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Excision of rhinophyma with a laser scanner handpiece - A modified technique*

Charalambos E. Skoulakis[1], Chariton E. Papadakis[2], Dimitrios G. Papadakis[2], John G. Bizakis[2], Dionysios E. Kyrmizakis[2], Emmanuel S. Helidonis[2]

[1] Department of Otolaryngology, University of Thessaly School of Medicine, Larissa, Greece
[2] Department of Otolaryngology, University of Crete School of Medicine, Crete, Greece

SUMMARY

Rhinophyma is a slowly progressive, benign dermatological disorder of the tip of the nose. The most widely accepted theory is that rhinophyma is the end stage result of chronic acne rosacea. The primary reason for excision of rhinophyma is cosmetic deformity. However, nasal obstruction may present, as rhinophyma may obstruct nasal vestibules.

Surgery is the treatment of choice for rhinophyma. Medical therapy has not given satisfactory results. The surgical treatment modalities are divided into two main groups. The first is complete excision, with primary closure for small lesions, or skin grafting for large lesions. The second group includes incomplete excision followed by re-epithelialization from the remaining glandular epithelium. The carbon dioxide (CO_2) laser has been advocated for excision of rhinophyma. Newer instrumentation, such as Swiftlase and SurgiTouch (ESC Sharplan) or Ultrapulse (Coherent) is more effective in vaporization and carbonization resulting in better hemostasis (Ries and Speyer, 1996).

In this report, 7 patients with rhinophyma treated with the Swiftlase are reviewed. The surgical technique, the complications and the follow-up are discussed.

Key words: rhinophyma, cosmetic deformity, nasal obstruction, CO_2 laser, Swiftlase

INTRODUCTION

Rhinophyma is a slowly progressive, benign dermatological disorder of the tip of the nose. The lesion presents as an erythematous, lobulated nasal tip with seborrheic discharge and telangiectasias, primarily involving the lower two thirds of the nose (Ali and Streitmann, 1997).

Surgery is the treatment of choice for rhinophyma. Medical therapy has not given satisfactory results. In very early cases, isotretinoin may be effective due to its ability to shrink sebaceous glands (Goldstein et al., 1982). Orally administered antibiotics such as tetracycline may prove beneficial, particularly when pustules are prominent (Roenigk, 1987). The surgical treatment modalities are divided into two main groups (Har-El et al., 1993). The first is complete excision, with primary closure for small lesions, or skin grafting for large lesions. The second group includes incomplete excision followed by re-epithelialization from the remaining glandular epithelium. Cryosurgery, electrodesiccation, dermabrasion, curettage, hot knife, and excision followed by closure with local flaps have all been used for excision (Gjuric and Rettinger, 1993). Regardless of the modality chosen, all have associated complications, not the least of which includes poor cosmetic results (Amedee and Routman, 1987). The carbon dioxide (CO_2) laser has been advocated for excision of rhinophyma (Wenig and Weingarten, 1993; Simo and Sharma, 1996).

Newer instrumentation, such as Swiftlase and SurgiTouch (ESC Sharplan) or Ultrapulse (Coherent) are more effective in vaporization and carbonization resulting in better hemostasis. The use of Swiftlase results in a more uniform distribution of the radiation, achieving a homogenous scan of focused beam over 3-4 mm cycle in 100 msec, smaller depth of penetration, less carbonization and necrosis of the adjacent tissues and less pronounced scar formation. This is achieved with a set of two mirrors, which rotate the laser beam delivered through the Swiftlase apparatus with a high speed. Thus, as the laser is sweeping the tissue, each part of the whole area is intermittently exposed to radiation for 1/10 of the exposure time, having the opportunity to "rest" for the rest 9/10 (Papadakis et al., 1999). In this manner ablation is promoted and carbonization is reduced.

In this report, 7 patients with rhinophyma treated with the Swiftlase are reviewed. The surgical technique, the complications and the follow-up are discussed.

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MATERIALS AND METHODS

Surgical technique

The rhinophyma excision procedure is carried out in all subjects in the operating room setting under local anesthesia (Figure 1). The patient is placed in a Trendelenburg position with a 10-15° tilt of the head and chest. A 1% lidocaine with 1:100,000 epinephrine solution is used to block both infraorbital nerves, the infratrochlear and external branch of the nasal ciliary nerves, and branches of anterior ethmoid. The eyes are covered with moistened eye pads, and the entire face is draped with wet towels, leaving only the nasal pyramid exposed.

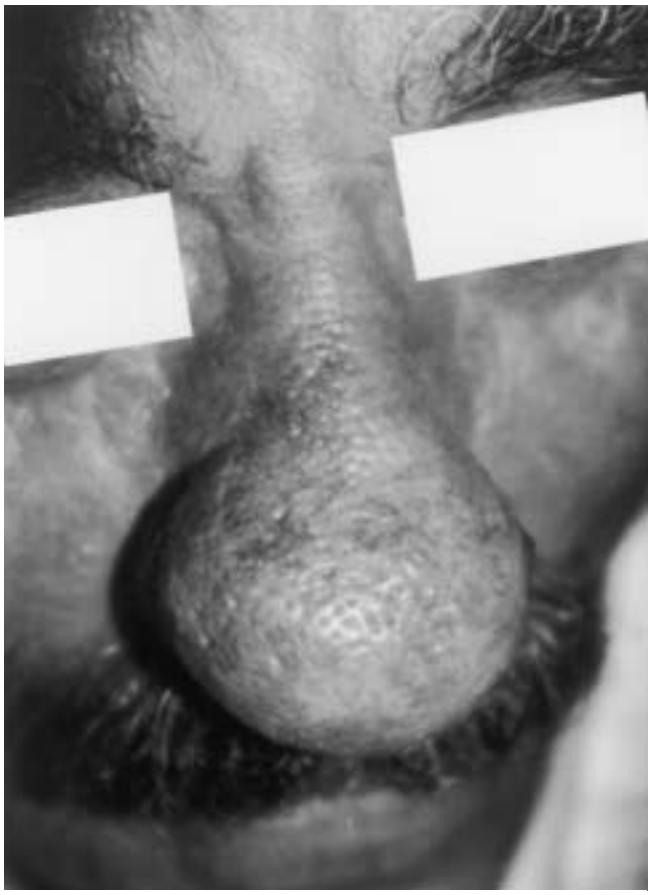

Figure 1. Preoperative presence of rhinophyma.

The CO_2 laser (ESC Sharplan 1040, Yokneam, Israel) in combination with the Swiftlase apparatus is used in all cases. The laser power is adjusted on a continuous mode of 18-20W with a spot size of 3 mm. The nose is divided in two sides by an imaginary line connecting the nasion with the nasal tip. The rhinophyma is completely removed from the one side (Figure 2), and then the procedure is repeated from the other side (Figure 3). The resection of rhinophyma separately in both sides of the nose helps the surgeon in determining the depth of excision more precisely, as the surgeon uses the depth of the first side as a guide when doing the second side. The skin is vaporized in several layers, depending on how much needed to be removed. At least one pass with the laser is performed over all hypertrophic tissue, and then several more passes may be necessary to "sculpt" the nose. The surgeon inserts his finger in the nares to stabilize the nose and to feel the thickness of the remaining tissue and nasal cartilage. Digitally expressing sebum is a useful technique to determine the depth of ablation. When no further sebum can be expressed, then the laser ablation should cease (Har-El et al., 1993). Vaporization can be continued as long as the sebaceous pores are visualized in this field or characteristic crackling sounds are made by the vaporization of the sebaceous material (Ali and Streitmann, 1997). Another test to determine the depth of vaporization is to squeeze the nasal skin gently. If sebaceous material is extruded, the glands are still present (El-Azhary et al., 1991). Once vaporization has extended deeper than the appendages, re-epithelialization becomes prolonged and sebaceous pores do not reform (Roenigk, 1987). Hemostasis is excellent in all cases, as CO_2 laser with the Swiftlase apparatus provides a bloodless field. Furthermore, the absence of charred carbonaceous debris results in better visualization and time sparing. The average operating time for this technique is less than 10 minutes. The wound is covered with xeroform gauze and the procedure is terminated.

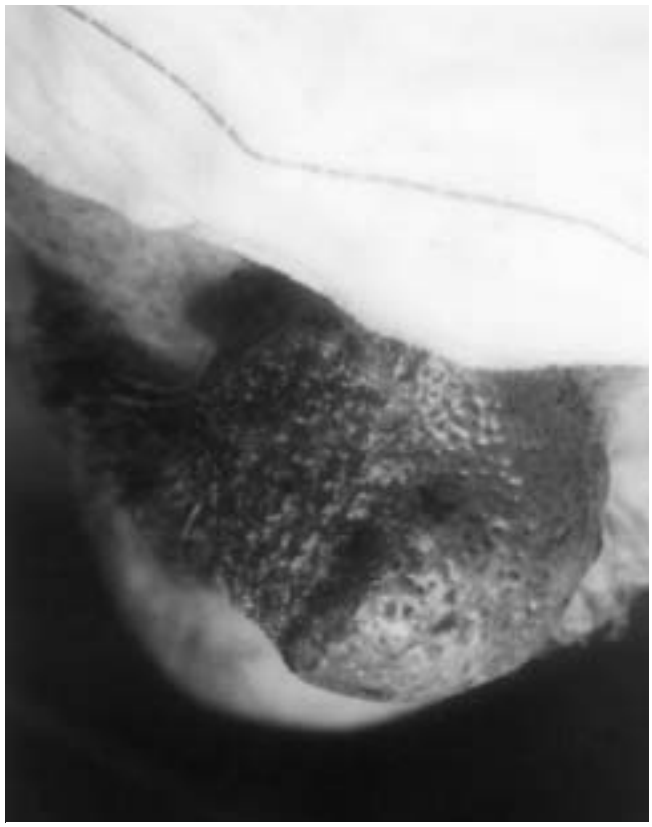

Figure 2. Resection of rhinophyma from the one side.

Postoperative care involves application of bacitracin ointment to the gauze every 8 hours. On the 3rd postoperative day, the gauze is removed and application of bacitracin to the nose is continued. The patient is followed up on a weekly basis until re-epithelialization is complete during the first 4-6 postoperative weeks (Figure 4), and bacitracin is then discontinued. Re-

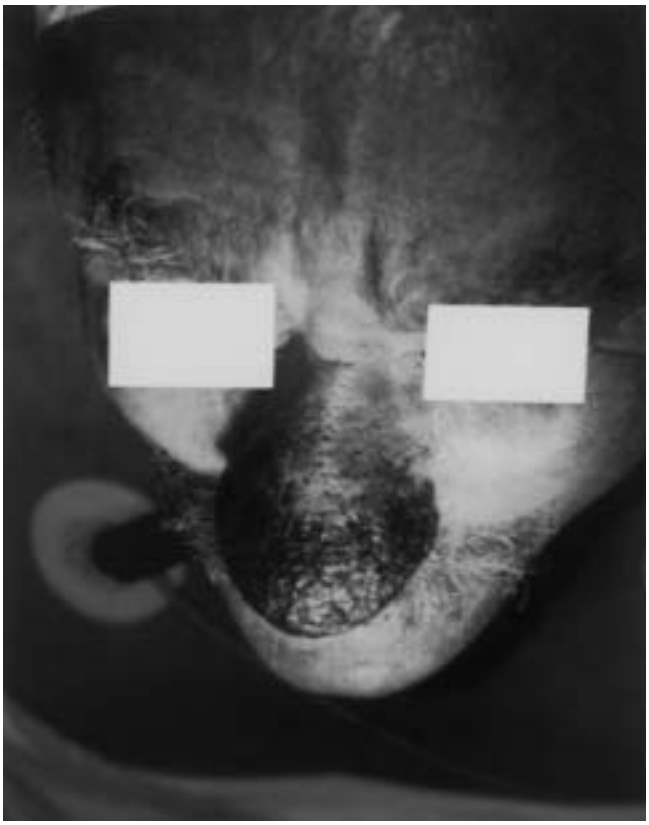

Figure 3. Complete resection of rhinophyma.

Figure 4. Postoperative results.

epithelialization is evaluated by clinical observation, and it is considered to be complete when edema and discoloration of the wound have been disappeared and normal tissue appearance has been reestablished. The patient is instructed to avoid prolonged sun exposure and to protect the nose with suncream during times of exposure until re-epithelialization of the wound is completed.

RESULTS

A total of 7 patients with rhinophyma, including 5 men and 2 women, who ranged in age from 58 to 75 years were treated using CO_2 laser in combination with the Swiftlase apparatus the last 3 years. The follow-up period was 6 to 35 months. Satisfactory results were present in all patients (Table 1). An excellent result was defined as a normal nasal contour without clinical scarring (Clark and Hanke, 1990). A satisfactory or good result was an acceptable nasal contour with some scar formation. A poor result was defined as an abnormal nasal contour with significant scar formation. Re-epithelialization of the wound was completed during the first 4-6 postoperative weeks. None serious complication occurred. Mild postoperative facial edema of the middle third developed in all patients. Furthermore, 2 patients had trivial postoperative bleeding the 2nd and the 7th postoperative day respectively, which needed no further management, in contrast to other techniques who have significant intraoperative bleeding asking for immediate management.

Table 1. Follow-up of the 7 cases.

Case	Sex	Age (yr)	Follow up (Weeks)	Re-epithelialization of wound (Weeks)	Complications
1	M	60	35	6	-
2	F	58	34	5	-
3	M	65	34	5	Bleeding 2^{nd} postop. day
4	M	68	26	4	-
5	M	63	22	5	-
6	F	75	14	4	Bleeding 7^{th} postop day
7	M	71	8	6	-

DISCUSSION

Greek and Arabic physicians recorded rhinophyma as early as 2000 BC (Stucker et al., 1993), however Hebra in 1845 is credited with the initial description of this clinical entity (Odu and Odou, 1961). The word rhinophyma derived from the Greek term for nose (rhis) and from phyma meaning growth (Roenigk, 1987). Surgical treatment has been the primary approach in patients with rhinophyma. Initially, surgical treatment consisted of excision and grafting (full-thickness or split-thickness skin graft). This technique was abandoned due to the different skin color resulting in cosmetic deformity (Roenigk, 1987).

Histologically, rhinophyma is characterized by hypertrophy of the sebaceous glands, dilated ducts with inspissated debris, connective tissue and blood vessels, leading to an enlarged, erythematous nasal tip with comedones (Ali et al., 1989). Although the cause is unknown excessive androgenic hormone stimulation, a saprophytic parasite Demodex folliculorum, abuse of alcohol, caffeine, spicy foods, and other vasoactive influences, such as climate have been implicated in the pathogenesis of rhinophyma (Roenigk, 1987). It generally affects middle-aged or elderly white men. The most widely accepted theory is that rhinophyma is the end stage result of chronic acne rosacea (Ali and Streitmann, 1997).

The primary reason for excision of rhinophyma is cosmetic deformity. However, nasal obstruction may present, as rhinophyma may obstruct nasal vestibules (Amedee and Routman, 1987). Basal cell carcinoma has been reported in 3% to 10% of patients (Wenig and Weingarten, 1993). Squamous cell carcinoma in long-standing rhinophyma (Broadbent and Cort, 1977) and sebaceous carcinoma (Motley et al., 1991) have also been noted in the biopsy specimens.

The use of Silktouch for the management of rhinophyma has been reported from Ullman and Peled (1996), while the use of Swiftlase for the management of rhinophyma has not been reported so far in the English literature. The Swiftlase has also been used for tonsillotomy, inferior turbinoplasty and in gynecological surgery (Papadakis et al, 1999). This is our first report using CO_2 laser in combination with the Swiftlase apparatus for the management of rhinophyma. Our report does not compare the Swiftlase results to other techniques.

Previous reports have compared CO_2 laser versus electrosurgery in the treatment of rhinophyma (Greenbaum et al., 1988; Gjuric and Rettinger, 1993), while Har-El et al. (1993) compared laser versus sharp blade excision of rhinophyma. A review of the advantages and disadvantages of various excisional techniques for the treatment of rhinophyma has recently been published (Redett et al., 2001). According to their results the use of CO_2 laser offers the advantage of excellent intraoperative hemostasis for better viewing of the surgical field, precise control of the depth and extent of vaporization, presents no need for skin grafting, causes less pain, requires easier postoperative care and yields better cosmetic results. Laser is safer in preserving the glandular epithelium, as tissue destruction appears to be 0.5 mm deeper than the actual visible surgical field as judged by histological study. In other techniques, for example electrosurgery there is a greater depth of tissue destruction, approaching 1.0 mm (Greenbaum et al., 1988). Furthermore, CO_2 laser procedures are easily performed on an outpatient basis with use of local anesthesia (El-Azhary et al., 1991). The electrosurgery is faster, more convenient, and less expensive than the CO_2 laser (Greenbaum et al., 1988). Conventional scalpel does not result in adjacent tissue injury (Har-El et al., 1993) and argon laser causes no bleeding and minimal trauma to underlying tissue (Stucker et al., 1993).

Complications have been reported with laser excision as a result of the removal of excess tissue, which led to scar contracture and exposed cartilage, requiring further procedures for adequate repair (Amedee and Routman, 1987). A 1-cm margin of tissue around the nares must be preserved to prevent scar contraction and resultant alar notching. Also, in case of excess depth of resection over the thin skin of the ala, nasocutaneous fistulae or damage to the lateral crura can occur (Ali and Streitmann, 1997). The presence of dilated sebaceous follicles is a common complication (El-Azhary et al., 1991). Bleeding may also occur the first postoperative days.

The surgical technique described above provides accurate and controlled removal of the excess tissue on the nose with excellent cosmetic results and relatively rapid healing (about 5 weeks), while decreasing the likelihood of complications experienced with previous techniques.

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Charalambos E. Skoulakis, MD
Dimitriados 287
Volos 38222
GREECE

Tel: +30-4210-36112
Fax: +30-410-611097
E-mail: skulakis@hotmail.com