

Role of Er YAG laser in treatment of benign skin lesion our experience: Case report

Ravi Kumar Chittoria¹, Padmalakshmi Bharathi Mohan², Imran³, Shijina K⁴, Neljo Thomas^{5*}, Nishad K⁶

¹Professor, ²⁻⁶Senior Resident, Dept. of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry, India

Corresponding Author: Neljo Thomas

Email: nishadtmc@gmail.com

Abstract

Fibroma is benign skin disease which can be located at varying locations. Different methods are used for its excision and have varying success in its treatment. Recently we have come across the application of Er YAG laser for the management of fibroma and have used in our patient and found it to be useful

Keywords: Er YAG, Fibroma, Benign skin condition.

Introduction

Fibroma is benign growth mainly of the fibrous or connective tissue which occur due to uncontrolled growth of the cells mostly as a result of the injury or local irritation. It can occur at different age groups and can be symptomatic causing pain, itchy to touch, or have a feeling of lump or heaviness. The patient can also have a cosmetic complaint of a tissue overgrowth over the face or exposed areas. There are different methods of treatment of the condition like cryotherapy, pressure therapy, steroid injections, excision of the lesion. However there can be recurrence of the lesion and no treatment is complete.

Materials and Methods

This study was conducted in the department of Plastic Surgery at tertiary care center after getting the departmental ethical committee approval. Informed written consent was taken from the patient. The details of the patient in study are as follows: 56 yr gentle man with c/o raised lesion over the malar region on the right side which was non tender and without any features of inflammation reported to our OPD (Fig. 1), he was evaluated and found to have fibroma of the right lower eyelid. The options for the treatment would be surgical excision and primary suturing which can yield a scar or to give him laser therapy. The patient was given Er YAG laser for the excision of the lesion. The site was pre cooled with cold air and was given Er YAG laser with twain 2940 nm with fluence of 10 j/cm² and pulse width of 0.3 ms using a spot size of 2mm. (Fig. 2). The treatment was given in a single sitting.



Fig. 1: Benign lesion over the lower eyelid right side.



Fig. 2: Er YAG laser applied to the patient



Fig. 3: Post-operative status of the wound with the lesion excised in toto

Results

The lesion was excised in toto and was sent for HPE. There was minimal bleeding over the excision area and patient did not report any pain and was satisfied. The HPE report came out as benign fibroma.

Discussion

The Er:YAG laser emits an infrared light with the wavelength of 2,940 nm that is strongly absorbed by tissue water. Its small penetration depth combined with the high power of the short light pulse enables the Er:YAG laser to penetrate and cut soft tissue with surgical precision, similar to that of conventional scalpels. The penetration depth of the Er:YAG laser beam is limited to a few micrometers upto the upper layer of tissue. Er:YAG laser wounds heal quickly compared to scalpel wounds,¹ and bleeding is minimal.^{2,3} The Er:YAG laser is easy to use, enables high accuracy of the skin ablation on a layer-by-layer basis, as well as the depth of the ablation per laser pulse is controllable without risk of tissue charring.

Er:YAG laser has a wavelength of 2.94 mm, which has an absorption coefficient in water 16 times greater than that of the CO₂ laser. This property makes it an ideal for tissue ablation. Er:YAG laser removes a thin layer of skin with each pass and the depth of ablation can be controlled by altering fluence. Er:YAG laser has been used for conditions like resurfacing of wrinkle and acne scars.⁴⁻⁸ Epidermal lesions can be removed without causing damage to the dermis, with minimal scarring. Er:YAG laser can be used to ablate or remove many benign, pre-malignant and superficial malignant cutaneous lesions. It can be used to remove or treat seborrheic keratosis, actinic keratosis, lentigines, epidermal nevus, benign nevi, xanthelasma, syringomas, sebaceous hyperplasia, warts, melasma, milia, acrochordons, dermatosis papulosa nigra, hypertrophic scars, rhinophyma, superficial basal cell carcinoma, squamous cell carcinoma in situ (Bowen's Disease), etc

The Er YAG excision of the skin lesion allowed for excision of the lesion with minimal bleeding and decreased scar formation. The procedure was done in a government hospital and so there was no cost of treatment for the patient.

Conclusion

Er YAG laser has been found to be useful in the removal of benign skin lesion and without any pain or scar formation. The patient was kept on close follow up to look for any

recurrences. However it needs large scale multicentric randomized controlled trial to be brought into practice

Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

Source of Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Aretz HT, Parham CW, Peretti G, Setzer S, Shapshay SM. Comparison of healing of skin lesions induced by Erbium-YAG laser versus scalpel. *Lasers Surg Med.* 1989;1:34.
2. Kaufmann R, Hibst R. Pulsed 2.94 mm Erbium-YAG laser skin ablation, experimental results and first clinical application. *Clin Exper Dermatol.* 1990;15:389-93.
3. Hibst R, Kaufmann R. Fundamentals of pulsed UV and mid-infrared laser skin ablation. In: Steiner R, Kaufmann R, Landthaler M, Braun-Falco O, eds. "Lasers in Dermatology." Heidelberg: Springer Verlag 1991:102-13.
4. Vedlin B. T. Kaufman R, Hibst R. Pulsed erbium:YAG laser ablation in cutaneous surgery. *Lasers Surg Med.* 1996;19:324-30.
5. Beier C, Kaufman R. Efficacy of erbium:YAG laser ablation in Darier Disease and Hailey-Hailey Disease. *Arch Dermatol.* 1999; 135: 423-7.
6. Jacob CI, Dover JS. Birt-Hogg Dube syndrome: Treatment of cutaneous manifestations with laser skin resurfacing. *Arch Dermatol.* 2001;45:98-9.
7. Alora MB, Arndt KA. Treatment of Cafe´-au-lait macule with the erbium:YAG laser. *Arch Dermatol.* 2001;45:566-8.
8. Ammirati CT, Giancola JM, Hruza GJ. Adult-onset facial colloid milium successfully treated with the long-pulsed Er:YAG laser. *Dermatol Surg.* 2002;28:215-9.

How to cite: Chittoria RK, Mohan PB, Imran, Shijina K, Thomas N, Nishad K. Role of Er YAG laser in treatment of benign skin lesion our experience: Case report. *IP Int J Aesthet Health Rejuvenation* 2021;4(2):44-5.