Chapter 4

MULTIMODALITY IMAGING OF AN ANTERIOR STATIC BONE CAVITY WITH THREE YEAR FOLLOW-UP: A CASE REPORT

Nazan KOÇAK[1]

INTRODUCTION

Static Bone Cavities (SBCs), also referred to as lingual mandibular bone defects, idiopathic bone cavities, static bone defects, or ectopic salivary glands, are generally found in the posterior portion of the mandible in men 50 to 70 years old (Stafne, 1942); an SBC in the literature most often refers to this specific type. SBCs are asymptomatic bone lesions diagnosed during routine radiographic examinations that were first described by Edward Stafne, who reported 35 discrete cases (Segev, Puterman & Bodner, 2006). Seventy-seven SBCs have been reported since according to the PubMed literature database, with around fourteen of them Anterior Static Bone Cavities (ASBCs). These types of cavities in the anterior region are therefore somewhat unusual.

Four different types of SBCs have since been identified. Richard & Ziskind first reported ASBCs in 1957. Philipsen & et al. described them as radiolucent, lingual, open-ovoid concavities in the canine-premolar mandibular region, and reported that they were seven times less frequent than those found in the posterior region (Philipsen & et al., 2002). Philipsen and his colleagues also discovered posterior SBCs located between the mandibular angle and the first permanent molar, below the inferior dental canal, alongside the anterior type located between the incisor and the premolar areas, and above the insertion of the mylohyoid muscle. Philipsen's team went on to describe buccal and lingual SBCs at the ascending ramus of the mandible while noting that these were exceedingly rare (Philipsen & et al., 2002). These other types may also be visualized incidentally on routine panoramic radiographic evaluation.

ASBCs may be confused with other pathologies owing to their location and low rate of occurrence. Differential diagnosis can be exhaustive, but correct interpretation and diagnosis of these lesions are crucial to prevent unnecessary excision. A diagnosis of SBC is therefore usually confirmed with a follow-up

[1] Dr. Öğr. Üyesi, Mersin Üniversitesi Diş Hekimliği Fakültesi, nazannkocak@gmail.com

fies both diagnosis and follow-up, particularly through high resolution imaging that enables the visualization of specific radiographic features in fine detail.

In our case report, CBCT was used to yield high resolution images with less radiation exposure to the patient. Segev, Puterman & Bodner, 2006 recommended that the cavities identified on CT images be supported by MRI findings to define the content and extent therein, which was found to be the case in this report. An MRI can provide much better resolution of soft tissue, and also enables multiple imaging sections and different echo sequences while not exposing the patient to ionizing radiation; this was a critical factor in this case study. The MRI revealed that the mandibular cavity contained soft tissue continuous and isointense with the sublingual gland on both *T*1 and *T*2 sequences. The lesion was definitively diagnosed as an ASBC as a result of the MRI.

Another diagnostic technique is sialography, which can determine whether glandular tissue exists in the cavity. A major drawback, however, is that sialography is both invasive and irritating for patients. Sialographic evaluation of ASBCs is also relatively challenging due to the presence of multiple ducts in the sublingual gland and was thus not used in this instance (Araiche & Brode, 1959).

CONCLUSION

ASBCs are incidental findings, particularly on panoramic radiography, and are generally considered anatomical rather than pathological abnormalities. These cavities do not have any alarming impacts on the surrounding structure, and surgical intervention is not necessary except when symptomatic or other accompanied by other pathologies. Conservative management and regular, long-term, radiological follow-ups are recommended instead. ASBCs should be analysed using advanced diagnostic imaging such as CBCT, CT, and/or MRI to exclude similar lesions.

REFERENCES

Apruzzese, D. & Longoni, S. (1999). Stafne cyst in an anterior location. J *Oral Maxillofac Surg*, 57(3), 333-8.

Araiche, M. & Brode, H. (1959). Aberrant salivary gland tissue in mandible. *Oral Surg Oral Med Oral Pathol*, 12(6), 727–9

Barker, G. (1988). A radiolucency of the ascending ramus of the mandible associated with investid parotid salivary gland material and analogous with a Stafne bone cavity. *Br J Oral Maxillofac Surg*, 26(1), 81-4.

Dereci, O. & Duran, S. (2012). Intraorally exposed anterior Stafne bone defect: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol,* 113(5), e1-3.

Etöz, M, Etöz, OA, Sahman, H, Sekerci, AE. & Polat, HB. (2012). An unusual case of mul-

tilocular Stafne bone cavity. *Dentomaxillofac Radiol,* 41(1), 75-8.

Okano, T., Harata, Y., Sugihara, Y., Sakaino, R., Tsuchida, R., Iwai, K., Seki, K. & Araki, K. (2009). Absorbed and effective doses from cone beam volumetric imaging for implant planning. *Dentomaxillofac Radiol*, 38(2), 79-85.

Philipsen, H., Takata, T., Reichart, P., Sato, S. & Suei, Y. (2002). Lingual and buccal mandibular bone depressiones: A review based on 583 cases from a worldwide literature survey, including 69 new cases from Japan. *Dentomaxillofac Radiol*, 31(5), 281-90.

Richard, EL. & Ziskind, J. (1957). Aberrant salivary gland tissue in mandible. *Oral Surg Oral Med Oral Pathol*, 10(10), 1086–90.

Saglam, M., Salihoglu, M., Sivrioglu, AK. & Kara, K. (2013). Multimodality imaging of Stafne bone defect. *BMJ Case Rep*, 2013, bcr2013009483. Doi: 10.1136/bcr-2013-009483.

Segev, Y., Puterman, M. & Bodner, L. (2006). Stafne bone cavity--magnetic resonance imaging. *Med Oral Patol Oral Cir Bucal*, 11(4), E345-7.

Sekerci, AE. & Sisman, Y. (2014). Bilateral anterior Stafne bone defect mimicking radicular cyst: report of a rare case with a review of the literatüre. *Oral Radiol*, 30(1), 115–122.

Shimizu, M., Osa, N., Okamura, K. & Yoshiura, K. (2006). CT analysis of the Stafne's bone defects of the mandible. *Dentomaxillofac Radiol,* 35(2), 95-102.

Slasky, B. & Bar-Ziv, J. (1996). Lingual mandibular bony defects: CT in the buccolingual plane. *J Comput Assist Tomogr,* 20(3), 439-43.

Smith, MH., Brooks, SL., Eldevik, OP. & Helman, JI. (2007). Anterior mandibular lingual salivary gland defect: a report of a case diagnosed with cone-beam computed tomography and magnetic resonance imaging. *Oral Surg Oral Med Oral Pathol Oral Radiol,* 103(5), e71-8.

Stafne, EC. (1942). Bone cavities situated near the angle of the mandible. *J Am Dent Assoc*, 29, 1969–72.

Taysi, M., Ozden, C., Cankaya, B., Olgac, V. & Yildirim, S. (2014). Stafne bone defect in the anterior mandible. *Dentomaxillofac Radiol*, 43(7), 20140075.

Turkoglu, K. & Orhan, K. (2010). Stafne bone cavity in the anterior mandible. *J Craniofac Surg*, 21(6),1769–75.