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Comparative study on periodontics clinical index by using diode laser and chlorhexidine gel.

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Introduction: Evaluating on different ways to treat periodontal pocket for changing clinical index such as PBI,PPD,CAL.
Materials and methods: 14 patients with 66 teeth that have 4-7mm periodontal pocket depth were chosen and divided into three equal groups.first group was treated by SRP (scaling-root planning) and second group by SRP+chlosite as a chlorhexidine gel and third one treated by SRP+980nm diode laser .clinical index such as PBI (papillary bleeding Index), PPD(periodontal pocket depth), CAL(clinical attachment level), and the quantity of aerobic bacterial colonies were evaluated in the first , third and seventh weeks and three months later. The one way ANOVA analysis was used in the beginning of the study and repeated measures ANOVA analysis at the end.
Results: The periodontal pocket depth was reduced in all three groups and we had a significant difference between the group by using laser and two other groups. Although we had good results in other three index (CAL-PBI-Bacterial colonies), we did not have significant differences. The important result of this study was a significant difference between two groups were treated by adjunctive therapy (SRP+Chlorhexidine or Laser) compare to only SRP.
Conclusion: To sum up, not only adjunctive periodontal pocket therapy is much better than the conventional pocket therapy, but also 980nm diode laser can reduce PPD.

Antimicrobial Photodynamic Therapy in Periodontics: Cases Report.

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According to the world health organization severe periodontal disease is highly prevalent among adult populations in all regions of the world; advanced disease with deep periodontal pockets affects 10% to 15% of adults worldwide. The global spread of antibiotic resistant pathogens has lead to a search for new antimicrobial therapies and in this context antimicrobial photodynamic therapy (aPDT) has been investigated as adjuvant to treat oral infections. In this work we evaluated the clinical response to aPDT of clinical cases with deep periodontal pockets and periodontal abscess that persisted after scaling and root planning (SRP) and systemic antibiotic. The patients had the affect area clean through manual SRP and afterwards methylene blue (MB) at 100 μM was applied inside the periodontal pocket and the fistula area. After 1 minute the area was irradiated with a λ=660 nm diode laser with power output of 40mW applied during 6 minutes with a 400μm optical fiber in each to oth. The results obtained one week after treatment showed fistula closure and no secretion drainage in the abscess areas, also improved probing depth was also observed. These preliminary results showed that aPDT with MB and red laser on the aforementioned parameters may be a promising adjuvant to treat areas that do not respond to conventional periodontal therapy without surgical intervention, long term evaluations of the results are necessary to fully understand the scope of this therapy.

Clinical and microbiological monitoring of patient with aggressive periodontitis treated by systemic antibiotic and laser or ultrasonic debridment.

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Introduction: our aim was to analyze during 18 months, the clinical and microbiological effects, of antibiotic therapy and to compare laser to ultrasonic debridement in the treatment of generalized aggressive periodontitis.
Material and Methods: Patient is aged 31 years, suffering from generalized aggressive periodontitis. we have prescribed antibiotics for 8 days, then we have achieved a full-mouth debridement in a split mouth technique after randomizationwith laser Er:YAG kavo (160mj, 10Hz),or ultrasonics debridment. Clinical and microbiological data were recorded on days 0, 7, 14, 2 months and 1 year.
Results: The bacterial analysis showed a complete absence of Aa and Pg. After 7 days, antibiotic therapy decrease significantly the pocket depth, the total bacterial load, an periodontopathogens load. The ultrasonic debridement shows a decrease in probing depth from 70% to 2 months and 58% in 1 year and in total bacterial load of 50% at 1 year and in reduction of periodontopathogens 98% 1 week after debridement, and 54% at 1 year. The laser debridement show a decrease in probing depth of 53% at 2 months but 52% at 1 year and in bacterial load of 84% 1 week after and 66% at 1 year and a reduction of periodontopathogens 98% 1 week after 93% at 1 year.
Conclusion: The absence of Aa and Pg on this type

The influence of an optical fiber for Endodontic Photodynamic Therapy.

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This study analyzed the use of an optical fiber/diffusor to perform antimicrobial photodynamic therapy (aPDT) in endodontics. Fifty freshly extracted human single-rooted teeth were used. Conventional endodontic treatment was performed using a sequence of Pro-tapper system sequence (Dentsply Maillefer Instruments), the canals were contaminated with E. faecalis 3 days' biofilm. The samples were divided into 5 groups (n=10) and 20 of these teeth had their crown removed. All the teeth and roots received methylene blue for 1 minute and were irradiated with a diode laser (660nm) for 3 minutes as follow: Group 1 – Roots irradiated with a laser tip area of 0,04cm^2, Group 2 – Roots irradiated with a laser tip area of 0,028cm^2, Group 3 - Ten teeth were irradiate with the laser the 0.04cm^2 tip. The forth group (G4) followed the same methodology as group 3 but the irradiation was performed with the smaller tip (0.028 cm^2) and in G5 ten teeth were irradiated using a 200-μm diameter fiber/diffusor-coupled to diode laser. Microbiological samples were taken after accessing the canal, after endodontic therapy and after PDT. Groups 1 and 2 showed reduction of 2 logs (99%), Groups 3 and 4 of 1 log (85% and 97%, respectively) and group 5 reduced 4 logs (99,99%). Results suggest that the use of PDT associated to endodontic treatment in root canals infected with E.faecalis with the optical fiber/diffusor showed better results is better than the laser tip used directed at the root canal access.

Surgical Endodontic Treatment associated with Photodynamic Antimicrobial Therapy.

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In the past decades there were several advances in endodontic treatment, however, there are situations in which surgery is still necessary due to insufficient decontamination that leads to a persistent infection. This study evaluated the microbial reduction after conventional periapical surgery followed by photodynamic therapy (PDT) as an adjuvant antimicrobial treatment. Twenty-eight teeth needing periapical surgery were enrolled in this study. Microbiological samples were taken (1) after surgical procedure, and (2) after PDT. The teeth received, a full mucoperiosteal flap, osteotomy with a high-speed bur, manual curettage, root-end resection of 2 to 3 mm with no bevel, retrograde cavities prepared using ultrasonic retro-tips to a 3 mm depth. After the conventional procedure the cavities received an aqueous solution of Methylene blue (60μM, 3mim.) and were irradiated with a diode laser λ=660nm (6 min. – 15 J). After PDT, the procedure was conventionally ended by a retrograde filling with mineral trioxide aggregate, flap re-positioning, and sutures. The microbiological samples showed that after the surgical procedure microorganisms can still be detected and PDT achieved a mean further reduction of about 1.5 log. It appears that surgical endodontic treatment associated with photodynamic therapy improves the microbial reduction compared to the traditional technique and this could directly affect the treatment prognosis.

TouchWhite™, Er:YAG Laser Assisted Tooth Whitening.

Jovanovic J.

The TouchWhite™ method is based on the usage of Er:YAG laser wavelength, having water absorption peak in the range of 3 μm. Since water is the major component of the aqueous bleaching gels, this eliminates the need for any additional absorbing particles in the bleaching gels. Due to its high absorption in bleaching gels, the Er:YAG laser beam is fully absorbed in the gel and does not penetrate to the hard tissue or the pulp.
The purpose of this study was to evaluate the ability of Er:YAG to perform teeth whitening with different bleaching gels (Smartbleach gel-HTL,Herzele, Belgium), Whitenes XP MAX –FGM Brazil) and to compare it with other laser assisted bleaching procedures.
Vital teeth in patients were treated with Er:YAG laser (Fidelis Fotona), using collimated handpiece with 5mm spot, Fotona bleaching gel 35% H_2O_2,. Smartbleach gel 35% and Whiteness XP MAX 35% H_2O_2. Laser parameter settings were: fluence 0,3 J/cm^2, pulse duration 1000 μs (VLP), frequency 10 Hz. Depending of the intensity of discoloration patients were treated up to three times in one session.
None of treated patients has shown any pain or discomfort during treatment. All treated patients were satisfied with achieved bleaching effect.
The results suggested that Er:YAG laser could be safe