Periodontal aesthetics with soft-tissue lasers

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The use of lasers in dentistry—and in medical procedures in general—has made great strides in recent years, not only in effectiveness but also in acceptance by patients. Our colleagues in medicine, such as dermatologists and ophthalmologists, have used lasers for years for myriad reasons. Visiting a dermatologist's office recently, I observed a variety of large, bulky and costly lasers. The different types have been needed because the doctor's choice of laser power source will vary based on the desired outcome goals for the procedure. Dermatological procedures are chiefly concerned with soft tissue—its responses and reactions defensively as well as offensively.



Fig. 1



Fig. 2

As has been true with general medical uses of lasers, the laser systems recommended for dentistry have been relegated primarily to soft-tissue procedures. The reason for this is that with the exception of relatively recently introduced technology, using lasers on hard tissue in dentistry would typically cause desiccation of the tooth or bone being treated, leaving the affected hard tissue dried out and brittle. Early laser technology that was promoted as appropriate for hard-tissue procedures made lots of noise, cost lots of money and at best achieved minimal and limited results. Recently, however, new laser technology for use on hard-tissue dental structures has proved to be more capable of meeting goals of both practicality and effectiveness.

This article, though, will limit its focus to the soft-tissue side: specifically, achieving desired aesthetic results by using soft-tissue laser technology to treat gingival hyperplasia. My personal experience with lasers dates back more than 25 years to when I bought a CO_2 laser for my private practice. It was an adventurous and costly (about $60,000 in early '90s dollars) commitment. There were no laser dental societies back then—just a few of us dentists trying to find newer techniques to more effectively and comfortably achieve the results our patients desired.

Hyperplasia of epithelial tissue of the gingival area breaks the smooth appearance of the periodontal tissue, compromising aesthetic goals. It also makes it difficult for patients to maintain good oral hygiene, leading to inflammation of tissue and increasing risk of progression to periodontitis.

Case 1

As illustrated in Figure 1, a patient presented in my office with a singular localised dense hyperplastic area,

Fig. 1: Dense hyperplastic tissue interproximally between the tooth #11 and tooth #12. Because the hyperplastic overgrowth inhibits accessibility, the patient is unable to reach the desired area to maintain good oral hygiene. **Fig. 2:** In case 1, diode laser removes dense, undesired hyperplastic tissue in minutes with no bleeding.

Fig. 3: Periodontal probe in the treated area. There is no tissue depth at all, and the patient is able to maintain her oral health. **Fig. 4:** Area healed, aesthetically blended.

confirmed through oral examination. The 31-year-old female had neat clothes and clean, well-maintained hands and nails. She related how difficult the local area was to clean, describing that cleaning efforts hurt and caused bleeding, especially when she flossed. The local area also didn't look clean visually, creating an unaesthetic appearance. There was a break in the continuity of the smooth appearance of the gingiva, causing the tooth to appear uneven.

As mentioned, there are and have been several laser devices available for years for use in a variety of soft-tissue dental procedures. All have the ability to achieve desired results when the practitioner is experienced with the technology and procedure. Some laser devices have the adaptability for different strengths, but, when used correctly, all can treat soft-tissue disease with desired results.

To correct this particular defect, we had the choice of using a sharp, cold-steel instrument or a laser. We opted to use a diode laser, which is easy to use and causes no bleeding in the wound, thus avoiding the need for a periodontal dressing that would be necessary to cover the resulting wound if cold steel was used.

The results documented in Figures 1 to 4 were achieved using the Picasso (AMD LASERS) diode laser exclusively. Instead of being heavy or bulky, it is portable and lightweight. It can be moved easily into each operatory as needed, removing the need to purchase separate units for each operatory. Also, the fibre tips are disposable, ensuring sterility.

A key factor for me in choosing the AMD Picasso laser was cost. Traditionally, costs for soft-tissue lasers seemed relatively high, ranging from $12,000 to $120,000. This light, portable system ranges from $2,000 to $2,500. In my experience, the system not only achieves results comparable to the more expensive systems, but it does so with ease.

In this particular case, a diode laser was used. The result was an aesthetic, smooth, homogeneous colour background that blends unnoticed with its environment and enables oral hygiene techniques that keep the area healthy, aesthetically pleasing and easily maintainable.


Fig. 3


Fig. 4

Case 2

This second case demonstrates use of the diode laser in an acutely inflamed hyperplastic situation in the maxillary anterior of a male teenager who desired a more pleasing smile (Fig. 5). Initially, the patient visited an orthodontist to seek treatment of his rotated, overlapping dentition and red, acutely oedematous, easily bleeding tissue. The orthodontist advised the patient that he could


Fig. 5

Fig. 5: In case 2, initial labial view of teenage patient with inflamed hyperplastic gingiva of maxillary anteriors.


Fig. 6


Fig. 7


Fig. 8

Fig. 6: Removal of undesired hyperplastic tissue using AMD diode laser with disposable laser tip. **Fig. 7:** Tissue removed from maxillary anterior area, progressing toward desired results. **Fig. 8:** Healed, healthy gingival tissue, homogeneous in colour. Patient ready for orthodontics.

not treat him predictably (and thus would not treat him), until the acute periodontitis had been eliminated and overall oral health restored.

With the parents' permission secured and the patient showing newly minted enthusiasm, we proceeded with the case, as illustrated in Figures 5 to 8. The figures and captions document the treatment of a simple local hyperplastic tissue area, as well as a complex acutely inflamed hyperplastic area.

Conclusion

In both of these cases, the patients were treated by using a soft-tissue laser to achieve correct, desired results. While any soft-tissue laser system might have achieved similar results, in these cases, a diode AMD Picasso laser was used. I chose this particular laser primarily because of what I consider to be its reasonable cost when compared with others, its ease of use and the disposable tips that make it easy to maintain sterility.

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Kurz & bündig

Anders als in medizinischen Disziplinen wie der Dermatologie werden Lasersysteme für die Zahnheilkunde hauptsächlich für Weichgewebeprozeduren verwendet. Mit ihnen lassen sich vor allem auch im zahnmedizinischen Bereich ästhetische Behandlungen durchführen. Im Artikel beschreibt der Autor zwei Fälle mit gingivaler Hyperplasie. Eine Hyperplasie des Epithelgewebes am Zahnfleisch unterbricht das glatte Erscheinungsbild des Parodontalgewebes und beeinträchtigt damit die Ästhetik. Zudem wird es für Patienten schwierig, eine gute Mundhygiene aufrechtzuerhalten, was zu einer Entzündung des Gewebes und einem zunehmenden Parodontitisrisiko führen kann.

Die Patientin aus Fall 1 wurde mit einem einzelnen lokalisierten hyperplastischen Bereich vorstellig. Im zweiten Fall wurde eine akut entzündete Hyperplasie festgestellt. Um das gewünschte ästhetische Ergebnis zu erzielen, wurden beide Patienten mit einem Weichteillaser behandelt. Für die Behandlung wurde der Diodenlaser Picasso von AMD LASERS verwendet. Dieser verfügt nach Meinung des Autors über eine hohe Benutzerfreundlichkeit, eine einfache Möglichkeit zur Erhaltung der Sterilität sowie ein vernünftiges Preis-Leistungs-Verhältnis. In beiden Fällen konnte die Hyperplasie erfolgreich behandelt werden, mit einem ästhetisch zufriedenstellenden Ergebnis für Behandler und Patient.



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