



SMART DENTAL UPDATES

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “**SMART DENTAL UPDATES**” which contain latest and interesting news in the field of Dentistry.

This issue contains:

- **Impact of both dietary calcium intake and physical activity on dental cavities in children and adolescents: an analysis of data from the NHANES database**
- **Efficacy of a Mixture of Calcium Hydroxide and Gingerols as a Novel Obturation Material for Infected Primary Tooth Roots: A Randomized Clinical Trial**
- **Comparison of whole salivary prostaglandin E2 between type 2 diabetic and non-diabetic individuals with periodontal inflammation**
- **Case Report on Stafne's Bone Defect in Relation to Submandibular Glands**

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Impact of both dietary calcium intake and physical activity on dental cavities in children and adolescents: an analysis of data from the NHANES database

INTRODUCTION

Dental caries, a prevalent yet preventable oral condition, may lead to abscess formation or tooth loss if not addressed. Its impact on the health and well-being of children and young individuals underscores the importance of promoting and sustaining proper oral hygiene practices among them.¹ The focus on preventing dental caries is shifting towards modifiable factors, particularly nutritional aspects. Increased intake of calcium (Ca) and dairy products might be linked to reduced risk of dental caries among children and teenagers. While physical activity is beneficial for maintaining a healthy Body Mass Index (BMI) and overall health, the relationship between physical activity and dental caries remains unclear. Notably, a systematic review suggested that Ca intake and physical activity could have a combined effect on bone mineral density (BMD) in this age group. Specifically, adequate Ca intake alongside high physical activity levels may promote bone mass accumulation. The study speculated that this combination could also be advantageous in preventing dental caries, although research on their combined impact specifically on dental caries in children and adolescents was not sufficient.² This study aimed to investigate the potential combined impact of calcium intake and physical activity on dental caries in children and adolescents.



DENTAL CARIES

There may have been a combination impact of calcium intake and physical exercise on dental caries in children and adolescents.

METHODS

In this cross-sectional study, data from 5,917 children and adolescents were gathered from the National Health and Nutrition Examination Surveys (NHANES) database spanning 2015–2020. Patients with a history of dental caries were included if they met specific criteria: aged between 2–17 years, had available data on dietary Ca intake and physical activity, and underwent caries assessment. Dental caries was diagnosed using the DMFT/S index, ranging from 0 to 28. Participants were categorized into two groups: those without caries experience (score=0) and those with caries experience (score>0). Dietary Ca intake was assessed via 24-hour dietary recalls, while physical activity levels were self-reported through questionnaires. Weighted univariate and multivariate logistic regression analyses were conducted to identify covariates and explore associations between dietary Ca intake, physical activity, and dental caries. The evaluation metrics included odds ratios (ORs) and 95% confidence intervals (CIs). Subgroup analyses were also conducted based on age, obesity, and total sugar intake.



RESULTS

Among the 2,687 children and adolescents with caries experience, the average age of participants was 9.29 years. The study investigated the joint impact of dietary Ca intake and physical activity on dental caries in this population (Table 1). Upon adjusting for covariates, this analysis revealed that individuals who fell below the recommended Ca intake level and engaged in physical activity less than seven times per week exhibited elevated odds of experiencing dental caries compared to those meeting the guidelines. This combined effect was observed particularly among individuals aged under 12 years, those without obesity, and those with lower total sugar intake (all $P < 0.05$).

Table 1. Combined impact of physical exercise and calcium consumption on dental caries

Variables	Model 1		Model 2		Model 3	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
Ca intake						
Reach recommendation level	Ref		Ref		Ref	
Not reach recommendation level	1.44 (1.20–1.72)	<0.001	1.28 (1.10–1.49)	0.002	1.43 (1.22–1.67)	<0.001
Physical activity						
=7	Ref		Ref		Ref	
<7	1.58 (1.30–1.92)	<0.001	1.26 (1.07–1.48)	0.007	1.27 (1.07–1.50)	0.007
Combined effect						
Ca reach recommendation level & physical activity=7	Ref		Ref		Ref	
Ca reach recommendation level & physical activity<7	1.46 (1.07–1.99)	0.018	1.26 (0.94–1.68)	0.123	1.22 (0.91–1.62)	0.173
Ca not reach recommendation level & physical activity=7	1.32 (1.01–1.72)	0.046	1.28 (0.99–1.66)	0.062	1.38 (1.08–1.76)	0.012
Ca not reach recommendation level & physical activity<7	2.07 (1.54–2.80)	<0.001	1.59 (1.23–2.06)	<0.001	1.77 (1.38–2.27)	<0.001
P for trend	<0.001		<0.001		<0.001	
Ca: calcium, OR: odds ratio, CI: confidence interval, Ref: reference Model 1: crude model; Model 2: adjusted for age and race; Model 3: adjusted for age, race, PIR, household food security category, obesity, smoking during pregnant, cotinine, total energy intake, total sugar intake, amount of toothpaste use, and time period since last dental visit						

DISCUSSION

In this cross-sectional study, the roles of dietary Ca intake and physical activity in dental caries among children and adolescents were investigated. The findings revealed that inadequate dietary Ca consumption or engaging in physical activity less than seven times a week were both linked to increased odds of dental caries. Additionally, another study compared salivary Ca levels between individuals affected by caries and a group of 32 non-caries individuals, discovering significantly higher Ca levels in the non-caries group.³ In a study involving preschool-aged children from Canada and the United States, it was found that elevated concentrations of vitamin D and Ca were both independently associated with reduced likelihood of severe early childhood caries.⁴ Prior research suggested that the association may be attributed to physical activity's role in fostering a favorable inflammatory profile, leading to a decreased risk of oral diseases.⁵



CONCLUSION

The combination of dietary Ca intake and physical activity may potentially have a detrimental association with caries experience in children and adolescents. Additional research was warranted to investigate the causal link between this phenomenon and dental caries.

REFERENCE

1. Matthews P. Prevention of dental caries in children and young people. *Nurs Child Young People*. 2023 May 4;35(3):22-27.
2. Zhang Q, Bai X, Jin H, Dong N. Combined effect of dietary calcium consumption and physical activity on dental caries in children and adolescents: a study of the NHANES database. *BMC Oral Health*. 2024 Feb 28;24(1):281.
3. Pratyusha N, Vinay C, Uloopi KS, RojaRamya KS, Ahalya P, Devi C. Association of serum Vitamin D and salivary calcium and phosphorus levels in 3-11-year-old schoolchildren with dental caries. *J Indian Soc Pedod Prev Dent*. 2021 Jul-Sep;39(3):240-245.
4. Williams TL, Boyle J, Mittermuller BA, Carrico C, Schroth RJ. Association between Vitamin D and Dental Caries in a Sample of Canadian and American Preschool-Aged Children. *Nutrients*. 2021 Dec 14;13(12):4465.
5. Chauhan A, Mazlee AM, Azhar NA, Ng Bansing SA, Qing CS, Sidhu DS, Xiong TW, Yee LY. Effect of HIIT (high-intensity interval training) on vulnerability to dental caries. *J Oral Biol Craniofac Res*. 2020 Oct-Dec;10(4):670-673.

Efficacy of a Mixture of Calcium Hydroxide and Gingerols as a Novel Obturation Material for Infected Primary Tooth Roots: A Randomized Clinical Trial

INTRODUCTION

Pulp therapy has a significant rate of recurrent inflammation in teeth that are necrotic or that have previously failed treatment. Moreover, the emergence of antibiotic resistance among microbes and variations in microbial presence further exacerbate this issue.¹ Furthermore, the

majority of materials lack the ability to eradicate microorganisms from this region. Consequently, various mechanical and chemical methods have been devised to enhance the effectiveness of materials in eliminating microbes from the pulp canal. These methods encompass enhancements in irrigation solutions, intracanal medicaments, and intracanal filling materials.² Over time, researchers have explored various intracanal obturation materials to enhance pulp therapy outcomes in primary teeth. Among these, calcium hydroxide (Ca(OH)₂) and Iodoform-based materials like Vitapex and Metapex were commonly used due to their excellent radiopacity and antibacterial properties. In addition to reducing pain and swelling, these materials promote bone remodelling and tissue regeneration in infected teeth by blocking pathological resorption. However, Metapex has been found to have limitations such as poor distribution and weak inhibition of resorption. Recent scientific studies have delved into the mechanisms and components of ginger, particularly its antibacterial properties. For instance, Park et al. demonstrated the potent antibacterial activity of Gingerols against oral periodontal pathogens in vitro. Adding to this, Ginge-Cal, a blend of gingerols and Ca(OH)₂,

When ginge-cal is utilised as an obturation material for an infected root canal, it might be considered an alternative therapy for the canal infection.

was evaluated against Metapex for the treatment of inflammatory primary teeth in a previous study by Qasem et al. Their findings revealed that Ginge-Cal outperformed Metapex in eliminating microorganisms cultured from inflamed primary tooth pulp, indicating its potential superiority in clinical applications.³ Due to the scarcity of substantial studies evaluating the application of Gingerols in dentistry, particularly in root canal obturation, and considering the anti-inflammatory properties of Gingerol, this research aimed to assess the efficacy of Ginge-Cal compared to Metapex in the clinical and radiographic treatment of primary teeth with infected necrotic pulp.

METHODS

The study involved 30 lower primary molars with infected pulp in children aged 4–8 years. Participants were randomly assigned to two groups: The Ginge-Cal group, where 16 molars were treated with Ginge-Cal pulpectomy paste, and the Metapex control group, with 16 molars filled with Metapex pulpectomy paste. Prior to treatment, right after the procedure, and one week, three, six, nine, and twelve months later, clinical assessments were carried out with an emphasis on pain, percussion sensitivity, purulent swelling, the existence of a fistula tract, and tooth movement. Radiographic assessments were performed before treatment, immediately after, and at 6- and 12-month follow-ups. At the 12-month mark, the treated teeth were categorized as Quiescent, Healed, or Failed based on the evaluation parameters.

RESULTS

At the 3-month mark, Ginge-Cal exhibited a 100% absence of teeth sensitivity to percussion, while Metapex showed 78.6% ($P = 0.090$). Ginge-Cal group displayed slightly higher rates of purulent swelling at 6 and 9 months (68.8% vs. 50% and 100% vs. 85.7%, respectively), yet these variances lacked statistical significance ($P = 0.414$ and $P = 0.090$, respectively). While most teeth initially presented purulent swelling, none exhibited it after 1 week in the Ginge-Cal group and after 3 months in the Metapex group. Over time,

both groups saw an increase in teeth without purulent swelling, reaching 93.3% in the Ginge-Cal group and 91.7% in the Metapex group at 12 months. Notably, both groups experienced a significant reduction in purulent swelling from pretreatment to each follow-up interval ($P < 0.05$). Furthermore, there was a noteworthy reduction in mobility scores from pretreatment to each follow-up interval in the Ginge-Cal group ($P = 0.046$). Radiographically, the Ginge-Cal group displayed significant improvements in periapical and furcation area radiolucency from 6 to 12 months, while the Metapex group showed notable enhancements from 3 to 12 months. Both groups exhibited a reduction in periapical and furcation radiolucency over time, with the Ginge-Cal group showing lower mean scores than the Metapex group at 12 months (0.13 vs. 0.33 for periapical radiolucency; 0.13 vs. 0.42 for furcation radiolucency). This reduction was

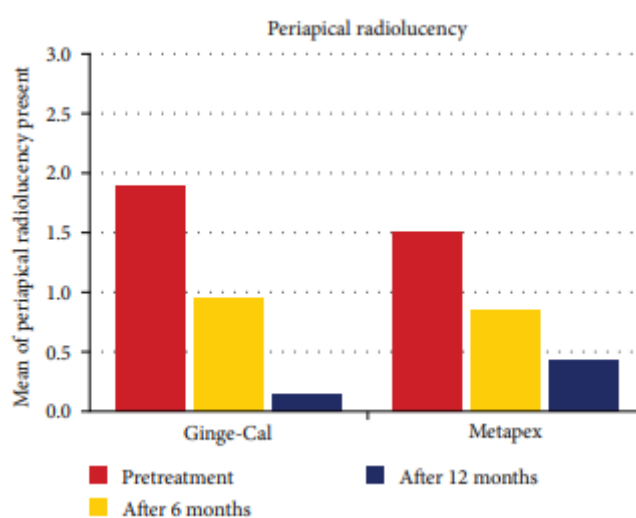


Figure 1. Appearance of periapical radiolucency in each group at various study intervals



significant from pretreatment to each follow-up interval in both groups (Figure 1). Additionally, the Ginge-Cal group demonstrated a significant improvement in resorption from 6 to 12 months, while the Metapex group showed notable progress from 3 to 6 months. Both groups exhibited a decrease in pathologic root resorption over time, with the Ginge-Cal group displaying a higher percentage of teeth with absent resorption than the Metapex group at 12 months (93.3% vs. 83.3%). This decrease was significant from pretreatment to each follow-up interval in both groups ($P < 0.001$ vs. $P = 0.001$). In terms of outcomes, the Ginge-Cal group had a higher percentage of healed teeth compared to the Metapex group (87.5% vs. 64.3%), while the Metapex group showed a higher percentage of quiescent teeth compared to the Ginge-Cal group (14.3% vs. 0%). The proportions of failed and dropped teeth were similar in both groups (6.25% vs. 7.1% and 6.25% vs. 14.3%, respectively), with no statistically significant difference between the groups ($P = 0.441$).

DISCUSSION

The findings from this study suggest that Ginge-Cal outperformed Metapex in decreasing periapical and furcation radiolucency as well as pathological resorption, although the discrepancy did not reach statistical significance. This outcome may be attributed to the anti-inflammatory properties and bone remodeling effects associated with Ginge-Cal, as evidenced in histopathological analyses from prior research.⁴ In terms of pathological root resorption, both materials exhibited a reduction, but Ginge-Cal demonstrated a greater percentage of inhibition compared to Metapex, showing significant differences at various intervals. Previous study by Gupta et al. also highlighted Metapex's relative weakness in preventing pathological resorption.⁵ This could be attributed to the inefficient distribution of Metapex within the treatment area, whereas Ginge-Cal achieves more effective distribution owing to its higher flow characteristics.

CONCLUSION

Despite some limitations, Ginge-Cal proves superior to Metapex in treating preapical infection. Additionally, Ginge-Cal demonstrates a greater ability to reduce bone destruction and promote bone remodeling compared to Metapex. These findings position Ginge-Cal as a promising material for both obturation and intercanal medicament in treating infected root canals. Utilizing Gingerols in endodontic materials holds potential for success in the broader field of endodontics.

REFERENCE

1. Brustolin JP, Mariath AA, Ardenghi TM, Casagrande L. Survival and Factors Associated with Failure of Pulpectomies Performed in Primary Teeth by Dental Students. *Braz Dent J.* 2017 Jan-Feb;28(1):121-128.
2. Chonat A, Rajamani T, Rena E. Obturating materials in primary teeth—a review. *J. Dent. Sci.* 2018;6:20-5.
3. Qasem FA, Awad SM, Elagamy RA. Effectiveness of Calcium Hydroxide and Gingerols Mixture as a Novel Obturation Material for Infected Root in Primary Teeth: A Randomized Clinical Trial. *International Journal of Dentistry.* 2024 Feb 8;2024:5528260.
4. Qasem FA, Awad SM, ELagamy RA, Badria F, Al-Gabri N. Histopathological evaluation of calcium hydroxide mixed with gingerols versus metapex as obturating material in treatment of infected pulp in primary teeth. *International Journal of Science and Research Methodology.* 2022;20:1-9.



5. Gupta B, Singh I, Goyal P, Garg S, Gupta S. A clinical and radiographic study of four different root canal filling materials in primary molars—an in vivo study. *Dental Journal of Advance Studies*. 2019 Aug;7(2):61-5.

Comparison of whole salivary prostaglandin E2 between type 2 diabetic and non-diabetic individuals with periodontal inflammation

INTRODUCTION

Periodontal inflammation (PI), a prevalent oral health issue, is characterized by clinical manifestations such as gingival erythema, gingival bleeding, and probing depth (PD) $\geq$ 3 mm.¹ Without timely diagnosis and treatment, untreated inflammation of the periodontal soft tissues can progress, leading to the degradation of bone structures surrounding the tooth socket, ultimately resulting in tooth loss.² From a systemic standpoint, persistent hyperglycemia (PH) stands out as a significant risk factor for periodontal inflammation. PH is a characteristic feature of poorly controlled type-2 diabetes mellitus (DM). Hemoglobin A1c (HbA1c) serves as a valuable indicator for assessing long-term glycemic control in individuals with DM. Prostaglandin E2 (PgE2) is a bioactive lipid molecule crucial for regulating inflammation, immune response, vasodilation, and pain perception. Studies have demonstrated significantly higher levels of whole salivary PgE2 in patients with periodontitis compared to those without, with a notable correlation with PI. However, a thorough review of relevant literature has revealed a lack of studies assessing PgE2 levels in unstimulated whole saliva (UWS) samples obtained from patients with type-2 DM. This study was based on the hypothesis that whole salivary PgE2 levels were elevated in patients with type-2 diabetes compared to non-diabetic individuals with periodontal inflammation. Additionally, the study aimed to investigate the correlation between whole salivary PgE2 expression and HbA1c levels.³ The objective of this study was to evaluate and compare the levels of whole salivary PgE2 between patients with type-2 diabetes and those without diabetes who have periodontal inflammation.

Compared to those with well-controlled type-2 DM and non-diabetic persons, hyperglycemia in type-2 DM patients was linked to exacerbated periodontal inflammation and higher expression of entire salivary PgE2 levels.

METHODS

This cross-sectional comparative study included patients with and without medically diagnosed type-2 DM. Inclusion criteria comprised adult individuals (aged $\geq$ 18 years) with documented type-2 DM, self-reported non-diabetic individuals, those diagnosed with periodontal inflammation, individuals with a healthy periodontal status, and those with HbA1c levels measured within the past 60 days. Participants were divided into four groups: Group-1: type-2 diabetic patients with periodontal inflammation; Group-2: type-2 diabetic patients without periodontal inflammation; Group-3: non-diabetic patients with periodontal inflammation; and Group-4: non-diabetic patients without periodontal inflammation. Clinical periodontal parameters including PI, GI, PD, and CAL were assessed in all patients. UWS samples were collected from both type-2 diabetic and non-diabetic patients and analyzed for

PgE2 levels within 24 hours of collection. Logistic regression models were employed to evaluate correlations between clinico-radiographic parameters and whole salivary PgE2 levels, with statistical significance set at p-values less than 0.05.

RESULTS

The study comprised a total of 160 individuals, divided into two groups: 80 individuals diagnosed with type-2 DM, and an equal number of 80 individuals without type-2 DM. Mean HbA1c levels were notably higher in group-1 (7.6 ± 0.4) compared to groups 2 (5.1 ± 0.5) ($P < 0.05$), 3 (4.9 ± 0.2) ($P < 0.05$), and 4 (4.6 ± 0.2) ($P < 0.05$).

The duration of type-2 DM in groups 1 and 2 was 5.7 ± 1.4 and 5.02 ± 0.9 years, respectively. Group-1 patients more frequently reported a family history of DM (40%) compared to groups 2 (12.5%) and 3 (7.5%). Participants in group 4 reported brushing their teeth twice daily more often compared to individuals in groups 1 (20%), 2 (50%), and 3 (25%). In groups 2 and 4, the percentage of participants who reported flossing their interproximal areas once a day was 10% and 52.5%, respectively. Scores of PI, gingival indices (GI), and PD were significantly higher among group-1 patients compared to individuals in groups 2 and 4, while clinical attachment loss (CAL) score was notably higher in group-1 compared to groups 2 and 3. Group-3 patients exhibited significantly higher PI and GI scores compared to group-2 individuals. Moreover, PD, PI, and GI were significantly higher in group-3 compared to group-4. Mesial and distal MBL were notably higher in group-1 compared to groups 2, 3, and 4. UWS flow rate was notably higher in groups 2, 3, and 4 compared to group-1. Additionally, whole salivary PgE2 levels were significantly higher in group-1 compared to groups 2, 3, and 4, with no difference observed between groups 2 and 4. In group-1, a statistically significant correlation was found between HbA1c levels ($P < 0.001$) (Figure 1), PD ($P < 0.001$), and whole salivary PgE2 levels in comparison to groups 2, 3, and 4. However, no statistically significant correlation was observed between age, gender, duration of type-2 DM, family history of DM, UWS flow rate, PI, GI, CAL, marginal bone loss (MBL), oral hygiene maintenance protocols, and whole salivary PgE2 levels.

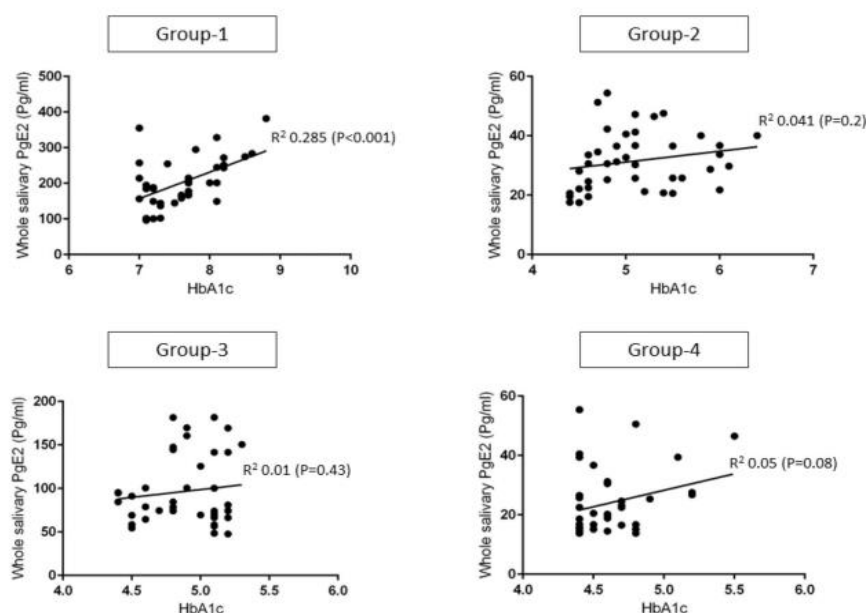


Figure 1. Relationship between whole salivary PgE2 levels and haemoglobin A1c levels

DISCUSSION

Zhong et al. conducted a molecular cross-sectional epidemiological study in which the authors investigated the relationships between mean PgE2 concentrations in the gingival crevicular



fluid (GCF) and clinical indicators of periodontal disease in a community-based sample consisting of 6277 adults ages 52 to 74. The findings demonstrated a favourable correlation between gingival bleeding and periodontal probing depth in the study population and GCF PgE2 levels.⁴ The investigators of the present research were pleased with Zhong et al.'s findings, since group 1 showed considerably greater whole salivary PgE2 levels and poorer periodontal inflammatory markers than the other groups. Furthermore, when compared to other groups, the current results showed a statistically significant association between whole salivary PgE2 levels and PD in group-1, supporting the findings published by Zhong et al. The current study's noteworthy finding was the statistically significant association between group 1's HbA1c levels and whole salivary PgE2 levels.

CONCLUSION

Elevated expression of whole salivary PgE2 levels was associated with hyperglycemia in patients with type-2 diabetes mellitus, leading to exacerbated periodontal inflammation compared to well-controlled type-2 diabetic individuals and non-diabetic individuals.

REFERENCE

1. Papapanou PN, Sanz M, Buduneli N, Dietrich T, Feres M, Fine DH, Flemmig TF, Garcia R, Giannobile WV, Graziani F, Greenwell H. Periodontitis: Consensus report of workgroup 2 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *Journal of periodontology*. 2018 Jun;89:S173-82.
2. Ramseier CA, Anerud A, Dulac M, Lulic M, Cullinan MP, Seymour GJ, Faddy MJ, Bürgin W, Schätzle M, Lang NP. Natural history of periodontitis: Disease progression and tooth loss over 40 years. *Journal of clinical periodontology*. 2017 Dec;44(12):1182-91.
3. Shaheen MY, Basudan AM, Alzawawi AS, Al-Ahmari F, Aldulaijan HA, Alshibani N, Shaheen RS, Al-Kattan R. Correlation between whole salivary prostaglandin E2 and hemoglobin A1c levels among type-2 diabetic and non-diabetic patients with periodontal inflammation. *BMC Oral Health*. 2024 Feb 23;24(1):266.
4. Zhong Y, Slade GD, Beck JD, Offenbacher S. Gingival crevicular fluid interleukin-1beta, prostaglandin E2 and periodontal status in a community population. *J Clin Periodontol*. 2007 Apr;34(4):285-93.

Case Report on Stafne's Bone Defect in Relation to Submandibular Glands

INTRODUCTION

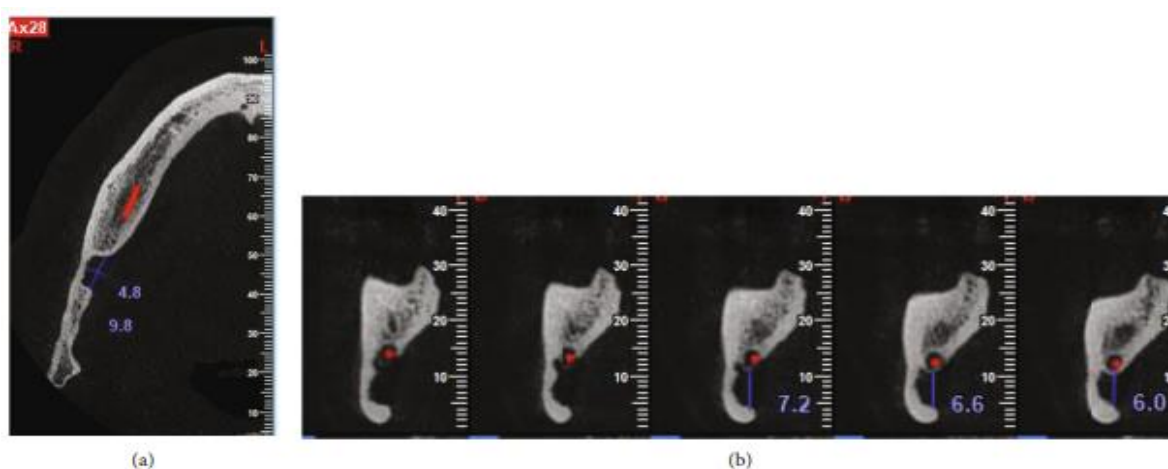
Stafne's bone defect (SBD) is a rare mandibular anomaly typically discovered incidentally on radiographs during routine dental examinations, as patients frequently exhibit no noticeable clinical symptoms. On panoramic radiographs, an oval or circular radiolucent area was typically observed near the mandibular angle, often situated between the inferior alveolar nerve and the lower border of the mandible.¹ Diagnosis of Stafne's bone defect was frequently established solely through panoramic radiographs; however, in certain instances, computed tomography scanning (CT), cone-beam computed tomography (CBCT) with or without sialography, and

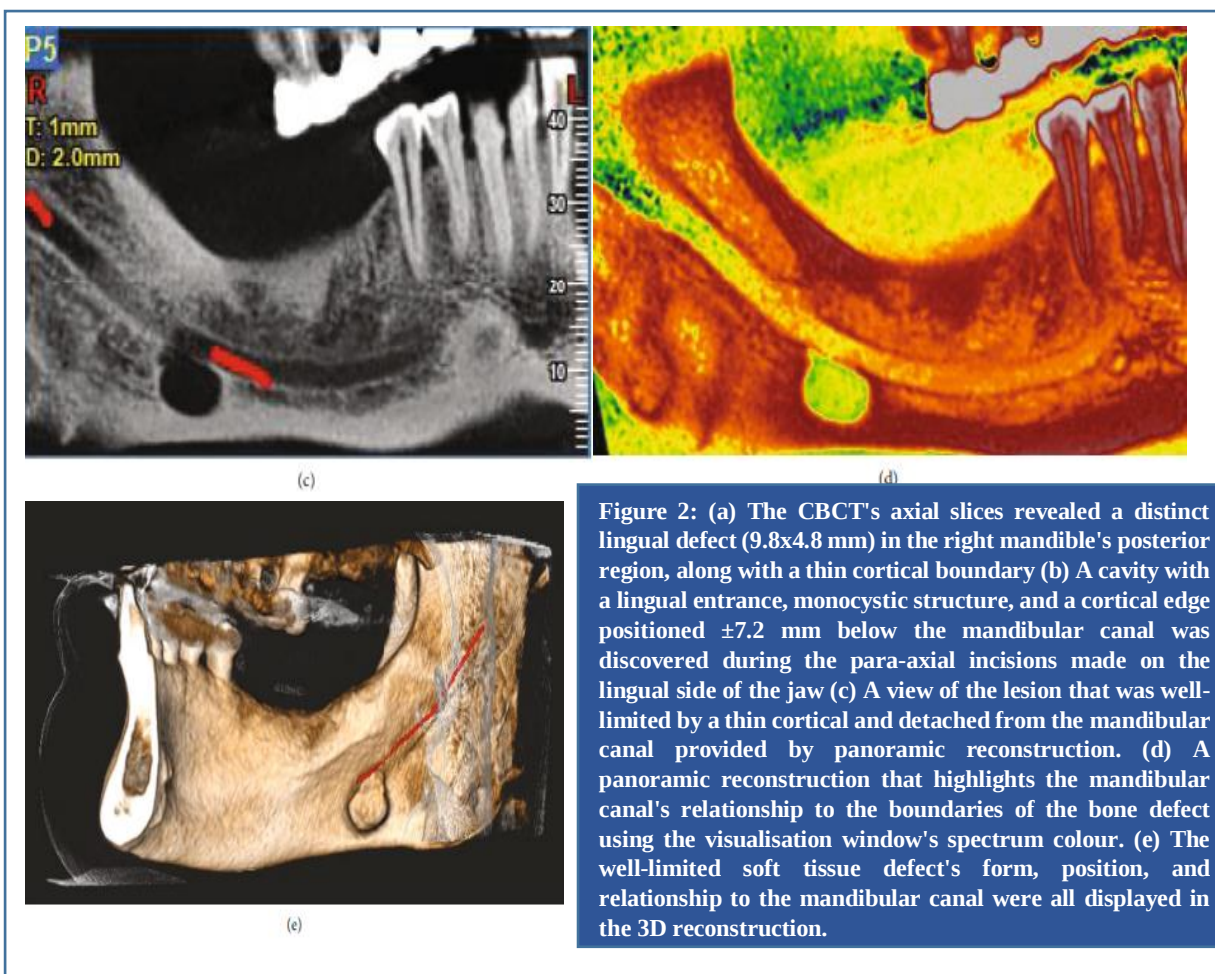
CBCT and MRI together were found to be a suitable approach for investigating SBD. The MRI was used to determine the kind of glandular tissue present in the lesion and supported the final diagnosis, while the CBCT provided information regarding the shape, size, and anatomical boundaries of the defect.

magnetic resonance imaging (MRI) may be necessary to obtain more accurate images. Stafne's bone defect can sometimes be mistaken for cysts or tumors in the mandible.² This case report described a Stafne's bone defect observed in the lingual posterior region of the mandible in a 60-year-old male patient.

CASE PRESENTATION

A 60-year-old male patient visited the clinic for a planned implant placement procedure in the right mandible to address missing first and second molars. A panoramic radiograph revealed a distinct radiolucency with a well-defined peripheral border below the mandibular canal. Clinical examinations did not reveal any facial asymmetry or lymphadenopathy, and the third right mandibular molar was absent. During this stage, a number of other diagnoses were taken into consideration, such as Stafne's bone defect, odontogenic keratocyst, residual cyst, traumatic bone cyst, and dentigerous cyst. To obtain further evidence and confirm the diagnosis, CBCT was recommended. Axial cuts from the CBCT scan revealed a well-defined lingual deficiency with a thin cortical border in the posterior region of the right mandible, measuring 9.8×4.8 mm (Figure 2(a)). Para-axial cuts showed a single cystic defect in the lingual aspect of the mandible communicating with the submandibular area, with a cortical margin below the mandibular canal at a distance of approximately 7.2 mm (Figure 2(b)). Panoramic reconstruction provided a detailed view of the lesion separated from the mandibular canal and surrounded by a thin cortical border (Figures 2(c) and 2(d)). The position and configuration of the well-defined soft tissue-filled defect, as well as its connection to the mandibular canal, were shown in three dimensions (Figure 2(e)). To identify the type of soft tissue within the bone defect, MRI was recommended. The radiolucent lesion appeared ovoid and well demarcated with a thin lingual cortical border in the mandibular body. MRI revealed that the bone cavity was filled with soft tissues exhibiting similar MRI signals to those of the submandibular gland. Furthermore, MRI confirmed that the cavity was contiguous with the submandibular gland. Based on these findings, a diagnosis of Stafne's bone cavity was established, and no further examinations or treatments were deemed necessary.





DISCUSSION

A Stafne's bone defect was identified in a 60-year-old male patient, extending into the lingual posterior region of the mandible. The panoramic radiograph depicted a distinct radiolucency with a clearly defined peripheral border, situated beneath the mandibular canal.² A total of 19 cases (0.475%) of SBD in the molar region of the mandible were identified upon examination of 4000 panoramic radiographs from Taiwanese patients. These cases exhibited a predominant male tendency, accounting for 90% of the total.³ In a systematic review conducted by Soares et al., which included 465 patients diagnosed with SBD, panoramic radiographs were the most commonly used radiological tests (64.09%), followed by CT scans (21.08%). SBD was found to be predominantly located in the posterior part of the mandible (93.77%), presenting as a radiolucent lesion in 77.40% of cases. The mean size of the defects was 1.58 cm.⁴

CONCLUSION

The combination of CBCT and MRI proved to be a beneficial approach for investigating SBD. CBCT provided detailed information regarding the shape, size, and anatomical borders of the defect, while MRI facilitated the identification of glandular tissue type within the defect, ultimately supporting a definitive diagnosis.

REFERENCE

1. Liang J, Deng Z, Gao H. Stafne's bone defect: a case report and review of literatures. *Ann Transl Med.* 2019 Aug;7(16):399.



2. Berberi A. Stafne's Bone Defect Correlated with Submandibular Glands: A Case Report and CBCT and MRI Analysis. Case Rep Dent. 2024 Feb 6; 2024:1173783.
3. Chen MH, Kao CT, Yu-Fong Chang J, Wang YP, Wu YH, Chiang CP. Stafne bone defect of the molar region of the mandible. J Dent Sci. 2019 Dec;14(4):378-382.
4. Soares A, Ferreira L, Calderipe C, Bologna-Molina R, Damian M, Martins M, Silveira F, Vasconcelos AC. Stafne's bone defect: a systematic review. Med Oral Patol Oral Cir Bucal. 2023 May 1;28(3):e264-e271.



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