

**Bragger U, Karoussis, J, Persson R, et al. Technical and biological complications/failures with single crowns and fixed partial dentures on implants: a 10-year prospective cohort study. Clin. Oral Impl. Res 2005; 16:326-334.**

**Purpose:** The purpose of this study was to examine prospectively the incidences of both technical and biologic complications in implant fixed restorations occurring in a cohort of consecutive patients over a ten year period.

**Materials and Methods:** Patients for the prospective long-term case cohort study were recruited for a complete clinical and radiographic examination at 1 and 10 year intervals after implant placement. The sample size of this study was 89 patients with an age range of 28-88 years. The treatment plans for implant restoration utilized 3 restorative treatment plans: single crowns (SC); implant-implant fixed partial dentures (I-I FPDs); or implant-tooth fixed partial dentures (I-T FPDs). Frameworks for I-I FPDs and I-T FPDs were constructed as 1 piece restorations without the use of precision attachments. During recall sessions, all incidences of biological and/or technical failures were noted and treated. At the 1 and 10 year examination intervals, complete periodontal and periimplant clinical and radiographic assessments were performed. The list of technical complications including: loosening of occlusal screws, fracture of occlusal screws, loss of retention, loosening of abutment screws, fracture of the abutment screws, fracture of the metal framework, fracture of the porcelain, and occlusal contact/ intrusion. Biological complications were defined as a probing pocket depth of 5 mm and bleeding on probing or suppuration around the fixture. For tooth abutments, caries represented biological failure. The data were subjected to statistical analyses including one-way ANOVA and post hoc multiple comparisons of the frequencies of biological and technical complications among the 3 groups.

**Findings:** Forty-eight of the patients had implants restored with 69 single crowns. Five of the crowns were lost because of biological complications. Two crowns (2.9%) were remade due to technical complications. Thirteen out of 65 implants were diagnosed with periimplantitis requiring anti-infective therapy. The total failure rate of the implant restorations was 7 (10%). Forty six (66.5%) out of 69 implant retained SCs remained free of any complications or failures over the 10 year period. Twenty-nine patients with 69 fixtures were restored with 33 I-I FPDs. One implant was lost to biological failure resulting in the loss of 1 I-I FPD. One I-I FPD had to be replaced due to technical complications. The total number of failed I-I FPDs in this study was 2 (6.1%) after an average time in function of 10 years. Ten I-I FPDs were exposed to technical complications not resulting in failure. Eight of 69 fixtures utilized required treatment for periimplantitis. Eighteen (54.5%) of the I-I FPDs remained completely free of any biological or technical complications or failures. For the I-T FPD results, 21 patients received 22 I-T FPDs. Failures of the abutment teeth included technical failures such as loss of retention and biological failures such as caries. The total number of failed I-T FPDs was 7 (31.8%) over the 10 year study period. Three implants were treated for periimplantitis using anti-infective therapy. Only 11 out of 22 (50%) of the I-T FPDs remained free of technical or biological complications over the 10 year study period.

**Conclusions:** I-I FPDs had statistically significant fewer biological complications compared to with the I-T FPDs. I-T FPDs had statistically more frequent technical failures compared to the SC and I-I FPD groups. Loss of retention was significantly more frequent in the I-T FPD group than in the SC group. Loss of retention and/or porcelain fracture did increase the risk of failure among the FPD groups. Loosening of the occlusal/abutment screws did not increase the risk of failure in the FPD groups. Implants treated for periimplantitis did result in a higher risk of failure compared to fixtures which did not have biological complications. FPD groups which were exposed to either biologic or technical complications also had an increased risk of failure compared to fixtures that did not experience these complications.

**Dannewitz B, Krieger JK and Eickholz P. Loss of molars in periodontally treated patients: a retrospective analysis five years or more after active periodontal therapy. J Clin Periodontol 2006; 33:53-61**

**Purpose:** To evaluate tooth loss of molars in relation to their degree of furcation involvement (FI) and treatment modality.

**Materials and Methods:** Information of up to 505 molars was collected for this retrospective analysis. Patients with periodontal treatment of at least one of the present molars and not less than 5 years of supportive periodontal therapy (SPT) were included in the study. Age range from 17-70 years old. Periodontal status was classified according to the Armitage (1999) criteria. However, only patients with radiographic 50% or more bone loss in at least 2 permanent teeth at the age of 35 or younger were diagnosed as aggressive periodontitis. Patients were asked actual and past smoking habits and pack/years were calculated (Number of cigarettes/day/20 years) to assess their lifetime smoking exposure. Examinations and therapy active periodontal therapy (APT) was performed similarly for all patients. The APT consisted of oral hygiene instructions, professional tooth cleaning, and subgingival SRP as a conservative, non-surgical therapeutical approach (antiinfectious periodontal therapy). SRP was performed only once during the APT at every tooth with probing pocket depth (PPD) of 4mm and more. Three to 6 months later outcome of anti-infectious periodontal therapy was re-evaluated and if necessary, further surgical therapy was rendered.

Depending on tooth type and the extent of periodontal destruction different surgical procedures were chosen. Surgical intervention included access flap surgery, GTR, tunnel preparation, resective procedures, and tooth extraction (corrective periodontal therapy). The horizontal extent of FI was assessed clinically at the beginning of periodontal therapy in every molar by a trained periodontist. In case of further surgical therapy FI was measured intra-surgically after elevation of the soft tissue flap but prior to soft or hard tissue instrumentation. The measurements were done with a Nabers probe and the defect characterized according to the following classification (Hamp et al. 1975, Eickholz & Staehle 1994). For this retrospective investigation the FIs charted before treatment or during periodontal surgery were documented. Further, the records at each appointment in the SPT phase were compared to verify for any tooth loss of molars and nonmolar teeth and for the reasons of extraction during the SPT. Radiographic bone loss at the beginning of the APT was measured possibly at every molar using a Schei ruler to assess the percentage of bone loss in 20% steps (Schei et al.1959) and classified in five categories. After completion of APT all patients were assigned to SPT on a regular basis and followed up for at least 5 years. The maintenance regimen was scheduled according to the patient's individual periodontal risk at 3, 6 months or annual intervals. SPT included clinical measurements, assessment of the plaque control record and if necessary re-instrumentation of sites with PPD of 4mm and bleeding on probing and of 5mm and more. Data analysis was performed by using the mean and standard deviations of the respective variables.

**Findings and Conclusions:** Of the 71 patients, 9 patients were classified as having aggressive periodontitis and 62 subjects with chronic periodontitis. 43.7% were smokers and 29.5% non-smokers. Median observation period was 107 months. Average teeth per

patient was 25.7; of this 48.1% were maxillary molars and 51.9% were mandibular molars. 33 molars (5.5%) out of 505 were extracted during active therapy. Twenty seven molars (5.3%) did not receive any periodontal therapy. 22(81.5%) of them were without FI. 25.1% of teeth were SRP surgical therapy was needed in 351 molars, of these 45% were subjected to flap surgery, 2.8% to tunnel preparation, 4% to root resection and 11.3% to regenerative therapy. Mean tooth loss per patient was 0.06 teeth/year during SPT being maxillary molar most common extracted than mandibular molars. The most common reason for extraction was periodontal problems (31.6%), followed by endodontic lesion or combine perio-endo lesions (21.5%). FI of degree II or III was significantly more frequent in the maxilla (47.7%) compared with the mandible (27.9%). At the beginning of periodontal therapy 9.9% of all molars showed a radiographic bone loss of <20%, 42.8% of <40%, 30.2% of <60%, 11.1% of <80%, and 6% of more than 80%. FI for the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> molars in the maxilla and mandible, demonstrated that degree II or III was significantly more frequent in the maxilla (47.7%) compared with the mandible (27.9%). A higher prevalence of FI in the maxillary molars (especially at the distal aspect of first and second molars) than in the mandible, probably caused by the root morphology FI (degree I, II) could be found in only 16 of a total of 70 third molars. FI of degree III was only seen in one upper third molar. The evaluation of different treatment modalities in the course of active periodontal therapy in relation to the degree of FI revealed that tunnel preparation was most frequently performed in molars with degree III and occasionally with degree II FIs. Root resection was primarily performed in molars with degrees II and III furcation defects, but also in four teeth without or with a degree I furcation defect; probably because of endodontic indications. The frequency of non-surgical therapy and flap surgery, respectively, decreased with increasing degrees of FI. However, 18 molars with through-and-through furcation defects were subjected exclusively to scaling and root planing or flap surgery, respectively. Twelve of these teeth were maxillary molars. A through-and-through furcation defect in mandible-GTR therapy was predominantly performed in molars with degree II FI. However, during the 3 year of SPT also a number of molars with a degree III FI were treated by GTR assuming that these defects could be closed by regeneration. The majority of defects remained through and through. On the other hand, only one of these molars got lost during the follow-up period of at least 5 years Survival rate of molars (85.9%) was inferior compared with non-molar teeth (97.2%). In the present study it was observed that root resected teeth have the highest failure rate in the maintenance phase (40%). The current study demonstrated no significant differences regarding survival rate could be observed between teeth without FI and degrees I and II FI during the first 5 years of SPT. No deterioration of the survival rate of molars with degree II FI after 5 years compared with FI degree 0 and I. Smoking as measured by pack/years as well as older age emerged as negative impact on the retention time of molars .Overall periodontal therapy results in a good prognosis of molars for at least 5 years.

**Fugazzotto PA. Success and failure rates of osseointegrated implants in function in regenerated bone for 72-133 months. Int J Oral Maxillofacial Implants 2005; 20:77-83. 17 (Refs)**

**Purpose:** The purpose of the study was to evaluate the long term stability of titanium plasma-sprayed (TPS) cylindrical implants and the stability of the surrounding regenerated bone under function 72-133 months after placement.

**Materials and Methods:** IMZ TPS cylindrical implants, cylindrical TPS implants, or TPS threaded Straumann implants, of various lengths and diameters were placed in 319 patients. In all implants, resorbable tricalcium phosphate (TCP) and/or demineralized freeze-dried bone allograft (DFDBA) was used as particulate grafting material with an expanded polytetrafluoroethylene (e-PTFE) membrane. The patients, 181 female and 138 male with a mean age of 49 years, were followed continually through maintenance visits until the time of current statistical compilation. All patients were seen at least every 6 months post-therapy. At that time, all prostheses were removed, the individual implants were examined for mobility, and clinical parameters (Gingival Index, BOP, and probing depth to the base of sulcus) were recorded. Radiographs were obtained at yearly intervals and were compared to those taken at the time of implant restoration under 2x magnification. Probing depth measurements were also compared to those made in preparation for the study. Implants were deemed successful if the implant was immobile; there was no pain, suppuration, or peri-implant radiolucency; and vertical bone loss was less than 1.5 mm in the 1<sup>st</sup> year in function and less than 0.2 mm annually in subsequent years in function. Cumulative success rates were calculated using the following formula:  $CFR = PCFR + IFR \times ((100 - PCFR) / 100)$  where CFR is the cumulative failure rate, PCFR is the previous cumulative failure rate, and IFR is the number of failed implants during the interval divided by the number of implants at the beginning of the interval.

**Findings:** A total of 607 implants (331 mx/276 md) were placed in 319 patients and followed for 78-133 months after restoration. In the first 51 months (subject of an earlier publication), 7 implants were lost and 2 were failing. Between 72-133 months, the 2 failing implants at 51 months were lost. One other implant was lost in a patient who received no professional care for 4 years and the exfoliated implant was covered with calculus to within 1 mm of its apex. Two implants were classified as failing and demonstrated 2-3 mm alveolar bone loss on their buccal aspects, but were immobile and did not bleed on probing. After 84 months in function, the cumulative success rate for TPS implants in regenerated bone was 98.8% for the maxilla, 97.4% for the mandible, and 98.3% overall. The cumulative success rates for TPS implants in regenerated bone at 133 months was 97.2% for the maxilla, 97.4% for the mandible, and 97.4% overall.

**Conclusions:** The regenerated bone proved capable of supporting implants and withstanding functional forces in a variety of clinical situations in a healthy, predictable manner. If implants are housed in an adequate quantity of regenerated bone, and problematic implants are identified relatively early after functional loading, these osseointegrated implants should demonstrate long-term success rates comparable to those of implants placed in nonregenerated native host bone.

**Kourtis S, Sotiriadou S, Voliotis S, et al. Private practice results of dental implants. Part I: survival and evaluation of risk factors- Part II: surgical and prosthetic complications. *Implant Dentistry* 2004; 13:373-85.**

**Purpose:** 1) To present the failure rate of implants and to associate the failure cause with some clinical parameters. 2) To associate the surgical and prosthetic complications with both failure and clinical factors.

**Materials and Methods:** 1692 implants were placed in 405 pts aged 18-83 years. The implants were placed by 4 dentists in 4 private practices. Different types of prosthetic restorations were used. Strict recall program was implemented. Implant failure was defined as loss of the implant. Factors such as bone loss, radiographic changes, mobility, and discomfort were not used as criteria for implant survival in this article.

**Findings and Conclusions:** clinical observation time ranged from 1 to 12 years (mean 4.6 years). 4.4% of implants failed (74 out of 1692). The mean time elapsed before implant removal was 40 months. No correlation was found between age and sex of pt and implant failure. Failure rate was increased in pts with metabolic diseases (thyroid, gland dysfunction). No difference was noted in implant failures between pts with diabetes and healthy pts. When implants were divided into immediate, delayed (placed after more than 6 weeks of extraction), & immediate delayed (placed 4-6 weeks post-extraction), failure rate showed significant difference (3.7% delayed, 5.2 % immediate delayed, & 9.3% immediate). The failure rate was significantly higher in 8mm long implants but no difference was noted for other length or among various implants diameters. The failure rate was higher with external hex implants. The implant loss was significantly higher in the maxilla in general then in the mandible. Posterior regions in both maxilla and mandible had higher failure rate than anterior segments. Failure rate was significantly higher in D4 bone. No difference was noted between D1, D2, & D3. Single tooth implants showed lower failure when compared with implants used in partially or completely edentulous pts. 49.6% of pts were smokers and showed higher failure rate than non-smokers. Significant difference in failures was noted between good, medium, & insufficient OH. 24 % of failure occurred before loading and 76 % after loading). The early failures can be attributed to postoperative surgical complications, poor bone quality, reduced primary stability, & premature uncontrolled overloading resulting from existing denture. The main cause of late implant failures was peri-implantitis (51% of overall failures). The most important factors for implant failures were bone quality (41.7%), OH (29.7%), surgical complications (17.1%), systemic diseases (8.7%), & smoking (2.7 %). Surgical complications happened in 3.8% of implants. The main surgical complication was premature implant exposure (57%). Surgical complications were more often in D1 and D4 bone, under membranes, & in smokers. Higher rate of complication was seen with non resorbable membranes (50%) compared to resorbable membranes (17.8%). 5.4 % of implants were connected to natural teeth with a rigid type of attachment. Prosthetic complications appeared in 9% of implants. Restorations supported only by implants and restorations that included connection to natural teeth did not differ regarding the prosthetic problems. The incidence of prosthetic complications in screw retained restorations was slightly increased (9.5%) compared to the cement retained restorations (8.3%), but was not statistically significant. Peri-implantitis

with clinical and radiographic signs was noted in 11.6 % of implants (196 out of 1692) some of which may be characterized as surviving implants. The main related factors to peri-implantitis were: OH (56.6%), surgical complications (18.7 %), bone quality (15.2%), systemic diseases (7.3%), and smoking (2.1%).

**Onizawa K, Yoshida H, Ohara K, Noguchi M. Predictive factors for the histologic response to preoperative radiotherapy in advanced oral cancer. J Oral Maxillofac Surg 2006, 64:81-86.**

**Purpose:** The purpose of this study was to analyze the factors associated with the histologic response to preoperative treatment and survival in patients with advanced oral cancers.

**Materials and Methods:** The participants in this study included forty three patients ranging in age from 33 to 83 years. Patients consisted of 28 males and 15 females with locally advanced cancer of the oral cavity and the oropharynx. All patients have respectable stage III or IV squamous cell carcinomas. The primary sites were 22 of the tongue, 13 of the upper and lower gingival, 5 of the floor of the mouth and 3 of the oropharynx. Preradiotherapy evaluation consisted of CBC, platelet count, electrolytes and liver and renal function tests. Chest radiographs were taken to evaluate distant metastasis or pulmonary disease. Ultrasonography, CT scans and MRI to evaluate the local tumor extent and regional lymph node metastasis was also utilized. Preoperative radiation therapy was administered using 6 MV x-rays with 1.8 or 2.0 Gy per fraction, 5 fractions per week with a total dose of 50.0 or 50.4 Gy. Patients also received concomitant chemotherapy. Response to both modalities of therapy was evaluated by clinical examination, CT and MRI scan. Following a 4 week healing period to allow for resolution of the radiation stomatitis or dermatitis, primary lesions were resected with a margin of 1 to 1.5 cm. Radical neck dissection was done for patients with lymph node metastasis and elective neck dissection was provided for patients without lymph node metastasis. The histologic effect of preoperative therapy was judged by classifying the resected specimens based on the number or amount of viable cells present in the tumor. Grade I: tumor structures aren't obliterated, Grade II a: obliteration of tumor structures is mild (ie: "viable tumor cells" are frequently observed), Grade II b: obliteration of tumor structures is severe (ie: "viable tumor cells" are few, Grade III : Viable tumor cells are rare and Grade IV: no tumor cells are seen in any section. To simplify the correlation of the histologic response with the established parameters, the response was classified as poor for grades I and II a and good for grades II b, III and IV.

**Findings and Conclusions:** The histologic response of 43 primary lesions to the preoperative therapy was graded as GI for 1 case, G II a for 17, G II b for 8, G III for 2 and G IV for 15. Therefore 18 cases (41.9%) were classified as having a poor response and 25 (58.1%) as having a good response. The findings showed a significant independent association for (1) hemoglobin value and (2) platelet count between the histologic effects and clinicopathologic features. A significant association was found between poor response and low hemoglobin value and between poor response and lower cell differentiation. Metastatic lymph nodes were diagnosed histologically in 21 patients. The relationship of the histologic responses between the primary lesions and the metastatic lymph noded showed that 6 of 11 patients who had a good response in the primary site also had a good response in the lymph node metastasis, whereas 8 of 10 patients with a poor response at the primary site had a poor response at the lymph nodes. At the follow-up period of more than 2 years after surgery, the overall survival rate was 60.5% and the disease specific survival

rate was 80.0%. Patients with a lower WBC or platelet count had a tendency to show a higher overall survival rate than those with higher counts. A significant correlation was found between the overall survival rate and the number of metastatic nodes. The authors therefore concluded that pretreatment hemoglobin levels are a significant factor for predicting a good response to adjunctive chemotherapy. This level can be adjusted with blood transfusion or the use of recombinant human erythropoietin.

**Purpose:** To present the case supporting transition from the repair to the wellness model of oral health care and to describe the requirement for quantitative assessment and expression of disease risk and status for this transition to occur. To also describe an oral health information system, the OHIS that can provide the necessary information.

**Materials and Methods:** Authors description of rationale, need and use of OHIS.

**Findings:**

The Wellness model of dental care: Traditionally, management of dental caries and periodontal disease has been based on the repair model of care under which the clinician's goal was to diagnose the problems and resolve them via treatment. Treatments were empirical and basically the same for all patients. However susceptibility and risk for disease vary greatly from one individual to another, and major factors that place individuals at risk have been identified. A significant proportion of treatment and preventive measures now being provided appear to be either inappropriate or not needed. These conditions fuel the escalating costs for oral health care.

The nature of risk: Risk for periodontitis and disease extent and severity are two entirely different entities. Risk predicts the disease state at some future point in time, or the rate at which a current disease state will likely progress. Severe disease logically implies high risk. However, an individual can, in fact, be at high risk for periodontal disease and have little clinical or radiographic evidence of disease. The proportion of the adult population at risk for periodontitis is considerably larger than the proportion that actually has the disease at any given point. A significant problem is the inability to distinguish between these two groups and hence the goal was to develop technology that permits identification of individuals at high risk to enable application of preventive interventions prior to the onset of the disease.

OHIS: It is an information system protected under U.S Patent #6,484,144. The system is comprised of a suite of related tools for the major oral health conditions including caries, periodontal disease and oral cancer. OHIS is unique for clinical dentistry by virtue of quantifying the risk for future disease in addition to quantifying the current periodontal disease state. Use of the tool can reduce oral health care costs and improve the quality of care. Thorough clinical and radiographic examinations are conducted to derive at diagnosis. Treatments and interventions are ranked and color coded as those most likely to be successful, those less likely, and those unlikely to be successful. Changes in risk and disease state are automatically analyzed by the system and are used to update the risk and disease scores as well as to refine and improve, over time, the selection of the most appropriate treatments for any given set of conditions.

The Periodontal Assessment Tool (PAT): It is an integral part of the OHIS. Following the input of 23 items taken from a routine periodontal examination, the system generates linguistic and numeric periodontal diagnoses and a risk score for future disease. The risk score ranges from 1-5 (highest) based on patients unique set of risk factors and patient history. The disease state score ranges from 1 (health) to 100 (most severe periodontitis)

based on distribution of sextants, with a specific diagnosis of health, gingivitis, and beginning, moderate and severe periodontitis. Changes in the risk and disease scores over time reveal effectiveness of treatment and provide a powerful method to continually and dynamically select the best treatment. The system has tested with a high level of accuracy and validity.

**Conclusions:** the OHIS is an information system that compiles, analyzes, and quantifies clinical information about current oral health status, interventions needed, and treatment outcomes, be they beneficial or detrimental, that are attributable to treatment and behavioral decisions. Use of the wellness model over time may be expected to result in improved oral health, reduction in the need for complex therapy, and stabilization or reduction in oral health care costs.

**Page RC, Krall EA, et al. Validity and accuracy of a risk calculator in predicting periodontal disease. JADA 2002, 133:569-76.**

**Purpose:** To test to see if periodontal risk calculator can accurately calculate risk scores, using information gathered during a routine periodontal examination.

**Materials and Methods:** The study population consisted of men enrolled in the Veterans Affairs, or VA, Dental Longitudinal Study, an ongoing closed panel study of aging and oral health begun in 1968. The authors reviewed clinical records and radiographs of 523 subjects. Data from baseline examinations was entered into the risk calculator, and a risk score on a scale from 1 (lowest risk) to 5 (highest risk) was calculated for each subject to predict periodontal deterioration. Actual periodontal status in terms of alveolar bone loss (determined from digitized radiographs) and tooth loss (determined from clinical records) was assessed at years 3, 9 and 15. The authors determined the statistical strength of the association between risk prediction and actual outcome.

**Findings and Conclusions:** The risk scores were strong predictors of periodontal status, as measured by alveolar bone loss and loss of periodontally affected teeth. Risk scores consistently ranked risk score groups from least to most bone loss and tooth loss. Compared with a risk score of 2, the relative risk of tooth loss was 3.2 for a risk score of 3, 4.5 for a risk score of 4 and 10.6 for a risk score of 5. The findings showed a strong association between the assigned risk score and the actual periodontal deterioration observed during a 15-year period. The authors predict that PRC will provide dentists with a new tool for assessing risk accurately, and it generates suggested treatment options for minimizing risk (such as quitting smoking) and for repairing existing damage (such as scaling and root planning or flap surgery). They expect using PRC along with the suggested treatments to result in more uniform clinical decision-making about periodontal disease, a reduction in disease incidence, improved oral health, a significant reduction in the need for complex periodontal treatment and a reduction in the costs of care. The availability of the PRC should foster the transition from the repair model to the wellness model for the prevention and treatment of periodontal diseases.

**Peleg M, Garg AK, Mazor Z. Predictability of simultaneous implant placement in the severely atrophic posterior maxilla: A 9-year longitudinal experience study of 2132 implants placed into 731 human sinus grafts. Int J Oral Maxillofac Implants. 2006; 21:94-102. 56 (Refs)**

**Purpose:** To study the long term survival rate of implants with roughened surfaces placed immediately into maxillary sinus graft in patient with 1-7mm of residual bone using a modified Caldwell- Luc approach.

**Materials and Methods:**

A total of 731 patients ranging in age from 42-81 yr old. 2132 implants were placed 64% had micro-textured and 36% had coated surfaces. The implants were all 15mm in length and 3.25-4.7mm in diameter. A pre-requisite for inclusion was the presence of at least 1mm of crestal bone height between the sinus floor and alveolar bone ridge. Pt. received 1.5g of amoxicillin 1 hr before surgery and 450 mg of clindamycin for penicillin allergic pt. A variety of grafting materials were used, Autogenous bone was harvested from Iliac crest or as a composite graft harvested from the intraoral site symphysis, ramus or tuberosity. Composite graft consisted of 50% autogenous bone and 50% DFDBA or Bovine dried xenograft. Bone cement was used as a single graft material. The modified Caldwell-Luc surgical procedure was used to gain the access to the sinus cavity. The grafted material was placed at the superior aspect of the sinus and medial aspect of the grafted compartment created in the sinus cavity. After further condensation of the graft, the implants were seated in their final position. Resorbable collagen membrane was used to cover the Schneiderian membrane tear and also placed over the grafted buccal window prior to closure. Post operative instructions were given to the pt. Those pt. who wore removable partial dentures and had >5mm of crestal bone were allowed to wear prosthesis immediately. Second stage surgery was performed 6-9 months after implant placement to expose the implants. Panoramic, periapical and CT scan were obtained.

**Findings:** Analysis of all implants placed revealed a 97.9 % cumulative survival rate after 9 years of clinical loading. The cumulative failure rate for all implants placed was 2.1% through 9 yr of clinical follow up. Of these 75% failed before the end of the 1<sup>st</sup> yr of clinical loading and remaining 25% within 4-7 yr of clinical loading. Pt. with 1-2mm of residual bone had a failure rate of 41%, while 34% of the failure occurred in 3-5mm of residual bone and 25% occurred in >5mm of residual bone. Infection was the leading cause of the implant failure (61.4%) followed by failure to integrate 13.6% and severe bone loss 25%

**Conclusions:** Simultaneous implant placement into sinus floor grafts can be a predictable treatment option for patients with at least 1-2mm of vertical residual one height when careful case planning and meticulous surgical technique are used.

**Persson GR, Mancl LA, Martin J, Page RC. Assessing periodontal disease risk. A comparison of clinicians' assessment versus a computerized tool. J Am Dent Assoc 2003; 134,575-82.**

**Purpose:** to determine the extent of individual variation in risk scores assigned to study subjects by expert clinicians; and to explore the relationship between risk scores assigned subjectively by expert clinicians and those calculated by the PRC.

**Materials and Methods:** The study was conducted on 107 subjects. FMX series was taken for each subject. Films were evaluated for hopeless teeth, periapical and carious lesions, extent of alveolar bone loss, vertical bone lesions, root calculus, and retained and fractured roots. Full mouth charting was performed and included missing and carious teeth, gross occlusal abnormalities, gingival recession greater than 2 millimeters, probing pocket depth and clinical attachment level, tooth mobility, presence of any oral mucosal lesions and bleeding on probing. Medical and dental histories were obtained. Clinical photographs were taken. Assuming no treatment would be performed, PRC was calculated for each subject for year 2 and 4 from the baseline examination. The level of risk was expressed on scale 1 to 5 (5 is the highest risk). 3 groups of evaluators were assembled. Group A (10 periodontists), group B (6 highly recognized periodontists), & group C (36 periodontally aware general dentists). Evaluators were instructed to assess subjects based on their risk of developing periodontal disease for those who did not have it, and the risk of experiencing future progression of periodontal diseases for those who already had it. They were asked to study the records and assign risk scores for two and four years, assuming no treatment was performed.

**Findings and Conclusions:** The percentages of subjects assigned by the PRC to the risk groups for year 2 were 23 percent, 12 percent, 18 percent, 15 percent and 32 percent, for groups 1 through 5, respectively. The group A periodontist evaluators had the highest level of agreement, followed by group B periodontists; the general dentist evaluators in Group C had the lowest level of agreement. There was substantial variation among individual evaluators with the range being greatest for general dentists. Relative to the PRC, the periodontists' scores appear to underestimate risk, especially for high-risk subjects. It was concluded that risk scores generated for individual patients by subjective expert clinician opinion are highly variable and, when used in periodontal clinical decision making, could result in the misapplication of treatment for some patients. Use of a risk assessment tool over time may be expected to result in more uniform and accurate periodontal clinical decision making, improved oral health, reduction in the need for complex therapy and reduction in health care costs.

**Roos-Jansåker A-M, Lindahl C, Renvert H, and Renvert S. Nine- to fourteen-year follow-up of implant treatment. Part I: implant loss and associations to various factors. J Clinical Periodontol 2006; 33: 283-9.**

**Purpose:** To evaluate the long-term results of implant therapy and analyze the associations between implant loss and various factors.

**Materials and Methods:** The subjects were evaluated during a period from Jan. 1988 to Dec. 1999, when placing Brånemark system implants. During this period, a total of 294 patients were provided with implant-supported fixed or removable restorations. Submerged implant healing was allowed for a minimum of 3 months. The final examination was performed 9-14 years after suprastructure placement. The data analyzed the following items: age at final exam, gender, dental status, years of education, number of dental visits, smoking habits, medical history, medication, number of implants placed, implant position, implant loss, plaque score, BOP score, and percentage of remaining teeth before extraction with bone loss  $\geq 4$  mm.

**Findings:**

1. Characteristics of subjects
  - Out of the 294 patients, 76 patients didn't attend final examination. Therefore, the population of this study was 218 individuals with 1057 implants.
  - Out of 1057 implants, there were 524 (49.6%) maxillary and 533 (50.4%) mandibular.
  - BOP showed 48.0% of full-mouth and 46.6% of implants.
  - The overall survival rate: 95.7%.
  - "Sleeping implants": 12 implants (1.1%) in 10 patients (4.6%) were not used in restorations.
2. Implant loss
  - "Early" loss: 29 implants (2.7%) in 15 patients (6.9%) were lost before placement of the suprastructure.
  - "1 year" loss: 7 implants (0.7%) in 5 patients (2.3%) were lost within the first year of loading.
  - "Late" loss: 10 implants (1%) in 5 patients (2.3%) were lost after the first year of loading.
  - "Early" lost: Maxillary implants (3.2%) > mandibular implants (2.2%).  
"Late" lost: Maxillary implants (1.4%) > mandibular implants (0.6%).
3. Time to first event
  - Statistically significant factor for implant loss: Teeth with bone loss  $\geq 4$ mm (p=0.01).
  - Tendency for prognostic factor
    - (i) Years of education (p=0.11; < 12 years versus  $\geq 12$  years)
    - (ii) Smoking status (p=0.16; never smoker versus current or ex-smoker)
  - The first event for maxillary implants (14 out of 133 implants): The event rate differed between patient groups categorized by number of implants placed (1-4 implants versus  $\geq 5$  implants, p=0.01).
  - The first event of mandibular implant (8 out of 119 implants): N.S.

4. Time between the first and second event

- There was a significant difference ( $P < 0.001$ ) between the time to first-event (1%, 22/218) and the time between the first and second event (36.4%, 8/22).

**Conclusions:** The patients who have a history of periodontitis are exposed to a higher risk for implant loss.