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Perio Reports provides easy-to-read research summaries on topics of specific interest to clinicians.

Perio Reports research summaries will be included in each issue to keep you on the cutting edge of dental hygiene science.

Laser treats hypersensitivity

Two theories explain dentinal hypersensitivity, hydrodynamic and neural theory. External stimuli cause movement of fluids within the dentinal tubules. This causes compression of the odontoblasts in the pulp and the nerve endings connecting to them, which causes pain. Exactly how the fluids in these tubules stimulate the nerve endings is as yet unknown. Potassium nitrate is commonly used in pastes, rinses and gels as a desensitizing agent. Lasers are also used to control the pain.

Researchers at the University of Oviedo in Spain compared a laser to potassium nitrate gel. Three groups of 15 subjects each participated. The test group was treated with the Biolase LaserSmile unit, wavelength of 810nm at an output power of 1.5 to 2.5 nW for one minute. Subjects were given a placebo gel to use daily at home. The next two groups were treated with a placebo laser and one group received a placebo gel and the other received a 10 percent potassium nitrate gel.

Pain was measured at baseline, 15 minutes, 30 minutes and days two, four, seven, 14, 30 and 60. The four-level pain scale was zero = no discomfort, 1 = slight discomfort, but not painful, 2 = painful during the stimulus, but not afterwards, and 3 = painful during the stimulus and immediately afterwards.

The laser reduced pain immediately, compared to the placebo laser, 37 percent vs. nine percent. Scores were 41 percent at 30 minutes vs. nine percent. The active gel also showed a reduction in sensitivity. At two months, pain was significantly and similarly reduced for the laser and the active gel.

Clinical Implications: The laser might be the quickest way to stop dentinal hypersensitivity.

Sicilia, A., Cuesta-Frechoso, S., Suárez, A., Angulo, J., Pordomingo, A., De Juan, P.: Immediate Efficacy of Diode Laser Application in the Treatment of Dentine Hypersensitivity in Periodontal Maintenance Patients: A Randomized Clinical Trial. J Clin Perio 36:650-660, 2009. ■

BOP linked to subgingival deposits

Bleeding is an important sign of the underlying periodontal condition and disease progression. The lack of bleeding on probing (BOP) is predictive of periodontal health. Researchers at the University of Bologna in Italy used endoscopic technology to non-invasively evaluate the subgingival surface of the root and the pocket wall to determine if a correlation exists between subgingival deposits and BOP.

Two periodontists provided the examinations of 16 patients with moderate periodontitis one month following oral hygiene instruction and scaling and root planing under local anesthesia. Traditional clinical indices were recorded for plaque, gingivitis, probing depths and bleeding and a Perioscope was used to determine biofilm and calculus levels within the pockets of teeth in one randomly assigned quadrant. Six sites per tooth were evaluated. Two new indices were introduced, the Endoscopic Biofilm Index (EBI) and the Endoscopic Calculus Index (ECI). Both indices have scores from 0 to 3.

Facial surfaces had lower EBI and ECI scores than lingual surfaces. Disto-lingual surfaces proved to be the most difficult to render calculus and biofilm-free. There were strong correlations between BOP and probing depths, biofilm and calculus scores. Plaque and gingivitis scores were not strongly correlated with BOP.

Biofilm and calculus scores were higher on posterior teeth and on interproximal surfaces, as compared to anterior teeth and facial and lingual surfaces. Calculating relative risk found BOP was up to six times more likely with calculus and eight times more likely with biofilm.

Clinical Implications: When you find bleeding on probing and the subgingival surface feels smooth, suspect that calculus and biofilm still remain and more instrumentation is needed.

Checchi, L., Montevecchi, M., Cheecchi, V., Zappulla, F.: The Relationship Between Bleeding on Probing and Subgingival Deposits. An Endoscopical Evaluation. The Open Dentistry Journal 3: 154-160, 2009. ■

Diagnosis and treatment of ankyloglossia

Ankyloglossia comes from the Greek words "agkilos" meaning curved and "glossa" meaning tongue and is translated into English as "tongue-tie." Definitions vary from the tongue being fused to the floor of the mouth to the lingual frenum being short and thick. This condition is seen in neonates, children and adults and just how and why it occurs is unknown. Mothers consuming cocaine during pregnancy are more than three times more likely to deliver a baby with tongue-tie.

Lingual frenulum

In newborns, it can interfere with nursing and swallowing. In children, it can impact occlusion and speech. Complaints with tongue-tie include inability to lick an ice cream cone or the lips, or stick out the tongue. Severely tied tongues cause functional problems, while mildly tied tongues are acceptable to the person and never require surgery.

Surgical treatment is done with either scalpel or laser and includes frenotomy, frenectomy and frenuloplasty. Tongue exercises are followed for one month after surgery to prevent relapse and stretch the new, longer frenum. Surgical treatment for newborns is easy, relatively painless, requires no anesthesia and results in little or no bleeding. Specific criteria to identify those tongue-ties that require surgery and those than can be observed has not been agreed upon by the researchers.

There is some evidence that ankyloglossia is a X-linked, genetically transmitted condition, but the exact gene is not yet known.

Clinical Implications: Diagnosis criteria and specific treatment for ankyloglossia remain varied and lack consensus among professionals.

Suter, V., Bornstein, M: Ankyloglossia: Facts and Myths in Diagnosis and Treatment. J Perio 80: 1204-1219, 2009. ■

Effect of SRP on type 2 diabetics

Studies have shown the clinical benefits of scaling and root planing (SRP) for those with type 2 diabetes. Periodontal disease is considered the sixth risk factor for diabetes, so treatment and prevention is valuable. Observational studies show that those who have poor glycemic control often have more severe periodontitis. The jury is out on the benefit of SRP for achieving better gylcemic control. Some studies show the benefit and others show now effect.

Researchers in Brazil compared FMD and quadrant SRP in a group of 36 individuals with type 2 diabetes. Study subjects were patients in the Periodontal Clinic at Guarulhos University. Prior to group assignment, the hygiene phase of the study included provisional restorative, removal of overhangs, removal of supragingival calculus, oral hygiene instructions with brushes, floss and interdental brushes. All subjects were given Colgate Total toothpaste.

The FMD group received two visits of 120 minutes each within 24 hours for instrumentation with power scalers and hand instruments. The quadrant group received similar treatment in four 60-minute visits within 21 days. All subjects were seen for maintenance at three and six months.

Fasting blood samples were taken for HbA1c tests that estimate glucose to hemoglobin binding over the previous three months.

Both FMD and quadrant groups showed similar periodontal healing, with reduced probing depths and reductions in bleeding on probing. Unlike some of the published research, this study of 36 subjects did not show a improved glycemic control following periodontal therapy.

Clinical Implications: Periodontal therapy for those with type 2 diabetes produces valuable clinical healing, but might not change glycemic levels.

Santos, V., Lima, J., Mendonça, A., Maximo, M., Faveri, F., Duarte, P.: Effectiveness of Full-Mouth and Partical-Mouth Scaling and Root Planing in Subjects with Type 2 Diabetes. J Perio 80: 1237-1245, 2009. ■

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FMD with ultrasonics and antibiotics

Full-mouth disinfection (FMD) research used hand instruments rather than power scalers to achieve comparable results to quadrant visits. Researchers in Brazil wanted to know if using ultrasonics and adding systemic antibiotics would provide better clinical, microbiological and immunological outcomes. Twenty-five patients at the University of Campinas took part in the six-month study. All subjects had at least eight periodontal sites deeper than 5mm, with at least two of these sites measuring 7mm or more.

The initial phase of the study included education about periodontal disease, oral hygiene instructions including floss and interdental brushes, and removal of caries, overhangs and supragingival calculus. Baseline measurements were taken 30 days later.

Both groups received ultrasonic scaling of the entire mouth, with anesthesia if needed, for a total of 45 minutes. The test group was given amoxicillin and metronidazole three-times per day for one week post treatment and the control group was given a placebo. Subjects were seen monthly for oral hygiene instructions and re-instrumentation of sites 5mm or more or bleeding.

The systemic antibiotics did not alter subgingival bacterial counts or cytokine levels significantly compared to the placebo. Clinical differences were evident between groups, with the test group showing greater reductions in probing depths and bleeding and presenting with fewer sites at monthly visits needing instrumentation.

Clinical Implications: Despite the positive outcomes of this research, the study authors warn against the use of systemic antibiotics without careful consideration of the benefits versus the potential adverse outcomes, including development of antibiotic resistant strains of bacteria.

Ribeiro, E., Bittencourt, S., Zanin, I., Ambrosano, G., Sallum, E., Nociti, F., Goncalves, R., Casati, M: Full-Mouth Ultrasonic Debridement Associated with Amoxicillin and Metronidazole in the Treatment of Severe Chronic Periodontitis. J Perio 80: 1254-1264, 2009. ■

Emdogain results in bone fill and pocket reduction

When periodontal bone is lost as the result of periodontal disease, guided tissue regeneration (GTR) has been the most popular method to regain attachment. These procedures use both resorable and non-resorbable grafts and depend on primary closure of the surgical wound to completely cover the graft and allow for proper healing. Published reports suggest that up to one-third of sites do not get primary closure. The introduction of microsurgery and conservative tissue approaches have reduced that figure to eight percent. Another option for bone regeneration is enamel matrix protein, which has demonstrated the formation of new cementum, ligament and bone.

Researchers the Institute for Periodontology and Implantology in Munich, Germany compared microsurgery with and without the application of Emdogain. Each of the 19 patients had periodontal pockets in one quadrant treated with the Emdogain, and control pockets in another quadrant left with a blood clot in the interproximal area. All sites were sutured using 7-0 polypropylene sutures.

Indices at six and 12 months demonstrated greater healing in the Emdogain sites. Probing depth reductions for test sites at six and 12 months were 3.5mm and 4.2mm; in the control sites 2.1mm and 2.4mm. Gain in clinical attachment in the test sites was 2.7mm and 3.7mm compared to 1.6mm and 1.7mm in control sites. Bone fill was 1.4mm and 2.5mm compared to control sites with 0.7mm and 1.1mm. Recession was similar for both, 0.5mm and .07mm.

Clinical Implications: Microsurgical techniques for interproximal access plus Emdogain result in better clinical healing than open flap debridement.

Ficki, S., Thalmair, T., Kebschuli, M., Böhm, S., Wachtel, H.: Microsurgical Access Flap in Conjunction with Enamel Matrix Derivative for the Treatment of Intra-Bony Defects: A Controlled Clinical Trial. J Clin Perio 36: 784-790, 2009. ■