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Clinical Bulletin

J. LAHA, Vol. 2018, No. 1; p. CB04.

Er:YAG Matrixectomy

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Parameters:

Laser source:	Er:YAG, 2940 nm
Pulse duration:	SP (300 μ s)
Energy:	900 mJ (28 J/cm ² at 2 mm spot)
Frequency:	6 Hz
Handpiece:	R11
Spotsize:	2 mm

Treatment procedure:

Onychocryptosis, commonly known as "ingrown nails" (unguis incarnatus), is a condition where the nail cuts into one or both sides of the nail bed, resulting in inflammation. It most commonly affects the toes. More advanced cases, which usually include infection (Fig. 1), are treated by surgically excising the ingrown portion of the nail down to its bony origin and thermally or chemically cauterizing the matrix, or 'root', to prevent recurrence. This surgery is called matrixectomy.

A matrixectomy procedure using Er:YAG laser on the big toe of the left foot of a 57-year-old male is presented here (Figs. 1-4). Local anesthetic (lidocaine) was injected at a pre-cooled site. First the hypergranulation at the lateral nail groove was removed using Er:YAG ablation with the above parameters. Avulsion of the lateral ingrown part of the nail plate on the affected side was also achieved with Er:YAG. Part of the ingrown nail plate was cut away with scissors. The nail matrix was destroyed by Er:YAG laser pulses.

Hemostasis can be achieved by using longer Er:YAG pulses, Nd:YAG, or as in the presented case, by electrocautery. The wound was closed by sterile strips without suturing. A mild compression bandage with sterile dressing was applied. The patient was advised about the correct way of cutting the toenail to prevent recurrence. In the particular case presented in Figs. 1-3, the patient suffered no side effects and no relapse in the 7 years after treatment.

Advantages of Er:YAG matrixectomy include minor traumatization of the nail bed, less postoperative swelling, suture-free surgery, and reduced postoperative pain.



Laser & Health
ACADEMY

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Infected ingrown toenail before treatment



2 days after matrixectomy



12 days after matrixectomy



7 years after matrixectomy