

Case Report: Can Periungual Verrucae be Totally Recovered with Single Long Pulse 1064 nm Nd: YAG Laser Shot?

Mohammad I. Fatani^{1,*}, Abdulhadi Jfri², Abdulhakeem A. Banjar³,
Mazin Ghazi Bafaraj⁴, Ahmad M. Bin mahfoz⁵

¹Dermatology Consultant, Dermatology Department, Hera General Hospital, Makkah, Saudi Arabia

²Teaching assistant of Dermatology, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia

³Pediatrician, Hera General Hospital, Makkah, Saudi Arabia

⁴Dermatology Resident, Medical Skin Centre. Dusseldorf, Germany

⁵Dermatology Resident, AL-Hada Armed Forces Hospital, Taif, Saudi Arabia

Abstract Human papilloma viral infection, also known as Verrucas Vulgaris, is a very common skin disease that can cause warty lesions over different parts of the body. The hand Verruca particularly the periungual region is usually poorly responsive to the commonly applied cryotherapy. Though Nd: YAG laser's work mechanism is yet to be properly understood, it is found in the studies to be safe and effective for warts removal from hands and legs. We report a case of a 15-year-old girl presented to our dermatology clinic with periungual warty lesions of two months duration, who was treated with cryotherapy for four sessions with mild improvement. Therefore, we treated the largest lesion with single shot 1064 nm Nd:YAG laser. We limited the treatment to the largest lesion on her right middle finger as she complained of pain even after having local anesthesia. A few hours after the conclusion of the initial laser session, the lesion on the right middle finger started to disappear. Subsequently, all of the remaining lesions disappeared within two days. No remnant lesions, blisters, or scars are apparent. The treatment options for periungual warts should not be limited to cryotherapy, and the application of Nd-YAG laser is highly recommended especially for refractory cases.

Keywords Periungual warts, Verruca vulgaris, Human papillomavirus, Nd-YAG laser

1. Introduction

Infections from human papillomavirus spread to turn as the cause of the epidermal cutaneous warts. Though a large number of therapeutic options are available to cure cutaneous warts, most of them are not highly effective. Effective wart removal by using a long pulse 1064 nm Nd: YAG laser has been achieved before effectually.

Here we report a case where only single shot long pulse 1064 nm Nd:YAG laser was applied on the largest periungual wart present on the patient's hand, and was successfully sufficient for the disappearance of that treated lesion and even the other non-treated warts without any recurrence or disfiguring effects. To the best of our knowledge, this is the first reported case of periungual verrucae completely improved with only one shot of a Nd: YAG laser.

2. Case Report

A 15-years-old Middle Eastern girl with healthy medical and surgical histories was presented with two months complain of progressive asymptomatic skin lesions around the fingernails. The lesions began as a solitary mass on the right middle finger then spread to the other nails. Multiple verrucous papules clustered around all the nails of the right hand and the fingernails of the left thumb and left middle finger was found in her skin examination (Figure 1a, 1b). A clinical diagnosis of periungual warts was made, and treatment was initiated with multiple sessions of cryotherapy.

The patient was treated with cryotherapy for four sessions with a two-week interval, which resulted in mild improvement. Long pulse Nd: YAG laser was determined as the next step in her medical treatment. The parameters were: 3 mm spot size, fluence 160 J/cm², pulse width 30 ms, and frequency 1 Hz. Because the patient could not tolerate the pain despite the pre-laser application of EMLA cream and air cooling, only one shot was applied to her right middle finger

* Corresponding author:

m_fatani@yahoo.com (Mohammad I. Fatani)

Published online at <http://journal.sapub.org/ajdv>

Copyright © 2015 Scientific & Academic Publishing. All Rights Reserved

lesion. We decided not to continue the laser treatment, and the patient was sent home and advised to schedule a new appointment for another treatment trial.

The patient stated that the pain disappeared after half an hour of the laser treatment leaving mild erythema in the right middle nail. A few hours after the initial laser session, the

lesion on the right middle finger started to disappear. Subsequently, all of the remaining lesions disappeared within two days. No remnant lesions, blisters, or scars are apparent. The patient was seen again for a follow-up one year later and her hands were clear with no sign of recurrence (Figure 1c, 1d).

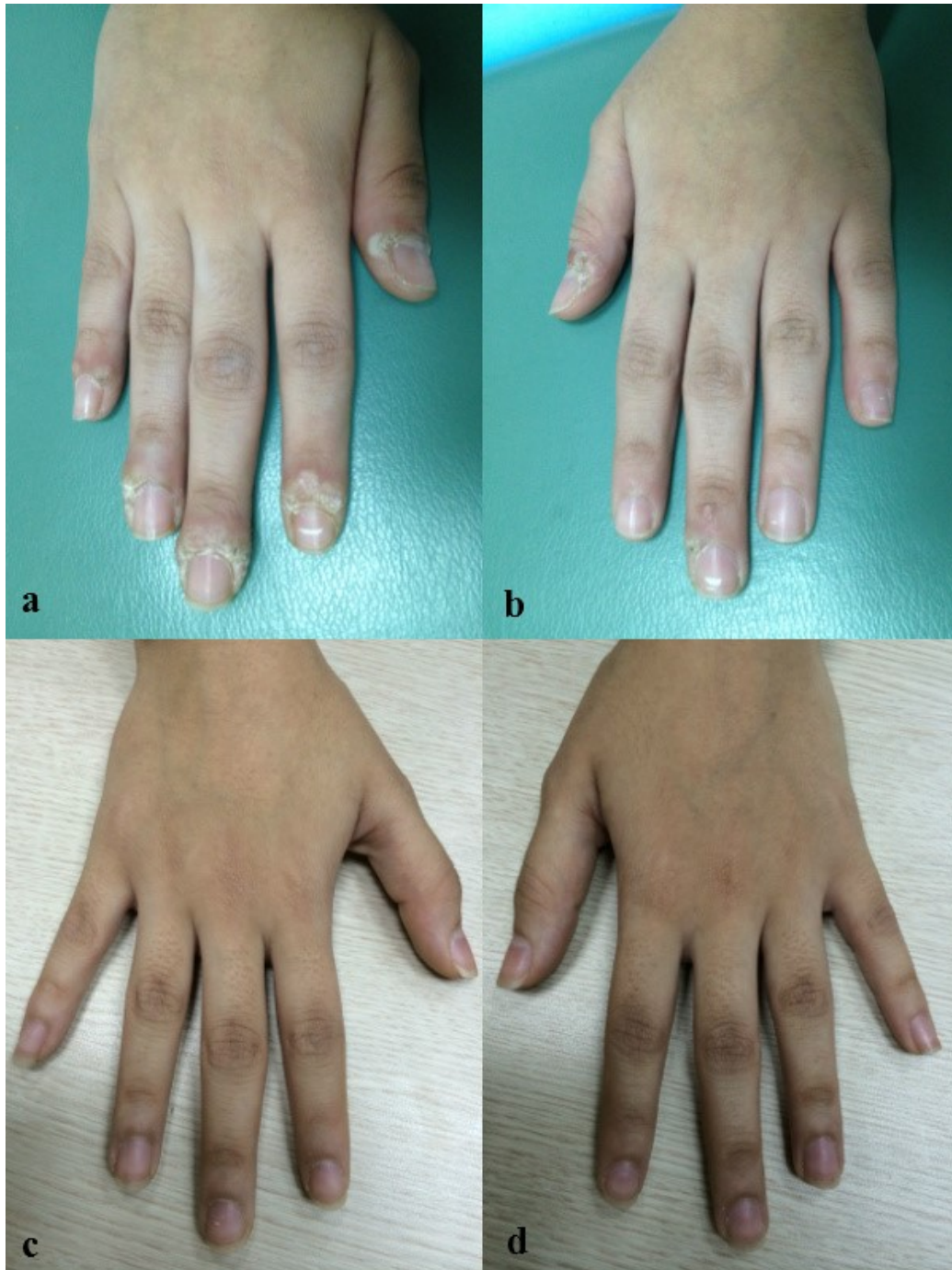


Figure 1. Thickened, fissured cauliflower-like verrucous papules clustered around all the fingernails of right hand (a), and around the fingernails of the thumb and middle finger of left hand (b). Both hands remained clear after one year follow up (c) & (d)

3. Discussion

Human papillomavirus infection causes benign cutaneous tumors that known as Verruca Vulgaris that is considered to be the most common dermatologic complain. Its incidence rate is 10% among kids and teens [1]. Hand and feet warts are showing poor treatment responsiveness and so-called refractory warts when they are resistant to current treatment modalities such as cryotherapy for more than six months [2]. A study said that of all warts 23% regress in 2, 30% in 3 and 65%-78% in 24 months respectively [3]. Factors like the type of viral, host's immunity state and duration influence the wart clearance rate [4, 5].

Mechanical destruction and patient's immune system adjustment with medications are two options in warts treatment while the widely practiced procedure involves cryotherapy or electrodesiccation or acid application to destroy the affected tissue [6].

As Hemoglobin's modest absorption peak ranges between 800 to 1100 nm; the guiding photothermal and photomechanical principle for laser treatment call for removing and destructing the wart tissues and its blood vessels. As such, 1064 Nd: YAG is useful in treating telangiectases [7]. While Nd: YAG laser's work mechanism is yet to be properly understood, it is found to be safe and effective for warts removal from hands and legs [2, 8, 9]. In a study, 72.6% of Verruca Vulgaris clearance rate is reported from the first treatment [9].

In addition to above, the destructive technique creates tissue blistering that eventually slough off leaving the dead tissues that make the immune system reacts to destroy the remnant lesions and prevents the wart's further growth [10].

In fact, this could explain how, in our patient, using the Nd-YAG laser to destroy the biggest warty lesion in size produced a lot of dead tissues that might have stimulated the patient's immune system to attack not only the remnants of the exposed lesion, but also the other warty lesions on the same and opposite hand.

4. Conclusions

From the above discussion, we can conclude that 1064 nm Nd: YAG wart removal is not only safe for the patient but

also effective. It also must be reported that the well tolerated application of the laser did not result in any adverse and side effect. Periungual warts can be refractory to classical treatment and a trial of Nd: YAG laser is encouraged.

REFERENCES

- [1] Robson KJ, Cunningham NM, Kruzan KL, *et al.* Pulsed-dye laser versus conventional therapy in the treatment of warts: a prospective randomized trial. *J Am Acad Dermatol* 2000; 43: 275-80.
- [2] Kimura U, Takeuchi K, Kinoshita A, *et al.* Long-pulsed 1064-nm neodymium: yttrium-aluminum-garnet laser treatment for refractory warts on hands and feet. *J Dermatol.* 2014 Mar; 41(3): 252-7.
- [3] Sterling JC, Hand field-Jones S, Hudson PM; British Association of Dermatologists. Guidelines for the management of cutaneous warts. *Br J Dermatol* 2001; 144: 4-11.
- [4] Leman JA, Benton EC. Verrucas. Guidelines for management. *Am J Clin Dermatol* 2000; 1: 143-149.
- [5] Clifton MM, Johnson SM, Roberson PK, *et al.* Immunotherapy for recalcitrant warts in children using intralesional mumps or Candida antigens. *Pediatr Dermatol* 2003; 20: 268-271.
- [6] Micali G, Dall'Oglio F, Nasca MR, *et al.* Management of cutaneous warts: an evidence-based approach. *American journal of clinical dermatology* 2004; 5(5):311-317.
- [7] Wiess RA, Wiess MA. Early clinical results with a multiple synchronized pulse 1064 NM laser for leg telangiectasias and reticular veins. *Dermatol Surg* 1999; 25: 399-402.
- [8] Katja Semprimoznik, Robin Sult, Masa Gorsic. CASE REPORT: Treatment of warts with 1064 nm Nd:YAG. *Journal of the laser and health academy.* 2012; 1: 1855-9921
- [9] Han TY, Lee JH, Lee CK, *et al.* Long-pulsed Nd:YAG laser treatment of warts: report on a series of 369 cases. *Journal of Korean medical science* 2009; 24(5):889-893.
- [10] Stulberg DL, Hutchinson AG. Molluscum Contagiosum and Warts. *Am Fam Physician.* 2003 Mar 15; 67(6): 1233-1240.