Efficacy and Safety of 1,064 nm Q-switched Nd:YAG Laser Treatment for Removing Melanocytic Nevi

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Background: Until recently, the removal of melanocytic nevi has been performed with a CO2 laser or Er:YAG laser. These lasers have been useful for removing affected spots. However, enlargement of spots or some sequelae, including depressed or hypertrophic scars, could develop as unwanted results. The Q-switched Nd:YAG laser has been used to remove deep-seated melanocytes, such as Ota nevus or tattoos. However, there have been no previous experiments performed to test the efficacy and safety of this laser treatment for melanocytic nevi. Objective: The objective of this study was to investigate the efficacy and safety of the 1,064 nm Q-switched Nd:YAG laser for removing melanocytic nevi, including congenital nevomelanocytic and acquired nevomelanocytic nevi. Methods: Two thousand and sixty four Korean patients with small melanocytic nevi were treated with a Q-switched Nd:YAG laser from 2005 to 2009. High-resolution photographs were taken in identical lighting and positions before and after the six weeks of treatment to observe the procedural efficacy. Results: About 70% of the nevi treated using a 1,064 nm Q-switched Nd:YAG laser were completely removed after one session. The other 30% were completely treated within three sessions. The appearance of sequelae such as hollow scars noticeably decreased compared to the results seen in CO2 or Er:YAG laser treatments. Conclusion: Use of the 1,064 nm Q-switched Nd:YAG laser is a safe and effective treatment modality for melanocytic nevi. (Ann Dermatol 24(2) 162~167, 2012)

Keywords: Melanocytic nevi, Nevi, Q-switched Nd:YAG

INTRODUCTION

Melanocytic nevi are very common and usually harmless. The vast majority require no treatment. However, some people may request nevi removal for cosmetic reasons, especially when they are located on exposed areas of the body such as the face, arms, hands and legs. Since the treatment of melanocytic nevi is often done for cosmetic reasons, it must not only be effective but also safe, and is performed so that the appearance of adverse sequelae is minimized as much as possible.

Melanocytic nevi are traditionally removed by surgical excision, cryotherapy or electrocoagulation. More recently, CO2 and Er:YAG laser therapies have been used due to their simple application and ability to treat multiple lesions in a short time. This advantage maximizes the optimal cosmetic results.1,2 However, the CO2 laser may cause post-operative scarring and pigmenitary changes in the procedure site. Furthermore, the use of pigment-specific lasers, such as the Q-switched ruby laser and Q-switched alexandrite laser, may lead to an incomplete removal of nevus cells.

The Q-switched Nd:YAG laser emits a longer, near-infrared ray of 1,064 nm that is capable of penetrating into the deeper regions of the skin. Therefore, it is able to destroy deep-seated dermal melanocytes by selective photothermolysis3. For this reason, many dermatology clinics commonly use this laser to treat nevus of Ota and...
Hori, or to remove tattoos. Its effectiveness for dermal melanocytosis treatment has been demonstrated, but problems with bleeding have prevented this laser from being used for melanocytic nevi. Based on this information, we postulated that control of bleeding can facilitate removal of melanocytic nevi with the Q-switched Nd:YAG laser, since nevi have a histology similar to the nevus of Ota and Hori. This study investigated this hypothesis.

**MATERIALS AND METHODS**

**Patients**

After a full explanation of the procedure and potential risks, informed consent was obtained from 2,064 healthy Korean patients with clinically benign melanocytic nevi between 2005 and 2009. The lesions were evenly pigmented, flat or just palpable and did not exceed 10 mm in diameter. The color of the nevi varied from light...