Comparison of carbon dioxide laser and electrosurgery in the treatment of rhinophyma*

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SUMMARY

Cosmetic results of rhinophymas treated with carbon dioxide laser or electrosurgery were compared in six patients 2–5 years after surgery. Although the results were comparably good the use of the carbon dioxide laser proved to be more time-consuming and less convenient. Scar formation was observed in both patient groups equally and was related to the depth of tissue removal, independent of the instrument used.

INTRODUCTION

Rhinophyma is a slowly progressive disease of the nose characterized by a chronic inflammatory process with gross hypertrophy of the subcutaneous and sebaceous tissue. The term "rhinophyma" was first used by Hebra in 1845. The therapy of choice for this disease is definitely surgical, preferably by decortication. Decortication can be performed traditionally by scalpel, electrocautery (Linehan et al., 1970) and, in recent years, by carbon dioxide laser (Greenbaum et al., 1988). Laser treatment is said to provide better cosmetic results (Haas et al., 1990). The purpose of the following clinical study was to compare the long-term results of rhinophyma surgery by electrocautery and carbon dioxide laser.

MATERIAL AND METHODS

Six male patients, aged 45–78 years, underwent the treatment under general anaesthesia. Three patients were treated with carbon dioxide laser with handpiece (Heracure LS 500; Heraeus, Hanau) with 15- to 30-W output, depending on skin thickness, 0.1-mm beam and continuous discharge. The area of the nasal skin to be resected was firstly incised with the laser beam perpendicular to the surface of the skin. This was followed by excision beginning laterally on each nasal ala by holding the laser handpiece parallel to the skin surface and progressing slowly to the midline. The encountered larger arteries were electrocauterized. The final sculpturing was done by focal vapori-Zation with perpendicular laser beam.

The other three patients were treated with monopolar electrosurgery using the electrocutting knife (Erbotom T 400 C; Erbe) and power setting of 7-9. Thin skin layers were repeatedly removed starting at the ala and proceeding

to the midline until the final result was achieved. After completion of both types of surgery the wound was covered with a thin layer of fibrin glue (Tissucol[®]; Immuno, Heidelberg) and left uncovered as proposed by Staindl (1981). Post-operative cleansing of the nose was done with hydrogen peroxide. The patients were followed up for at least two years post-operatively up to a maximum of five years for two patients.

RESULTS

Post-operative discomfort or pain was minimal in all patients. The wound healing was uncomplicated in all cases and completed after about six weeks. Most patients had marked post-operative crusting and exudation that resolved after one week. All patients were satisfied with the cosmetic appearance and considered the surgery as successful. One patient had difficulty in nasal breathing that improved after surgery. The time required for surgery was in the laser group twice as long as in the electrosurgery group.

Unpleasant scar formation was observed in four out of six patients, irrespective of the type of surgery used (Figures 1 and 2). The predilection sites for scarring were the nasal ala and the supra-tip area. Hypertrophic scarring was not observed.

DISCUSSION

An important disadvantage with the traditional sculpturing technique using the scalpel or razor blade was abundant bleeding that made the precise tissue removal difficult. To a large extent this was improved by the electroscalpel. Nevertheless, the zone of thermally-induced tissue destruction bears the risk of unwanted scarring and poor

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Figures 1A-C. Pre-operative photograph demonstrating bulbous deformity of the nasal tip.



Figure 1D-F. Same patient five years after carbon dioxide laser surgery.

cosmetic results. On the other hand, the overzealous removal of sebaceous tissue will consistently result in scarring and poor results too (Clark et al., 1990).

Removal of tissue below the depths of the pilosebaceous apparatus will result in an unnaturally smooth, atrophic scar, rather than a normal porous nose. The areas at most risk are the thin nasal ala and supra-tip area. Scarring at this regions produces deformities of the nasal tip that are difficult to correct later. On the other hand, the thermal effect of laser is extremely limited, thereby reducing the risk of scarring by thermal injury. The sculpturing of the nasal shape, however, proved in our hands to be somewhat difficult and more timeconsuming. Problems sometimes arose with staying in the same cleavage plane throughout the whole nasal contour, resulting in too deep a decortication at some areas. Greenbaum et al. (1988) have compared the effectiveness of carbon dioxide laser and electrosurgery by treating one half of the nose by laser and the other by electrosurgery in the same patient. They conclude that the wound healing, patient acceptance and final result are quite comparable for both and that the carbon dioxide laser may have insignificantly less risk of inducing scarring than electrosurgery. Comparing the cosmetic results in our both patient groups, we feel that they are equally good and without preference to any of the both surgical modalities. The carbon dioxide laser treatment is more time-consuming and less convenient, and compared with the low cost and high availability of electrosurgery units offers no distinct advantage (Table 1).

Our current technique includes subtotal skin excision

Treatment of rhinophyma





Figure 2D-F. Post-operative result, two years after electrosurgery.

using the electrocutting knife and final sculpturing with razor blade. The wound is covered with a thin layer of fibrin glue and left without dressing.

Table 1.	Carbon-dioxide	laser versus	electrosurgery.
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	CO ₂ laser	electrosurgery
surgery time	long	short
bleeding	additionally bipolar coagulation	direct coagulation
sculpturing	good	good
thermal	controlled	partially
penetration		controlled
healing	about 6 weeks	about 6 weeks

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