Individualized oral hygiene achieves better health

Controlling periodontal disease requires a high level of daily oral hygiene. Instructions that include individually set goals, and motivational interviewing suggest better long-term outcomes than traditional education targeted to the periodontal diagnosis.

Researchers at Uppsala University in Sweden compared these two oral hygiene approaches in a group of 113 patients with periodontal disease. Two dental hygienists provided oral hygiene instructions and non-surgical therapy in weekly sessions over four to six weeks, depending on patient needs. Follow-up visits were at one, three and 12 months.

The experimental group of 57 received oral hygiene tailored to the individual’s problems, capacity and goals, with guidance towards appropriate and effective oral hygiene habits. The hygienist helped the patient determine a plan to overcome obstacles and achieve their goals.

The control group of 56 individuals received targeted oral hygiene instructions tailored to their specific periodontal problems.

The test approach took approximately ten more minutes for the first two sessions and averaged five visits compared to an average of four visits for the control group. Both groups showed improved oral health at the end of the study, with the test group showing greater reductions in plaque and gingivitis scores. The test group reported more frequent interdental cleaning and more confidence in their ability to achieve good oral hygiene and follow the instructions provided.

Clinical Implications: Individualized oral hygiene instructions that encourage patients to set goals and strategies for long-term implementation into their lifestyle are more effective that targeted instructions based on clinical diagnosis.


Crown-root fractures reattached with adhesives

Crown-root fractures occur in two percent of deciduous teeth and five percent of permanent teeth, occurring due to falls, blows, and sport, bicycle and car accidents. Traditional treatment suggests restorative margins need to be at least 2mm from the alveolar bone to avoid violating the biologic width and best kept 3mm from the bone.

With new resin composites and bonding systems, it is now possible to reattach broken tooth fragments. Researchers at the University of Würzburg in Germany evaluated the results of 20 crown-root fractures in 18 patients (11 to 78 years of age) seen for emergency care. Four of the fractures were molars, seven premolars, two cuspids and seven incisors. All presented with a fracture line less than 1mm from the alveolar bone. In five teeth, close exposure of the pulp chamber required subsequent endodontic treatment and three had previously been treated endodontically.

A surgical flap was used to access all fractures. In six teeth, no more than a half a millimeter of bone was removed. Treatment included a 30-second etch with Ultradent UltraEtch, and then placement of Optibond FL from KerrHawe and Tetric flow by Ivoclar Vivadent. Curing was done with an LED curing light, Elipar FreeLight 2 from 3M ESPE. All excess was carefully removed and patients were instructed to refrain from toothbrushing for ten days, using instead a 0.2 percent chlorhexidine rinse twice daily.

After two years, periodontal tissues remained healthy. Two of the teeth were re-fractured in new accidents.

Clinical Implications: Adhesive reattachment of crown-root fractures in periodontally healthy subjects should not cause periodontal problems.


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**Rheumatoid arthritis (RA)** is a chronic inflammatory disease with disease progression similar to chronic periodontitis (CP). The etiology of RA is still unknown, but it has been suggested that an infectious agent in a susceptible host could trigger the RA inflammatory process. Several agents being considered are mycoplasm, Epstein-Barr virus, cytomegalovirus, rubeola virus, and periodontal bacteria.

Researchers at San Luis Potosí University in Mexico evaluated a group of 19 subjects with both CP and refractory RA to see if periodontal pathogens or DNA from these bacteria could be found in serum and synovial fluid. Subgingival plaque samples were taken after blood and synovial fluid samples, to avoid any bacteremia. Plaque samples were taken from the upper right first molar, the lower right central incisor, and the lower left premolar.

The two most common bacteria found in all three areas were *P. intermedia* and *P. gingivalis*. DNA from periodontal pathogens was found in all samples of serum and synovial fluid.

4mm or more, while no one in the control group reached this level.

DNA testing was done on subgingival bacterial samples. Periodontal pathogens, *Aa*, *Pg*, *Tf*, and *Pi* were found more frequently in the AMI group than the control group. Adjusting for all variables, the presence of *Pg* was the most significant risk factor detected in the AMI group. *Pg* was 14 times more likely to be detected in the AMI group than in the control group.

**Clinical Implications:** Since the presence of *P. gingivalis* may be a risk factor for heart disease, dental office microbiological testing of subgingival bacteria may be encouraged as a screening test in the future.


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**Cardiovascular diseases (CVDs)** are still the most common cause of death in industrialized countries. Known risk factors for CVDs include smoking, high blood pressure, high cholesterol and male gender. However accumulating evidence points to a bacterial or viral cause, with periodontal pathogens becoming prime suspects.

Researchers at the University Hospital Aachen, in Aachen, Germany compared 54 individuals treated for acute myocardial infarction (AMI) to 50 healthy controls of similar age and gender to determine if periodontal disease played a role.

Differences were evident between the two groups with more smokers and more pack years of smoking in the AMI group than the control group. Clinical indices showed differences as well. Those in the AMI group had more probing depths higher than 4mm than the healthy controls, with 40 percent vs. 15 percent. Thirty-three percent in the AMI group had more than 50 percent of sites measuring 4mm or more, while no one in the control group reached this level.

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**Do perio bugs trigger rheumatoid arthritis?**

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Samples from the serum and synovial fluid were cultured to see if bacteria could be grown, but none were. It was concluded that the free DNA form was transported through the bloodstream from the periodontal pockets to the knee joint, where it has been shown in mice to trigger an inflammatory response with release of cytokines and bone destruction.

**Clinical Implications:** This preliminary study shows the potential for periodontal pathogens to travel from the mouth to joints where inflammation is triggered. Not all people with RA also experience CP but more research will determine if periodontal bacteria do in fact trigger RA.


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Metabolic syndrome and perio linked

There are five components of metabolic syndrome: diabetes, obesity, hypertension, low HDL cholesterol, and high triglycerides. The incidence of metabolic syndrome is increasing worldwide and has been linked to periodontal disease.

Researchers at Kyushu University in Japan evaluated 1,070 adults between 40 and 70 years of age for periodontal disease and the five components of metabolic syndrome. Medical examinations were performed at hospitals in Miyazaki City, Japan, as part of a municipal health program. Periodontal examinations were performed in private dental offices using the Community Periodontal Index (CPI). The CPI uses probing depths to categorized patients with scores of 0 to 4. For the purposes of this study, those with scores of 0-3 were considered to have a low level of periodontitis and those with a score of 4 were in the high level perio group.

The low perio group included 754 subjects and the high group had 316 subjects. Hypertension and low HDL were significantly associated with deeper pockets. Those with none of the five components of metabolic syndrome comprised 36 percent of the high perio group and 66 percent of the low perio group. Four percent of the high perio group had four to five of the metabolic syndrome components, compared to two percent in the low perio group. Within this population, those with deeper pockets were twice as likely to have metabolic syndrome.

Based on these and other findings the authors suggest periodontal examinations should be part of medical examinations now provided by Japanese insurance companies for those older than 40 years of age.

Clinical Implications: Periodontitis is an inflammatory disease now linked with many systemic conditions and it’s diagnosis and treatment should not be overlooked.


What happens to the bacteria after FM extractions?

The bacteria that infect periodontal tissues around implants are similar to those found in chronic periodontitis. Researchers have suggested that full-mouth extractions would spontaneously eliminate the pathogens associated with periodontal disease, thus protecting implants placed after the extractions.

To test this theory, researchers at Catholic University in Leuven, Belgium, measured oral bacterial types and numbers before and after full-mouth extractions in nine patients with aggressive periodontitis. Culturing of bacteria, specifically anaerobic species, is difficult and often underestimates the numbers of bacteria actually present. For this study, polymerase chain reaction (PCR) testing was used instead of culturing. PCR measures bacterial DNA of both living and dead microorganisms, thus providing a more accurate number for bacteria present. PCR can measure as many as 100 times the number of bacteria present when compared to culturing.

Bacterial samples were taken before extractions with paper points from subgingival areas, using cotton swabs from the tongue and also from saliva samples. Six months after extractions, the samples were repeated from the tongue and saliva. Most of the subjects were positive for the following periodontal pathogens both before and after extractions, 9/9 for P gingivalis, 8/7 for P intermedia, 9/9 for Aa and 9/9 of T forsythia. The difference was the total bacterial count, which was significantly lower after extractions.

Clinical Implications: The results show that periodontal pathogens do not disappear from the oral cavity after full-mouth extractions and the host can effectively cope with the lowered total number of bacteria.