

SOFT TISSUE MANAGEMENT FOLLOWING IMPLANT PLACEMENT

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Tissue maintenance is imperative following implant placement in order to prevent the reduction of attachment fibers compared to natural teeth. In order to prevent tissue loss, clinicians should be aware of a variety of issues, including



Figure 1. Note the white, patchy appearance of the tissues during deepithelization using a YSGG laser.



Figure 2. Postoperative appearance following laser treatment demonstrates tissue maintenance following implant placement.



Figure 3. Probing depths demonstrate the need to ensure sufficient tissue reattachment for proper maintenance of attachment levels near the implant.

potential tissue recession or development of periodontal pockets. Contemporary advancements in laser technology have further enabled clinicians to predictably improve soft tissue aesthetics following implant placement. This article will address the postoperative maintenance of critical soft tissue structures using advanced laser technologies.

Soft Tissue Recession

The use of a low-level radiation laser on the remaining attached tissues has allowed the clinician to successfully eliminate postoperative tissue recession. Using an Er,Cr:YSGG laser at a setting of 0.5 W 20 Hz 0/14 with a C-12 tip, the area is painted with laser energy so that the tissue has a dehydrated, white, patchy appearance (Figures 1 and 2). This procedure may be repeated 3 times with 4- to 5-day intervals between each application. It is the author's experience that soft tissue rebound of approximately 1 mm can be achieved using this protocol. This is significant in the highly aesthetic area of the anterior maxilla, when the facial margin is exposed or the tissue morphology is thin.

Posterior Pocket Depth

If posterior pockets greater than or equal to 5 mm in depth present during implant placement, appear swollen, bleed upon probing, demonstrate the presence of biofilms, or develop unmanageable depths, a diode laser (eg, LaserSmile, Biolase Technology, Irvine, CA; Odyssey Navigator, Ivoclar Vivadent, Amherst, NY; Sirolaser, Strona, Charlotte, NC) can be used to kill the infected tissues in the sulcular epithelium (Figure 3). The diode laser should be set at 1.0 W or less, in a continuous mode. The clinician should use an initiated tip in the sulcus, removing the black, diseased tissue (Figure 4). This tissue, upon removal, has a black, worm-like appearance. Once the diseased tissue has been completely removed, pocket welding and biomodulation are performed to aid in the healing process. It is common to maintain reduction of pocket depths of 3 mm. The aforementioned procedure usually needs to be performed on a semiannual basis to maintain the desired health of the tissue.

Anterior Pocket Depth

The posterior protocol described above is unacceptable in the anterior region because it would result in recession in the aesthetic region. The treatment of choice in this region would be to use the YSGG laser with a Z-4 tip in the pocket at a 1.0 W 20Hz 9/14 setting. A "sewing machine" technique should be applied in the sulcus by placing the tip into the sulcus and, then, firing the laser until the pocket loses its natural tightness, and has a floppy, limp consistency. In the future, tips will have a specific design to utilize both the sterilization effect and the hydroacoustic effect. Recent advancements have also discussed the laser's ability to detoxify the tissues; the laser's ultrasonic/tidal wave effect has also been hypothesized.¹ With this use, clinically, the pocket can detoxify without the side effects of tissue recession.

Gaining Keratinized Tissue in Nonkeratinized Tissue Zones

The lack of sufficient keratinized tissue to surround the entire implant circumference will significantly compromise treatment success when delivering a flapless implant technique. Some reports indicate the lack of keratinization may contribute to implant failure. By simply gaining a tissue punch of keratinized tissue, a clinician can create a splitthickness flap using a YSGG laser to create a pouch in the area of non-keratinized tissue. The keratinized tissue is then fitted into this pouch (Figure 5) and again, with the use of the YSGG laser, it is possible to tissue-weld the areas of non-keratinized tissue to keratinized tissue (Figure 6). In a matter of one week, adequate amounts of keratinized tissue will be available to surround the entire circumference of the implant (Figure 7).

Conclusion

The use of diode lasers is becoming a significant adjunct for the treatment of early implantitis, and clinicians can also predictably treat gingival recession using these devices. The benefits of use are the ability to kill or disrupt the bacterial colonization without the use of chemicals, surgery, and with little postoperative pain and swelling. While additional investigation is required to determine the range of efficacy associated with these systems, soft tissue management can be easily achieved using the protocols described herein.

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References

1. Hendy J. Lecture presented at: WCLL symposium; 2007; Vail, CO.



Figure 4. The diode laser was applied to the periodontal sulcus using a continuous mode to ensure sufficient removal of the compromised tissues.



Figure 5. Keratinized tissue placed in a pouch of nonkeratinized tissue.



Figure 6. Tissue weld with YSGG laser.



Figure 7. A band of keratinized tissue is obviously growing around the buccal aspect of the implant one week postoperatively.

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