

## Autogenous Onlay Graft For The Maxillary Anterior



Glenn J. Wolfinger, D.M.D., F.A.C.P. Thomas J. Balshi, D.D.S., F.A.C.P.

The patient illustrated in the following clinical report is a 21 year old female, with a class III smile line, who sustained a traumatic injury to both maxillary central incisors (Fig. 1). A greater fracture occurred to the left central incisor leading ultimately to its loss. The residual alveolar ridge defect associated with the removal of tooth #9 extended to the apex of the root with total loss of the labial bone plate and partial loss of the palatal wall (Fig. 2-3).

Site preparation began with a crestal incision followed by vertical releasing incisions distal to each of the adjacent teeth and a full thickness flap elevated labially and palatally. All granulation tissue was removed from the future implant receptor site. The anterior mandible was selected as the donor site for a unicortical autogenous bone graft.

A full flap initiated several millimeters below the mucogingival junction was elevated to expose the anterior mandible. The width of the maxillary defect was measured mesially-distally. This dimension was marked with a surgical bur on the labial of the anterior mandible. Using a variety of surgical burs, a unicortical bone graft consisting of the labial cortical plate and underlying trabecular bone was harvested from the mandible (Fig 4-5).

Using a combination of rongeurs and diamond burs, the autogenous graft was shaped and placed into the wedge shaped maxillary defect with the cortex facing superiorly and the trabecular bone contacting the host site. A sufficient quantity of bone was allowed to extend labially beyond the adjacent

*(Continued on Page 3.)*



Figure 1  
Smiling view illustrates both labial and palatal defect.



Figure 10  
Frontal view of completed treatment.



Figure 2  
Lateral view without prosthetic replacement.



Figure 3  
Lateral view with temporary removable partial denture clearly illustrates the severity of the bone loss defect.

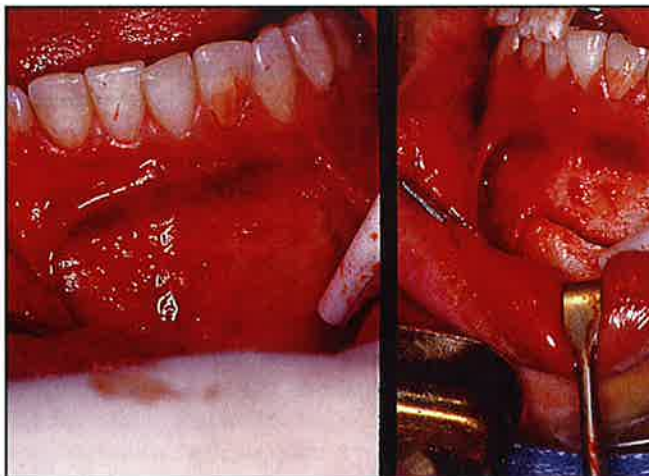


Figure 4  
Full thickness flap exposes the anterior mandible from which a unicortical graft was taken

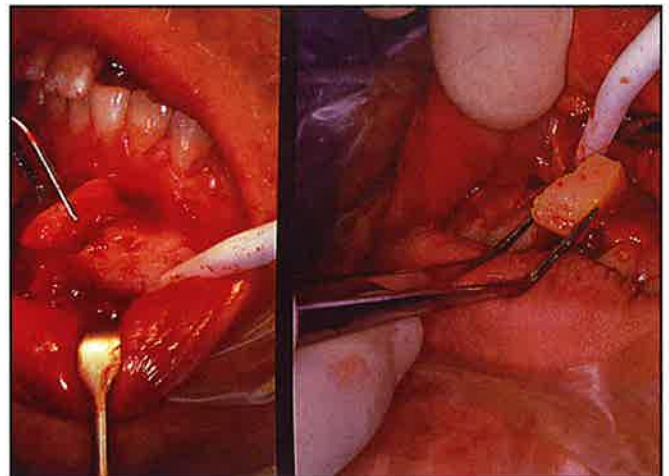


Figure 5  
The unicortical graft was cut slightly larger than the dimensions of the maxillary defect.

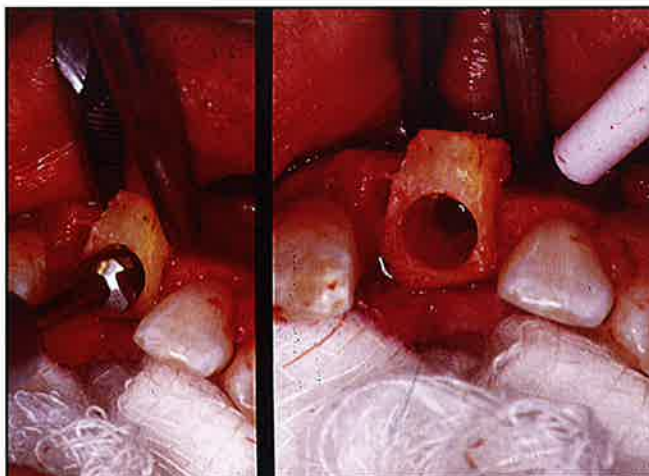


Figure 6  
Implant receptor site is prepared through the onlay graft.

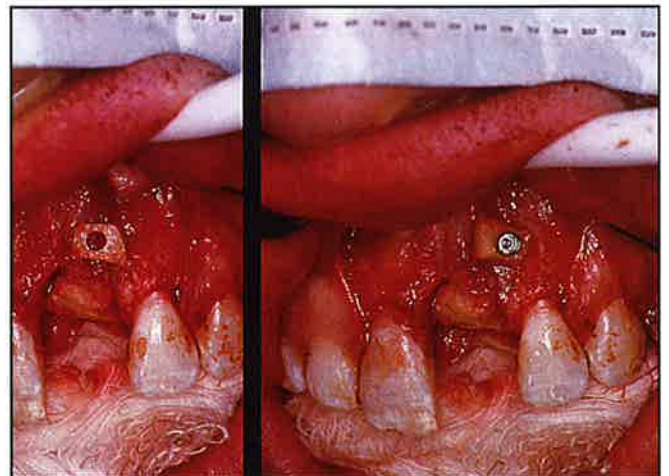


Figure 7  
Separate labial cortical grafts were used to fill the defect.



## Autogenous Onlay ...

*(Continued from Page 1.)*

bone to enable the graft to be held firmly in place using a stiff surgical clamp. Then standard drills were used to prepare the implant receptor site (Fig 6). Additional blocks of bone were also harvested from the chin and were used apical to the cortical portion of the main graft and held in place with small stabilizing bone screws (Fig 7). Mimfix screws were used to secure a Gortex nonresorbable membrane over the grafted area following implant placement.

The postsurgical periapical radiograph illustrates the position of the implant, the bone graft, and the adjacent membrane stabilizing screws (Fig 8). Primary closure was accomplished over both the donor site and the graft-

ed maxilla. Both surgical sites healed uneventfully. Shortly following the surgical procedure the patient was refitted with a temporary removable partial denture which was worn until completion of the five month healing period.

Stage 2 surgery was performed with a coronal incision made slightly to the palatal aspect of the ridge, approximately at the position of the adjacent cingulum. Small vertical releasing incisions were designed to maintain the interdental papilla. A full thickness labial flap was required to retrieve the nonresorbable membrane and the fixation screws. The autogenous bone grafts were evaluated for stability while simultaneously noting the bone fill between the cortical plates.

A 1 mm CeraOne abutment was tightened to the implant using 32 Ncm of torque. A provisional crown was

then constructed for the implant abutment and the adjacent central incisor. The master impression for both the implant restoration and the traditional natural tooth crown were made at the same time. Two weeks following second stage surgery the final ceramometal crowns were delivered and the patient continued to heal uneventfully (Fig 9,10).

The patient has returned on a semi-annual basis for reevaluation with no changes in soft or hard tissue configurations during a 4-year followup.

*Special thanks to the dedicated dental technicians at Fort Washington Dental Lab, Inc. (1-800-541-3490) for construction of this artistically designed restoration.*

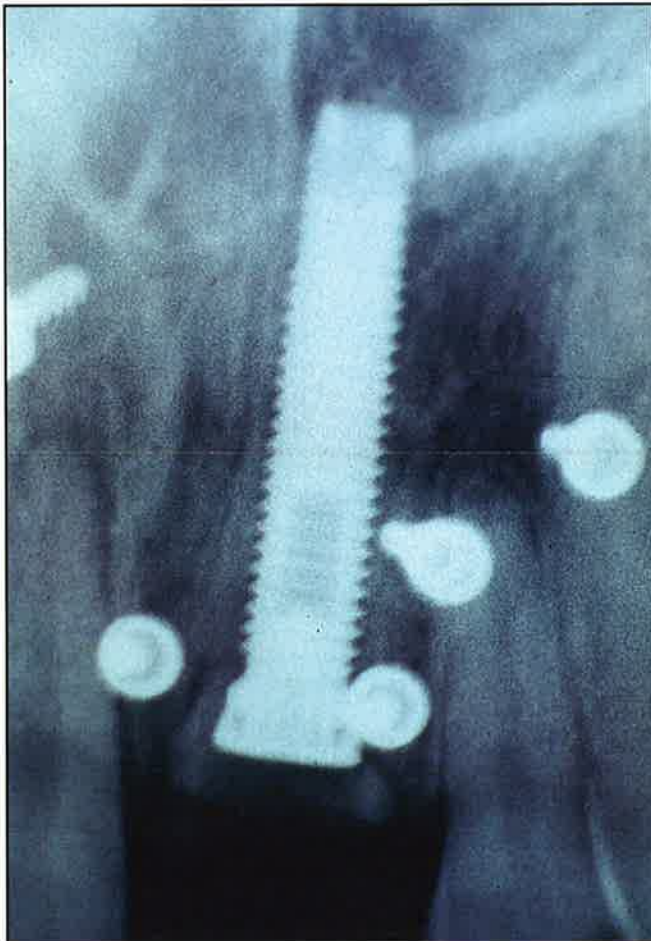


Figure 8  
Radiograph of implant and fixation screws the day of surgery.

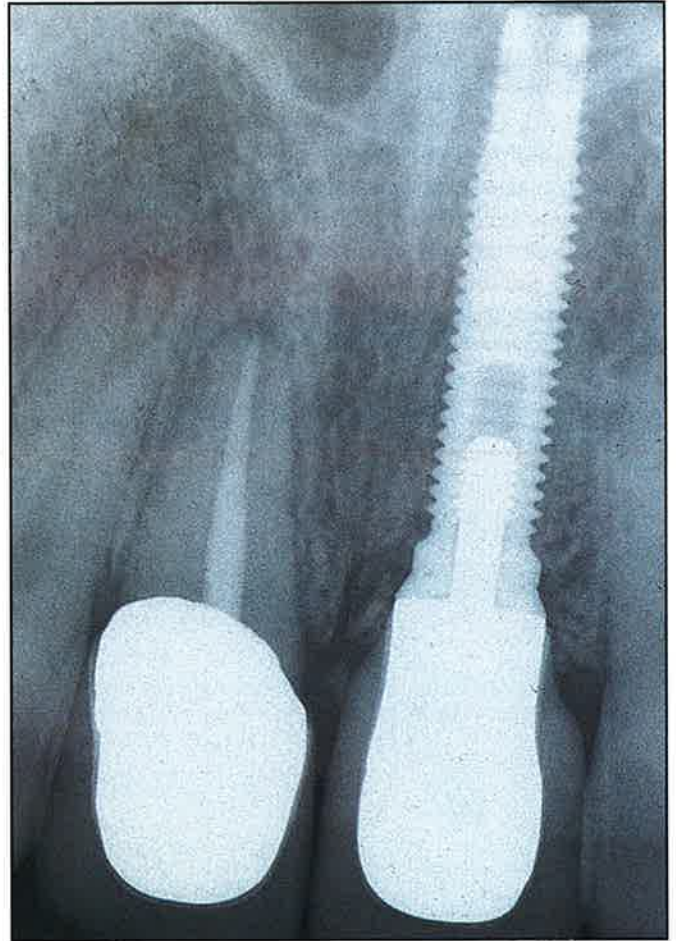


Figure 9  
Post op radiograph

# An Evaluation of Differences and Similarities Observed in Implant Failure of Five Distinct Implant Systems

by ES Rosenberg & J Torosian

This investigation attempts to identify the clinical and microbial differences associated with failure observed in five distinct implant systems: Brånemark (Nobel Biocare), IMZ, Swede-Vent, Screw-Vent and Core-Vent. This article reports the clinical findings on 958 implants placed in private practice from March 1986 through September 1993. Of the 958 implants placed, 67 were determined to have failed, representing an overall implant failure rate of 7%.

While the success rate of 93% is within normal limits, there is a distinct variation between the success of different implants and success rates in different indications.

- A higher rate of successful implant integration was achieved in fully edentulous patients compared to partially edentulous patients.

- Osseointegration was more successful in the mandible than in the maxilla (94.2% vs. 91.9%).
- There was a distinct difference noted when comparing anterior and posterior implants with anterior implants being much more predictable (95.1% in the anterior vs. 92% success rate in the posterior).
- Longer implants demonstrated higher rates of success than did shorter implants.
- When implants failed, the majority occurred before the stage 2 abutment connection procedure. When comparing the 10 mm implant for all five systems individually, Brånemark implants demonstrated a significantly lower failure rate than did any other system. In fact other manufacturer's 10 mm implants demonstrated nearly a 3-4 fold

increase in implant failure rate compared to the 10 mm Brånemark implant. The highest success rate for any of the five systems was for the Brånemark implant system (95.3% success rate). The highest failure rates occurred with the Core-Vent implants (84.8% success rate).

In evaluating the results of this study clinicians will be able to perform implant therapy with a greater degree of success and predictability in the future by selecting the proper implant systems and knowing the variations that may occur between fully and partially edentulous, mandibular and maxillary, anterior and posterior, and success in response to the length of the implants as well.

*Pract Periodont & Aesthet Dent 1998, 10(6):687-698*

## Bone Mineral Density and Its Change in Pre- and Perimenopausal White Women: The Michigan Bone Health Study

by Sowers et al

There is a need to better understand potential bone mineral density (BMD) loss during the menopausal transition since this period may include the initiation of interventions. Environmental interventions may include diet and exercise; therapeutic interventions may include bisphosphonates, estrogen or estrogen/progestin combinations, calcitonin, and sodium fluoride. The purpose of this study was to determine if there was bone mineral density (BMD) loss at the femoral neck, lumbar spine, or total body bone sites in a population-based study of women, ages 25-45, approaching or transitioning the midlife. Bone mineral content and bone width were measured using dual-energy X-ray absorptiometry.

Considering all of the enrollees collectively, the study concluded that there was a significant 3-year decline (1%)

in BMD at the femoral neck ( $p=0.0076$ ); no significant annual change in the lumbar spine ( $p=0.11$ ); and a significant annual increase in the total body BMD ( $p=0.0003$ ).

This study provided further evidence that disruption in ovarian function can lead to bone loss, although the amount of loss may vary depending on the particular bone site. When categorized by menopausal status, bone loss was significant only among those women who were moving toward and into the perimenopausal transition. Women who were classified as perimenopausal because of a double oophorectomy lost bone. Women who received hormone replacement therapy and without oophorectomy showed no evidence of bone loss.

*J Bone Miner Res 1998;13:1134-1140*

*Editor's note: Because of the significant relationship between bone mineral density and the success of osseointegrated implants, we feel this information is beneficial for implant prosthodontic patients.*



## Calcium and Vitamin D Decrease Fractures in People 65 and Older

Daily calcium and vitamin D supplements significantly reduced bone loss and the risk of nonvertebral fractures in men and women age 65 and older in a 3-year study published in The New England Journal of Medicine in September 1997. The incidence of nonvertebral fractures was cut by more than half in this study of 389 men and women. Only 6% of the group taking calcium and vitamin D had a fracture, compared with 13% of those taking a placebo or sugar pill.

In both men and women, calcium and vitamin D supplementation reduced total body bone loss throughout the study, suggesting that supplementation has long-term effectiveness.

In addition, bone turnover, the rate at which bone tissue is broken down and rebuilt, was slowed. This may also explain the positive effect on fracture reduction.

The study participants took daily supplements containing 500 mg of elemental calcium as calcium citrate and 700 IU of vitamin D. They also were getting about 700 mg of calcium and 200 IU of vitamin D from foods in their diet. This study adds to the body of evidence that adequate levels of calcium and vitamin D can help prevent bone loss and fractures.

*Osteoporosis Report V.13,  
No. 4/Winter 1997*

*Editor's note: Because of the significant relationship between bone metabolism and the success of osseointegrated implants, we feel this nutritional supplement information is beneficial for implant prosthodontic patients.*



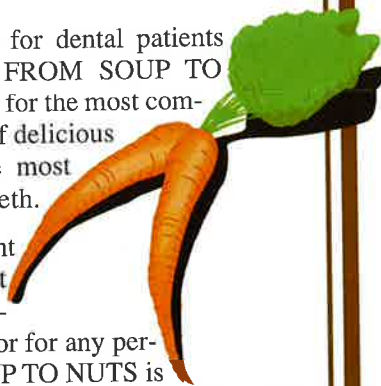
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## SINUS ELEVATION WITH GRAFTING: An Aid to Implant Placement

by *BE Zweig*

The maxillary posterior area is one of the most difficult anatomic areas to restore with dental implants due to the poor quality and the lack of a sufficient quantity of bone in this region. The paucity of bone is frequently a result of alveolar resorption and a large pneumatized maxillary sinus.

This problem can be solved by making an osseous window in the lateral maxillary wall, followed by exposing and elevating the maxillary sinus membrane. The superior repositioning of the membrane essentially decreases the size of the sinus. Grafting below the newly formed sinus will reconstruct the atrophic ridge and allow for the placement of implants.

Various grafting modalities have been utilized with the above surgical procedure. These include autogenous bone, allogenic bone, hydroxylapatite, or combinations. Autogenous bone is the "gold standard" of graft materials and is the material of choice for long-term success with this procedure. Autogenous bone may be obtained from intraoral or extraoral donor sites, depending on the clinical situation and patient preference.

Frequently, implants can be placed simultaneously when performing the sinus elevation procedure. However, the implants must have good initial stability at the time of placement; therefore, usually a minimum of 4 to 5 mm of residual alveolar bone must be available.

Maxillary implants are usually uncovered approximately 6 months after placement. At that time, the prostheses can be fabricated utilizing the concept of transitional or progressive loading.

*AAOMS: Symposium on Emerging Technologies of Implants  
September 1998*

# Perceptions of Complete Dentures by Prospective Implant Patients

by Kotkin et al

Dentists who arrive at a diagnosis that is inconsistent with the patient's denture related perceptions and feelings may be biased toward either a conservative or implant related prosthodontic approach. This investigation aimed to assist dentists in recognizing patients who are unable to adapt to conventional dentures and those who would benefit from implant-supported prostheses by analyzing pretreatment complaints.

Sixty-nine patients referred for postgraduate prosthetic treatment completed a self-report inventory of items related to their dentures in current use. Conventional dentures were fabricated for all subjects. Those patients who could not adapt to conventional complete denture treatment were referred for treatment with implant supported prostheses provided they conformed with the recommended criteria for this treatment. The clinical results achieved with implant-supported prostheses shows that this treatment modality could be indicated for patients with compromised supportive tissues, para-functional activity, lack of muscle coordination, a hyperactive gag reflex,

or the inability to adapt to wearing dentures.

An analysis of the inventory of pretreatment denture complaints yielded variables that differentiated between the group who remained with conventional dentures and the group that was referred for implants. Significant variables were the period that a mandibular denture was used before new dentures were requested ( $P = 0.025$ ); the period that a maxillary denture was used before further treatment was sought ( $P = 0.03$ ); the discarding of a

mandibular denture ( $P = 0.035$ ); and patient complaints related to maxillary dentures ( $p = 0.045$ ).

Sixty-six percent of the subjects who accepted conventional treatment and 69% of implant patients corresponded for both classifications. The authors concluded that pretreatment denture complaints can be useful diagnostic aids for evaluating patients who are likely to benefit from implant-supported prostheses.

*Int J Prosthodont 1998;11:240-245*

## The Brånemark System 3-Day Prosthetic & Surgical Training Programs

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Glenn J. Wolfinger, DMD, FACP  
Bob Winkelman, CDT, MDT  
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