Commentary on Beam Computed Tomography Studies in Sphenoid Sinus

Natalisa Hvizdosova*

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ABSTRACT

The aim of this Commentary is to define cone beam computed tomography (CBCT) characteristics of arrested pneumatization of sphenoid sinus in an effort to help differentiate it from invasive or lytic skull base lesions. Two cases are presented with incidental findings. Both studies, acquired for other diagnostic purposes, demonstrated unique osseous patterns that were eventually deemed to be anatomic variations in the absence of clinical signs and symptoms although the pattern of bone loss and remodeling was diagnosed as pneumatization of the sphenoid sinus by a panel of medical and maxillofacial radiologists following contrasted advanced imaging.

Key Words: *Phenoid sinus; Development; Cone-beam computed tomography*

INTRODUTION

Since the appearance of relatively lucent lesions mimic osteolysis in the skull base captured on such studies and trigger additional investigations, it is imperative that benign conditions noted in such studies be considered in the differential diagnoses prior to further referral and advanced imaging [1,2]. This report presents two cases in patients reporting for orthodontic or orthoganthic surgery and dental implant treatment, in which lytic lesions were investigated owing to extensive effacement of the sphenoid bone architecture. This report presents two cases of arrested pneumatization of the sphenoid sinus as seen on large field-of-view (FOV) cone beam computed tomography studies (CBCT) acquired for orthodontic/maxillofacial surgical diagnostic tasks and dental implant placement procedure. The aim of the report is to define CBCT characteristics of arrested pneumatization of sphenoid sinus in an effort to help differentiate it from aggressive, invasive skull base lesions [3]. CBCT is suboptimal for interpretation of soft tissue entities and spatial resolution is significantly higher than that of multi-detector computed tomography (MDCT). Spatial resolution is better than MDCT by an order of magnitude but the modality is best suited for imaging osseous and dental tissues. Image acquisition is completed in 20 seconds, with the total radiation dose being a fraction of that associated with MDCT [4].

There were central heterogeneous, high-attenuation entities with signal intensities approximating those of osseous tissue. Possibility of involvement of vidian canal and foramen rotundum could not be ruled out. Based upon the radiographic presentation, an impression of arachnoid granulations was made [4]. There was also evidence of bowing and thinning of the lingual cortical plate at the left mandibular ramus superior to the lingula of the mandibular foramen.

Diagnosing arrested pneumatization is important in order to distinguish this entity from other skull base abnormalities like fibrous dysplasia, arachnoid granulations, and invasive lesions such as acoustic neuroma, glioma, and pituitary tumor such as an adenoma, giant cell tumor, chondro sarcoma, metastatic lesions, meningioma, or chordoma [5].

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Department of Anatomy, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Slovak Republic

Correspondence: Natalisa Hvizdosova, Department of Anatomy, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Slovak Republic. E-mail: natalisa.hvizdosova@upjs.sk

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