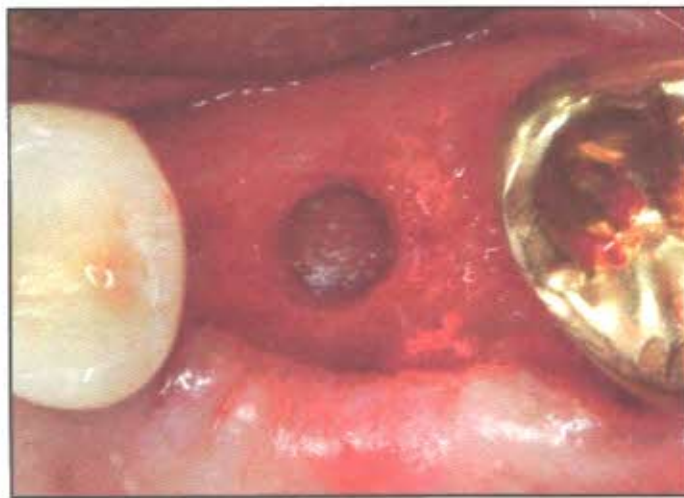


Crestal Core Elevation with Immediate Implant Placement: A New Technique

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Charles Cobb, DDS, PhD⁴

Abstract



Implant placement in maxillary posterior sites presents many challenges to clinicians. In those posterior segments many factors should be considered and these include: sinus anatomy, ridge width, interocclusal and interdental spaces. Pneumatization of the maxillary sinus

is the major complicating factor; in some cases, ridge height dictates whether the placement of implants at the time of sinus augmentation will be possible or not. This case report presents a technique of a crestal core elevation into the maxillary sinus followed by placement of a dental implant.

KEY WORDS: Maxillary sinus lift, dental implants, crestal core elevation

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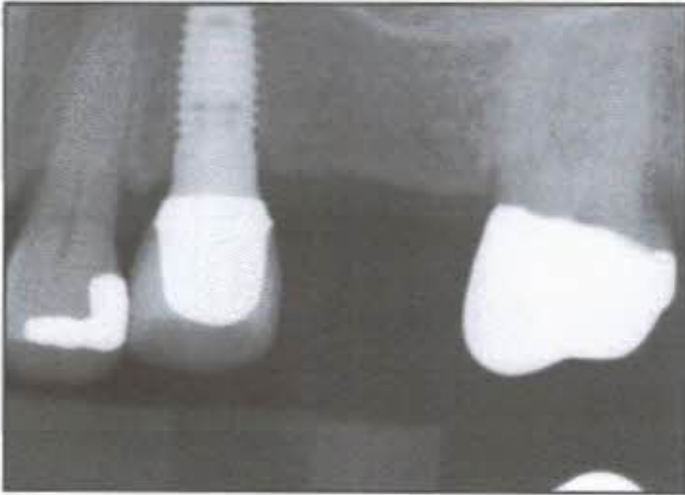


Figure 1: Pre operative radiograph.



Figure 2: Initial incisions.

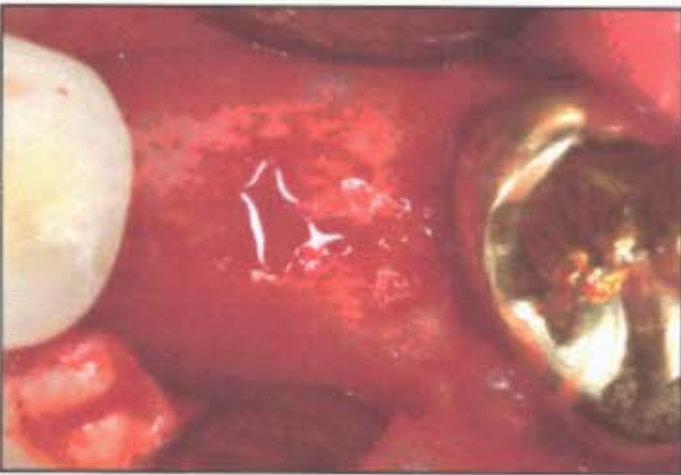


Figure 3: Edentulous ridge exposed.

INTRODUCTION AND BACKGROUND

Reconstruction of the edentulous posterior maxilla presents many challenges to clinicians. Pneumatization and enlargement of the maxillary sinuses occurs as a result of the loss of maxillary posterior teeth. In the absence of those teeth, resorption and crestal bone loss is accelerated. The surgical techniques¹ to restore and augment a pneumatized maxillary sinus have been described in the literature and include:

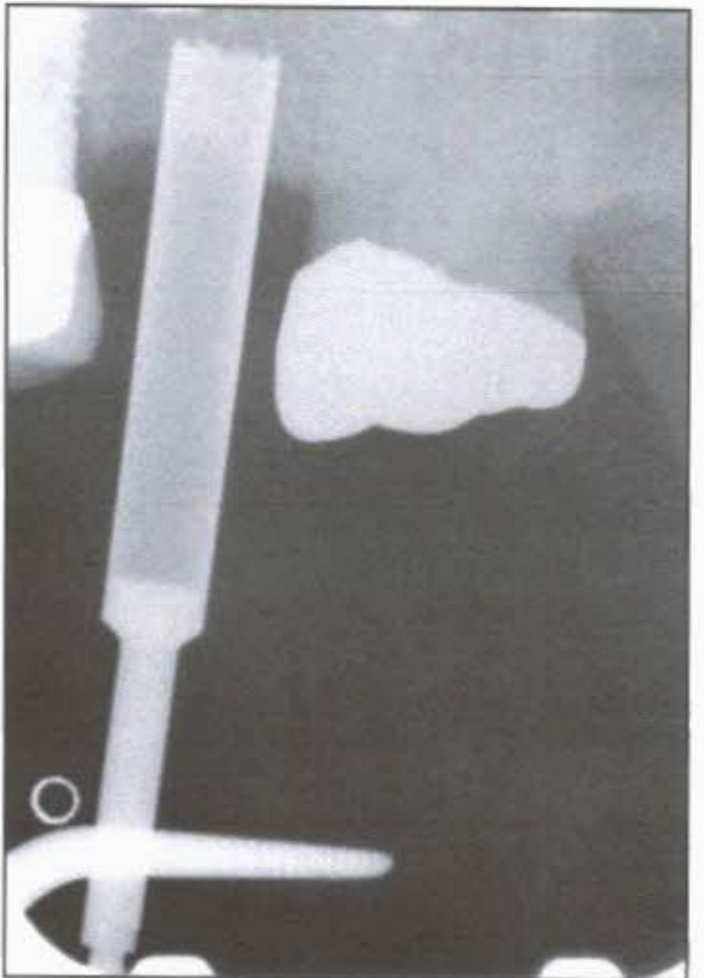


Figure 4: Trepine in position.



Figure 5: Bone core elevated into the maxillary sinus.



Figure 6: Implant placement.



Figure 7: 10 day post operative radiograph.

the lateral window approach "direct lift"², the osteotome technique "indirect lift"³ or a crestal core elevation technique.^{4,5} Initially proposed by Summers in 1995, the osteotome technique^{3,10,11} is more conservative in nature where the augmentation of the sinus is more localized to the area of implant insertion. The lateral window technique was introduced by Tatum and is more technique sensitive.² Careful elevation of the Schneiderian membrane creates a

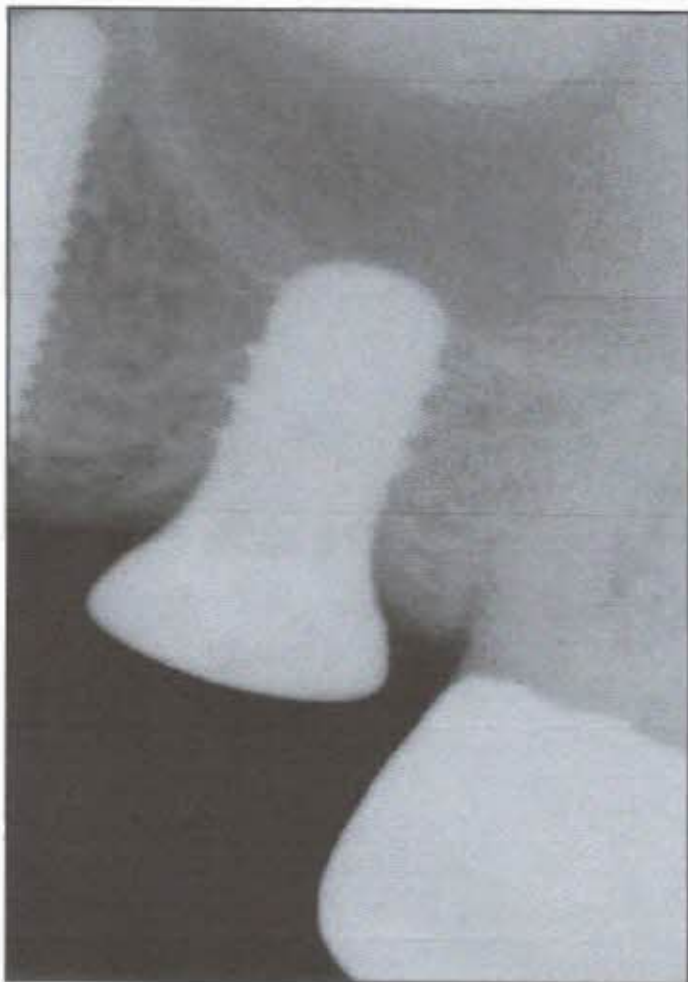


Figure 8: 4 month post operative radiograph.

defined space between itself and the sinus floor to receive the bone-grafting material of choice. An alternative to the traditional two techniques (direct and indirect lifts) involves the apical displacement of a crestal core using osteotomes and a graft when indicated as described by Toffler in 2002.⁵ Current literature focuses on improving the direct and indirect techniques for augmenting maxillary sinuses; however, very few reports focus on the importance of crestal core elevation. This case report presents the technique and instrumentation of a crestal core elevation technique followed by the simultaneous placement of a dental implant.

CASE REPORT

A healthy 64 year-old female presented to the Graduate Periodontics Clinic at the University of Missouri Kansas City for implant placement. The patient lost tooth #14 due to non-restorable caries approximately 3 years ago. The patient's medical history was unremarkable.

A periapical radiograph demonstrated a pneumatized maxillary sinus with a crestal ridge height of approximately 6mm (Fig 1). The treatment plan consisted on implant placement with simultaneous crestal core elevation. The patient's participation in this study was discussed and informed consent was obtained. Three carpules of 2% Lidocaine with 1:100,000 epinephrine and one carpule of 0.5 % Marcaine™ (Hospira, Inc., Lake Forest, Illinois, USA) with 1:200,000 epinephrine were administered by infiltration. Full thickness flap reflection was performed and the edentulous bony ridge was exposed (Figs. 2, 3). A short explantation drill, with an outside diameter of 3.5mm, was used to create a core. The explantation drill was

kept 2mm away from the floor of the sinus (Fig 4). Consequently, an angled osteotome with a 4.2mm diameter was used to infracture the floor of the sinus, therefore elevating the crestal core into the maxillary sinus cavity (Fig 5). An SLA active implant (4.8x8mm WN) was then inserted (Fig 6). A healing abutment was placed and the surgical wound was primarily closed using Vicryl 4-0 sutures. A peri-apical radiograph (Fig 7) was taken to verify the position of the implant and the dislocated core in the sinus (Fig 7). The patient was prescribed Amoxicillin 875mg bid for a week, a Medrol dose pack, Vicodin 5/500, and a 0.12% chlorhexidine rinse. The patient was given written and oral instructions and seen at 10 days, one month and 3 months postoperatively (Fig 8). To date, the patient has healed without complication.

CONCLUSION

Crestal core elevation is a challenging and a technique sensitive procedure. Sinus lift augmentation is the prime choice in augmenting pneumatized sinuses. The Summers³ and Tatum² approaches have proven to be the gold standards in that field. The crestal core approach is an alternative, unique, and case selective approach. The results of this case report suggest that additional and more comparative studies are required to confirm the success rate. ●

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Disclosure

The authors report no conflicts of interest with anything mentioned in this article.

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