

Binahmed A, Stokewych A, Peterson L. Single preoperative dose versus long-term prophylactic antibiotic regimens in dental implant surgery. Int J Oral Maxillofac Implants 2005;20:115-7. 9 (Refs)

Purpose: To compare the efficacy of single preoperative dose versus long-term prophylactic antibiotic regimens in dental implant surgery.

Materials and Methods: Medically unremarkable 215 patients were included in this study and allocated into 2 groups. The first group consisted of 125 patients (58 females, 67 males, mean age 52 yrs) in whom 445 implants were placed in a 2-stage procedure. These patients received penicillin or clindamycin preoperatively only. The second group consisted of 90 patients (46 females, 44 males, mean age 64.3 yrs) in whom 302 implants were placed. This group received both preoperative (penicillin or clindamycin) and long-term postoperative antibiotics (penicillin 300mg 4 times/day or 150mg clindamycin 3 times/day) for 7 days. Patients returned for postoperative evaluation at 1 wk, 2 wk, and just prior to surgical uncovering. All wounds were assessed for pain, swelling, erythema, and purulence.

Findings: There was no statistical difference between the 2 regimens

	Group 1 (125 pts-445 implants)	Group 2 (90 pts-302 implants)
Wound dehiscence	3 pts- 5 implants with no inflammation or infection	3 pts- 3 implants with no inflammation or infection
Inflammation	1 pt not associated with swelling or discharge	2 pts
Infection	0 pt	1 pt
Osseointegration	125 pts- 445 implants	90 pts- 302 implants

Conclusions: Long-term prophylactic antibiotic use in implant surgery was no advantage or benefit over a single-dose preoperative antibiotic regimen.

Giannopoulou C, Andersen E, Brocht P et al. Enamel matrix derivative and systemic antibiotics as adjuncts to non-surgical periodontal treatment: biologic response. J Periodontol 2006; 77:707-13. 46 (Refs)

Purpose: To evaluate the anti-inflammatory capacity of EMD by monitoring the GCF components.

Materials and Methods: 16 systemically healthy subjects (6 females and 10 males), aged 25 to 65 years, with untreated moderate to advanced periodontitis were studied. The investigated area includes the canine, premolars, and the mesial aspect of the first molar of two contralateral quadrants. One interproximal periodontal lesion with radiographic evidence of an intrabony defect >2mm in depth, associated with a PD >5mm, CAL >5mm, and BOP was chosen. At baseline, after thorough SRP, one side was treated with EMD and the other with PGA only. In addition, half of the patients received 250mg metronidazole and 375mg amoxicilline tid for 7 days, and the other half, a placebo. At the same session, and after 10 days, and 2, 6, and 12 months after treatment, PI, GI, PD, BOP, REC were measured with pressure-sensitive probe. Also samples of the GCF and subgingival microbiota were obtained.

Findings and Conclusions: On the whole, a highly significant reduction of PD and a gain of CAL were noted. Although the effect of systemic antibiotics was clinically evident, the effect of EMD emerged only in cases also receiving antibiotics. GI scores decreased after treatment. Sites treated with antibiotics exhibited less clinical signs of inflammation (GI and BOP) 2 months after treatment, whereas no significant differences were observed for mean PI scores between the treatment modalities. The total protein level decreased significantly immediately after treatment (day 10) and remained low throughout the study. MRP8/14 levels also decreased significantly after therapy, but at month 12 were no longer significantly lower than at baseline. Also a significant decrease was noted for IL-1beta; however, the reduction was statistically significant only beginning with month 2. A pair wise comparison reveals no significant differences between sites treated with or without EMD for biochemical markers. The only biochemical parameter found to be significantly different between sites with or without antibiotics was the MRP8/14 at day 10. For total protein, IL-1beta, and elastase, no statistically significant differences were noted for sites of subjects with or without antibiotic therapy. A tendency for lower levels of total protein and MRP8/14 can be identified at day 10 and month 2 for the groups treated with antibiotics. However, a level of statistical significance could only be reached at day 10 for MRP8/14. Cross-sectional comparisons identified no single parameter, assessed at baseline, day 10, or month 2, being significantly different in sites rated successful or not at month 6.

Greenstein G. Local drug delivery in the treatment of periodontal diseases: Assessing the clinical significance of the results. J Periodontol 2006; 77: 565-78. 77 (Refs)

Purpose: This article addresses the efficacy of local drug delivery systems, which are commercially available, related to clinical significance.

Materials and Methods: A Medline search was conducted using the following strategy: anti-infective therapy in the treatment of periodontitis. Studies were excluded that did not specifically address local delivery devices that became commercially available in the United States or Europe.

Findings: Results of studies need to be interpreted with respect to their statistical and clinical significance. Clinical significance denotes a change that may alter how a clinician will treat a patient, and this value judgment varies depending on the situation. Data from controlled clinical trials pertaining to six different local drug delivery systems was collected. When four devices (tetracycline fibers, doxycycline gel, minocycline microspheres, and metronidazole gel) were evaluated as monotherapies and compared to SRP alone, there were no statistically significant differences between therapies relative to decreasing probing depth and gain of clinical attachment. At present, doxycycline gel is the only local delivery device approved by the FDA as a monotherapy for treatment of chronic periodontitis. Overall, mean probing depth reduction for these delivery systems when used as a monotherapy at sites initially 4-6 mm deep was around 1 mm. Recently, the AAP conducted a systematic review on local drug delivery which underwent a meta-analysis if certain criteria were met. The results of the meta-analysis indicated that combined therapy provided a statistically significant improvement beyond SRP alone with respect to probing depth reduction (0.338 mm). However, the mean improvement was small, and the gain of clinical attachment was not statistically significant. Because the meta-analysis calculated for the systemic review addressed only mean benefits provided by combined therapy versus SRP alone with respect to probing depth reduction and gain of clinical attachment, it was recognized that these data might not identify other benefits or limitation of therapy provided by local drug delivery. Therefore, controlled clinical trials in the literature were evaluated to determine the ability of local drug delivery to induce other clinical changes that may be used to reflect clinical significance.

Probing Depth Reduction ≥ 2 mm: A 2-mm probing depth reduction is often considered a clinically significant improvement. As a monotherapy, only doxycycline gel was evaluated pertaining to its ability to decrease probing depths ≥ 2 mm. Other local drug delivery systems used in combination with SRP demonstrated that combined therapy resulted in a greater number of sites achieving a ≥ 2 mm probing depth reduction than SRP alone during active therapy and maintenance. However, when the Number Needed to Treat (NNT) calculations based on means per patient indicated that many sites usually need to be treated with adjunctive local drug delivery to attain an improvement at one additional site compared to SRP alone. In this regard, NNT values provide a perspective concerning the effort and cost to achieve this objective.

Local Drug Delivery's Impact on Deep Probing Depths (≥ 7 mm): Pertaining to monotherapies, it has been found that when doxycycline gel was compared to SRP, it achieved equivalent results with regard to probing depth reduction at sites initially ≥ 7 mm deep. Many studies have shown similar effects between local drug delivery and conventional therapy, with results that were not statistically significant. The effects of local drug delivery as an adjunct to conventional therapy at deep sites found conflicting data regarding minocycline gel (applied two times) in deep pockets. Machion et al. found significantly greater probing depth reduction among smokers who received SRP plus doxycycline gel.

Reduction of Probing Depth < 5 mm: Several studies determined the rate or odds of converting deep (≥ 5 mm) to shallower probing depths (<5 mm). However, these studies were problematic as they did not report how many or what percentage of patients achieved a mean probing depth <5 mm. Odds ratios need to be interpreted carefully. A subsequent analysis of the same data with respect to all sites combined revealed that 60% of the test sites (SRP and minocycline microspheres) and 55% of the control group (SRP only) that were initially ≥ 5 mm deep were reduced to <5 mm after 3 months.

Inhibition of Periodontal Disease Progression: The ability of local drug delivery to inhibit periodontal disease initiation was addressed in several studies. Overall, it is difficult to project outcomes regarding the ability of local drug delivery to inhibit disease progression because a limited number of studies, diverse study protocols, and different thresholds for disease progression were used.

Impact of Local Drug Delivery on Furcations: A few studies addressed the impact of local drug delivery in molar furcations. A couple of studies noted a statistically greater probing depth reduction in molar furcations when SRP plus minocycline microspheres were compared to SRP alone (1.26 v 0.99 mm and 1.1 v 0.7 mm, respectively). In both 9-month studies, minocycline microspheres were placed multiple (3 and 4 times) and root planing was not repeated. Additional studies are needed to assess the effect of local delivery in a variety of defects to include furcations and intrabony lesions.

Repair of Osseous Defects: The amount of bone fill that occurred after local drug delivery was limited. In general, results regarding bone fill need to be interpreted in light of the fact that other clinical procedures provide better bone repair in osseous defects.

Conclusions: A critical assessment of the literature indicated that it is necessary to interpret results of studies as they relate to statistical and clinical significance to place improvements provided by local drug delivery in perspective.

Guerrero A, Griffiths GS, Nibali L et al. Adjunctive benefits of systemic amoxicillin and metronidazole in non-surgical treatment of generalized aggressive periodontitis: a randomized placebo-controlled clinical trial. J Clin Periodontol 2005; 32:1096-1107. 53 (Refs)

Purpose: To test the null hypothesis of “no difference in treatment effect of adjunctive use of systemic amoxicillin plus metronidazole during full-mouth non-surgical cause-related periodontal treatment (FSR) performed within 24h compared with FSR alone, in patient with GAP patients at 2 and 6 months after the completion of active treatment.

Materials and Methods: This study was a randomized placebo-controlled, parallel-design, double-blind clinical trial with 6 month follow-up. The 50 subjects who were diagnosed GAP according to Armitage’s classification (1999) were investigated. In pre-treatment period, the subjects had OHI to maintain <20% plaque score, thereafter, subjects were randomly assigned (25 subjects in each group) by a computer to receive one of the two treatments, 1) test group: adjunctive course of systemic antibiotics consisting of 500mg of amoxicillin and 500mg of metronidazole TID for 7days, or 2) control group: receiving placebo. Both group were asked to take the first dose of the medication before mechanical instrumentation (using a piezoelectric and hand instruments). The 1-week post-treatment visit served as a compliance control by counting remaining medication. Re-assessment visit occurred at 2 and 6 months after the completion of the treatment. At the time of each visit, following parameters were measured and statistically analyzed; full-mouth plaque score (FMPS), full-mouth percentage bleeding score (FMBS), full-mouth PPD, REC.

Findings: At the baseline, the 41 participants were non-surgically treated. The mean age of the participants was 31.3+5.2 years for the test group and 31.7+5.1 years for the placebo group. The difference of baseline clinical data was not statistically significant. All parameters, with the exception of the mean LCAL (Lifetime clinical attachment level) gain at the initial shallow pockets, showed a statistically significant difference between baseline and 2 month, also between baseline and 6 months except for LCAL gain and PPD reduction at shallow pockets. At 2 months, there were statistically significant differences between test and placebo in the mean PPD at moderate pockets (4-6mm) and mean PPD at deep pockets (>7mm). At 6 months, statistically significant differences were detected between test and placebo groups in the mean PPD at moderate pockets, mean PPD at deep pockets and LCAL at deep pockets. There were highly significant treatment effects for full-mouth PPD reduction, PPD reduction at 4-6mm pockets and PPD reduction at >7mm pockets at 2 and 6 months, with the outcomes favouring the test treatment. For PPD reduction in 4-6 mm pockets, the adjusted differences between test and placebo treatment were 0.5mm at 2 months and 0.4mm at 6 months. In the deeper pockets >7mm this difference was much larger: 0.9mm at 2 months and 1.4mm at 6 months. For sites with initial PPD >7mm, LCAL gain was also significantly better in test subjects: an adjunctive benefit of 0.6mm at 2 months and 1.0mm at 6 months was observed. While there was no statistically significant benefit in terms of 2-month LCAL gain at sites with initial PPD 4-6mm, a highly significant difference of 0.5mm in favour of the test group was noted at 6 months. Plaque scores decreased in both treatments from baseline to 2 months and the difference was statistically significant for test and placebo groups. However, the 6-months plaque scores values were equal to baseline values. The effects of both treatments had a large impact on bleeding, and these changes were statistically significant at 2 and 6 month. Also, there was a statistically significant difference between test and placebo for the improvement in the percentage of bleeding sites at 2 and 6 months.

Conclusions: The adjunctive use of systemic amoxicillin plus metronidazole, during full-mouth

non-surgical cause-related periodontal treatment (FSR) performed within 24h, has resulted in significant additional improvements in the clinical conditions of GAP patients when compared with FSR alone.

Jerjes W, Jerjes WK, Swinson B et al. Midazolam in the reduction of surgical stress: a randomized clinical trial. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005;100:564-70.

Purpose: To assess the role of midazolam in reducing surgical stress as measured using subjective and objective variables.

Materials and Methods: 46 healthy adult males undergoing surgical removal of impacted lower third molar. All operation was carried out in the morning to minimize the effect of diurnal variation in serum cortisol.

Criteria: Men older than 18 yr old

Non smokers.

Maintained normal sleep pattern

ASA I

Patients were excluded if they were taking medication such as corticosteroid, androgens or estrogen. 3 pt. were excluded because more than 3 local anesthesia cartridges were administered during surgery. This will potentially cause variation to the level of cortisol. 3 more were excluded because of insufficient saliva collection and 2 more because of contamination of saliva samples.

Premedication used in this study was administered sublingually:

1. 7.5mg Midazolam
2. Placebo

The process of double blind was carried out by the pharmacist. The medications were given to the patient in a random fashion. Study variables were either subjective (HAD scale) or objective (salivary cortisol measurement, HR, BP, RR and PaO₂)

HAD scale was used to assess the anxiety and depression in nonpsychiatric patients, every pt. on day of surgery was asked to fill HAD scale. The first 10 pt. were asked to collect 8 salivary samples

1 week preoperative

Shortly after coming to the ward for surgery

20-30 minute after administration of drug

Intraoperative

During recovery

One hour post opt

One week post opt

One month post opt

Rests of the pt. 6 samples were required 5 on the day of surgery and one, 1 week after surgery.

Findings: Out of 38, 20 pt. received 7.5mg midazolam and rest receive placebo. No significant difference was found in HAD scale in control and treatment group. No significant difference was found in first 10 pt. for cortisol saliva measurement. 4 samples that were collected after the administration of sublingual midazolam showed a marked decrease in cortisol level when compared to sample taken from the placebo group, the p value was less than .001. No significant difference was noted in the measurement of vital signs.

Conclusions: small dose of midazolam appear to have a significant beneficial effect on patient preoperative cortisol level, without having significant effect on the cardiovascular and respiratory system or prolonging recovery.

Machion L, Andia DC, Lecio G, et al. Locally delivered doxycycline as an adjunctive therapy to scaling and root planing in the treatment of smokers: 2-year follow-up. J Periodontol 2006; 77:606-13.

Purpose: To evaluate the long term effects of the association of locally delivered doxycycline to scaling and root planing compared to conventional mechanical therapy in the treatment of chronic periodontitis in smokers.

Materials and Methods: 43 subjects with average age 42 ± 4 y.o, 19 men, 24 women, with chronic periodontitis with (probing depth) PD ≥ 5 mm, BOP on anterior teeth participated in this study. Participants also smoked ≥ 10 cigarettes/day for the minimum of 5 years. Subjects were randomly assigned to scaling and root planing group (SRP) or SRP with doxycycline group (SRP-D). Assigned treatments were performed at baseline and 12 months. Evaluation of clinical parameters were performed at initial visit, 2 weeks, 45 days, 3,6,12 months (retreatment); 45 days post retreatment, and at 15, 18, and 24 months. Clinical parameters: plaque index (PI), BOP, both gingival recessions (GR) and relative attachment level (RAL) were measured 6 sites per tooth with a plastic stent. Data collected was analyzed statistically.

Findings and Conclusions: No significant difference between SRP and SRP-D groups for plaque, BOP, GR and PD for moderate pocket (5-6mm). Statistically significant difference for deep pockets: SRP vs SRP-D at 6 months (3.78 ± 1.41 mm vs. 2.6 ± 1.36 mm), at 18 month (3.81 ± 1.17 mm vs. 2.08 ± 1.41 mm). SRP-D group had a greater proportion of PD reduction of >2 mm than SRP at 6 months and 24 months. SRP-D group had greater RAL gain than SRP at 6, 18, and 24 months. A greater proportion of sites with RAL gain >2 mm compared to SRP at 24 months. Locally delivered doxycycline may serve as an adjunct for active and maintenance therapy of advanced periodontitis in smokers (for anterior areas).

Nevins M, Giannobile WV, McGuire MK, et al. Platelet-Derived Growth Factor Stimulates Bone Fill and Rate of Attachment Level Gain: Results of a large multicenter randomized controlled trial. J Periodontol 2005;76:2205-2215.

Purpose: To evaluate the safety and effectiveness of purified recombinant human platelet-derived growth factor (rhPDGF-BB) mixed with a synthetic beta-tricalcium phosphate (B-TCP) matrix for the treatment of advanced periodontal osseous defects after 6 months of healing.

Materials and Methods: 180 subjects were recruited in a multi center (11 centers), prospective, blinded and randomized clinical trial. Subjects were chosen to be 25-75 years of age, each with one interproximal periodontal defect requiring surgical treatment and with no history of aggressive periodontitis. Defects selected for the trial were 7mm in probing depth at baseline with a 4mm or greater vertical bone defect depth (BD) and with at least one intact bony wall.

Subjects were divided randomly into 3 groups: Group 1: B-TCP, with buffer containing 0.3mg/ml rhPDGF-BB; Group 2: B-TCP, with buffer containing 1.0mg/ml rhPDGF-BB; and Group 3: B-TCP, with buffer alone (active control).

Scaling and root planning was performed on all subjects prior to the surgical trial. Surgical treatment consisted of full thickness buccal and lingual flaps. The osseous defect was debrided using ultrasonic and hand, and rotary instruments in preparation for grafting material. Direct measurements of vertical BD, bone defect width (W) and number of bony walls. The B-TCP was mixed with the buffer with or without rhPDGF-BB for 10 minutes and then placed in the osseous defect. Postoperative visits at days 3 to 5, 6 to 9, 12 to 15, and 19 to 24 and weeks 6, 12, 18, and 24 were scheduled to obtain clinical and radiographic data for subsequent analysis. Following completion of the 6 month assessments, surgical reentry was performed on a small number of patients to visualize the area of the original defect.

Findings: The results from the statistical analyses revealed clinical and radiographic benefits for the two treatment groups incorporating 0.3 or 1.0 mg/ml rhPDGF-BB (groups 1 and 2, respectively), compared to the active control, B-TCP, group. At 3 months post-surgery, the mean CAL gain was significantly greater in group 1 versus group 3 (3.8 ± 0.2 versus 3.3 ± 0.2 mm), indicating a significant early benefit of rhPDGF-BB for the gain in CAL. At 6 months post surgery this trend continued to favor group 1 over group 3 although this difference was not statistically significant. Overall this early acceleration of CAL gain led to group 1 exhibiting a significantly greater rate of CAL gain between baseline and 6 months than group 3. There was also less gingival recession (GR) at 3 months in group 1 compared to group 3; at 6 months, GR for group 1 remained unchanged, whereas there was a slight gain in gingival height for group 3 resulting in comparable GR. In addition to the observed clinical benefits on the soft tissue parameters of CAL and GR, radiographic analysis of Linear Bone Gain and %Bone Fill revealed a significant improvement in bone gain for groups 1 and 2 over group 3. The cumulative percentage of patients with the greatest bone fill was highest in group 1 compared to either group 2 or 3. For example 50% of patients in group 1 exhibited >49% bone fill compared to 20% bone fill in group 3.

Conclusions: The results of the study suggest that the use of purified rhPDGF-BB mixed with synthetic bone had an additional benefit for the treatment of periodontal osseous defects.

Parashis AO, Tsiklakis K, Tatakis D. EDTA gel root conditioning: Lack of effect on clinical and radiographic outcomes of intrabony defect treatment with enamel matrix derivative. J Periodontol 2006; 77:103-10.

Purpose: To compare outcomes following the application of EMD with and without EDTA gel root conditioning in the treatment of intrabony defects.

Materials and Methods: 28 patients, who were diagnosed as moderate to advance chronic periodontitis. Criteria includes the presence of 2-3 wall intrabony defects of radiographic depth ≥ 4 mm and were not taking any systemic medication. First group, 13 subjects receive EMD alone, of them 2 were smoker. Last group, 15 subjects in which 6 of them were smokers received EMD in conjunction with 24% EDTA gel root conditioning (EMD + EDTA). Scaling and root planning with OHI was done initially, and a re-evaluation in 12 week. Pt. were scheduled for periodontal surgery who have at least one interproximal area with a residual probing depth ≥ 6 mm, clinical attachment level ≥ 6 mm and plaque index of ≤ 1 . Final decision to perform regenerative procedure was made during surgery, if the intra bony defect was not associated with furcation involvement, 4mm deep and ≥ 2 mm wide. Following local anesthesia intrasulcular incision were made, full thickness mucoperiosteal flap was reflected, with mesial and distal extension for complete visibility. Granulation tissue was removed no osseous recontouring was carried out. No etching or chemical preparation of the root was carried out in the group treated only with EMD. In the group treated with EDTA gel root conditioning plus EMD, the 24% EDTA gel was applied for 2 minutes on the exposed root surface and subsequently rinsed thoroughly with sterile saline. The EMD gel was then immediately applied on the exposed root. The flaps were sutured with vertical mattress sutures. The sutures were removed 2 week later. Subjects were instructed to rinse twice daily for 6 week with .12% solution of chlorhexidine. Mechanical plaque control was not carried out in the area of surgery for 6 weeks. Subgingival instrumentation was not performed in the area for at least 12 months. Following measurement were recorded before surgery and 12 month after surgery on six aspect of the study tooth, 1- PD, 2- GI, 3- PII, 4- CAL, 5- Recession. During surgery following measurement were taken 1- distance from CEJ to Bone crest (BC) 2- distance from CEJ to base of defect (BD) and 3- distance from BC to BD. Radiograph were taken preoperatively and 12 month post operatively and 1- distance from CEJ to BD, 2- distance from CEJ to BC and 3- distance from BC to BD were measured.

Findings: with in treatment group comparison indicated that EMD alone and EMD + EDTA both resulted in statistically significant reduction in PD (4.4 +- 1.1 and 4.5 +- 1.2mm respectively) and CAL (3.4 +-1.0 mm and 3.8 +- .9mm respectively) a significant increase in recession 1.0 +- .9mm and .7 +- .7mm respectively. When the change in PD, CAL and REC were compared between 2 group there was no significant difference. For both group the least CAL gain obtained at 1 yr was 2mm, while majority of defects more than 80% gained between 2-4 mm. radiographically both group resulted in $> 60\%$ mean defect resolution, where as both group exhibited same crestal bone height.

Conclusions: the study showed that the use of EMD with and without EDTA gel root conditioning does not result in any statistical significant changes for any of the evaluated clinical and radiographic outcome.

Spink M, Bahn S, Glickman R. Clinical implications of cyclo-oxygenase-2 inhibitors for acute dental pain management- benefits and risks. JADA 2005; 136:1439-48.

Purpose: To discuss the potential benefits and risks of COX-2 inhibitors when used in dentistry.

Materials and Methods: Lit review using a MEDLINE search

Findings and Conclusions: COX-2 inhibitors selectively bind to the COX-2 isoform responsible for synovial inflammation and tissues with high cellular transformation. These inhibitors originally were approved only for analgesia and anti-inflammation in patients with rheumatoid arthritis (RA), osteoarthritis (OA) and gynecologic disorders such as dysmenorrhea. During an injury to an endothelial cell membrane, a cascade of phospholipids' metabolites propagate from the cells' ruptured membranes. COX is the enzyme that catalyzes the formation of special polyunsaturated fatty acids called prostanoids from arachidonic acid in a rate-limiting step. These short-lived metabolites are second messengers for both inflammation and normal organ homeostasis, resulting in the formation of important prostanoids: prostaglandin E₂ (PGE₂), prostaglandin I₂ (PGI₂) and thromboxane A₂ (TXA₂). Platelets express COX-1, which converts arachidonic acid to its metabolite TXA₂, TXA₂ is specifically associated with inflammation and platelet aggregation. Therefore, COX-1 expression not only is constitutive in all nonpathological tissue, but it also is responsible for prostaglandin repopulation after tissue injury. COX-2 inhibitors were developed to selectively prevent prostanoid synthesis expressed only at bodily trauma or inflammation sites. Theoretically, these agents should not diminish the gastro- and nephroprotective properties of the COX-1 isoform. Compared to COX-1 inhibitors, COX-2 inhibitors improve safety for most patients who require specific GI watchfulness. COX-2 inhibitors adversely affect the cardiovascular system. Its use may result in a proliferation of thrombi, because COX-2 inhibitors could have no antiplatelet activity at therapeutic dosages. COX-2 inhibition modifies glomerular filtration in compromised kidneys causing sodium retention, promoting peripheral edema and hypertension, and lowering renal perfusion. Orthopedists are uncertain if COX-2 inhibitors demonstrate impedance to osteogenesis. COX-2_i may prevent the progression of periodontitis in human cultured gingival fibroblast and may be bone-sparing. Many studies showed that COX-2 inhibitors had less GI adverse events when compared to NSAIDs. Unlike acetaminophen, COX-2 inhibitors are rarely contraindicated in pts with liver dysfunction. The potential of Narcotics abuse and their undesirable side effects such as constipation, nausea and vomiting, dizziness and sleepiness increase the benefits of the COX-2 inhibitors. COX-2 inhibitors provide equal efficacy as narcotic combinations, such as codeine with acetaminophen when the appropriate dosage is given. Elevated levels of COX-2 were linked to early tumor development. Blocking COX-2 decreased tumor progression such as invasion, angiogenesis and metastasis. COX-2 inhibition may prevent degeneration of neurons as in Alzheimer's disease and defuse malignancy, which arises from familial adenomatous polyposis. Peripheral nerve regeneration appears to be hampered by nonselective NSAIDs but by not COX-2 inhibitors. The authors concluded the literature is replete with articles disproving the original hypothesis that COX-1 is simply a housekeeping enzyme necessary for the production of prostaglandins needed for homeostasis, while the COX-2 isoform exists only in pathophysiological states. Blocking COX-2 may create a state of potential platelet aggregation, thrombosis and vasoconstriction in some compromised patients. Although NSAID and narcotic analgesic combinations are successful analgesic regimens for most healthy patients, COX-2 inhibitors widen the spectrum of pharmacological management in specific patient populations. COX-2 inhibitors may be more than 200 times as expensive as generic aspirin and ibuprofen, but only a few dental patients with chronic pain require COX-2 inhibitors analgesia and anti-inflammatory activity on a long-term basis.

In their review article in 2005 about COX-2 inhibitors, Spink et al concluded that:

- 1- COX-1 is a housekeeping enzyme necessary for the production of prostaglandins needed for homeostasis, while the COX-2 isoform exists only in pathophysiological states.
- 2- COX-2 inhibitors should never be used in management of pain in dentistry
- 3- COX-2 inhibitors have similar cost to aspirin & ibuprofen
- 4- Only a few dental patients with chronic pain require COX-2 inhibitors analgesia and anti-inflammatory activity on a long-term basis. ***

The committee on research, science and therapy of the American Academy of Periodontology. Position paper. The role of supra- and subgingival irrigation in the treatment of periodontal diseases. J Periodontol 2005; 76:2015-27. 99 (Refs)

Purpose: To clarify the benefits and limitations of supra- and subgingival irrigation (lavage) in the treatment of periodontal diseases.

Materials and Methods: Literature review and the opinion of the committee.

Findings: 1. Supragingival Irrigation

(1) Hydrokinetic and irrigation forces: Devices used for supragingival lavage usually provide a pulsating stream of water that incorporates a compression and interpulse decompression phase. Supragingival irrigation forces of 80 to 90 psi generally can be tolerated without untoward effects.

(2) Supragingival irrigation with water as a monotherapy: Early investigations reported that supragingival lavage with water did and did not reduce plaque indices. Therefore, supragingival irrigation with water should not be used in lieu of toothbrushing.

(3) Supragingival irrigation using water or a placebo combined with toothbrushing: Patients who demonstrate proficient toothbrushing and have no gingivitis may not need adjunctive irrigation therapy. However, supragingival lavage can assist individuals with gingivitis or poor oral hygiene. The greatest benefit is seen in patients who perform inadequate interproximal cleansing.

(4) Supragingival irrigation compared to rinsing with medicaments: Currently, there are insufficient data to unequivocally determine if supragingival lavage with water is superior to rinsing with medicaments or vice versa.

(5) Supragingival irrigation with antimicrobial agents: Supragingival irrigation with medicaments consistently improved clinical and microbiologic parameters in individuals with gingivitis. Benefits of supragingival irrigation with antimicrobials were confirmed in the treatment of gingivitis. At present, it is unknown if supragingival irrigation with even higher drug concentrations or other drugs can aid in the treatment of periodontitis.

(6) Subgingival penetration of solutions after supragingival irrigation: Data indicate that supragingival irrigation does not routinely project solutions into deep pockets. Therefore, this form of therapy can be beneficial in treating gingivitis, but may not be very effective in the treatment of periodontitis. At present, no studies have evaluated the efficacy of devices that provide marginal irrigation in the treatment of periodontitis.

(7) Induction of bacteremia: It appears that irrigation presents no particular safety hazard to systemically healthy patients, because similar levels of bacteremia were detected after toothbrushing, flossing, scaling, root planing, and chewing.

2. Subgingival irrigation

(1) Penetration of drugs into pockets: A device which was placed 1mm apical to the gingival margin provided what is referred to as marginal irrigation and attained 90% pocket penetration when PD were ≤ 6 mm. It may be advantageous to circumferentially irrigate teeth to ensure that drugs are delivered throughout most of the pocket. Since calculus impeded drug penetration in deep pockets, root planing should precede irrigation therapy. Low irrigation forces were effective at delivering solutions subgingivally. Therefore, they should be used to minimize the potential of projecting bacteria into tissues. It seems there is no difference with respect to the depth of penetration regardless of irrigator tip design.

(2) Pathogen reduction after subgingival irrigation: Subgingival irrigation with

medicaments as a monotherapy significantly reduced monitored bacteria. Monitored organisms often rebounded to baseline within 1 to 8 weeks after short-term subgingival irrigation. Tissue invasive organisms also may not respond well to this treatment method.

(3) Improvement of clinical parameters: Subgingival irrigation with medicaments decreased plaque indices, but failed to completely eliminate signs of inflammation. However, when root planing was also used, there were fewer bleeding points. If root planing precedes irrigation therapy, probing depths were decreased 2 to 3mm. Therefore, if probing depth reduction is desired, root planing is indicated.

(4) Additive effect

1) Root planing plus subgingival irrigation: There currently is insufficient evidence to indicate that subgingival irrigation routinely should be used as a supplemental in-office procedure to augment the effects of scaling and root planing. However, preliminary data using high concentrations, and prolonged or multiple application of antimicrobials have shown some promise in improving periodontal status.

2) Ultrasonic debridement with and without antimicrobial agents as the irrigant: Several short-term investigations which compared the efficacy of water versus CHX delivered through an ultrasonic device reported that there were no significant differences between irrigants regarding the gain of clinical attachment, reduction of PDs, or BOP. Failure to attain a better clinical result with CHX was usually attributed to excellent results achieved with ultrasonics and water. Several studies suggested that adjunctive use of povidone iodine (PVP-I) might enhance non-surgical periodontal therapy.

(5) Antimicrobials versus placebos as irrigants: It should be noted that the bactericidal dose of CHX determined supragingivally (18 to 32 μ g/ml) may not be the same subgingivally (125 μ g/ml), because blood and protein can deactivate the drug. A lack of substantivity demonstrated by many agents casts doubt on their ability to be effective as subgingival irrigants. Therefore, while bactericidal drug concentrations can be delivered with subgingival irrigation, the medicament may not be retained long enough to have an efficacious effect. Several studies indicated that subgingival irrigation with antimicrobials improved periodontal health better than a placebo, whereas others demonstrated that a placebo achieved equivalent results.

(6) Potential uses of subgingival irrigation: Multiple irrigations with antimicrobials may help therapists treat refractory sites with tortuous pockets or furcations where solutions can penetrate into areas inaccessible to instrumentation, but there are limited data to support this assumption. Subgingival irrigation may allow individuals to actively engage in self-therapy at problem sites and potentially have a direct effect on the microflora.

(7) Professional versus personal application of subgingival irrigation: There are no long-term studies that compared the benefit of personal versus professional administration of subgingival irrigation. Many individuals may not have the dexterity to irrigate with a subgingival cannula and that compliance can present another pitfall. However, marginal irrigation that results in significant subgingival penetration has been successfully used by maintenance patients, and is a technique that is easy to master.

3. Safety of supra- and subgingival irrigation therapy

In general, supra- and subgingival irrigation have not produced any deleterious effects. However, it may be prudent to avoid these modes of therapy in patients with gingivitis or periodontitis if they have a medical history which dictates that premedication is required prior to conventional therapy. Utilization of an antimicrobial mouthrinse before sonic or ultrasonic debridement may help reduce infectious agents in aerosols.

Conclusions: Supragingival and subgingival irrigation will continue to play a role in the

treatment of gingivitis and maintenance of periodontal patients. However, there is a paucity of data to support the contention that a single episode of subgingival irrigation increases the immediate impact or duration of root planing efficacy. Similarly, there is limited information to suggest that multiple in-office irrigation appointments provide a substantial benefit beyond root planing.

Van Winkelhoff AJ. Antibiotics in periodontics: are we getting somewhere? *J Clin Periodontol* 2005; 32:1094-1095.

Purpose: The purpose of this article is to discuss the concept of antibiotic administration in periodontics and to evaluate the rationale for their administration.

Materials and Methods: Authors comments.

Findings and Conclusions: The treatment of [GAP] Generalized Aggressive Periodontitis as with other forms of periodontitis involves the reduction of bacterial load employing mechanical and surgical methods. Clinicians utilize systemic antibiotics to augment their local measures in an attempt to bring this disease under control. However, from the microbiological data that is available thus far, it seems likely that all patients with GAP do not have identical microflora. Major pathogens such as *Actinobacillus actinomycetem comitans* and *Porphyromonas gingivalis* are detectable in only a part of the subjects with periodontitis. In the study by Winkel et al, it was seen that patients with chronic periodontitis who did significantly better after systemic antibiotic administration, than the placebo group did due to the fact that the patients in the test group were infected with *P.gingivalis*. Patients in the test group without this pathogen did not show an adjunctive benefit to the antibiotic regimen compared with patients treated with the placebo. The author contends that the future challenge for diagnosis and treatment of severe forms of periodontitis such as GAP involves an individual risk assessment which should include microbial testing of the subgingival microflora as the basis for any adjunctive antibiotic therapy.