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Scanner-assisted carbon dioxide laser correction of severe rhinophyma: case report of a quality-of-life intervention easily learned

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ABSTRACT Rhinophyma is a severe complication of rosacea that has been treated with multiple different surgical modalities over the years. Here we present two cases of rhinophyma that demonstrate the cosmetic results of scanner-assisted carbon dioxide laser correction and how this method can be easily learned and managed. We conclude that scanner-assisted carbon dioxide laser is an excellent treatment alternative for rhinophyma.

Case Presentation

Rosacea is a common skin condition of unknown cause with a prevalence of up to 22% in adults [1] that mainly affects women [2]. Although the precise prevalence of rhinophyma is unknown, in one study of 108 patients with rosacea, 15 were noted to have rhinophyma, almost all of whom were men [3]. Rosacea is classified into four stages: pre-rosacea and stages I to III. In stage III, large inflammatory nodules, furunculoid infiltrations, and connective tissue hypertrophy appear [4]. Stage III is dominated by sebaceous gland hypertrophy of the nose resulting in the characteristic cauliflower-like appearance called rhinophyma. The skin hypertrophy typical of rhinophyma may also be present in other facial areas. Recently a new Rhinophyma Severity Index (RHISI) was introduced [5]. The RHISI scale ranges from 1 to 6; lobules are seen in stages 3-6.

Although topical antibiotics or retinoids are often effective for rosacea, they have not been shown to improve rhinophyma. Therefore, several surgical treatments have been developed, including tangential excision, electroscalpel, dermabrasion, laser ablation, scissor sculpting, radiofrequency electrosurgery, cryosurgery and wire loop electrosurgery [6-9]. Rhinophyma is often extremely disfiguring, and surgical correction was reported to improve the quality of life in the majority of patients [10]. Carbon dioxide laser surgery

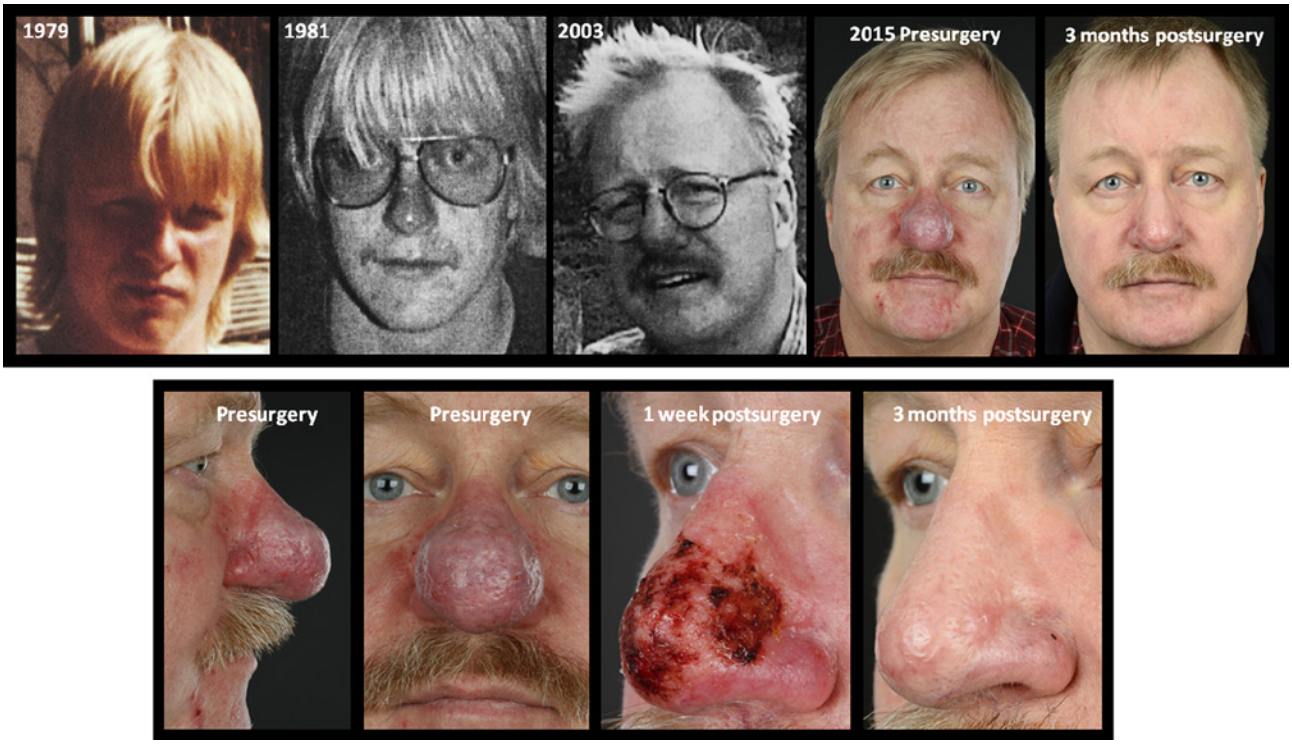

Figure 1. Pre- and post-surgery photographs of Patient 1 with rhinophyma treated with scanner-assisted carbon dioxide laser. Rhinophyma develops slowly over time as indicated by the timeline photographs (years are indicated). The surgical result 3 months post-surgery resembles the original nose profile of year 1981. At the 15 months follow up, papulopustular rosacea had returned which required topical treatment. Note that this patient was a teaching case. [Copyright: (c)2018 Wikström et al.]

has become increasingly popular, because sharp margins and good hemostasis can be obtained with good intraoperative surgical field visibility [11]. The scanned carbon dioxide laser is a laser with a focusing hand-piece attached to a miniature optomechanical flash scanner delivery system that generates multiple focal beams. The laser moves rapidly and homogeneously in spiral scans and covers a round area on tissue at the focal plane that minimizes the tissue laser exposure time and thus reduces the risk of excessive tissue thermal necrosis and subsequent scarring. The area selected is gradually ablated by the laser beam when it passes over the tissue repeatedly. Thus, scanner assisted carbon dioxide laser treatment of rhinophyma may require less training and may be more easily taught to dermatology residents who can practice independently. Here we present one patient successfully treated in a teaching setting by both authors followed by a second patient that was independently treated by the resident dermatologist (JDW).

Patient 1 is a 54-year-old, otherwise healthy, man with a 30-year history of rosacea. He presented with facial redness and a large bulbous nose (rhinophyma stage III or RHISI 6), which had increasingly affected his quality of life (Figure 1). Medical treatment previously administered 25 years previous had been unsuccessful and he had since been without treatment. The diagnosis of rhinophyma was evident, as the skin of the nose appeared thickened with irregular nodularities. He was assessed to have active disease, as the nose was erythematous, and papulopustular rosacea was evident on his cheeks and chin. Eight weeks prior to surgery, the patient was given oral doxycycline (100 mg daily) to reduce the inflammation to optimize surgical conditions following clearance of the papulopustular rosacea. No prophylactic antiviral treatment or other forms of oral or local antibiotics were given.

The patient was treated in a single teaching session lasting one hour. The nose was anesthetized by injections of lidocaine 1% with epinephrine (1:100 000), followed by scanner-assisted pulsed carbon dioxide laser (UNILAS Touch, Limmer Laser GmbH, Germany) evaporation of excess tissue. The following settings were used: 3-4 mm diameter spot-size, effect 25-50 W and 0.3 ms pauses in continuous mode. All personnel and the patient wore laser protective glasses. A vacuum suction device was used to clear the smoke consisting of evaporated tissue. Photographs from the patient's youth were used as a reference when reshaping the nose to its original contour (Figure 1). These photographs also illustrated the rhinophyma development over time. The selected area, delineated by ink, is gradually ablated by the laser beam when it passes over the tissue repeatedly. Devitalized tissue is removed gently by cleansing the surface with swabs soaked in 0.9% sodium chloride solution. The depth of the vaporization is controlled by the selection of power, focal length, scanner-controlled spot size, and the movements of the handheld

scanner. The vaporization is continuously shaping the nose into its desired form. The therapeutic endpoint is satisfaction with nasal shape and preservation of the deep portion of the sebaceous follicles, which aid re-epithelialization (Figure 3). A honeycomb appearance and expressible sebum is useful for ensuring that the ablation is not carried out too deeply [12].

Post-surgery, the nose was covered with a simple dressing and the patient immediately discharged. The dressings are initially left on for one or two days without changing to prevent early bleeding. Thereafter, the wound is cleaned and rinsed with tap water, and the bandage is changed as often as necessary, preferentially on a daily basis, pending complete healing. Seven days post-surgery, areas of early re-epithelialization were observed. Follow up visits after 3 months and 15 months revealed a maintained cosmetic result. The patient was very satisfied with the treatment outcome. The recurrent papulopustular rosacea was later managed by topical metronidazole gel (0.75%) followed by topical ivermectin cream (10 mg/g), which cleared the remaining symptoms.

Patient 2 is a 67-year old man with high blood pressure and rosacea of unknown duration, who presented with a moderate rhinophyma (stage III or RHISI 3) for one year (Figure 2). Oral tetracycline had limited success in treating the symptoms and the patient expressed a strong wish for surgical correction. The rhinophyma diagnosis was clinically evident despite the disease appearing less active than in Patient 1. The surgery was performed in a similar manner to Patient 1 with the exception that the patient was operated on by the resident dermatologist (JDW) only. Follow up visits after 12 months showed a good cosmetic result and the patient was very satisfied. The patient continued topical metronidazole treatment.

Conclusions

Rhinophyma stands out as a severe dermatological condition that can be treated straightforwardly in an outpatient setting. Here we present two cases of rhinophyma that were successfully treated with scanner-assisted carbon dioxide laser. The knowledge added by this report is three-fold: 1) we demonstrate that this method can be easily learned; 2) we show that even after decades of progression, rhinophyma can be treated successfully; and 3) we provide an instructive photographic timeline of rhinophyma development. While we did not compare scanner-assisted carbon dioxide laser to other methods, other authors have noted that scanner-assisted carbon dioxide laser treatment requires less training,

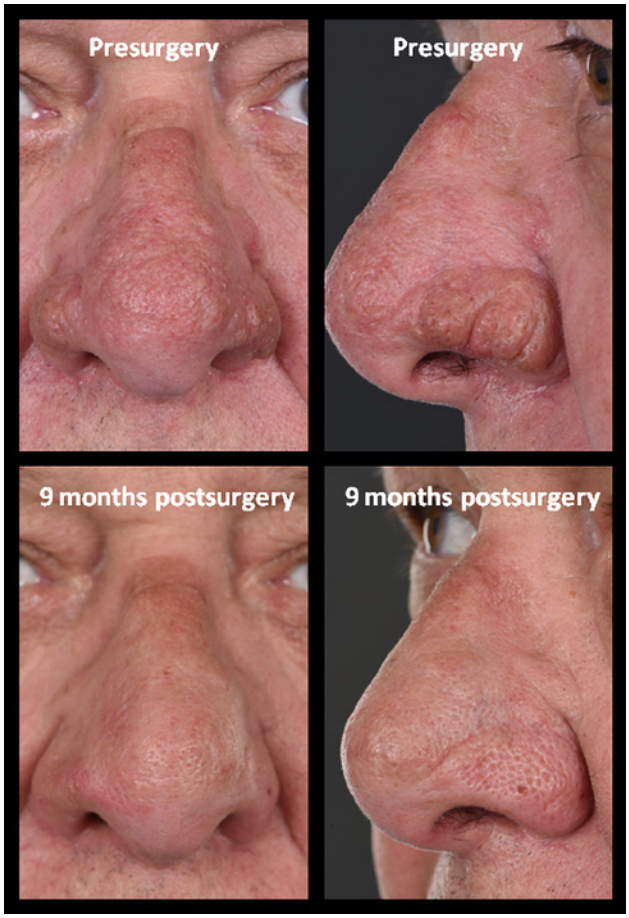

Figure 2. Pre- and post-surgery photographs of Patient 2 with rhinophyma treated with scanner-assisted carbon dioxide laser. Note that this patient was independently operated on. [Copyright: (c)2018 Wikström et al.]

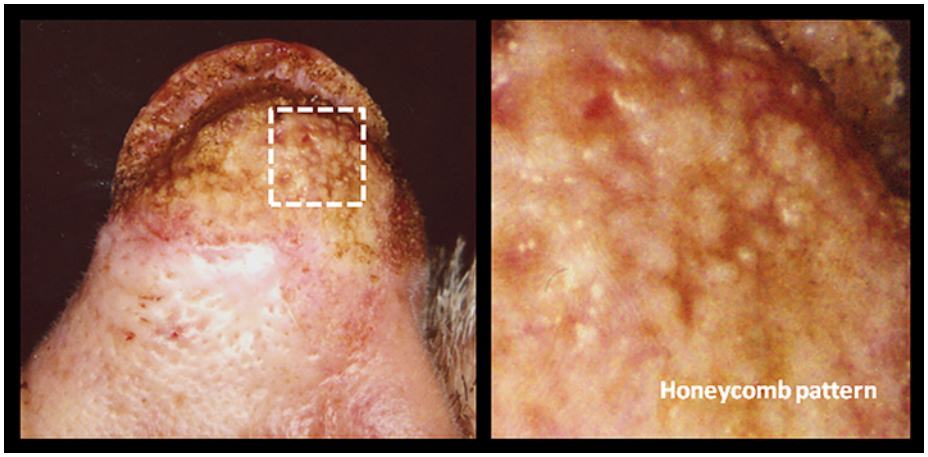

Figure 3. Peroperative photograph during carbon dioxide laser vaporization of rhinophyma visualizing the different surgical layers. White or yellow granularity or honeycomb appearance, representing deep sebaceous follicular structures necessary to preserve normal texture and nasal follicular openings and avoid atrophic scarring. [Copyright: (c)2018 Wikström et al.]

is reproducible and is potentially a lower-risk procedure in inexperienced hands [11].

References

1. Abram K, Silm H, Oona M. Prevalence of rosacea in an Estonian working population using a standard classification. *Acta Derm Venereol.* 2010;90(3):269-273.
2. Berg M, Lidén S. An epidemiological study of rosacea. *Acta Derm Venereol.* 1989;69(5):419-423.
3. Sibenge S, Gawkrodger DJ. Rosacea: a study of clinical patterns, blood flow, and the role of Demodex folliculorum. *J Am Acad Dermatol.* 1992;26(4):590-593.
4. Crawford GH, Pelle MT, James WD. Rosacea: I. Etiology, pathogenesis, and subtype classification. *J Am Acad Dermatol.* 2004;51(3):327-341; quiz 342-324.
5. Schüürmann M, Wetzig T, Wickenhauser C, Ziepert M, Kreuz M, Ziemer M. Histopathology of rhinophyma - a clinical-histopathologic correlation. *J Cutan Pathol.* 2015;42(8):527-535.
6. Pelle MT, Crawford GH, James WD. Rosacea: II. Therapy. *J Am Acad Dermatol.* 2004;51(4):499-512; quiz 513-494.
7. Husein-ElAhmed H, Armijo-Lozano R. Management of severe rhinophyma with sculpting surgical decortication. *Aesthetic Plast Surg.* 2013;37(3):572-575.
8. Prado R, Funke A, Bingham J, Brown M, Ramsey Mellette J. Treatment of severe rhinophyma using scalpel excision and wire loop tip electrosurgery. *Dermatol Surg.* 2013;39(5):807-810.
9. Lazzeri D, Larcher L, Huemer GM, et al. Surgical correction of rhinophyma: comparison of two methods in a 15-year-long experience. *J Craniomaxillofac Surg.* 2013;41(5):429-436.
10. Schweinzer K, Kofler L, Spott C, et al. Surgical treatment of rhinophyma: experience from a German cohort of 70 patients. *Eur J Dermatol.* 2017;27(3):281-285.
11. Madan V, Ferguson JE, August PJ. Carbon dioxide laser treatment of rhinophyma: a review of 124 patients. *Br J Dermatol.* 2009;161(4):814-818.
12. Goon PK, Dalal M, Peart FC. The gold standard for decortication of rhinophyma: combined erbium-YAG/CO2 laser. *Aesthetic Plast Surg.* 2004;28(6):456-460.