

# Implant Restoration of Maxillary Molar with Simultaneous Site Preservation and Lateral Window Sinus Lift

Dan Holtzclaw, DDS, MS

## Introduction

Average occlusal loads in the posterior maxilla have been shown to be 60% higher than those in the anterior maxilla.<sup>1</sup> This is despite the fact that bone densities in the posterior maxilla are the lowest in the mouth according to computed tomography hounsfield unit analysis.<sup>2</sup> Upon loss of maxillary molar teeth, these factors are further complicated by pneumatization of the maxillary sinus which reduces the availability of residual native bone at the sinus floor. When restoring maxillary posterior occlusion with dental implants, it is often necessary to augment the maxillary sinus with bone grafting procedures to facilitate fixture placement. Implant survival rates in augmented sinuses have been found to be statistically similar to that of native bone.<sup>3</sup> Additionally, meta-analysis evaluation of implant survival in augmented sinuses found that bone allografts produced results superior to those of autogenous bone and alloplastic bone substitutes.<sup>3</sup> Use of a barrier membrane over lateral window sinus access at the time of sinus augmentation was found to increase implant survival as well.<sup>4</sup>

Maxxeus produces a full array of allogeneic bone grafts and barriers such as pericardium which are perfectly suited for maxillary sinus augmentation procedures. The following case report documents use of Maxxeus allografts to facilitate dental implant restoration in a uniquely challenging maxillary sinus augmentation procedure with simultaneous site preservation and ridge augmentation.

## Case Report

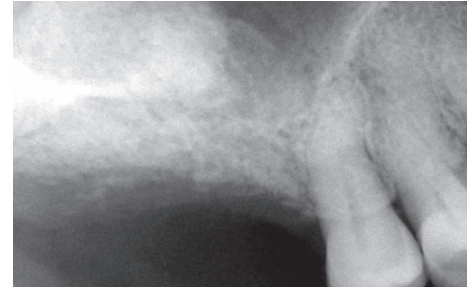
A 61 year old Caucasian male was referred for treatment of deep probing depths associated with the maxillary right molar teeth. Pre-surgical radiographic and clinical evaluation revealed significant bone loss in the quadrant resulting in multiple furcation involvements (Figures 1, 2). Prognoses for the maxillary molar teeth were deemed hopeless and implant placement was planned to restore masticatory function. Due to pneumatization of the right maxillary sinus and minimal residual bone associated with the molars, extraction with bone graft site preservation and simultaneous subantral augmentation were performed (Figure 3). Following apical mobilization of the Schneiderian membrane, the sinus and extraction sockets were grafted with Maxxeus cortical freeze dried bone allograft. No attempt at primary closure was made at the extraction sockets as Maxxeus pericardium was used for coverage over the bone graft and at the lateral sinus access window. The patient was provided with prescriptions for pain medications and antibiotics post-surgically. At the 10 day initial post-surgical visit, the intentionally exposed pericardium remained intact to cover the underlying bone allograft (Figure 4). Healing following the procedure was uneventful and the exposed pericardial barrier was replaced with keratinized gingiva following its bioabsorption. Five months after the initial surgery, the patient returned for placement of a single dental implant to replace the first maxillary molar. A 5.0 x 11.5 mm dental implant was placed in a single stage fashion with ISQ readings of 72. Four months after implant placement, follow up ISQ readings of 78 were obtained and a final restoration was delivered (Figure 5). The augmented maxillary sinus bone demonstrated excellent peri-implant stability an additional twelve months later (Figure 6).



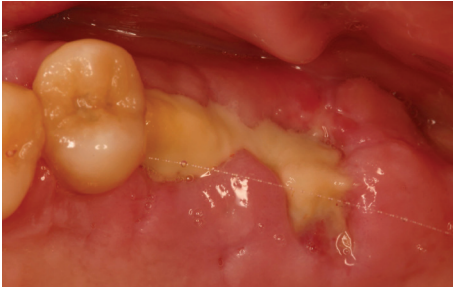
**Figure 1:** Pre-surgical clinical photograph of hopeless maxillary first and second molars.



**Figure 2:** Pre-surgical radiograph suggestive of significant molar bone loss and maxillary sinus pneumatization.



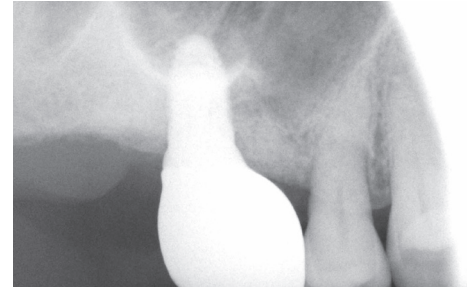
**Figure 3:** Single surgery simultaneous extraction plus site preservation and maxillary sinus lift with Maxxeus bone graft.



**Figure 4:** Initial 10 day post-surgical visit showing exposed Maxxeus pericardium protecting underlying bone allograft.



**Figure 5:** Clinical photograph showing final implant restoration of the maxillary right first molar.



**Figure 6:** Twelve month post-restorative radiograph demonstrating excellent peri-implant bone stability.



**Dan Holtzclaw, DDS, MS**  
maintains a private practice limited to periodontics and dental implants in Austin, Texas.

Contact:  
info@lonestarperio.com  
512-453-1600

## References

1. Waltimo A, Nystrom M, Kononen M. Bite force and dentofacial morphology in men with severe dental attrition. Scand J Dent Res 1994; 102: 92-96.
2. Hiasa K, Abe Y, Okazaki Y, Nogami K, Mizumachi W, Akagawa Y. Pre-operative computed tomography derived bone densities in Hounsfield units at implant sites acquired primary stability. ISRN Dent 2011; 2011: 678729.
3. Aghaloo T, Moy P. Which hard tissue augmentation techniques are the most successful in furnishing bony support for implant placement? Int J Oral Maxillofac Implants 2007; 22: Suppl 49-70.
4. Wallace S, Froum S. Effect of maxillary sinus augmentation on the survival of endosseous dental implants. A systematic review. Ann Periodontol 2003; 8: 328-343.

2900 College Dr.  
Kettering, OH 45420  
800-684-7783  
dental@maxxeus.com  
www.maxxeusdental.com

