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Horizontal maxillary sinus septa: An uncommon entity

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ABSTRACT

INTRODUCTION: Maxillary sinus septas are barriers of cortical bone that arise from the floor or from the walls of sinus and may even divide the sinus into two or more cavities. Morphologically maxillary sinus septa are generally oriented in buccopalatinal orientation horizontal or sagittal orientation of the sinus septa is a rare condition.
PRESENTATION OF CASE: This report presents two sinus lift case, in which observed septa in a horizontal orientation was presented. Both cases were fixed by an implant supported prosthethic restoration.
DISCUSSION: Surgeons must know detailed knowledge about maxillary sinus anatomy for successful sinus augmentation. Computed tomography (CT) is useful for examining the maxillary sinus.
CONCLUSION: Horizontal-type sinus septa are rarely seen. Surgeons must be aware of septa types and orientations.

1. Introduction

Maxillary sinus septas which were first described in 1910 [1] are barriers of cortical bone that arise from the floor or walls of the sinus and may even divide the sinus into two or more cavities [2]. Neivert [3] suggested that the septum develops from the fingerlike projections produced by the embryologic out-pouching of the ethmoid infundibulum, which the adjacent walls did not resorb. In addition to this, Krennmair et al. [4] classified the septa into primary and secondary septa. Primary septa occur from the development of the maxilla and secondary septa occur by irregular pneumatization of sinus floor after tooth loss. In order to perform a successful sinus surgery, surgeons must know the anatomy and structures of the sinus [5]. The presence of septa, located at the inner surface of the maxillary sinus, increases the risk of sinus membrane perforation during a sinus elevation for dental implant surgery [6]. Advanced knowledge of sinus anatomy and related structures increases the chance of a successful surgery and reduces complications. The aim of this report is to demonstrate the unexpected antral septa type that compromises the elevation of Schneiderian membrane.

2. Presentation of cases

2.1. Case 1

40 year old healthy male patient was referred to Ankara University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery Clinic for a dental implant treatment. The patient had lost teeth number 4,11,13,27 and 28 according to the ADA classification. According to his medical history, the patient had no any systemic disorder and sinus diseases. The patient underwent orthodontic treatment before the dental implant placement. A panoramic film was taken for the evaluation of the alveolar ridge and maxillary sinuses (Fig. 1), and there were not any surgical pathology and anatomic structures. The bone height between the patient's alveolar ridge and the maxillary sinus floor was 4 mm, so maxillary sinus floor elevation was decided upon with the lateral approach in the area of tooth no 4. While making a lateral hinge door osteotomy, an unexpected septa type was discovered and this septum prevented replacing a hinge door in the upward and medial directions. The septa orientation was in the antero-posterior direction (horizontal type), so we decided to divide into smaller two osteotomy above

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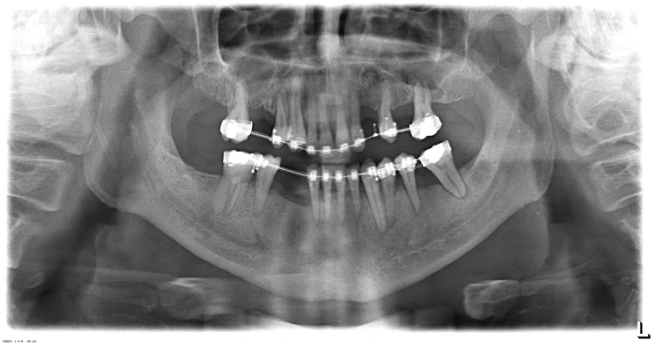

Fig. 1. Preoperative panoramic view of Case 1.

Fig. 2. Horizontal sinus septa of Case 1.

and below the septum (Fig. 2). Dissection of the sinus membrane was completed without complication. Cavities were filled with Chouckroun's platelet rich fibrin. Six months after the surgery, computed tomography (CT) was taken for examining the post-operative sinus anatomy and osteointegration of the dental implant. Successful osteointegration and another transverse septa parallel to the dental implant were seen in the CT scan (Fig. 3).

2.2. Case 2

52 year old female patient was referred to our clinic for her absent teeth. The patient was systemically healthy. Clinical and radiographic examinations revealed that a second premolar and all molar teeth in the left maxilla were absent (Fig. 4). Treatment was planned as an implant supported restoration within sinus lift procedure in Ankara University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery. Under the local anesthesia the full thickness vestibular flap was elevated from the first premolar to the posterior maxilla region. The lateral wall of the sinus was carefully removed, and the anatomic variation of the horizontally oriented septum was seen. The horizontal septum divided the sinus into two cavities (Fig. 5). These compartments were lifted one by one. After the compartments were filled with synthetic graft materials, two dental implants were placed into the posterior region of the maxilla. A postoperative panaromic radiograph showed the implants and sinus clearly (Fig. 6). The operation site was primarily closed with a 3,0 polyglactin suture. Postoperative antibiotics, antiseptic oral rinses and a decongestant were prescribed to the patient.

3. Discussion

Several studies were published about the orientations of maxillary sinus septa. Oh and Ryu [7] examined the orientation of

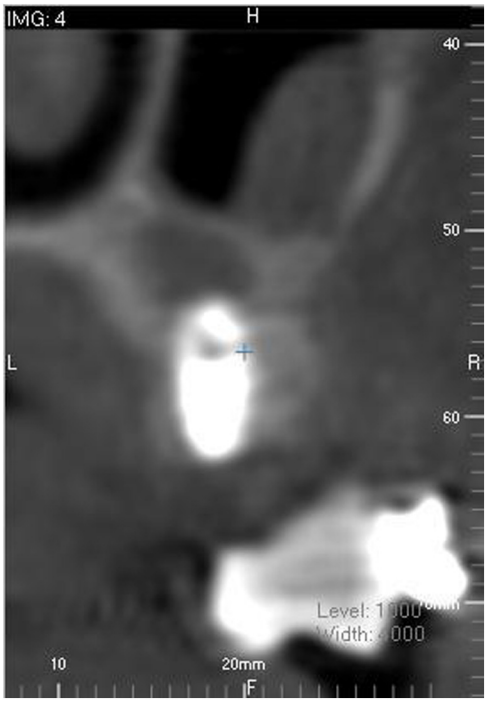

Fig. 3. CT imaging of complete horizontal septa and implant in Case 1.

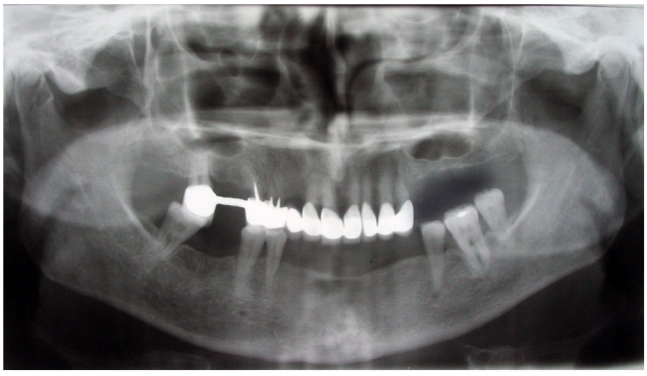

Fig. 4. Preoperative panoramic view of Case 2.

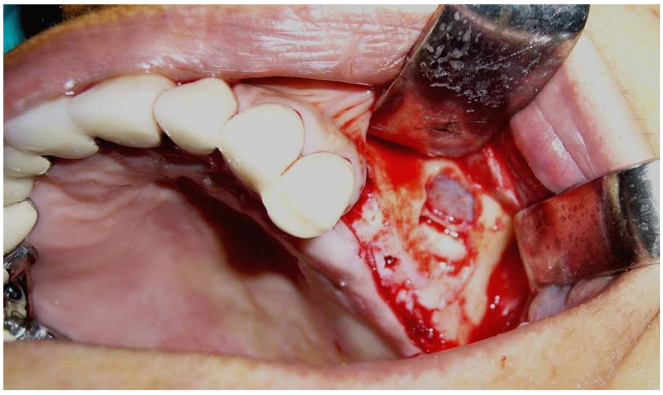

Fig. 5. Horizontal sinus septa of Case 2.

sinus septa, and they reported that buccopalatal orientations of the septum percentage is 86.3%, sagittal orientations are 8.8% and transverse orientations are 4.9% (8). Park et al. [8] studied the directional orientation of septa and found that 106 septa were buccopalatal, four were sagittal, and there were none of the transverse