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Title:

**Removal of Gingival Melanin Pigmentation with
LiteTouch Er:YAG**

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Academy of Laser Dentistry

Advanced Proficiency Clinical Case Studies

Pre- treatment

A.Outline of case

1.Full clinical description

This case describes removal of melanin pigmentation for the aesthetic requirement. A 36 years old female chief complaint is the color of surrounding gingival tissue. Request of her was removal of pigmented soft tissue caused by smoking.

Figure 1 and 2 shows the preoperative view of the gingival tissue.

Medical history: The patient was in excellent health. She had no known allergies to any medications and was not taking any medication at the time. The patient has been smoking for 10 years.

Dental history: Last time she had received dental treatment was 4 years prior.



Figure 1: Middle to high lip line shows upper gingival melanin pigmentation



Figure 2: Intraoral examination

Pre-treatment perio charting: The periodontal pocket did not any problems as figure 3 shows it.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Upper Facial		212	212	211	211	212	111	111	111	111	112	212	212	211	211	
Upper Lingual		211	211	111	111	111	111	111	111	111	111	111	111	111	112	
Lower Lingual		211	211	212	212	111	111	111	111	111	111	211	112	112	212	
Lower Facial		212	212	211	211	111	111	111	111	111	111	111	211	212	212	
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Figure 3: Preoperative periodontal chart

Occlusion: This patient was a class I of the Angle classification.

TMJ: TMJ examination shows no abnormalities. The patient had 10mm lateral excursions and a 40mm maximum opening, both normal. She did not deviate on opening and reported no difficulties or sounds on opening or in lateral excursions.

2. Radiographic exam

Radiographs of the maxillary teeth showed no evidence of osseous or periapical pathologies (Figure 4). In X-rays of the bone horizontal and vertical absorption were not seen. The existence of the impacted tooth was not recognized. In addition, the radiographs confirmed the presence of fillings at teeth #8 and 9, with no evidence of caries.



Figure 4: Radiographic examination

3. Soft tissue status

No bleeding was observed upon probing. The depth of pocket measured by probing was within normal limits.

4. Hard tissue status, tooth vitality

There were no loose teeth. Cracks and cavities of the tooth were not seen.

5. Other tests

The lip line was medium to high.

B. Diagnosis

1. Provisional diagnosis

Upper front gingival melanin pigmentation caused by smoking.

2. Final diagnosis

Teeth #6 to 11 severe moderate gingival melanin pigmentation caused by smoking. While any treatment would be of an essentially cosmetic nature, it was considered that the melanin pigment in

the gingival tissue could be removed using an Er:YAG Laser.

3. Treatment plan outline

The planned treatment was removal of all the melanin pigmentation of the tissue on teeth #6 to #11, using an Er:YAG laser.

4. Indications and contraindications

a. Indications

Melanin pigmentation is located at the basal layer of the epithelium. The Er:YAG laser's indications are ablation and vaporization of soft tissue. The laser would allow ablation of the tissue, and minimal invasion of tissue generates less postoperative pain.

b. Contraindications

There were no contraindications for suggested treatment. However, the Er:YAG laser wavelength does not provide excellent hemostasis. The laser energy can easily interact with the tooth surface, so care must be taken to direct the radiation toward the soft tissue to avoid damage to the tooth.

5. Precautions

Benefits of using the Er:YAG laser wavelength would enable selective targeting of soft tissue. At the same time, it is appropriate to use minimal power and proper technique, along with rest intervals to allow thermal relaxation to minimize the risk of tissue damage. Good tissue appearance post-surgery would suggest predictable healing. After such a procedure, the patient should follow home care instructions to maximize healing and stability, and minimize potential complications.

During treatment, don't use the thing to reflect instruments

6. Treatment alternatives

Treatment alternatives would be to leave the pigmentation as is, use the electric scalpel or apply the phenol alcohol method of chemical removal.

7. Informed consent

The dentist and patient discussed advantages and disadvantages of laser treatment as well as alternative treatments prior to the treatment. The patient signed the consent form that discussed complications and proper care.

Treatment

A. Treatment objectives strategy

The patient hesitated about laughing because gingiva colored it. It was necessary to get rid of the inferiority complex of the patient. To improve the quality of life of the patient. The planned treatment was removal of all the melanin pigmentation using Er:YAG laser.

B. Laser operating parameters

The Laser used was the Er:YAG Laser(Lite Touch, Light INSTRUMENTS LTD, Israel),and the operating parameters were as follows:

- 1.Wavelength: 2,940 nm
- 2.delivery system: Direct Drive Delivery system
- 3.Beam diameter: sapphire tip Chisel laser tip(Figure 7)
- 4.Power: 2.4 watts
- 5.Pulse Rate: 30 Hz
- 6.Energy Level: 80 mJ
- 7.Water spray: On
- 8.Total time taken: 5 minutes

C. Treatment delivery sequence

The laser warning sign was posted before measures. All people present in the operating room wore protection goggles over their eyes. The procedure was performed with local anesthesia (2% lidocaine with 1/100,000 epinephrine 3.6ml). A test fire of the laser was performed to establish correct working and patency of light delivery. A safety area check (only required personnel present, safety warning signs posted, reflective surfaces minimized) was carried out. The patient and all personnel within the above-mentioned safety area were issued protective glasses. High-volume evacuation was used for tissue cooling and suction of removed tissue.

The water spray helped to rinse the tissue as ablation proceeded, and there was some bleeding from the underlying connective tissue. The laser tip was used in near-contact with the tissue. The laser was applied 45 degrees on the lesion. All the discolored gingival surfaces around teeth #6 to #11 were ablated with the Er:YAG laser. The immediate postoperative view is shown in Figure 5 and 6.



Figure 5: view during laser irradiation



Figure 6: Immediate postoperative view

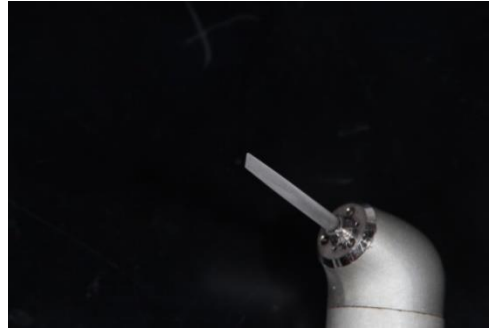


Figure 7: Chisel tip 1.3x17mm

D. Post-operative instructions

The patient was shown the results of the procedure and given an explanation indicating that the appearance was normal for soft tissue immediately after a laser procedure. The patient did not report pain or discomfort and most of the gingivae treated improved a few days later.

The patient was told that tissue healing would begin immediately and the discoloration should resolve within a few days. The patient was encouraged to keep the areas scrupulously clean to promote healing and instruction was given in the use of a very soft toothbrush for few days. If there were excessive discomfort with the brush, the patient could use a cotton swab. The patient was instructed to avoid very hot foods or drinks or spicy foods. If there were any concerns or problems, the patient can call to the office.

The patient was scheduled for one-week postoperative appointment.

E. Complications

Complications following soft tissue laser surgery can include pain, swelling, deformation, bleeding and infection. Additionally in this particular case there was the possibility that the melanin may not be removed. In this case, however, no such complications were encountered.

F. Prognosis

All of the melanin pigmentation was removed with minimal penetration into the tissue. There were no areas of carbonization and the bleeding was controlled. There was no irradiation on any of the tooth surfaces. The surgical prognosis was good.

G. Treatment records

Notation in the patient treatment record was included to describe the ablation of melanin pigmentation on the attached gingiva of teeth #6 to #11 using an Er:YAG laser with 200mJ, 30 Hz, Chisel tip near-contact with water spray for 5 minutes.

Follow up

A. Assessment of treatment outcome

The clinical view 1 week after treatment shows healthy gingival color and almost all the ablated area was covered with new epithelium, with no inflammation.

1. Post-treatment perio charting

The periodontal pocket did not have the problem as figure 8 showed it. The influence with the laser was not seen in the periodontal pocket. There was no bleeding on probing and no mobility on the teeth.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Upper Facial		211	211	111	111	111	111	111	111	111	111	111	111	111	112	
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	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

Figure 8: Periodontal charting at three-month

2. Specify treatment assessment intervals

The patient was asked to return at one-week, three month and six month intervals. (Figure 9,10)



Figure 9:
One-week
postoperative
view
Figure 10:
One-month
postoperative
view

B. Complications

The only complication was a postoperative pain. But this pain was just a little and it was only operated day. The patient was explained such complications in advance. Apart from that, there were no side effects or complications.

C. Long term results

Long-term results were expected to be good, with little expectancy of recurrence of pigmentation. The

patient's oral hygiene is excellent. The patient did continue smoking, but reduced the amount following our oral hygiene instruction.

D. Long term prognosis

The measures using the Er:YAG laser went very well. When this patient laughs, maxillary gingiva is exposed. Because the gingiva have returned to a natural color after this operation, the patient was very pleased.



11: Three-month close-up view of patient's smile

Figure



Figure 12: Three-month postoperative view



**of
view**



**Figure13:
Six-month
close-up view
Figure14:
Six-month
postoperative
patient's smile**