

State-of-the-Art Sinus Augmentation and Closure of Oral Nasal Fistula

dental case studies



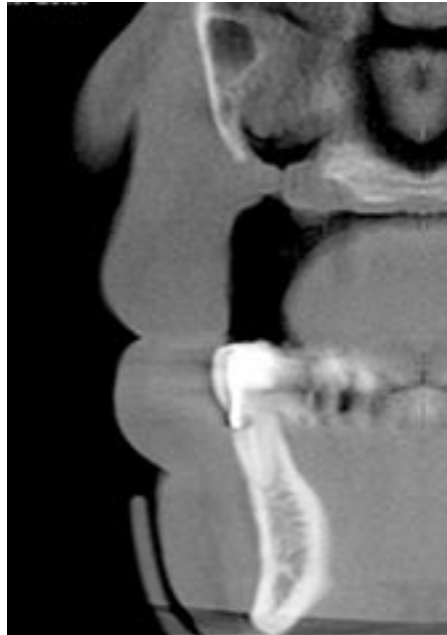
By Andrei Mark, D.D.S.

Back in 1993, a healthy male patient received a sinus lift and had four dental implants placed by another oral surgeon. The sinus augmentation failed and subsequently the implants failed too, leaving him with an oral nasal fistula.

Now, 14 years later, at the age of 60, that patient appeared in my office seeking a consultation with a full maxillary denture that was ill fitting at best. While conducting my consultation, a routine CT scan was performed. The reason the patient's dental implants failed was due to a lack of bone formation, after a hydroxyapatite sinus lift.

The patient's chief complaints were difficulties with the oral nasal fistula, due to food and liquid entering the nasal cavity and minimal retention of his full upper denture, which was maintained mostly with adhesive and one old implant in position #11.

The CT scan of his maxilla revealed severe atrophy of the entire alveolus with only one millimeter of bone surrounding pneumatized sinuses. Also observed on the CT scan was a quarter-size defect in the bony floor of the nose. Given this patient's failed history with bone augmentation, I felt that I needed the most predictable bone augmentation possible. In addition, the patient requested that I use a nonhuman bone grafting material. The treatment plan I chose involved bi-lateral sinus lifts with INFUSE rhBMP-2, and a three-layered closure of the oral nasal fistula with PRP (platelet rich plasma) and Bioplant HTR bone grafting material for his nasal floor. HTR is a unique combination of biocompatible polymers with a calcium hydroxide coating, which form a slowly resorbable, radiopaque, porous matrix that fosters new bone in-growth.



Pre-op scan

The patient received intravenous sedation with Versed and local anesthesia of his entire maxillary arch. A full-thickness mucoperiosteal flap was raised over the midcrest of the entire maxillary area.

Sinus lifts were performed bilaterally through a 2-centimeter bony window in each sinus, with elevation of the maxillary sinus membranes. This procedure was particularly challenging, due to the scarred areas created by previous sinus lift procedure on the patient's right side. The Schneiderian membrane was elevated bilaterally. The INFUSE rhBMP-2 powder was reconstituted in solution and the collagen sponge was soaked with it for 15 minutes. Then the C-graft (a porous inorganic hydroxyapatite bone substitute obtained from red algae) was sprinkled on top and the membrane and was rolled to encapsulate the graft, similar to a hazelnut crepe. Then the INFUSE rhBMP-2 collagen and C-graft mixture was packed into the base of both maxillary sinuses.



Post-op scan

The bony defect in the nasal floor appeared significant (a little larger than a quarter). The nasal mucosa was released from the rim of the bony defect and sutured closed (layer 1). Then a thick layer of PRP mixed with HTR was applied to fill in the bony defect (layer 2) and the mucoperiosteal flap was sutured over (layer 3). HTR is a mostly, nonresorbable material and would likely create a permanent seal. The patient's own denture was also relined with soft silicone material.

The postoperative CT scan revealed excellent anatomical fill of both maxillary sinuses and very good closure of the bony defect in the nasal floor (see photos). In approximately four to six months, once the proper healing has occurred, the patient anticipates returning for multiple dental implants.

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