Laser Treatment of Oral Mucosa Tattoo

Mirjana Gojkov-Vukelic, Sanja Hadzic, Enes Pasic
Department for Oral Medicine and Periodontology, Faculty of Dentistry, Sarajevo, Bosnia and Herzegovina

1. INTRODUCTION

The pigmented lesions may be solitary, multiple or diffuse. The solitary pigmented lesions characterised by dark colour are: tattoos, ephelis (freckles) and the oral melanotic macule (1). The most common oral solitary pigmented lesion is the dental amalgam tattoo and it occurs in almost 0.4-0.9% of the US and 8% of the Swedish adult population (2, 3). It occurs as a result of colouring of the tissue by alien pigment which was administered intra or subepidermaly either intentionally or accidentally. The most common material used for the colouring of the oral mucosa is amalgam from amalgam fillings and metal particles from prosthetic restorations which are absorbed accidentally. The oral mucosa tattoos are most often found in the area of the marginal gingiva or the buccal mucosa.

The histological section presents brown, fine-granulated, punctuated reticular fibres notably around the blood vessel walls with a rare occurrence of larger pieces of black metal particles. There is a frequent presence of the mononuclear inflammatory infiltrates while findings of giant cells are not common (5, 6).

In the recent period the laser therapy has provided exceptional results in the removal of such alterations both on the skin and on the mucosa.

The laser beams can have primary (photochemical, photoelectric and photo-energetic) and secondary effects (stimulation of the cell metabolism and microcirculation) which result in treatment effects (analgesic, anti-inflammatory, antiedematous and bio-stimulant). Lasers are distinguished by the power of radiation emission into low and high energy lasers. The most common representatives of the low energy are the gas lasers (He-Ne) and the semiconductor (gallium arsenide-GaAs and gallium aluminium arsenide – GaAlAs) lasers. The low energy lasers are used in oral medicine and periodontology for their biological effects (activation of the enzyme substances, increase of neurotransmitters and increase of neuro-peptides), bioelectrical effects (nor-
malization of the cell membrane potential) and bio-energetic effects (stimulation of the energetic process through the formation of the ATP). The indirect effects stimulate microcirculation, cell tissue exchange which as a result stimulates the cell metabolism. This emanates with very precise treatment effects which are reflected as bio-stimulant, analgesic, anti-inflammatory and antiedematous (7). In our work, we used the diode laser (gallium aluminium arsenide – GaAlAs) which belongs into the category of low energy lasers (Figure 1).

2. CASE OVERVIEW
A 25-year old girl was administered for alterations in the colour of the gingiva in the area of the upper first premolar which posed an aesthetic issue for the patient. (Figures 2 and 3).

The patient’s medical history indicated that the dark colouring of the gingiva appeared three years ago shortly after the placement of the custom-cast post which was additionally treated by the dentist before cementing the crown. The patient’s wish is to replace the crown on that tooth but primarily to remove the pigmentation from the gingiva. A tattoo removal treatment with the low power diode laser (SmilePro980, Biolitec, Germany) was recommended. The patient received local anesthetics of 2% lidocaine with adrenaline. With the operational end of the laser and with the help of optical fibre cable, we managed to reach the area of the sulcus and to remove the tattoo in the pulsing mode (Pulse 3, On time 0,10s, Of time 0,10s, Fibre Range 300-600μ, Set Power 3.0W) (Figure 4).

After the intervention, the gingiva was whitish colour without visible signs of surface tissue damage (Figure 5).

The patient was recommended to keep the oral hygiene with the use of an ultra-soft tooth brush (Curaprox 5460) and to apply Gengigela (0.2% hyaluronic acid).

4 weeks after the treatment, the gingival colour is light pink and without the presence of the tattoo (Figure 7). No bleeding is registered upon sounding. The patient is satisfied with the aesthetic effects of the performed therapy.

Discussion
The advantage of the laser removal of oral mucosa tattoo is that it can be performed as an outpatient treatment without the use of a scalpel and the subsequent wound stitching. The procedure is simple with only minimum trauma to the surrounding tissue. The fractured pigment particles are phagocyted and removed by means of a transepidermal exudate (8).

Shan i Alster have conducted an amalgam tattoo removal treatment by using the Q-Switched Alexandrite (755nm) laser. They achieved satisfactory results after the third treatment (9). In our case, the tattoo resulted from metal particles which have penetrated into the epithelium during the processing of the custom-cast post and it was removed in a single patient visit. We deem that the number of necessary treatments for the removal of the tattoo depends on the density and the type of material from which the tattoo had arisen as well as the place in which it is located.
3. CONCLUSION
The diode laser can safely and efficiently remove the oral mucosa tattoo.

Conflict of interest: non declared.

REFERENCES