Implant uncover with the Picasso diode laser

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Introduction

Dental implants are placed either utilizing a 2-stage approach (delaying abutment placement until implant placement) or a 2-stage approach (implant is covered by soft tissue at time of placement) and modification of the soft tissue to expose the implant fully may be required. When the prosthetic phase is initiated, soft tissue to either removed to uncover the implants or reshape the gingival margin for better esthetics which can be accomplished by several methods. A cutting instrument (ie, Scapel or tissue punch) has been the traditional approach to incise through the soft tissue to the underlying implant. The result of a bleeding edge that can interfere with impressions if they are to be taken at the same appointment. Additionally, post-operative sensitivity has been reported and can result from the fresh cut edge. Typically a delay of 2 weeks or longer is required before impressions can be taken so that bleeding doesn’t hamper the accuracy of how the soft tissue is captured.

An alternative to the blade, electro surgery has been offered as it can conserving all of the attached gingiva present.

Figure 2: Companion of the depth of affected cells with an electrosurgery unit and a diode laser

Figure 3: Tissue reaction upon contact with an initiated diode laser tip demonstrating the effect as one moves away from the tip

Figure 4: Implant to be uncovered (A) presents with two options depending on width of attached gingiva available. Wide band of attached gingiva will remain after removal of tissue over cover screw, the diode is utilized in a spiral pattern (B). Narrow band of attached gingiva presents an elliptical cut is made with the diode and tissue is pushed buccally and lingually to preserve the attached gingiva (C).

Figure 5: When minimal keratinized gingiva is present, the diode laser is utilized to make an incison distal-mesially and the tissue is spread converging all of the attached gingiva present.

Figure 6: Buccal view of the anterior maxilla demonstrating preservation of the papilla due to the provisional bridge.

Figure 7: Occlusal view of the anterior maxilla demonstrating preservation of the papilla due to the provisional bridge.

Figure 8: Picasso diode laser removing soft tissue to uncover the implants cover screws.

The coagulation affects and lack of thermal damage. The higher the wattage, the faster the soft tissue is reported. But a greater zone of unwanted lateral thermal damage may result. It is designed to use the lowest wattage to accomplish the task to avoid the risk of thermal damage within the adjacent tissue. The assistant during usage of the diode laser uses the HV E air to remove any edges and periodically can spray water on the site to aid in cooling the tissue. This also minimizes thermal issues which improves initial healing. To minimize the soft tissue covering the implants cover screw or reshale the tissue for esthetics a setting of 0.8-1.0 watts in a continuous mode is usually sufficient. A 400 micron diode tip (orange) is utilized for oral and periodontal surgical applications. The 300 micron tip (purple) is designed for periodontal applications such as Laser Assisted Periodontal Treatment (LAPT).

Beyond the coronalization zone, an area of hematosis (coagulation) occurs. Typically sites treated with the diode laser will demonstrate little to no bleeding depending on the condition of the tissue prior to treatment. Tissue that is hemorrhagic will require longer contact with the diode laser to achieve coagulation and may occur due to the inflammation present prior to laser treatment. The coagulation affects and lack of post treatment tissue shrinkage allow immediate implant impressions should be desired.

The laser also creates an area of biostimulation adjacent to the coagulation area. Tissues and cells following irradia
tion with a diode laser, have a
biostimulatory effect that provides faster or more favorable wound healing compared to healing with a scalpel or electrosurgical unit. The laser irradiation stimulates the proliferation of mesenchymal stem cells without DNA alterations in the affected cells. Thus, wound healing is enhanced and soft tissue at the cut edges demonstrates faster healing than when treated with a scalpel or other methods by stimulation of gingival fibroblasts inducing growth factors. It has been reported that biostimulation via the diode laser also has a positive effect on bone cells and can be stimulatory to the bone cells at the crest around the implant. Compared to conventional methods, tissue healing as well as postoperative sensitivity was less with the diode laser than with other methods.

**Implant Uncovery technical considerations**

The width of attached gingiva remaining will dictate the best method for implant uncovery. (Figure 4A)

When a wide band of attached gingiva is present and a sufficient amount of bone is available, the uncovery can be performed after onlay on both the buccal and lingual then the diode laser is activated and inserted at the center of the site and worked in a spiral pattern outward until the entire cover screw is exposed (Figure 4B) A circular or other instrument may be necessary to loosen the tissue over the cover screw as the periosteum during implant uncovery becomes adherent to the titanium cover screws. Sites that present with a narrow width of attached gingiva of ≥3 mm at the crest will require some conservation of the remaining attached gingiva. In this clinical situation, the diode is utilized to remove an elliptical piece of soft tissue over the cover screw and then the tissue is pushed buccally and lingually to preserve the attached gingiva (Figure 4C) If less attached gingiva is present on either side of the center of the crest then the practitioner will need to preserve all of the attached gingiva present and a conventional flap is recommended to be able to position the tissue in a more apical direction. When this is necessary incisions can be made with the diode laser as an alternative to a scalpel. (Figure 5)

**Case report**

A 40-year-old female patient present with severely malposed maxillary central incisors tipped facially and a desire for esthetic improvement. A DICT was taken and noted minimal bone present over the facial of the central incisors. Options for treatment were presented to the patient which included orthodontics to correct esthetics or extraction of the central incisors, placement of implants at these sites and restorations on the anterior teeth. The patient indicated that she did not wish to pursue orthodontic treatment option due to the time involved.

The patient presented for surgery and the central incisors wereatraumatically extracted under local anesthesia. The adjacent teeth were prepared for crowns, which would support a provisional bridge during the healing/integration period. A 4mm wide 24 degree Co-Axis implant (Keystone Dental, Burlington, MA) was placed into the ostectomy at each central incisor orienting the prosthetic axis to a vertical position of the incisal edge then the trajectory of the premacula. A healing screw was placed and occlusal contouring was done. A FLPlaced on the facial to thicken the resulting bone. The soft tissue was closed with resorbable PGA sutures. A stent created over the wire of the study models that had been modified was filled with an auto-cure provisional resin (Perfectemp 70, Dentalux, Cauca, Colombia) and seated over the anterior and allowed to set. Upon setting the stent with provisional Crowns were cemented in place and trimmed and polished. The material at the implant sites was shaped to form an emergence profile in the soft tissue and preserve the papilla.

Six months post implant placement the provisional bridges were removed and preservation of the papilla was confirmed with a natural emergence profile within soft tissue (Figure 6). Local anesthetic was administered. The Picasso diode laser was set at 2.5 watts in continuous mode with an initiated tip and at the center of the diapason. The soft tissue above the implants cover screw and moved in a circular motion moving outward until the entire cover screw was exposed. (Figure 8) The process cured the desired soft tissue and coagulated any bleeding from the cut edges. This was then repeated on the second implant. (Figure 9) Open tray implant impression abutments were placed into the diode laser (Figure 10) Ceramic crowns were tried in on teeth 7, 10 and 11 and the screws returned zirconia based implant crowns inserted. An impression of the maxillary arch was taken utilizing Aquasil heavy body (3M, Milford, DE) placed into a MTA advanced Implant tray (Hager Worldwide, Hickory, NC) and Aquasil Ultra ringed around the preparations and implant abutments heads. Healing abutments were placed into the implants (Figure 10) The previously placed provisional bridge was tried in and modified at the pontics to allow the bridge to fully seat over the healing abutments and luted with a provisional cement (Sensi Temp LT, CO-America, Alpin, CA).

Two weeks later the prosthesis returned from the lab (DentMat Labs, Lompoc, CA) and the provisional screw bridge was removed. The healing abutments were removed and the soft tissue was inserted a lack of inflammation and a good periodontal health where it had been modified by the diode laser. Ceramic crowns were tested in on teeth 7, 10 and 11 and the screws returned zirconia based implant crowns inserted. A radiograph was taken verifying fit of the implant prosthesis. A torque wrench was utilized to tighten the fixation screws on the implants to 40 Ncm and the ceramic crowns were luted with Panavia 5a resin cement Kit ( Kuraray, NY, NY). Occlusion was checked and adjusted where needed.

**Conclusion:**

Diode lasers are a useful adjunct to soft tissue modification to uncover dental implants or esthetically recontour the gingival margin. They provide better safety than electro surgery maintaining a temperature profile within the safety zone of bone and do not cause tissue shrinkage that can affect the esthetic outcome. As the diodes tip provides simultaneous cutting and coagulation (hemostasis) a clear advantage to the use of a scalpel or tissue punch immediate impressions can be accomplished without site bleeding affecting the accuracy of the caption of the soft tissue contours and position.

**References**


The full list of references is available from the publisher.
Study finds fundamental misconceptions about dental implants among patients

By DTI

HONG KONG, China: Investigating patients’ knowledge and perceptions regarding implant therapy, a Chinese study has found that an alarming number of participants had inaccurate and unrealistic expectations about dental implants. Moreover, the study determined that only 18 per cent felt confident about the information they had about the treatment.

In the study, the researchers investigated preoperative information levels, perceptions and expectations regarding implant therapy via a questionnaire. Responses from 277 patients were obtained during 2014 and 2015 in three different locations in China (Hong Kong, Sichuan and Jiangsu).

The analyses established that about one-third of the participants had mistaken assumptions about dental implants. According to the researchers, common misconceptions were that dental implants require less care than natural dentition, implant treatment is appropriate for all patients with missing teeth, dental implants last longer than natural dentition, and there are no risks or complications with implant treatment.

Overall, younger respondents (< 45) and those with higher education (bachelor’s and postgraduate degrees) tended to have more realistic perceptions and lower expectations of the treatment outcome.

When asked about their level of knowledge, 63 per cent of the participants said that they were generally informed about implants, but only 18 per cent felt confident about the information they had.

The study, titled “What do patients expect from treatment with dental implants? Perceptions, expectations and misconceptions: A multicentre study”, was published online ahead of print on 23 March in the Clinical Oral Implants Research journal.
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