

## Rhinophyma Successfully Treated with Ultra Plus CO2 Laser: Report of a Case and Literature Review

### Abstract

Rhinophyma (Greek “nose growth”) benign skin deformity characterized by tumorous growth leading to a large, bulbous, and erythematous appearing nose. It is a rare subtype of phymatous rosacea. The exact pathogenesis is still not known. It can lead to considerable cosmetic impairment with psychosocial implications and poses a risk of developing an occult malignancy. Early diagnosis and treatment is imperative to avoid these complications. Herein, we report a case of a 47-year-old man presenting with rhinophyma who was treated with ultra plus CO2 laser.

**Keywords:** *Rhinophyma, rosacea, ultra plus CO2 laser*

### Introduction

Rhinophyma is the most common variant of the phymatous subtype of rosacea.<sup>[1]</sup> Rhinophyma is characterized by a large, bulbous, erythematous appearance of the nose occasionally leading upper airway obstruction and difficulty in eating.

The word rhinophyma is derived from the Greek word “rhis” meaning nose and “phyma” meaning growth.<sup>[2]</sup> It can occur in isolation and, its severity may not correlate with the duration of disease.<sup>[3]</sup> It is no longer considered to be an end stage of rosacea.<sup>[4]</sup>

Owing to rigorous ongoing research in treatment of rosacea, several newer topical formulations have been developed.<sup>[5]</sup> However, no precise treatment algorithm has become the standard of care and treatment remains empirical. Many reports have found lasers to be effective for the erythema of rosacea.<sup>[6,7]</sup> Larson and Goldman<sup>[8]</sup> documented the use of multiplexed laser in reducing erythema and telangiectasia. Kawana *et al*<sup>[9]</sup> concluded that intense pulsed light (IPL) at the wavelength of 550 -670 nm was effective for rosacea especially for erythemato-telangiectatic variant. In our experience, ultra pulse CO2 laser might give beneficial result in the treatment of rosacea. Nonetheless, early treatment is warranted to

avoid cosmetic impairment and minimize the risk of occult malignancy. We report a case of a patient with rhinophyma, a variant of phymatous rosacea treated with the novel laser technology, ultra plus CO2 laser.

### Case Report

A 47-year-old man presented with chief complaints of a growing mass on his nose for past 6 years. Lesions started on the tip of the nose as a small nodule and gradually extended to involve the entire nose leading to severe cosmetic disfigurement and psychological impact. No nasal obstruction or dyspnea were present. The patient denied any trauma, physical manipulation, prior use of any topical medications, previous history of similar lesions on the nose or personal and family history of rosacea. Clinical examination revealed a 1.5 cm × 2.0 cm soft lobulated skin colored nodule on the tip of the nose with thickened skin and irregular surface nodularities on rest of the nose [Figure 1a-c]. Lesions were non-pruritic and transient facial erythema and papules were noted without any telangiectasias, pustules or evidence of a malignant transformation. Histopathological examination of punch skin biopsy from the edge of the mass revealed moderately dense superficial, mid perivascular and periappendageal lymphoplasmocytic infiltrate with dilation of a few capillaries in the papillary and reticular dermis. There

Jagdish Sakhiya<sup>1</sup>,  
Dhruv Sakhiya<sup>2</sup>,  
Milan Sakhiya<sup>2</sup>,  
Feral Daruwala<sup>2</sup>

<sup>1</sup>Department of Dermatology, Sakhiya Skin Clinic PVT LTD, Surat, <sup>2</sup>B.J. Medical College, New Civil Hospital Asarwa, Ahmedabad, Gujarat, India

**Address for correspondence:**  
Dr. Jagdish Sakhiya,  
Sakhiya Skin Clinic PVT LTD,  
2<sup>nd</sup> Floor, Ayush Docter House,  
Station- Lal Darwaja Road,  
Surat - 395 003, Gujarat, India.  
E-mail: sakhiya.academic@rediffmail.com

Access this article online

Website: [www.idoj.in](http://www.idoj.in)

DOI: 10.4103/idoj.IDOJ\_385\_19

Quick Response Code:



**How to cite this article:** Sakhiya J, Sakhiya D, Sakhiya M, Daruwala F. Rhinophyma successfully treated with ultra plus CO2 laser: Report of a case and literature review. Indian Dermatol Online J 2020;4:619-22.

**Received:** 06-Aug-2019. **Revised:** 14-Sep-2019.  
**Accepted:** 07-Nov-2019. **Published:** 24-Jan-2020.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprints@medknow.com](mailto:reprints@medknow.com)

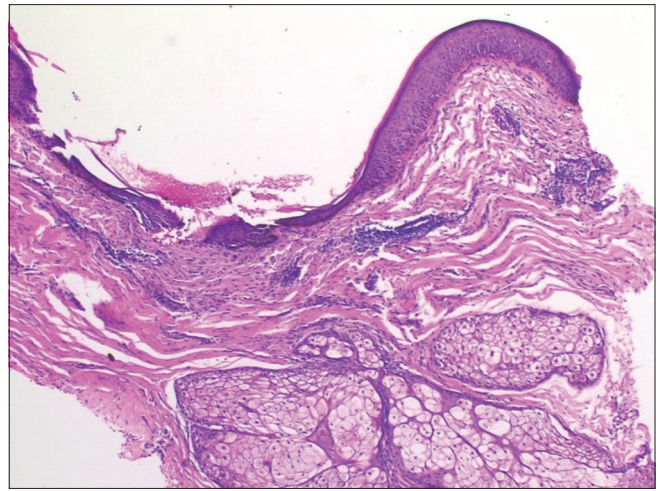


**Figure 1:** Classic appearance of rhinophyma with a bulbous, cosmetic nasal deformity (a) front view (b) right side view (c) left side view

was encroachment of follicles by infiltrate with absence of granuloma [Figure 2]. Based on the above findings the diagnosis of rosacea was reached. The patient was treated with ultra plus CO2 laser at a wavelength 10,600 nm [pulse duration 500 $\mu$ s (defocusing mode and multiple passes), laser frequency 500 Hz and power 20 Watt] under local anaesthesia with 2% lignocaine hydrochloride. Treatment consisted of six sessions with a 4-week interval between each session. Mild local pain, swelling, redness and oozing was noted after the treatment sessions which subsided in 7 days. After each session, the patient was put on close dressing on the affected part after applying antibiotic cream, which was removed after 24 hours. Oral antibiotics and analgesics were prescribed postoperatively for 7 days. The hyaluronic acid gel mixed with betadine ointment was advised topically 3–4 times for 8–10 days. After 10 days, the patient was advised to apply clindamycin gel 1% in the morning and adapalene gel 0.1% in the evening until the next session was started. Normal appearance of the nose without nodule was regained in seven days [Figure 3a-c]. No reoccurrence of lesions was observed during the 1-year follow-up.

## Discussion

The first standard classification of rosacea was developed by the National Rosacea Society in 2002. According to this classification, rosacea can be classified into 4 broad subtypes: Erythematotelangiectatic, papulopustular, phymatous, and ocular.<sup>[10]</sup> Rosacea is manifested as erythematous flushing, blushing, telangiectasias, papules, and pustules affecting the central third of the face. In areas of long-standing disease,



**Figure 2:** Histopathology of rosacea. The H and E stained soft tissue section showed rosacea include moderately dense superficial, mid perivascular and periappendageal lymphoplasmocytic infiltrate with dilation of a few capillaries in the papillary and reticular dermis. The infiltrate encroaches onto the follicular. Absence of granuloma. (H and E,  $\times 5$ )

yellow-orange plaques (phymas) can develop, resulting from sebaceous hyperplasia, most commonly on the nose (rhinophyma).<sup>[11]</sup> Phymatous rosacea is portrayed early by prominent follicular pores or patulous follicles with mild swelling while advanced disease reveals pronounced hyperemic skin thickening, irregular surface nodularities representing sebaceous gland hypertrophy and eventual distortion of the nasal surface architecture.<sup>[12]</sup> In this case, all the mentioned features were seen. On the basis of distinct clinical and histological features, rhinophyma has classified in four variants including glandular, fibrous, fibroangiomatic, and actinic.<sup>[13]</sup> In our case, rhinophyma is identified as fibroangiomatic rhinophyma as it meets its feature including nose colour turn to red or copper, presence of edematous lesion with visible veins on its surface and sometimes pustules across the surface. Albeit the prevalence rate of rosacea is 1–20%, the phymatous subtype is rare. Rosacea overall has a slightly female predominance, but the incidence of rhinophyma is much higher in males and is seen most often after 40 years of age.<sup>[14]</sup>

The differential diagnosis of rosacea includes acne vulgaris, seborrheic dermatitis, perioral dermatitis, carcinoid syndrome, and lupus erythematosus. In this context performing a biopsy with local anesthesia is necessary for a definite diagnosis. In the present case, acne vulgaris was the differential diagnosis due to the presence of papules in both conditions. Differentiating features of acne and rosacea have been summarized in Table 1.<sup>[15]</sup>

What exactly triggers the innate immune response is not known but UV light, trauma and microorganisms such as demodex mites are thought to play a role. Additionally, smokers have been found to have a higher risk of developing rosacea. Historically, alcoholism was believed to be a trigger for rhinophyma as a lot of alcoholics have



**Figure 3: Significant reduction in rhinophyma after treatment with ultra plus CO2 (a) front view (b) right side view (c) left side view**

erythema of the face. Recently, this credo was changed and, alcoholism is presently not believed to be a cause for rhinophyma.

The exact pathogenesis of rosacea and rhinophyma is not known but it is thought to be a combination of multiple factors as described above leading to vascular changes and a trigger of the innate immune system. Numerous vascular growth factors and receptors have been shown to be increased in affected skin leading to an overall state of abnormal vascular reactivity. Specifically, vascular endothelial growth factor (VEGF), VEGF receptors, lymphatic endothelium marker D2-40 and CD31 expressions are increased which provide stimulants for the proliferation of vascular and lymphatic endothelial cells. This correlates with the grossly irregular and dilated vascular networks seen in affected skin histopathologically.<sup>[16]</sup>

Histopathological changes can differ considerably from case to case, reflecting the clinical aspect on presentation. Schüürmann *et al* compiled the histopathology of published reports for rhinophyma between the year 1969 and 2013.<sup>[17]</sup>

Although topical antibiotics or retinoids are effective medical treatment options for rosacea, they have not been shown to improve rhinophyma. Depending on the size of the lesion, manifold treatment approaches are available for rhinophyma including sharp excision, dermabrasion, cryosurgery and hydrodissection (versajet system). Nowadays, carbon dioxide (CO2) laser surgery has extensively used compared to scalpel excision because of sharp margins and, high-grade hemostasis can be obtained with improved

**Table 1: Differential Diagnosis: Rosacea and Acne<sup>[15]</sup>**

Feature	Rosacea	Acne
Comedones	Absent	Present
Telangiectasia	Present	Absent
Deep, diffuse erythema	Present	Absent
Age of onset	Peak: 40-50 years	Peak: Adolescence
Areas of involvement	Usually the central face	Apart from the face it can also affect back and chest
Ocular involvement	Present	Absent

wound healing.<sup>[18]</sup> Ultra Plus CO2 Laser is used to achieving a bloodless field in the treatment of rhinophyma, which enables efficient and quick removal of hypertrophied tissue without excessive scarring and pain-free recovery. Patients can get back to their regular activities soon after the treatment. Compare to radiofrequency and dermabrasion, it produces less scarring and requires a lack learning curve. Besides, redness, swelling, milia, the treated area may turn darker than the surrounding skin after several weeks, increased sensitivity to sunlight are the side effect associated with dermabrasion.<sup>[19]</sup> By contemplating all these, ultra Plus CO2 laser is the preferred choice for a dermatologist in treatment of rhinophyma.

Here, we reported a classic case of rhinophyma, a variant of phymatous rosacea. The author postulated the beneficial effect of ultra plus CO2 laser in treating such an extraordinary entity. Ultraplus CO2 laser appears to be the best for optimal treatment of rhinophyma, with multiple modalities available at the discretion of the surgeon.

#### *Declaration of patient consent*

Written informed consent was obtained from the patient's legal guardian(s) for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

#### *Financial support and sponsorship*

Nil.

#### *Conflicts of interest*

There are no conflicts of interest.

#### *References*

- Crawford GH, Pelle MT, James WD. Rosacea: I. Etiology, pathogenesis, and subtype classification. *J Am Acad Dermatol* 2004;51:327-41.
- Bogetti P, Boltri M, Spagnoli G, Dolcet M. Surgical treatment of rhinophyma: A comparison of techniques. *Aesthet Plast Surg* 2002;26:57-60.
- Aloi F, Tomasini C, Soro E, Pippione M. The clinicopathologic spectrum of rhinophyma. *J Am Acad Dermatol* 2000;42:468-72.
- Tan J, Berg M. Rosacea: Current state of epidemiology. *J Am Acad Dermatol* 2013;69:S27-35.
- Del Rosso JQ. Medical treatment of rosacea with emphasis on topical therapies. *Expert Opin Pharmacother* 2004;5:5-13.

6. Norwood R, Norwood D. Treating rosacea. *US Pharm* 2007;32:45-53.
7. Dressler-Carre M. Acne vulgaris and rosacea. In: Arcangelo VP, editors. *Pharmacotherapeutics for Advanced Practice: A Practical Approach*. Philadelphia: Lippincott Williams & Wilkins; 2005.
8. Larson AA, Goldman MP. Recalcitrant rosacea successfully treated with multiplexed pulsed dye laser. *J Drugs Dermatol* 2007;6:843-5.
9. Kawana S, Ochiai H, Tachihara R. Objective evaluation of the effect of intense pulsed light on rosacea and solar lentigines by spectrophotometric analysis of skin color. *Dermatol Surg* 2007;33:449-54.
10. National Rosacea Society. Available from: <http://www.rosacea.org>. [Last accessed on 2002 Sep 23].
11. Marks JG, Miller JJ, editors. *Principles of Dermatology. Rosacea*. 4<sup>th</sup> ed. Philadelphia: Elsevier/Saunders; 2006.
12. Powell FC, Raghallaigh SN. Rosaceae and related disorders. In: Bologna JL, Schaffer JV, Jorizzo JL, editors. *Dermatology*. 3<sup>rd</sup> ed. Philadelphia: Elsevier Saunders; 2012. p. 561-70.
13. Mandal A. Rosacea and Rhinophyma. Available from: <https://www.news-medical.net/health/Rosacea-and-Rhinophyma.aspx>. [Last accessed on 2019 Feb 27].
14. Tan J, Berg M. Rosacea: Current state of epidemiology. *J Am Acad Dermatol* 2013;69:S27-35.
15. Acne and rosacea: Differential diagnosis and treatment in the primary care setting. Available from: [https://www.medscape.org/viewarticle/441986\\_13](https://www.medscape.org/viewarticle/441986_13). [Last accessed on 2019 Apr 23].
16. Gomaa AH, Yaar M, Eyada MM, Bhawan J. Lymphangiogenesis and angiogenesis in non-phymatous rosacea. *J Cutan Pathol* 2007;34:748-53.
17. Schürmann M, Wetzig T, Wickenhauser C, Ziepert M, Kreuz M, Ziemer M. Histopathology of rhinophyma—A clinical-histopathologic correlation. *J Cutan Pathol* 2015;42:527-35.
18. Laun J, Gopman J, Elston JB, Harrington MA. Rhinophyma. *Eplasty* 2015;ic25.
19. Dermabrasion. Healthlink BC. Available from: <https://www.healthlinkbc.ca/health-topics/aa59511>. [Last accessed on 2019 Jun 21].