Successful Treatment of Congenital Oral Melanosis with a 1064/532-nm picosecond Nd:Yag Laser

Shahjahan Shareef, DO1; Douglas C. Wu M.D., Ph.D.
1Western University of Health Sciences/Chino Valley Medical Center; Cosmetic Laser Dermatology, San Diego, CA

CASE PRESENTATION

Chief Complaint: Brown spots on tongue.

History of Present Illness: Patient is a 22 year old Hispanic female with a lifetime history of hyperpigmentation to the bilateral edges of her tongue. Patient denied any changes in size, color, or morphology. Patient denied any associated symptoms such as itching, burning, pain, bleeding, or tingling. Patient did not try any other treatments in the past for the brown spots on her tongue.

Past Medical History: Patient denied any significant past medical history.

Medications: Patient denied any prescription medications, over-the-counter medications, vitamins, or herbal supplements.

Family History: Patient denied any significant family history. Patient specifically denied any family history of LEOPARD syndrome, Peutz-Jeghers syndrome, Addison’s disease, Albinism syndrome or any other hyperpigmentary disorders in the family.

Social History: Patient denied any alcohol, tobacco, illicit drug use, oxidizing mouthwashes or recent travel.

Surgical History: Patient denied any significant surgical history. Patient denied any dental procedures other than routine dental cleaning every 6 months.

Allergies: NKA, NKA

Physical Exam: Patient is a well-nourished, well-appearing female who presented in no acute distress. On examination, there was discreet macular hyperpigmentation to the bilateral edges of the tongue extending from tip to base (Figure 1). Focal areas of further hyperpigmentation involved scattered papillae throughout. No other oral pathology was noted. A total body cutaneous examination was unremarkable and revealed no other pigmented abnormalities.

Dermatohistopathology: Due to lifelong history of oral pigmentation and no change in lesion, a biopsy was deferred.

Patient Course/Treatment: After a thorough history and physical a clinical diagnosis of congenital oral melanosis was reached. The patient complained of cosmetic disfigurement and she therefore elected to proceed with treatment and removal. Two treatment sessions spaced 1 month apart were performed with the dual wavelength 1064/532 nm picosecond Nd:YAG laser utilizing a 4 mm spot size, 1.8 J/cm², 532 nm wavelength, 375 picosecond pulse duration, and 125 and 83 pulses delivered at a 1.2 Hz repetition rate for the first and second treatment sessions respectively. A mild, instant whitening phenomenon was noted over all treated hyperpigmented areas with the application of each laser pulse. Areas of the tongue that were not involved with hyperpigmentation did not whiten in response to laser exposure. No anesthesia was applied and the patient noted a 2/10 pain score. Treatment side effects included a mild erythema and burning sensation to the treated areas that persisted for a period of 5-8 days before complete spontaneous resolution. There was no incidence of peeling, scaling, erosion, ulceration, crusting, or scabbing. Severity percent clearance was noted after the first treatment session. Two weeks after the second treatment session, 100% resolution of the congenital oral hyperpigmentation was achieved (Figure 2).

DISCUSSION

Congenital oral hypermelanosis is a benign hyperpigmentation of the mucous membranes. There is an increase in focal melanin deposition without an increase in the number of melanocytes. It is characterized as a flat macule or patch of brown discoloration of an oral mucosal surface with uniform color and border. Due to congenital oral melanosis’ benign and asymptomatic nature, removal is characteristically sought for cosmetic reasons as the hyperpigmentation can be disfiguring. In this report we demonstrate the safety and efficacy of a 1064/532 nm picosecond neodymium:yttrium aluminum garnet (Nd:YAG) laser (PicoWay, Syneron-Candela) for the treatment of congenital oral hypermelanosis.

Although the 1064/532 nm picosecond laser was originally developed for tattoo removal, it has since exhibited the ability to treat a variety of benign pigmented conditions.1,2 However, this is the first report of successful treatment of congenital oral hypermelanosis with this laser modality. There are several other features that make this case study unique. First, the sensitive mucosal location of the lesion raised potential treatment safety and tolerability issues. Due to the extremely short pulse duration of the 532 nm picosecond laser, much lower fluences (compared with longer pulsed nanosecond lasers) could be applied to achieve treatment efficacy and this allowed for greater treatment safety, minimal downtime and treatment-related side effects, and minimal pain even in the absence of specific anesthetic measures. Additionally, the effectiveness of this laser after just 1-2 treatment sessions highlights the efficiency of the 532 nm wavelength and majority photoacoustic effect in ablating melanin and treating benign melanotic lesions.3,4

As has previously been shown, picosecond pulsed laser enables greater fragmentation of melanosomes into melanin particles that are eventually phagocytosed as compared with the previous generation of Q-switched technologies.5 The 532 nm picosecond laser’s high affinity for melanin coupled with its uniquely short pulse duration allows the use of lower fluences to remove melanosomes while causing less nonspecific photothermal damage.5,6

In summary, the 532 nm picosecond Nd:YAG laser seems to be a safe and effective treatment option for congenital oral hypermelanosis and is likely the treatment of choice for benign hyperpigmented lesions located on sensitive mucosal surfaces.

REFERENCES