

THE LASER ER-CRYSGG AND THE CEREC 3D IN THE SYSTEMATIC CORRECTION OF GUMMY SMILE OVERCAST: FEW HOURS TO CHANGE A SMILE

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Aim: In the restoration the smile in patients with gummy smile the use of porcelain veneers is often the elective treatment but at the same time requires remodeling of gums, the positioning according to azimuth gingival aesthetic parameters, the necessary bone remodeling and the creation of new gingival width. In periodontal consolidated approach provides the crown lengthening to be able to carry out such gummy, resulting in stitches resulting in a significant post-operative discomfort and a wait of 100 days from the patient before we can begin the prosthetic therapy. The author's aim is to test a new surgical approach developed by himself to make a guided surgery using laser light in flapless mode, and then an immediate prosthetic treatment using Cad Cam system for the preparation of porcelain veneers. **Materials and Methods:** This study used a laser ErCrYSGG wavelength 2.78 μm , pulse Energy 300mj, pulse length 140 μs , frequency 20-30Hz, fiber optic \varnothing 320 μm - 400 μm , power range 0.75 - 2.5 W, beam incidence 0°, 45°, 90°. Cerec 3D CAD / CAM system with the drive milling and feldspatic ceramic blocks and disilicate blocks. Five patients were treated after a careful study design and functional through a wax-up teeth and gums. then a specific surgical template was made and it have been conducted a clinical crown lengthening and bone remodeling in exclusive Laser flapless surgery. After that the teeth will be prepared by high-speed drills for porcelain veneers. In this way the teeth will be recorded by the optical impression cad cam system and the veneers will be prepared by milling machine. And two dental technicians are dedicated to the characterization and staining of the veneers and in a few hours after surgery veneers will be cemented permanently. **Results:** All patients did not feel pain and postoperative edema was greatly reduced compared with traditional techniques. Controls at 5 years showed a stability of tissue, no inflammatory disease with great patient satisfaction. **Conclusion:** The author believes that the proper use of the ErCrYSGG laser and the Cerec 3d system consents in exclusive mode to perform the complete smile, reconstruction in few hours with stable and predictable results.

THE PERIODONTAL TREATMENT WITH THE DIODE LASER AND ELECTROSURGERY: COMPARING CLINICAL AND HISTOLOGICAL

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AIM: The authors have compared, in this paper, both histologically and clinically the results of linear incisions made on the oral mucosa by electrosurgery and a 810nm diode laser, comparing the results with the consulted literature. **MATERIALS AND METHODS:** The authors analyzed clinically and histologically, using both optical and electronic microscopy, the outcomes of clinical and histologic healing of linear cuts, made by a 810nm diode laser and a L.A.S.E.R.T71C / b operating system, on the oral mucosa of 10 patients undergoing operations such as gingivectomy. Linear incisions were made, by the same operator. Histological sections were then made perpendicular to the examined mucosa and to the linear incision. Four histological sections were made for each incision and thus a total of 36 samples were then analyzed by optical microscopy, using 10x magnification. Sixteen histological sections showed the effects of the cuts made by the laser while 20 the outcome of the electrosurgical incisions. Two electrosurgical treatment were also compared, by electron microscopy, with 2 similar performed by a diode laser. **RESULTS:** The optical microscopy emphasized the width and depth of cut, while the electron microscope showed the extent of cellular damage. The 4 histological sections regarding each incision, made by the laser, showed, by optical microscopy, a width and a depth of cut similar in each section. A constant width of cut of 1.1 mm corresponded to a constant depth of cut of 1.1 mm. The histological sections of the incisions made by the electrosurgery, showed instead a depth of cut, generally constant, associated with a cutting width sometimes variable. A generally constant depth of cut equal to 0.60 mm corresponded to a width of cut ranging from 0.55 to 0.10 mm. The histological analysis, performed at electron microscope, pointed out the cytological damage and ultrastructural changes such as pulverization of the squamous epithelium, due to electrosurgery, with disappearance of the same. Electron microscope also showed an optimal result in diode laser cuts. **CONCLUSIONS:** Histological analysis carried out by optical microscopy showed that the diode laser, compared with the electrosurgery, can provide greater depth of cut associated with a lower level of necrosis linear extension and therefore of the damage. A similar depth of electrosurgical cut indeed causes a greater extent of linear damage. The laser thus provides clinically less invasive operative procedures associated with lower inflammatory responses and consequent optimal aesthetic results.

"Dental extractions: An in vivo study in primates using Piezosurgery vs drills vs levers & forceps"

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INTRODUCTION: The extraction of ankylosed teeth is considered difficult. A novel technique able to facilitate extractions using piezosurgery and dedicated inserts was recently introduced. This study compares piezoelectric technique for extractions to traditional instruments and levers/forceps alone on a primates model.



MATERIALS AND METHODS: 321 teeth were extracted in 18 monkeys (*macaca fascicularis*), since all upper and lower molars and premolars were to be extracted. The teeth were divided in three groups (Group A, Group B, Group C) of 107.

Group A = forceps and levers

Group B = rotational instruments + levers and forceps

Group C = piezosurgery and inserts + levers and forceps

Statistical analysis was performed with ANOVA Test, Kruskal-Wallis and χ^2 .

RESULTS: Four parameters were evaluated:

1. Surgical timing:

Group A: 105,82±2,51 min. (slower)

Group B: 78,10±3,31 min. (faster than group A)

Group C: 45,21±4,10 min. (Faster than group A and B)

2. Residual bone morphology (RBM): Evaluated with a clinical score of alteration

Group A showed the worst destruction of the bone crest

Group B showed a better preservation than group A but worse than group C.

Group C showed a significantly better preservation of the bone crest.

3. Number of intact teeth extracted: Teeth not broken during extraction:

Group A (18%)

Group B (46%)

Group C (85%)

4. Number of broken roots remnants: In alveolar bone after extraction:

Group A (72,5%)

Group B (3,7%)

Group C (2,1%)



CONCLUSIONS:

- 1) Extractions with Piezosurgery were significantly faster than drills that were faster than forceps and levers.
 - 2) Best crestal preservation was observed in piezosurgery cases, while drills and levers and forceps were more destructive.
 - 3) The higher number of extracted intact teeth was obtained with piezosurgery
 - 4) Broken teeth can be easily extracted with both piezo and drills, but piezosurgery better preserves bone crest morphology.
- The present study shows that Piezosurgery is superior in difficult tooth extractions of ankylosed teeth.

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"810NM DIODE LASER APPLICATIONS IN ORAL SURGERY BY COMPARISON WITH THE TRADITIONAL TECHNIQUES"

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AIM: The aim of this clinic study was to evaluate the reliability and the efficacy of a 810nm diode laser in the treatment of soft tissue lesions localized in the oral cavity. The authors wanted to compare the traditional surgical management of those lesions with the 810nm diode laser treatment, in particular regarding the post-operative pain reduction and the healing time. **MATERIALS AND METHODS:** Between 2006 and 2010 at Sandro Pertini Hospital, in Rome, 120 oral soft tissues lesions were examined and catalogued: 25 were localized on the gingiva, 57 on the buccal mucosa, 22 on the tongue, and 16 on the lips. Ninety of these lesions were treated by 810nm diode laser (2,5-3 watt with 200-300m fibers in Continuous Wave) while 30 were treated by traditional scalpel technique. Immediately after the treatment, all the specimens were fixed in 10% buffered formalin solution for the histological final diagnosis. Pain evaluation was performed by the N.R.S. (Numeric Rating Scale) and the healing was evaluated at 1-2-4 weeks and at 3 months. **RESULTS:** In examined lesions, the laser treatment was almost always performed without local anaesthesia and always without suture. The diode laser is highly absorbed by pigmented tissues with haemoglobin and melanin. For this reason, during surgical phases, the action of vaporization and incision is well controlled since the absence of bleeding, which is guarantee by coagulation and haemostasis. All the laser treated lesions healed by second intention and in a quite rapid way in comparison with scalpel controls: the tongue wounds recovered in a medium of 10 days and the other areas appeared healthy after about 3/4 weeks. NRS ratings were always lower in laser group. **CONCLUSIONS:** The benefits of diode laser treatment concern reduced bleeding during surgery with consequent reduced operating time, rapid postoperative haemostasis, thus eliminating the need for sutures and anaesthetics. Lower pain and better healing are further items registered in laser treated lesions. These advantages make this technique particularly useful for young patients and for patients with systemic disorders.

THE USE OF 810NM DIODE LASER FOR GINGIVAL RETRACTION IN FIXED PROSTHESIS: A CLINICAL EVALUATION.

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Aim: After tooth preparation accurate reproduction of the finishing line, of the emergence profile and the surrounding soft tissues in the final impressions is mandatory to provide an improved restorative outcome. If the margins are placed subgingivally a low traumatic gingival deflection method is essential. The aim of the present clinical study was to evaluate the effectiveness of 810 nm diode laser application for gingival retraction prior to taking impression for indirect aesthetic restorations. **Materials and methods:** For this purpose between January 2008 and December 2011 seventyfive patients requiring aesthetic rehabilitation on anterior teeth with bonded porcelain restorations were recruited for this study. The mean observation time was 2.3 years. Soft-tissue incisions were obtained through vaporisation of the tissues by means of a 810nm diode laser used at 1.5 W power in continuous mode and with an optical fibre by a diameter of 200µm. Before use, the optical fibre was activated on a dark surface to ensure its efficacy at maximum therapeutic level. After determination of available biologic width, the angle of insertion of the fibre was 45° and the incision depth in the sulcus was 1 mm. For some patients recontour of gingival margins for cosmetic purposes was necessary and performed according to same parameters. Polyether impression materials by the one-step, double-mix impression technique was used. **Results:** The impressions, under perfect hemostasis, demonstrate accurate reproduction of preparations details and of surrounding soft tissues, as it could help the ceramist to optimize tooth shape, contours and final marginal accuracy of the restorations. Follow-up examinations were performed one month after adhesive cementation and afterwards at the oral hygiene recalls. A stable, healthy, and predictable tissue height was verified. An adequate biological integration of all restorations, a new physiological tissue contour and no gingival retraction were observed. **Conclusion:** Based on the results of this clinical investigation the use of 810 nm diode laser for gingival retraction by final impressions was clinically successful.