

**Special
Issue**



*Thomas J. Balshi,
D.D.S., F.A.C.P.*

Implants and Older Patients

Due to advances in modern medicine, there is an ever increasing demographic trend towards a larger number of older patients. Many of these patients are missing teeth for various reasons. Conventional replacement of missing teeth, such as crown and bridge therapy and removable dentures, may not be the preferred method of tooth replacement for many of these patients.

When treatment planning for tooth replacement, patients should be presented with all possible treatment options regardless of age. Dental implant therapy has proven to be a

predictable method of permanent tooth replacement. Preliminary results of a retrospective study of over 200 patients over 65 years of age, conducted at Prosthodontics Intermedica, Fort Washington, PA are consistent with the results of previous studies indicating that age is not a factor in the success of dental implants.

The following are two brief clinical reports representative of the 200+ older patients treated with Branemark osseointegrated dental reconstructions at Prosthodontics Intermedica over the past five years.

Implant Reconstruction At Age 90

Balshi T

This 90 year old "Great-grandmother" (Fig 1) presented with a chief complaint of compromised function due to missing mandibular teeth and an unstable partial overdenture prosthesis (Fig 2). Her medical history was significant only with regard to controlled hypertension and a history of a spontaneous femur fracture two years prior.

It was determined that optimal bone was available for the placement of Branemark implants in the mandible to construct a fixed prosthesis instead of a complete removable denture (Fig 3). The remaining teeth were extracted with concomitant placement of seven Branemark implants into the mandible. The patient healed uneventfully with little swelling or ecchymosis.

Three months following implant placement, Stage II surgery was completed, including the construction of a fixed acrylic prosthesis. A traditional type IV gold framework was used as the supporting structure for the final mandibular fixed prosthesis (Fig 4 a,b,c).

This patient enjoyed the last four years of life with complete oral function. The ability to dine with her nursing home colleagues and masticate food efficiently gave her enormous pleasure (Fig 1). It was an honor and a pleasure to know this "Great" woman over my entire lifetime. She was called "Great" by my children, a name affectionately bestowed on my wonderful grandmother (Fig 5).

Photos continued on Page 2



Figure 1
Patient demonstrates "Great" ability to function with the bone anchored bridge.

Acknowledgements: Fort Washington Dental Lab, Inc.

Osseointegration for Elderly Patients

Zarb G, Schmitt A



Fig 2
Few remaining teeth are periodontally compromised.

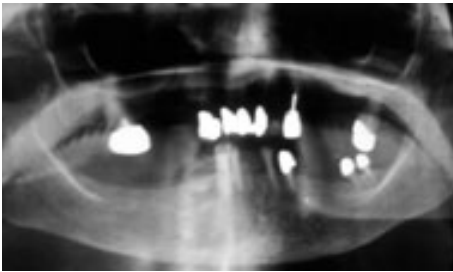


Fig 3
Panradiograph showing ample quantity of bone throughout the mandibular arch.

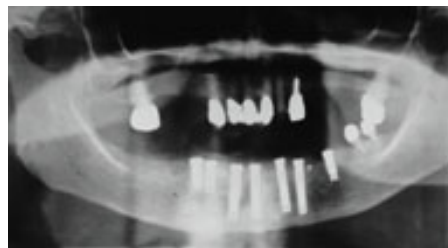


Fig 4a
Panradiograph showing mandibular bone anchored bridge supported by seven Branemark implants.

Evidence has shown that conventional removable dentures are poor substitutes for missing natural teeth. Essentially a conventional removable denture becomes quite a compromise of quantitative and qualitative support. Studies have shown a significant number of patients in all age groups experience difficulty in obtaining comfortable and efficient oral function with a removable prosthesis. Several studies have shown the relationship between adequate oral function and proper digestion and nutrition; and where oral function is compromised, so too is nutritional status.

Because the life expectancy of edentulous patients will increase, the risk of denture dissatisfaction and its functional implications can only be prolonged. Published clinical data for osseointegrated dental implant treatment of maladaptive patients has led to the clinical impression that a stable prosthesis could preclude most of the problems associated with complete denture wearing. The original studies on osseointegrated dental implants were done on maladaptive edentulous patients. Age did not enter into either the inclusion or exclusion criteria. Any geriatric patient whose systemic health did not preclude a minor oral surgical procedure was considered a candidate for osseointegration. Previous studies have proven that age dependent differences in wound healing do not appear to effect the

outcome of surgery in elderly subjects. And although a large percentage of post menopausal women may have or are developing osteoporosis, a recent study concluded that osteoporosis is not a contraindication for prescribing osseointegration.

The present study involved the overall results on Branemark implants placed during the Toronto Study from 1979 to 1992 and compared those results to that of the subgroup of patients whose ages ranged from 60 to 81 years. Surgically related problems and complications encountered with the elderly patients in this study were similar to those reported in other studies and were not frequent in the elderly patient group. Data gathered from previous articles indicated that the survival rate for implants placed in elderly patients was similar to that of implants placed in other age groups.

To date this clinical study from Toronto supports the conclusion that neither advanced age itself, nor the diminished levels of oral hygiene that often accompany it, are alone contraindications to the prescription for treatment with osseointegration. Until recently being elderly and edentulous has undermined the quality of life for the patient. However patients who were elderly at the time their implants were placed, and patients who have grown elderly since implant insertion, have functioned successfully with implant supported prostheses of various designs throughout the years.

J Prosthet Dent, 1994; 72:559-568.



Fig 4b
Bone anchored mandibular prosthesis, centric relation.



Fig 4c
Occlusal view of implant supported prosthesis.



Fig 5
Full facial esthetics with completed mandibular implant supported restoration

Torus Necessitates Maxillary Implant Rehabilitation

Balshi T

Treatment of older patients presents distinct challenges in prosthodontic rehabilitation. One such example is a 90 year old female patient who was referred to Prosthodontics Intermedica for the treatment of a failing maxillary fixed prosthesis. Due to her inability to wear a removable denture, it was a challenge to provide her with continued fixed prostheses throughout the implant treatment reconstruction.

The patient's medical history revealed rheumatism, arthritis and recent frequent occurrences of pneumonia. She was sensitive to Penicillin and was medicated with Prednisone every other day.

The patient's dental history included fixed prostheses restoring both mandibular posterior quadrants and a failing, mobile fixed prosthesis and multiple missing teeth in the maxilla.

The maxillary left molars were periodontally and restoratively hopeless. Radiographic examination of the maxillary teeth could only be accomplished with panradiographic (Fig 1) due to the enormous torus palatinus which totally obliterated the palate. This extosis extended beyond the occlusal surface and incisal edges of the maxillary dentition. The patient was reluctant to consider surgical intervention to remove this overgrowth of bone.

The treatment plan prescribed the Branemark method of osseointegration (Class III modification). Three of the remaining natural teeth (#s 7, 10, and 15) were selected to serve as temporary abutments to support a fixed prosthesis (Fig 2). A wire reinforced heat processed acrylic provisional restoration was prepared in advance.

Using local anesthesia, teeth #s 6,8,9,11 and 16 were removed. Branemark implants were placed in the pterygomaxillary region bilaterally and six additional implants were inserted in the anterior region. Following implant placement and full flap closure the provisional fixed prosthesis was cemented. The patient was comfortable postoperatively with little swelling or ecchymosis.



Fig 1
Panradiograph showing severe periodontal deterioration of the two remaining maxillary molars and the anterior teeth.



Fig 2
Panradiograph following selective extractions and placement of eight Branemark implants. Wire reinforced provisional restoration is supported by three remaining natural teeth.



Fig 3
Porcelain fused to gold maxillary implant supported prosthesis in centric relation.



Fig 4
Frontal view of maxillary fixed prosthesis and extensive torus.

Following a five month healing period, angulated abutments were placed on the six

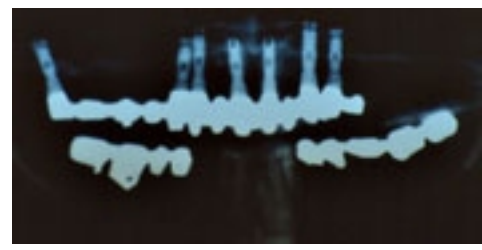


Fig 5
Postop panradiograph of the final maxillary prosthesis supported by seven implants. Note the three remaining teeth (#s 7, 10, 15) have been removed.



Fig 6
Postoperative full face view with the final prosthesis fastened to 7 Branemark implants.

anterior implants and a standard abutment on the pterygomaxillary implant on the left side. Its counterpart on the right side was not osseointegrated and was therefore removed.

A porcelain fused to gold fixed prosthesis (Fig 3 & 4) was constructed using the seven Branemark implants. A short cantilever provided additional function and esthetics for the right side (Fig 5 & 6).

The patient is able to perform adequate oral hygiene and has excellent masticatory function. She reports delight in chewing food without discomfort or fear of losing her maxillary teeth.

Patients in later years are indeed good candidates for osseointegrated implants ad modem Branemark. This 90+ year old patient had excellent bone growth response to the titanium implants permitting a solid fixed restoration. This certainly is a significant contribution to maintaining her quality of life and the ability to function orally.

Acknowledgement: Fort Washington Dental Lab, Inc. for construction of the porcelain fused to gold tissue integrated prosthesis.

Titanium Implants in the Treatment of Edentulousness

Influence of Patient's Age on Prognosis

*Kondel PA, Nordenram A
Landt H*

There is a demographic trend towards populations with increasing proportions of elderly patients. The dental profession will soon be faced with a generation of very elderly patients who expect to maintain high standards of oral function, even in old age. Many elderly people experience considerable difficulty obtaining adequate oral function with removable dentures. Edentulous elderly patients have experienced greater difficulty adapting to full dentures than younger patients, and those who eventually adapt take a considerably longer amount of time. Recent articles have shown the significance of adequate oral function for proper digestion and nutrition.

The purpose of this study was to

investigate the possible influence of patient age on successful rehabilitation with the Branemark implant system by comparing the outcome of treatment in a group of elderly patients with a group of younger patients, 65 to 85 years and 36 younger patients, 18 to 54 years, treated for edentulousness with tissue integrated implants were recalled regularly after treatment. The observation periods ranged from 1 to 6 years. The elderly group received a total of 284 Branemark titanium implants and the younger group 183 implants.

A very high success rate was noted in both age groups with respect to continuing function and stability of the original implants. The criteria for evaluation of dental implant success proposed by Albrektsson et al 1986 is so stringent that a high success rate based on this criteria would clearly indicate that the therapy is appropriate. The elderly group showed a 90% success rate in the maxilla and 99.5% in the mandible; the younger group experienced 88% success rate in the maxilla and 98% in the mandible. It was also of interest to note that where osseointegration of implants failed, 76% of the failures occurred within one year of installation and before

prosthetic loading.

Although the number of subjects in the study was small and the group distribution somewhat uneven, the findings indicate that the chronological age of the patient alone does not seem to be a determining factor in the prognosis for osseointegration.

Gerodontology 1988;4:280-284.

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Implant Treatment in Elderly Patients

Jemt T

With the increasing number of elderly persons in the population, we will be seeing more older patients seeking dental treatment in the future. A retrospective study was conducted on 48 elderly patients, 30 women and 18 men, who were treated at the Branemark Clinic in Sweden. The mean age at implant placement was 82.7 years with an age range of 80-89 years. A total of 254 implants were placed.

The results of this treatment indicated that healthy vital elderly patients who were provided with dental implants can have the same prognosis as younger patients. Marginal bone response around the neck of the implants showed a pattern of modeling and remodeling which was similar to that found in younger age groups. Most patients experienced minimal post-placement problems, but the study also indicated that some patients had

problems adapting to the prosthesis. This is not surprising, as previous studies indicated that the muscular learning process is prolonged in elderly patients. In spite of this, all patients adapted to their implant supported prosthesis within one year and no major maintenance problems were encountered during the following years. Thus the selection criteria for implant treatment should be the same for all patients regardless of age and no patients should be refused implant treatment because of advanced age.

Int J Prosthodont 1993;6:456-461.

Care for a Lifetime Dental Care for Ambulatory Senior Citizens: Getting the Word Out

Stapleton M, Watson MT

Preventative oral health initiatives have traditionally focused on young patients. However researchers and dental health experts are also directing attention to the oral health needs of the rapidly expanding elderly population. As a result of these efforts, over 60% of our senior citizens retain some or all of their natural dentition, compared to 45% in 1990.

Older patients are at risk for oral health problems, resulting from declining physical and/or mental status, medications, and reluctance or failure to seek routine dental care. The elderly population must recognize that tooth loss is preventable. They need to understand the risks associated with untreated dental disease, the signals indicating that dental care is required, the importance and value of thorough daily oral hygiene practices, as well as regular professional cleanings and examinations.

Through educational efforts, optimal oral health for the life of the individual may be ultimately attainable. Education of the patient can begin in the dental office, with brochures, audio and video tapes, and even high tech options such as interactive CD's.

The American Society for Geriatric Dentistry (ASGD) is a professional organization devoted to creating awareness of the oral health problems of the elderly. The Society's membership consists of dentists, hygienists, auxiliaries, dental researchers, dental school faculty members, and other oral health professionals. ASGD works to ensure that seniors receive quality and appropriate dental care by providing continuing education programs, promoting access to geriatric oral health-care, encouraging dental schools to provide didactic and clinical training in geriatric dentistry, and advocating expanded dental benefits for the elderly.

There are a variety of ways doctors can

become involved in promoting dental care for seniors, such as:

- Volunteer at local and state dental societies, and oral health programs Sponsored by these organizations.
- Promote oral health in a newsletter or Special letter to older patients.
- Hold an open house for older patients and present a brief talk on dentures.
- Offer to make presentations to groups at local senior's centers.

Oral health-care providers, dentists and their staffs are the most logical instigators of the educational process. However, the educational efforts must move from the dental office to the general community.

Dental Products Report, April 1995

Osteoporosis: A Risk Factor for Osseointegration of Dental Implant

Dao TT, Anderson JD, Zarb GA

The success of osseointegration depends in part on the state of the bone, the host site, and its healing capacity. Concerns have therefore been raised about the treatment of osteoporotic patients with osseointegrated dental implants. Osteoporosis is a condition believed to be associated with a decrease in bone quality and bone quantity. Whether osteoporosis effects bone quality, bone quantity, or both, remains a matter of controversy. Thus a diagnosis of osteoporosis made solely on the basis of bone mass remains empirical and arbitrary.

However, the orthopedic literature indicates that osteoporotic fractures heal readily, and the level of bone mass and estimates of the parameters associated with bone remodeling present considerable overlap between patients with osteoporosis and control subjects. The concern that osteoporosis effects the mandible or the maxilla in the same manner as other parts of the skeleton that serve as diagnostic markers for the disease; and the impaired bone metabolism in osteoporotic bone may reduce the healing capacity around implants.

It appears that osteoporosis diagnosed at one particular site of the skeleton is not necessarily seen at another distant site. This is not surprising because bones in different locations

are subjected to different biomechanical stress is known to influence remodeling of bone tissue.

The literature clearly indicates that osteoporosis increases with age and is more prevalent in women than in men. The prevalence of osteoporosis in asymptomatic women has been reported to be as high as 25% for those 45 to 54 years and 39.2% for the range 50 to 54 years. If there were a direct correlation between osteoporosis and predictability for osseointegration, we would expect to find the rate of implant loss caused by failure of osseointegration to increase corresponding to age and gender.

The results of this study indicate that the rate of implant failure is not related with age and sex, thus subjects at risk for osteoporosis are not at risk for implant failure. A review of the literature and the results of a series of patients treated does not provide a compelling theoretic or practical basis to expect osteoporosis to be a risk factor for osseointegrated dental implants.

Therefore, denying implant treatment to a patient whose diagnosis of osteoporosis is based on a decrease in bone mass, or on the presence of a traumatic fracture in a site other than the jaw itself cannot be supported at this time. It is important that treatment planning for dental implant therapy be based on a local assessment of the potential surgical site.

Int J & Maxillof Impl 1993;8:137-144.

Xerostomia or "Dry Mouth"

Ebwab R

Xerostomia or "dry mouth" can result from the congenital non-development of one or more of the salivary glands. It is usually a manifestation of a clinical disorder. Most often, xerostomia is a decrease in salivary flow due to many possible conditions, including medications such as diuretics, antihistamine, antihypertensives, antidepressants, narcotic analgesics, or aging.

There are many degrees of xerostomia with symptoms ranging from dry mouth or burning sensation with normal mucosa to severe alterations in the mucous membranes. The mucosa can appear dry, atrophic, inflamed, pale and translucent. The tongue can appear dry, atrophic with loss of papillae, inflamed, fissured, cracked and in severe cases denuded.

Continued next page...

Implant Therapy For the Older Edentulous Patient

Myers G

The population of older adults has increased dramatically in recent decades and will continue to grow in the future. These people will anticipate a greater life expectancy accompanied by a higher quality of life. Their expectations, like those of all patients, include a functional dentition that is esthetically attractive. Many of these older patients are fully edentulous and are often given dentures as the only restorative option.

About one-fourth of denture wearers report dissatisfaction with removable prostheses. Studies have shown that older patients have more difficulty in adapting to a removable denture. In addition, the added life expectancy will lead to further increased risk of dissatisfaction because long term denture use promotes increased bone loss.

Due to these problems with removable dentures, there is a need for an alternative dental treatment for older edentulous patients. Previous studies indicate that patients who have had dentures replaced with a fixed implant retained prosthesis reported an improvement in the quality of their lives. Other studies indicate improved chewing ability as a result of implant therapy.

Universally, the older population has not experienced the same access

to dental implants as a treatment option. The lack of implants used in older patient populations can be attributed to two possible causes: misconceptions arising from negative stereotypes regarding older adults, and misconceptions regarding the feasibility of implants in older adults.

Studies have shown that dentists often make different treatment decisions for older adults, based on stereotype views of the elderly, such as life expectancy, dexterity, motivation, and economic standing. These stereotypes tend to be negative and can lead to reduced options and quality of care for the elder patient.

Studies attest that age has no bearing on the success of osseointegrated dental implants. Reports also indicate the long-term reliability of osseointegrated dental implants even in situations with less than optimal oral hygiene. These reports do not support the exclusion of patients due to lack of manual dexterity or motivation. The author states that "...regardless of economic status, it is the patient's ethical right to make decisions regarding the economic feasibility of implants and it is the dentist's responsibility to offer them as a treatment option."

Dentists need to be better informed of the realities of the aging process as it relates to the success of implant placement, and to the need and desires of older patients. The dental community would then be more likely to offer a wide range of available therapies to edentulous older patients, including implant supported reconstructions.

*First place. Fourteenth Annual Arthur Eifenbaum Essay Award Contest, 1995:
Sponsored by the American Society of Geriatric Dentistry*

The Dietary Adequacy of Edentulous Older Patients

Greksa et al

Tooth loss, even with denture replacement, tends to result in a reduced masticatory functional capacity and significant alterations of dietary patterns. Edentulous patients consume fewer tough but nutritious foods, such as meat, fruits, and raw vegetables, and increase their consumption of softer foods such as processed foods, refined carbohydrates, and soft drinks. The latter group of foods has a lower content of many essential nutrients and a high content of salt, sugar, cholesterol and fat. This dietary inadequacy leads to further deterioration of oral health and increased risk for various chronic diseases.

This study compares the dietary patterns and adequacies of 34 edentulous subjects (16 men, 18 women) who regularly wore dentures with 38 dentate subjects (15 men, 23 women). The subjects were between the ages of 51 and 83 years.

The results of this study suggest that tooth loss does not result in a modification of eating habits. However, they do indicate that tooth loss and denture wearing is associated with a decrease in dietary adequacy. In particular, the diet of the dentate subjects tended to be superior to that of the edentulous subjects, as indicated by lower fat and cholesterol %RDAs and by higher %RDAs for protein and all of the vitamins and minerals. Contrary to the findings of previous studies, the results of this study indicate that tooth loss and denture wearing are not associated with a change in dietary patterns but are associated with a decrease in dietary adequacy.

These findings can be used in dental office education programs to encourage patients to maintain their teeth throughout life. Secondly, once tooth loss and denture replacement has occurred, this data suggests that patients should be directed to a registered dietician who can assist them in monitoring their diets more closely to ensure that there is not a decrease in dietary adequacy, resulting in decreases in their overall and dental health.

J Prosthet Dent 1995; 73: 142-5.

Xerostomia...

(Continued from page 5.)

The dentition may show rampant caries with accompanying periodontal disease.

Treatment of the primary disease, using salivary substitutes, can improve the oral condition and relieve many of the accompanying symptoms.



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