

Conservative Management of Rhinophyma with Pharmacological Therapy: Experience from a Case Report

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ABSTRACT

Rhinophyma represents an advanced manifestation of phymatous rosacea and is characterized by progressive sebaceous gland hyperplasia, dermal fibrosis, and thickening of the nasal skin, resulting in cosmetic deformity and, in advanced cases, functional impairment. Although surgical intervention remains the standard treatment for moderate to severe rhinophyma, conservative medical management may represent a therapeutic option for carefully selected patients with early-stage disease.

We report the case of a 49-year-old man with a long-standing history of rosacea who presented with progressive nasal enlargement, persistent erythema, and cutaneous hypertrophy consistent with early rhinophyma. Clinical examination revealed no ulceration, rapid focal growth, atypical pigmentation, or other findings raising clinical suspicion of malignancy, and there was no evidence of functional airway compromise. Conservative treatment was initiated with oral isotretinoin at a dose of 20 mg/day, combined with topical metronidazole, strict photoprotection, and avoidance of identified triggering factors.

The patient was followed regularly for six months, during which progressive reductions in erythema, sebaceous activity, and clinically apparent phymatous tissue were observed, accompanied by improvement in nasal contour and skin texture. Liver function tests and lipid profiles remained within reference ranges, and treatment was well tolerated throughout the follow-up period. Given the clinical improvement observed during treatment, surgical intervention was not pursued.

This case suggests that pharmacological management may be considered in selected patients with early rhinophyma, particularly before marked fibrotic and structural changes develop. However, conclusions regarding treatment efficacy cannot be established from a single case, and prospective studies are required to better define patient selection criteria, standardized treatment protocols, and long-term outcomes.

KEYWORDS: rhinophyma; phymatous rosacea; isotretinoin; conservative management; pharmacological therapy; case report.

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INTRODUCTION

Rhinophyma is a chronic, disfiguring inflammatory disorder of the nose that represents an advanced manifestation of phymatous rosacea. It is characterized by progressive enlargement of the nasal soft tissues secondary to sebaceous gland hyperplasia, connective tissue hypertrophy, dermal fibrosis, vascular dilation, and chronic inflammatory cell infiltration, resulting in irregular nasal enlargement, distortion of the nasal contour, and disruption of the nasal aesthetic subunits. Although rhinophyma was historically regarded primarily as a cosmetic concern, it is now recognized as a condition that can significantly impair patients' quality of life, negatively affecting psychological well-being and social interactions and, in advanced cases, nasal airflow due to obstruction of the external nasal valves.¹ Rosacea is a chronic inflammatory dermatosis affecting approximately 5–10% of the adult population, predominantly fair-skinned individuals between the third and sixth decades of life. Among its clinical phenotypes, phymatous rosacea is relatively uncommon, with rhinophyma representing its most characteristic manifestation. The condition occurs predominantly in men, with a reported male-to-female ratio approaching 12:1, and is most frequently diagnosed between the fifth and seventh decades of life. The lower incidence observed in women has been attributed to possible hormonal influences on sebaceous gland activity and cutaneous inflammatory responses.²

The pathophysiology of rhinophyma remains incompletely understood and is believed to be multifactorial. Current evidence suggests that dysregulation of the innate immune system, persistent inflammatory pathways, and neurovascular dysfunction contribute to progressive dermal remodeling. Increased expression of antimicrobial peptides, particularly cathelicidin LL-37, enhanced matrix metalloproteinase activity, abnormal angiogenesis, and sustained production of pro-inflammatory cytokines have all been implicated in the development of fibrosis and excessive tissue overgrowth.

In addition, genetic susceptibility, chronic ultraviolet radiation exposure, cigarette smoking, extreme environmental temperatures, and the potential role of *Demodex folliculorum* have been proposed as contributing factors. The increased density of *Demodex* mites observed in patients with rosacea may perpetuate local inflammatory responses. Although rhinophyma has historically been associated with excessive alcohol consumption, current evidence indicates that this relationship is largely a misconception. Alcohol may exacerbate the vasodilatory manifestations of rosacea but is not considered a direct causative factor in the development of rhinophyma.^{3,4}

Clinically, rhinophyma usually begins with persistent facial erythema, telangiectasia, and mild thickening of the nasal skin. As the disease progresses, irregular nodular enlargement, hypertrophy of the nasal lobules, enlargement of sebaceous pores, and progressive distortion of the nasal pyramid become evident. Advanced disease may result in

nasal airway obstruction, retention of secretions, recurrent cutaneous infections, bleeding following minor trauma, and substantial impairment of body image.

Furthermore, cutaneous malignancies, particularly basal cell carcinoma and squamous cell carcinoma, have occasionally been reported within rhinophymatous tissue, underscoring the importance of careful clinical assessment and histopathological evaluation when suspicious findings are present.⁵

The diagnosis of rhinophyma is primarily clinical and is based on physical examination, the natural history of the disease, and a history of rosacea. Skin biopsy is generally reserved for cases presenting with ulceration, rapid focal enlargement, atypical pigmentation, spontaneous bleeding, or other findings raising suspicion of malignancy. Dermoscopy and, when indicated, histopathological examination are valuable adjuncts for confirming the diagnosis and evaluating conditions that may clinically mimic rhinophyma, including adnexal neoplasms, sarcoidosis, granulomatosis with polyangiitis, lupus vulgaris, cutaneous leishmaniasis, and other infiltrative dermatoses.⁵

The management of rhinophyma depends on disease stage and the degree of tissue hypertrophy. In advanced cases, surgical treatment remains the standard therapeutic approach. Tangential excision, electrosurgery, dermabrasion, hydrosurgery, radiofrequency surgery, and carbon dioxide laser resurfacing are established techniques that can restore nasal contour and provide functional and aesthetic improvement. Nevertheless, these procedures may be associated with complications, including bleeding, infection, pigmentary alterations, scar formation, recurrence, and, occasionally, the need for secondary reconstructive procedures.⁶

Conversely, medical therapy may be considered in patients with early-stage rhinophyma and limited tissue hypertrophy, as well as in selected patients with contraindications to surgery or those who decline surgical intervention. The objectives of conservative treatment are to reduce inflammatory activity, control the underlying rosacea, and potentially limit progression of sebaceous and phymatous changes before extensive fibrosis develops.

Oral isotretinoin is among the pharmacological agents described for early phymatous disease because of its ability to reduce sebaceous gland size and activity, inhibit sebocyte proliferation, decrease sebum production, and exert anti-inflammatory effects. Adjunctive therapies, including sub-antimicrobial-dose doxycycline and topical agents such as metronidazole, ivermectin, azelaic acid, and brimonidine, may improve control of the underlying manifestations of rosacea. However, evidence specifically addressing medical management of established rhinophyma remains limited and is derived primarily from case reports and small case series.⁷ Despite advances in the understanding of rosacea pathophysiology, published evidence regarding exclusive pharmacological treatment of rhinophyma remains scarce.

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Most available studies focus on surgical techniques or comparisons among different excisional modalities, whereas relatively few reports describe outcomes following conservative medical therapy, particularly when treatment is initiated during early disease. Consequently, standardized therapeutic recommendations and clearly defined patient selection criteria remain lacking.⁷

In this context, the present case report describes the conservative management and clinical course of a patient with early rhinophyma treated with pharmacological therapy. Particular emphasis is placed on patient selection, clinical response during follow-up, and the potential role of early recognition in allowing consideration of nonsurgical management. Additionally, the available literature on medical treatment of rhinophyma is discussed to provide context for this therapeutic approach.

CASE REPORT

A 49-year-old man from the State of Mexico presented to the Department of Plastic and Reconstructive Surgery with a progressive increase in nasal volume that had evolved over approximately three years. The condition began insidiously with persistent centrofacial erythema accompanied by recurrent episodes of facial flushing and increased sebaceous skin activity.

Over time, the patient developed progressive thickening of the nasal skin, enlargement of follicular pores, irregularity of the cutaneous surface, and nodular overgrowth predominantly involving the nasal tip and alae, resulting in gradual aesthetic deterioration that prompted medical consultation.

The patient denied any history of nasal trauma, previous aesthetic procedures, cutaneous infections, dermatological disorders other than rosacea, or known skin malignancies. His past medical history was significant for hypertension diagnosed five years earlier, which was well controlled with losartan 50 mg once daily. He denied diabetes mellitus, dyslipidemia, autoimmune disorders, chronic liver disease, drug allergies, and a family history of rosacea or skin cancer. He reported a previous smoking history of 10 pack-years, having quit eight years before presentation, and occasional alcohol consumption.

During the clinical interview, the patient reported worsening of facial erythema following sun exposure, alcohol intake, consumption of spicy foods, and abrupt temperature changes. He denied nasal obstruction, epistaxis, rhinorrhea, pain, olfactory disturbances, or unintentional weight loss.

Physical examination revealed a hemodynamically stable patient with no evidence of systemic inflammatory response. Facial inspection demonstrated persistent centrofacial erythema with multiple telangiectasias, moderate hypertrophy of the nasal skin, marked enlargement of follicular ostia, and increased volume of both the nasal tip and alae.

Multiple firm, non-tender nodules with an irregular lobulated surface, consistent with early phymatous changes, were observed. No ulceration, necrosis, spontaneous bleeding, rapid focal growth, atypical pigmentation, purulent discharge, or other clinically suspicious lesions were identified. Both nasal cavities remained patent, with no clinical evidence of functional airway compromise.

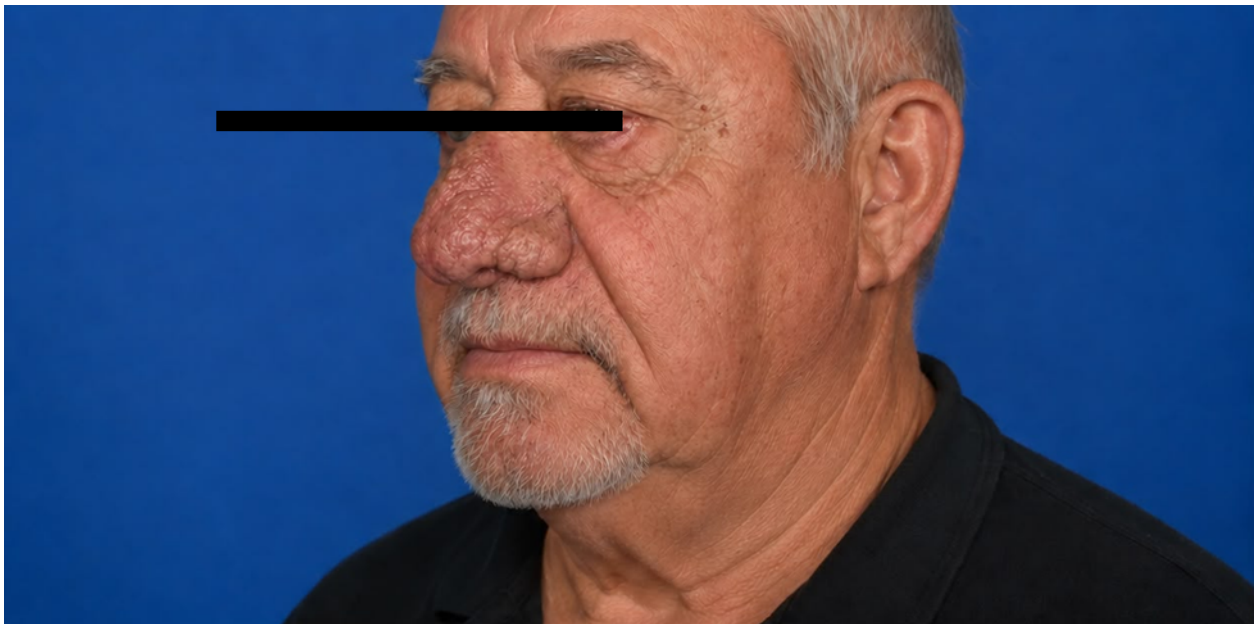


Figure 1. Initial clinical appearance before treatment.

The remainder of the physical examination was unremarkable. No additional cutaneous lesions, regional lymphadenopathy, or ocular manifestations of rosacea were identified.

Baseline laboratory investigations, including a complete blood count, comprehensive metabolic panel, lipid profile, and liver function tests, were obtained before initiating

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systemic retinoid therapy. All laboratory parameters were within normal reference ranges.

Based on the patient's clinical history and characteristic physical examination findings, a diagnosis of early-stage rhinophyma associated with phymatous rosacea was established clinically. No focal or atypical findings raising clinical suspicion of an underlying cutaneous malignancy were identified; therefore, biopsy was not performed. The patient was maintained under clinical surveillance, with histopathological assessment to be considered if suspicious or atypical changes developed during follow-up.

Given the absence of severe nasal deformity, airway obstruction, or an immediate indication for surgical contouring, conservative medical management was selected. Treatment consisted of oral isotretinoin at a dosage of 20 mg/day (approximately 0.3 mg/kg/day), combined with topical 0.75% metronidazole applied twice daily, strict photoprotection using a broad-spectrum sunscreen with SPF 50+, gentle soap-free facial cleansing, and counseling regarding avoidance of previously identified triggering factors.

Clinical follow-up was performed at monthly intervals. At the first follow-up visit, the patient demonstrated good treatment tolerance, with mild cheilitis being the only reported adverse effect. This was successfully managed with topical emollients

without requiring dose adjustment. Serial liver function tests and lipid profiles remained within reference ranges throughout treatment.

After three months of therapy, clinical examination demonstrated a reduction in facial erythema, sebaceous activity, and cutaneous inflammation. Partial regression of clinically apparent nasal soft-tissue hypertrophy and improved definition of the nasal tip and alar contours were also observed, with no clinically apparent progression of the disease.

Following six months of continuous pharmacological treatment, the patient exhibited a clinically appreciable reduction in phymatous tissue prominence, together with improvement in sebaceous activity, skin texture, persistent erythema, and definition of the nasal tip and alar contours. Clinical response was assessed through serial physical examinations and comparison of clinical photographs obtained during follow-up. Because no validated volumetric or three-dimensional measurement method was used, the magnitude of tissue reduction was not expressed as a quantitative percentage.

No biochemical abnormalities attributable to isotretinoin therapy or other clinically significant adverse events were detected during treatment.

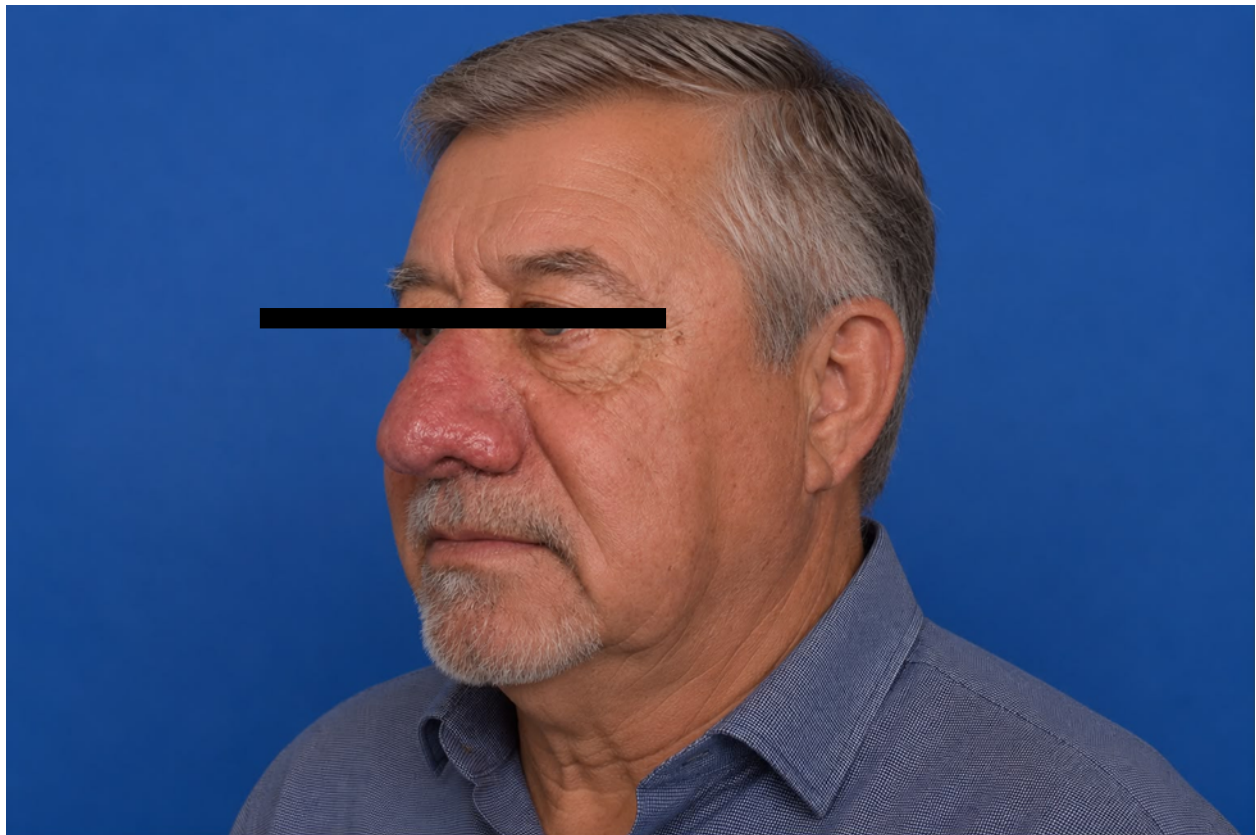


Figure 2. Clinical appearance after six months of conservative treatment.

In view of the clinical improvement observed during follow-up, systemic isotretinoin was discontinued, while topical therapy, strict photoprotection, and periodic clinical surveillance were maintained. At the three-month follow-up

after treatment discontinuation, no clinically apparent progression of the phymatous changes was observed, and the improvement remained stable. Surgical intervention was not considered necessary during this follow-up period.

DISCUSSION

Rhinophyma represents an advanced manifestation of phymatous rosacea and is a chronic inflammatory disorder characterized by sebaceous gland hyperplasia, dermal fibrosis, angiogenesis, and persistent inflammatory cell infiltration. Although surgical intervention has traditionally represented the principal treatment for established rhinophyma, recognition of earlier phymatous changes has generated interest in pharmacological treatment as a potential option for selected patients.⁸

In the present case, rhinophyma was diagnosed clinically at an early stage, before the development of severe nasal deformity or functional airway compromise. This clinical scenario supported an initial conservative approach with oral isotretinoin combined with topical therapy. Clinical improvement was observed during follow-up, and surgical

intervention was not pursued during the reported observation period. However, given the nature of a single case report, these findings should not be interpreted as establishing treatment efficacy or a direct causal relationship.⁸

Isotretinoin reduces sebaceous gland size, inhibits sebocyte differentiation, decreases sebum production, and exerts anti-inflammatory effects through modulation of cytokine expression and immune-response mediators. However, because established fibrosis is unlikely to respond substantially to pharmacological therapy, the potential clinical response may depend partly on the degree of structural tissue change present when treatment is initiated. Patients with marked tissue hypertrophy and fibrosis frequently require surgical contouring to restore nasal anatomy.⁹

Table 1. Comparison Between Medical and Surgical Management of Rhinophyma

Characteristic	Medical Management	Surgical Management
Primary consideration	Early disease with limited hypertrophy	Moderate to advanced tissue hypertrophy
Main objective	Control inflammation and underlying rosacea; potentially limit progression	Remove or remodel hypertrophic tissue
Principal modalities	Oral isotretinoin and adjunctive rosacea therapy	Tangential excision, CO ₂ laser, radiofrequency, electrosurgery
Aesthetic change	Usually gradual	More immediate contour modification
Recovery	Generally limited procedural downtime	Requires wound healing
Risk of scarring	No procedure-related surgical scar	Variable depending on technique and healing
Recurrence/progression	May occur after treatment discontinuation	Recurrence may occur despite treatment

Therapeutic decision-making should therefore be individualized according to the degree of tissue hypertrophy, clinically apparent fibrosis, functional impairment,

comorbidities, and patient preferences. In the present case, the absence of significant structural deformity supported an initial trial of conservative treatment.¹⁰

Table 2. Mechanisms and Potential Clinical Roles of Medical Therapies Used in Rosacea and Early Phymatous Disease

Treatment	Mechanism of Action	Potential Clinical Role
Oral isotretinoin	Reduces sebaceous gland size and sebum production; anti-inflammatory activity	May reduce sebaceous activity and early phymatous changes
Doxycycline	Anti-inflammatory activity at sub-antimicrobial doses	Control of inflammatory manifestations of rosacea
Topical metronidazole	Anti-inflammatory and antioxidant effects	Control of underlying rosacea
Topical ivermectin	Anti-inflammatory activity and reduction of Demodex density	Reduction of inflammatory rosacea lesions
Azelaic acid	Anti-inflammatory and keratinization-modulating effects	Improvement of inflammatory manifestations and erythema

Among available pharmacological approaches, oral isotretinoin has been described for patients with early phymatous changes. Nevertheless, the available evidence remains limited, predominantly consisting of case reports,

small case series, and extrapolation from studies of rosacea. Standardized protocols regarding dosage, duration of therapy, patient selection, and expected outcomes have not yet been established.¹¹

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Table 3. Comparison of the Present Case with Characteristics Reported in the Literature

Variable	Published Literature	Present Case
Predominant sex	Male	Male
Typical age	Most frequently middle-aged to older adults	49 years
Diagnosis	Primarily clinical; histopathology when indicated	Clinical
Disease stage	Variable	Early
Treatment	Medical and/or surgical according to presentation	Medical
Isotretinoin	Described mainly for early phymatous changes	Yes
Surgical intervention	Commonly used for established tissue hypertrophy	Not performed during follow-up
Clinical course	Variable	Clinical improvement during follow-up

The present case is consistent with epidemiological characteristics commonly reported for rhinophyma, including its predominance among middle-aged and older men. The clinical improvement observed during treatment suggests that conservative pharmacological management warrants further

study in selected patients presenting with early phymatous changes. However, because this report describes a single patient without a control group, a causal relationship between the therapeutic regimen and the observed improvement cannot be established.¹²

Table 4. Potential Advantages and Limitations of Conservative Management

Potential Advantages	Limitations
Avoids an immediate surgical procedure	Does not reliably reverse established fibrosis
No surgical wound	Requires prolonged clinical follow-up
Preserves native nasal tissue	Clinical response may be gradual or incomplete
May be acceptable to patients preferring nonsurgical management	Progression or recurrence may occur
May control concomitant inflammatory rosacea	Evidence specific to rhinophyma remains limited

One of the principal challenges is identifying patients who may be appropriate candidates for an initial medical approach. Once marked fibrosis and severe tissue

hypertrophy predominate, pharmacological therapy is unlikely to adequately restore nasal contour, and surgical treatment may be required.¹³

Table 5. Clinical Factors That May Influence Selection of Medical or Surgical Management

Clinical Factor	Medical Management May Be Considered	Surgical Management May Be Considered
Early-stage disease	✓	
Limited tissue hypertrophy	✓	
Advanced rhinophyma		✓
Marked fibrosis		✓
Nasal airway obstruction		✓
Severe structural deformity		✓
Contraindication to surgery	✓	
Patient declines surgery	✓	
Suspicious lesion requiring tissue diagnosis		✓*

*When malignancy is suspected, biopsy or excision with histopathological examination should be considered according to the clinical presentation.

Our patient presented several characteristics supporting an initial conservative approach, including early-stage disease, absence of nasal obstruction, limited clinically apparent fibrotic change, and adherence to follow-up. During treatment, improvement in erythema, sebaceous activity, skin texture, and nasal contour was observed, and surgical intervention was not considered necessary during the reported follow-up period. These observations should not be interpreted as evidence that pharmacological therapy can

reliably prevent future surgery, because the natural history and therapeutic response of rhinophyma vary among patients.¹³

The present report has several limitations, including its single-patient design, absence of a control group, lack of histopathological confirmation, absence of objective volumetric assessment of nasal tissue changes, and relatively short follow-up period. These limitations preclude definitive conclusions regarding treatment efficacy, causality, long-term

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durability of the response, and recurrence risk. Nevertheless, this case adds to the limited clinical literature describing conservative treatment of early rhinophyma and supports further investigation of medical management in appropriately selected patients.^{13, 14}

The clinical course observed in this patient suggests that oral isotretinoin combined with topical therapy and strict photoprotection may be considered as a conservative approach in selected patients with early-stage rhinophyma. Early recognition may provide an opportunity to initiate treatment before marked structural and fibrotic changes occur. Larger prospective studies with objective outcome measures and extended follow-up are required to determine the effectiveness of this approach and to establish evidence-based therapeutic protocols and standardized patient selection criteria.

CONCLUSION

Rhinophyma is a progressive manifestation of phymatous rosacea that may result in substantial cosmetic deformity and, in advanced cases, functional impairment. In the present patient with early-stage disease, conservative treatment with oral isotretinoin, topical metronidazole, photoprotection, and avoidance of identified triggering factors was associated with clinical improvement in erythema, sebaceous activity, skin texture, and phymatous tissue prominence during the follow-up period.¹⁵

Given the single-patient nature of this report, the absence of a control group, and the lack of objective volumetric assessment, definitive conclusions regarding treatment efficacy or causality cannot be drawn. The fact that surgical intervention was not pursued during the observation period should not be interpreted as evidence that medical therapy prevents the future need for surgery.

Surgical management remains an established therapeutic approach for patients with substantial tissue hypertrophy, fibrosis, structural nasal deformity, or functional impairment. Conservative pharmacological management may nevertheless be considered in selected patients with early disease, provided that appropriate clinical surveillance is maintained and the limitations of the currently available evidence are recognized.¹⁵

Further prospective studies involving larger patient cohorts, standardized and objective outcome measurements, longer follow-up periods, and direct comparisons of therapeutic strategies are required to determine the effectiveness, durability, appropriate indications, and optimal treatment protocols for conservative management of rhinophyma.¹⁵

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