT in dentistry – in fact, it is considered the first-line diagnostic tool in many dental specializations, while 3D imaging is standard mostly before implantation and certain other surgical interventions – it can be assumed that the morbidity of the anterior SBD might be underestimated.

Conclusions

Two cases of two-chamber and 1 case of single-chamber anterior SBDs were presented, which is a very uncommon diagnosis. All cases were observed in female patients at a relatively young age. Bone resorption varied, so it remains unknown what influence it has on the morbidity and size of the anterior SBD. However, in our cases, the hyperactivity of selected muscles in the vicinity of the lesions, as well as vitamin D3 deficiency, were reported. It should be strongly emphasized that case series study results do not allow definite conclusions in this matter. Further studies should be conducted to determine the possible cause-and-effect relationship with regard to this issue.

Ethics approval and consent to participate

Not applicable.

Data availability

The datasets supporting the findings of the current study are available from the corresponding author on reasonable request.

Consent for publication


Not applicable.

Use of AI and AI-assisted technologies


Not applicable.

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