**Abstract**

Verruca vulgaris (common warts) are caused by HPV infection of the epithelial tissues of the skin and mucous membranes. They may be found anywhere on the skin, particularly on the dorsum of the hand, the fingers, and around the nails (perungual). Treatment options of verruca include: cryotherapy with liquid nitrogen, salicylic acid, duct tape, cantharidin, bleomycin, surgical ablation, curettage and desiccation, 5-Fluorouracil, Tretinoin, cidemline, imiquimod, interstitial immunotherapy, and laser treatment using pulsed dye laser, and CO2 laser. Lasers such as Nd:YAG and KTP 532nm were reported to be effective but there is less evidence for their use. We present a case of a 39-year-old female with a wart on her finger that was resistant to different therapies. However, after the use of four Nd:YAG 1064nm laser treatments, the wart was completely destroyed. This case illustrates and supports the effectiveness of using Nd:YAG 1064nm laser therapy for treatment of verruca vulgaris that do not respond to standard therapy. Early institution of this treatment option can help to prevent wart growth and spreading, and allow for early disease remission.

**Case Presentation**

A 39-year-old Caucasian female presents to a private dermatology practice with a 2mm, non-pruritic, perungual, verrucous papule on her right third finger. The lesion was first noticed to be a flesh-colored bump which grew in size over the past few months. A diagnosis of verruca vulgaris was made, and patient received multiple treatment sessions using liquid nitrogen for wart destruction. However, she reported no improvement at her follow-up visits and the wart remained to be of the same size. Subsequently, patient was prescribed topical treatments including Aldara 5% cream, Veregen 15% ointment, and Zyclara but they did not significantly help to decrease the size of the wart. At her tenth visit to our office, patient began to receive Nd:YAG 1064nm laser therapy for wart treatment at two weeks interval. After the completion of the fourth laser treatment, the wart was completely destroyed.

**HPI:** 39-year-old Caucasian female presents to the dermatology office c/o a non-itchy, painless bump on her finger that has been increasing in size for the past few months.

**PMH:**

- denies smoking
- denies illicit drug use

**ROS:**

- denies any systemic symptoms

**PE:** 2mm flesh-colored, firm, hyperkeratotic, verrucous papule with disruption of normal fingerprint lines and display of small black dots (frombosed capillaries) on right middle third finger close to the nail

Dr. Verruca Vulgaris (based upon clinical appearance)

**Management:**

- cryotherapy with liquid nitrogen, podophyllin, Aldara 5% cream Qd x8 wks, Veregen 15% ointment Tid x 4 wks, Zyclara 0.75% cream Qd x4 wks, 4 treatments with Nd:YAG 1064 nm laser (2mm spot, power 8J, 2 passes).

**Discussion**

Verruca vulgaris are caused by HPV infection (subtypes 1,2,4,7,9,18, 63), and occur mostly in children and young adults. They are usually asymtomatic, and are transmitted via skin-to-skin contact. Trauma and maceration may facilitate initial epithelial inoculation, and spreading may subsequently occur by autoinoculation. Common warts are often present as well-demarcated, rough, hard nodules or plaques with irregular surfaces. Diagnosis of verruca is based upon clinical appearance. Spontaneous remission of warts occurs in up to two-thirds of patients within two years; hence, observation is an option for all patients. However, recurrence of verruca is common, so it is better and easier to treat a wart when it is smaller in size than wait until it enlarges or multiple to initiate treatment. Treatment of verruca involves two approaches: destruction of wart and induction of local immune reaction with immunotherapy. Destructive methods are most commonly used as initial therapy and they include cryosurgery, electrocautery, curettage, excision, laser therapy. Immunotherapy is aimed at eliciting an immune response to HPV which may be achieved by applying topical irritant such as salicylic acid, cantharidin, trichloracetic acid, podophyllin resin, 5-Fluorouracil, or trichloroacetic acid over the wart. These compounds can also be used in combination or with a destructive method. Antiviral effect can be achieved with bleomycin and interferon α2b but they are reserved for recalcitrant warts. Imiquimod 5% cream may be used to induce skin locally to produce antiviral cytokines. Intralosomal immunotherapy with skin test antigens (ie: mumps, Candida, or Trichophyton antigens) and HPV vaccine have demonstrated success in treating warts. Lesions that have failed to respond to routine office modalities are often successfully treated with laser therapy such as carbon dioxide or pulsed dye laser. Nd:YAG 1064nm laser have also been reported to be successful in treating verruca, and has received FDA clearance for this indication. The Nd:YAG 1064nm laser treatment involves the delivery of laser light irradiation at wavelength 1064nm, which allows penetration into deeper and thicker tissue comparing to shorter wavelength lasers, and the laser used in this study does not contact the verruca. This laser is also used for treating vascular & pigmented lesions, hair and PFB removal, skin rejuvenation, onychomycosis and many other aesthetic and medical treatments. A minimum of one to two treatment sessions are needed, with sessions spaced between two to three weeks apart. Treatment sessions usually begin using a focused lens with a 2mm spot under the settings of 1.5ms pulse duration and energy mode of 8 or 9 (fluence of 255 J/cm² to 287 J/cm²). As in the case of our patient, a total of two passes over the wart were applied with each treatment session and patient tolerated the treatment very well. Upon the end of the fourth treatment session, the patient’s wart was completely destroyed. Based on the case that we have just presented, we have demonstrated the success of utilizing Nd:YAG 1064nm laser in treating verruca that had failed in responding to standard treatment. Dermatologists should consider using this laser therapy early in the course of treating resistant warts since it is well tolerated by patients, and it provides timely, significant results which help to bring disease remission.

**References**


**Table I.**

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<tr>
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<tr>
<td>Laser 532mm</td>
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**Figure 1. Nd:YAG 1064nm Laser**

**Figure 2. Before (left) and After (right) Laser Treatment**