

TREATMENT OPTIONS FOR MILD TO MODERATE RHINOPHYMA

**Joseph Niamtu reviews the diagnosis and treatment
of rhinophyma in cosmetic surgery, techniques of which have
proven safe and effective**



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ABSTRACT

Rhinophyma is an end-stage disease process of rosacea. These patients will usually present to dermatologic and cosmetic surgery offices for treatment.

Materials and methods: A review is presented of the pathophysiology and treatment of rhinophyma in a cosmetic surgery practice.

Results: Rhinophyma can be successfully treated by surgeons already familiar with common skin resurfacing and ablation modalities.

Conclusions: Rhinophyma represents hyperplastic tissue growth from the late stages of rosacea and causes social and functional problems for patients. Although it can become extremely disfiguring, treatment of mild-to-moderate cases is safe and predictable using common resurfacing modalities, such as CO₂ laser and radiosurgery.

THE TERM 'RHINOPHYMA' IS DERIVED from the Greek rhis ('nose') and phyma ('growth'). Rhinophyma is a pathologic process characterised by enlarged pores and thickening of the fibrous tissue of the nose. It is one of the end processes of severe rosacea and can be a debilitating, functional and psychosocial problem for patients. The most severe cases can affect breathing and even vision. Excessive alcohol consumption does not cause the disease, but can aggravate the condition and process—as it can with all phases of rosacea. Rhinophyma is a slowly progressive condition that worsens, with hypertrophy of the sebaceous glands. It manifests as single or multiple pink, bulbous, lobulated masses of the nasal tissue, especially on the dorsum and tip, may be associated with advanced telangiectasia, and may be pustular in advanced cases.

Rosacea is classified as types 1–4¹:

- **Type 1** is erythematotelangiectatic rosacea, which presents with flushing and telangiectasia, and is usually seen as the primary state in younger patients
- **Type 2** is papulopustular rosacea, and appears as bumps (papules) and pimples (pustules) on the skin
- **Type 3** is phymatous rosacea, with enlargement of the nose and thickening of the skin owing to bump-like lesions
- **Type 4** is ocular rosacea with burning, redness, irritation and watering of the eyes.

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KEYWORDS

rhinophyma, rosacea, surgical treatment, cutaneous nasal surgery





Figure 1 (A) The Ellman 4.0 MHz radiowave generator (B) with specialised rhinophyma electrodes

▷ More women experience rosacea symptoms on the cheeks and chin, while the enlargement of the nose is usually seen in men past middle age¹.

Diagnosis

The diagnosis of rhinophyma is visual, but can be confirmed with a biopsy. Phyma is the result of hyperplasia and fibrosis of the sebaceous glands in the presence of rosacea. Although rhinophyma is by far the most common pattern in cases of phyma, metophyma (swelling of the forehead), otophyma (swelling of the ear), and gnathophyma (swelling of the chin) may also be seen². The lesions can become large, causing significant social stigmatisation and pose a challenge in the management of patient care.

Minor or early cases of rhinophyma may manifest as a 'roughened' patch of large pores and thickened tissue, which may remain static or progress to a grossly and advanced state. By using a range of rosacea medications, such as topical creams (Metrogel[®]; Galderma Laboratories, L.P., Ft. Worth, TX, USA), sulfur-based washes, antibiotics, Retin-A, light-based treatments (intense pulsed light), photodynamic therapy, and avoiding the triggers that can aggravate the condition, treatment of minor rhinophyma may be an option before permanent skin and sebaceous changes occur. *Table 1* shows rosacea triggers from a survey of 1066 patients³.

Medical or drug treatment is futile in moderate to advanced cases, and the definitive treatment is surgical. A number of modalities have been used to treat rhinophyma, including cryosurgery, radiofrequency ablation, electrosurgery, radiowave surgery, heated scalpel, tangential excision, scissor sculpting, skin grafting, dermabrasion, fractional laser, and conventional ablative lasers⁴⁻¹³. Simple resurfacing may be effective in minor cases, while aggressive ablative laser treatment is required in more advanced or disfiguring cases.

Surgical treatment

In a non-dermatology, cosmetic surgery office, moderate to severe rhinophyma is not a commonly seen condition and this author's experience is based on approximately 20 procedures seen over the past decade. Most of these cases were in male patients, who are not usually motivated to seek, nor candidates for, medical treatment.

Table 1	
Rosacea triggers	
(n=1066)	
Sun exposure	81%
Emotional stress	79%
Hot weather	75%
Wind	57%
Heavy exercise	56%
Alcohol consumption	52%
Hot baths	51%
Cold weather	46%
Spicy foods	45%
Humidity	44%
Indoor heat	41%
Certain skincare products	41%
Heated beverages	36%
Certain cosmetics	27%
Medications	15%
Medical conditions	15%
Certain fruits	13%
Marinated meats	10%
Certain vegetables	9%
Dairy products	8%
Other factors	24%

Adapted from National Rosacea Society³

They usually present for surgical treatment.

Although the author has experimented with different means of treating rhinophyma, he favours a combination of 4.0MHz radiowave surgery (*Figures 1* and *2*) and fully ablative CO₂ laser (*Figure 3*). Although either of these treatment modalities may be used alone, they team-up well to more easily and comprehensively treat rhinophyma. It is rare that the author uses cold steel for significant surgery, as incision with simultaneous coagulation is preferred. The nasal skin is quite vascular and using dermabrasion or scalpel to debulk presents a number of problems, such as a bloody and hard to visualise surgical field, and increased exposure of the surgeon and staff to blood (especially with dermabrasion). The ability to reduce, trim, and otherwise 'pare' the hypertrophic nasal skin with virtually no blood loss is a tremendous asset. Most commonly, both laser and radiosurgery (or electrosurgery) are used in conjunction, although either modality can be used as a sole therapy and is dependent on the instrumentation available to the surgeon and his/her specific preferences. The Ellman Ball Electrode (Ellman International, Inc., Hicksville, NY, USA) is also valuable for haemostasis if no laser device is available (*Figure 4*).

The author uses the same treatment modalities for mild, moderate, and severe rhinophyma, but tempers the depth and power to the extent of the lesion. This is similar to treating acne scars, as light acne may be treated with laser devices at lower settings, while moderate and severe acne scars are treated using the same modality with the power and depth appropriately adjusted.

Bloodless incision

Radiowave surgery is a great adjunct for any cosmetic practitioner, or for those who perform cutaneous surgery. The basis of radiosurgery is that standard household ▷

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Figure 2 The Ellman Rhinophyma electrode in action



Figure 3 The Lumenis Encore laser (A) with the 3.0 mm spot handpiece (B) ablating nasal tissue

▷ current is converted to radiowaves at the effective (and patented) level of 4.0MHz. This is entirely different from standard electrosurgery or Bovie machines, which function in the same manner as a soldering iron. The electrode tip provides the resistance and is heated. Anyone with significant surgical experience can attest to the tungsten electrodes becoming red hot and/or melting with use. This may be sufficient for some modalities, but



Figure 4 The Ellman Ball electrode is shown being used to cauterise and reduce hyperplastic tissue in rhinophyma surgery

for cosmetic skin incision it provides increased lateral thermal damage and char, which lead to a compromised scar. Radiowave surgery, on the other hand, is different. Rather than the electrode tip providing the resistance, the tissue provides the resistance and the tip does not get hot. The radiowaves cause intracellular water to boil in a process known as intracellular volatilisation, and the tissues separate with very little blood loss. Simultaneous incision and cauterisation is a tremendous surgical advantage.

Bloodless incision can also be performed with the CO₂ laser, which produces light with a wavelength of 10.6nm in the infrared (invisible) range of the electromagnetic spectrum. The radiant energy produced by the CO₂ laser is strongly absorbed by water and by all biologic tissues with a high water content, providing an excellent target for vaporisation. When a small spot size of 0.2mm is used, the CO₂ laser is an excellent incision tool. When larger spot sizes are used, such as the 3mm handpiece, excellent reduction through ablation and vaporisation is produced.

Although the CO₂ laser with a large spot size is great for reducing tissue, it becomes difficult to debulk thickened tissue as desiccated char forms and reduces the ability of the laser to vaporise. This would be like attempting to reduce a large piece of wood with very fine sandpaper; although it is abrasive, it becomes clogged and inefficient. For gross debulking, the Ellman 4.0MHz radiowave device is invaluable. Specialised rhinophyma electrodes (*Figure 2*) are used as a 'cheese wire' modality and glide through the phymatous tissue as deeply as the operator desires, with bloodless precision. The bleeding that does occur at the base of the lesion can be treated with the CO₂ laser in the defocused mode (holding the handpiece

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further away from the tissue to enlarge the spot size), or by using the ball electrode with the radiowave system. The ball is used on a pure coagulation setting and provides rapid and effective cauterisation. The author has used both modalities singularly with great success, but prefers to use them in combination for a more effective treatment.

Although rhinophyma sculpting can be performed under local anaesthesia, the author prefers IV sedation as the surgeon is producing a lot of heat and smoke directly into the patient's face.

Procedure end-points

The biggest challenge for the novice surgeon is how much tissue can safely be ablated. For those surgeons experienced in operating on the nose, the end-point is

> usually apparent and the indicators would be a change in the quality of abnormal phymatous tissue to more normal dermis. Other end-point indicators are the residual thickness and dimension of the treated area; that is, the surgeon would stop ablating when the nasal anatomy begins to approximate normal dimensions. It is paramount to remember that when using ablative modalities such as electrosurgery, radiosurgery, laser or ice, there will always be a component of lateral tissue

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damage that makes the treatment depth deeper than one can see with the naked eye. The surgeon may be removing 100µm with the laser, but the wound may extend to 125µm. This is obviously less of a problem with scalpel debulking and similar treatments. The advantages of bloodless incision and debulking without bleeding are huge; less blood means more accurate surgery, less bruising, faster healing, and less postoperative pain.

Mild-to-moderate rhinophyma

Mild-to-moderate surgical treatment is essentially simple skin resurfacing. Ablative lasers (CO₂, Er:YAG) can be used to ‘burn and wipe’ layers of affected skin much in the same way we treat other areas of the face for wrinkles and actinic damage. In such cases, using the Lumenis Encore (Lumenis Ltd., Yokneam, Israel) laser at a setting of 100mJ and a density of 6 (30% overlap) performs well at reducing the hypertrophic layers. This is done with a burn/wipe repeated sequence. It is important to bear in mind that with this, and any type of resurfacing treatment: ‘be conservative, you can always take more’. This should be the mantra of any doctor who treats cosmetic patients. It is important to explain to patients that this treatment is a sculpting procedure and although it is easy to remove tissue, it is impossible to ‘put it back’.

Debulking tissue

Larger cases of rhinophyma with bulbous growths require a bigger treatment with a more experienced surgeon. Although there are many ways of debulking this tissue, the author prefers to use the Ellman rhinophyma triangular wire electrode to begin with, and use this in the same manner that a sculptor might remove clay with a curette when working on a bust. These electrodes come at set depths that enable a confluent and homogenous removal of strips of tissue in the same manner as a cheese wire. The author treats one side at a time so that normal tissue dimensions and contours can be approached and then repeated on the other side. This allows the surgeon to use the first side as a standardisation model for the contralateral side (assuming bilaterality).



Figure 5 Healing is similar to other skin resurfacing procedures and open wound treatment with petrolatum. (A) Patient immediately after excision and (B) 72 hours post-treatment



Figure 6 This patient was treated with laser and radiosurgery for minor rhinophyma changes on the nasal bridge



Figure 7 This patient was treated with laser and radiosurgery for minor rhinophyma changes on the nasal tip



Figure 8 (Above) This patient was treated with laser and radiosurgery for minor rhinophyma changes on the central nose



Figure 9 (Below) This patient was treated for advanced rhinophyma with laser and radiosurgery and is shown (A) before and (B) 8 weeks after treatment



▷ The setting for the radiowave generator is 10-20W on 'cut/coag', or 30-40W on the 'pure coag' setting. Although this is a coagulative modality, the tissue bed will still bleed and the CO₂ laser or Ellman Ball Electrode is used to cauterise the base for haemostasis and fine contouring. When using the Lumenis Encore 3mm ablative handpiece, a setting of 3-5W is used. The process is to excise a strip of tissue, then cauterise the base. This is repeated to the desired contour. At this point, 'fine tuning' of the tissue contour is completed with the CO₂ laser or radiowave ball electrode. Either modality will sculpt and shrink the excess tissue.

Postoperative treatment

Postoperative treatment is very similar to other skin resurfacing procedures, and the author prefers open wound treatment with simple 24-hour coverage with petrolatum or Aquaphor (Beiersdorf AG, Hamburg, Germany) (Figure 5). The tissue will initially appear very dry, brown, and leathery from the desiccation and heat of the procedure. The wound bed will mature to a more pink and granulating state over a number of days, and

Complications with rhinophyma include under-correction with regrowth, over-excision with defects or perforation, burns, scarring, and asymmetry.

progress to consistent pink tissue. The erythema can persist for weeks or months, but generally fades faster than similar resurfacing on the cheeks and lower eyelids. Full re-epithelialisation will occur over

1-14 days. Care after this point is the same as for normal skin.

Selected before and after pictures show minor to moderate rhinophyma treatments (Figures 6-8). Figures 9 and 10 show before and after images of larger rhinophyma cases.

Complications

Complications with rhinophyma include under-correction with regrowth, over-excision with defects or perforation, burns, scarring, and asymmetry. The author's experience with rhinophyma treatment has been very positive owing to a conservative approach. This is a condition in which patient happiness is high because the average patient is thrilled to be improved. These have not been 'picky' patients; they love what was achieved on a physical, functional, emotional, and physiologic level.

Conclusions

Rhinophyma is an uncommonly seen condition in the average cosmetic surgery practice, but more commonly seen in dermatology practices. It represents the terminal stages of rosacea and has mistakenly been associated with excessive alcohol consumption. Early and minor stages of rhinophyma can be controlled by rosacea medication and trigger avoidance. Moderate and advanced stages require surgical treatment. Haemostatic ablative technologies are the author's preference for controlled surgical precision and treatment.

The techniques described have proven safe and effective for the functional and aesthetic treatment of rhinophyma.

► **Declaration of interest** Dr Niamtu is on the speakers bureau for Lumenis Laser and Ellman International but has no conflict of interest in this article

► **Figures 1-10** © Dr J. Niamtu

Key points

■ Rhinophyma is a pathologic process characterised by enlarged pores and thickening of the fibrous tissue of the nose, and is one of the end processes of severe rosacea

■ The lesions can become large, causing significant social stigmatisation and posing a challenge in the management of patient care

■ A number of modalities have been used to treat rhinophyma, including cryosurgery, radiofrequency ablation, electrosurgery, radiowave surgery, heated scalpel, tangential excision, scissor sculpting, skin grafting, dermabrasion, fractional laser, and conventional ablative lasers

■ Haemostatic ablative technologies are the author's preference for controlled surgical precision and treatment

■ The techniques described in this article have proven safe and effective for functional and aesthetic treatment of rhinophyma

Figure 10 This patient was treated for advanced rhinophyma and is shown (A) before and (B) 90 days after treatment with CO₂ laser and radiosurgery



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