

Challenging management of a corneal ulcer in a patient affected with rosacea

Eduardo Bianchi¹, Davide Tucci², Marco Messina²

From ¹Resident, ²Consultant, Department of Ophthalmology, University of Perugia, Perugia, Italy

ABSTRACT

This case report is intended to describe the challenging diagnostic process and management of a severe corneal ulcer in a patient with rosacea, initially misdiagnosed as herpetic keratitis, and subsequently considered as peripheral ulcerative keratitis (PUK), before reaching the correct diagnosis of rosacea-related marginal keratitis. Here, we present the case of an 80-year-old male presenting with long-standing ocular pain, tearing, and reduced vision in his left eye, unresponsive to intensive antiviral therapy. A complete ophthalmic and systemic workup was performed. Despite antiviral withdrawal, topical antibiotics, and a multilayer amniotic membrane transplantation, corneal thinning progressed to a descemetocele requiring a Gunderson flap. Reassessment of eyelids and skin revealed severe blepharitis and erythematotelangiectatic rosacea. Introduction of systemic doxycycline, topical steroids, topical antibiotics, and eyelid hygiene resulted in gradual improvement. Rosacea may cause severe, sight-threatening marginal keratitis that mimics herpetic keratitis or PUK. Careful evaluation of eyelids and periocular skin is essential. Early recognition of rosacea-related ocular disease is crucial in preventing progression of corneal damage.

Key words: Corneal thinning, Corneal ulcer, Doxycycline, Marginal keratitis, Meibomian gland dysfunction, Ocular rosacea

Rosacea is a chronic, inflammatory skin condition with a relapsing–remitting course, associated in up to 58% of cases with ocular involvement. The condition has a multifactorial pathogenesis involving immune-mediated mechanisms, neuro-vascular dysregulation, and environmental factors, such as ultraviolet exposure or dietary triggers, and microbial elements, with Demodex frequently implicated. Cutaneous manifestations mainly involve the facial and periocular areas with flushing, persistent erythema and pustules, whereas ocular rosacea may be associated with meibomian gland dysfunction (MGD), chronic conjunctivitis and, in up to one third of cases, corneal involvement ranging from punctate erosions to stromal melting and perforation [1,2]. Patients with MGD may develop marginal keratitis, characterized by peripheral anterior stromal infiltrates separated from the limbus by a clear corneal zone [3,4]. This keratitis is related to an immune hypersensitivity to staphylococcal antigens rather than direct infection, as demonstrated by its steroid responsiveness and by its typical location at the 10, 2, 4, and 8 o'clock positions, where antigen-presenting cells are abundant [5,6].

CASE PRESENTATION

An 80-year-old male came to our emergency department complaining of long-standing, severe ocular pain, described as stabbing and worsening at night, associated with marked photophobia, tearing, and progressive loss of vision in his left eye. He had been previously evaluated elsewhere and diagnosed with presumed herpetic keratitis, for which he was treated with high-dose systemic acyclovir (800 mg 5 times daily) and topical acyclovir ointment (30 mg/g, 5 times daily), without any improvement. His ocular history included glaucoma treated with topical prostaglandins (latanoprost 0.005%), bilateral cataract surgery, and recurrent redness in both eyes. His medical history was significant for diabetes, hypertension, benign prostatic hyperplasia, chronic obstructive pulmonary disease, and known skin rosacea. No history of mucocutaneous herpetic disease was reported.

General examination revealed persistent centrofacial erythema, telangiectatic vessels across cheeks and nose, and eyelid margin inflammation, consistent with erythematotelangiectatic rosacea. Systemic physical examination revealed no abnormalities other than mild peripheral edema. On slit-lamp examination, an infiltrated arcuate corneal ulcer was visible in the

Access this article online

Received - 29 October 2025
Initial Review - 14 November 2025
Accepted - 10 December 2025

Quick Response code



DOI: 10.32677/ijcr.v12i1.7929

Correspondence to: Eduardo Bianchi, Resident, Department of Ophthalmology, University of Perugia, Perugia, Italy. E-mail: dr.bianchieduardo@gmail.com

© 2025 Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC-ND 4.0).

superior cornea, a few millimeters from the limbus, with pronounced stromal thinning, conjunctival hyperemia, and perikeratic injection (Fig. 1).

Given the absence of response to antiviral therapy, the peripheral location of the lesion, and the severe stromal thinning, our diagnostic hypothesis shifted from herpetic keratitis to peripheral ulcerative keratitis (PUK). Therapy was modified by applying a bandage contact lens, prescribing preservative-free lubricants, and topical moxifloxacin 0.5% 6 times daily, while discontinuing all antiviral medications. The patient was admitted for a complete workup aimed at identifying potential infectious or autoimmune causes of PUK.

Microbiological analysis of corneal scrapings, blood tests for systemic infections such as tuberculosis, syphilis, Lyme disease, and *Neisseria gonorrhoeae*, rheumatologic screening including rheumatoid factor, antinuclear antibody, antineutrophil cytoplasmic antibodies, and extractable nuclear antigens, and a high-resolution chest computed tomography were performed. All results were negative, and no systemic factor explaining the corneal ulceration was identified.

Despite treatment, corneal thinning progressed, and an impending perforation developed. A multilayer human amniotic membrane graft was performed (Figs. 2a and 3a; Video 1). The patient was discharged a few days later on topical preservative-free netilmicin 3 mg/mL 4 times daily, with instructions for close follow-up.

However, he was lost to follow-up and returned after 1 month with worsening symptoms. Slit-lamp examination demonstrated further thinning, and anterior segment-optical coherence tomography revealed a descemetocoele (Fig. 3b and Video 2). A Gunderson flap was subsequently performed.

Given the persistent worsening, the absence of identifiable systemic causes, and the lack of response

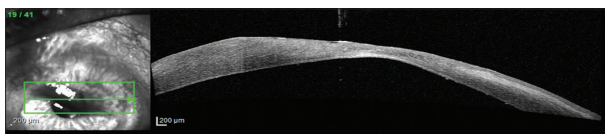


Figure 1: Anterior segment optical coherence tomography of patient's affected eye, revealing a marked thinning of the involved cornea (residual cornea of 212 μm)

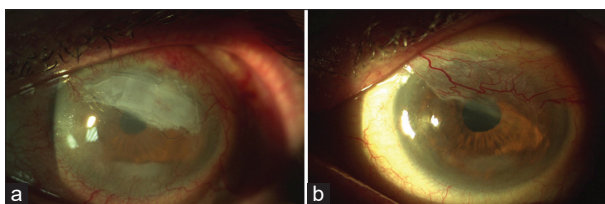


Figure 2: (a) Anterior segment slit-lamp photography of patient's affected eye after surgery: multi-layered amniotic membrane patch covering the corneal ulcer; continuous 10.0 nylon suture; (b) Anterior segment slit-lamp photography of patient's affected eye 1 month after surgery, with decreased eyelid redness and swelling and with a reduction of conjunctival hyperemia and corneal neo-vascularization

to previous therapies, the diagnosis was reconsidered. Closer inspection revealed severe blepharitis, marked lid margin erythema and swelling, turbid meibomian secretions, and the presence of cutaneous rosacea, all strongly suggestive of rosacea-related marginal keratitis. Systemic doxycycline 100 mg once daily, topical steroid (dexamethasone 1 mg/mL), and topical netilmicin were started, together with eyelid hygiene and warm compresses.

At follow-up, the patient showed progressive improvement with reduced lid swelling, decreased conjunctival hyperemia, and regression of corneal neovascularization (Fig. 2b).

DISCUSSION

The prevalence of rosacea is higher among Caucasians with photosensitive skin phototypes and in individuals over 30 years of age, as previously described by Crawford *et al.* and by Wilkin *et al.* [7,8]. Up to 58% of patients with cutaneous rosacea develop ocular manifestations, although ocular severity does not necessarily correlate with the extent of skin involvement [7]. Common symptoms include irritation, photophobia, redness, and epiphora, and vision may be impaired when the cornea becomes involved [8]. Ocular rosacea typically begins with lid margin inflammation, characterized by erythema, telangiectasia, and meibomian gland dysfunction, which contributes to evaporative dry eye and chronic conjunctivitis [9-11]. Corneal involvement may occur in approximately one-third of cases and varies from superficial punctate keratitis to stromal infiltrates, ulceration, and in severe cases, perforation [1,2].

In our patient, the initial diagnosis of herpetic keratitis appeared plausible because of the chronic, painful course. However, the lack of response to high-dose antiviral therapy, the peripheral arcuate morphology, and the progressive thinning raised suspicion for PUK. A microbial keratitis was also considered but was deemed less likely due to the predominance of ulceration over suppuration. Autoimmune and infectious evaluations excluded PUK and other systemic vasculitic causes.

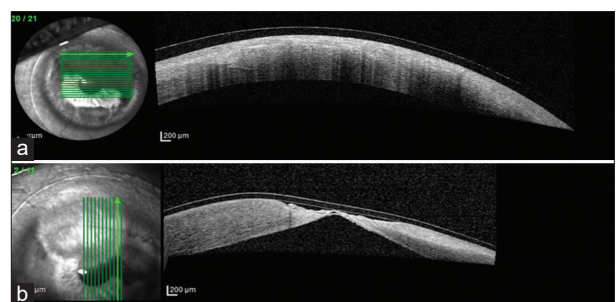


Figure 3: (a) anterior segment-optical coherence tomography (AS-OCT) of patient's affected eye after surgery with multilayered amniotic membrane, revealing a restored corneal thickness with overlying bandage contact lens; (b) AS-OCT of patient's affected eye 1 month after surgery, revealing a marked corneal thinning with descemetocoele and the overlying bandage contact lens.

A key turning point occurred when clinical attention shifted to the lids and facial skin, where signs of erythematotelangiectatic rosacea were prominent. This subtype is strongly associated with meibomian gland dysfunction and with immune-mediated marginal keratitis. The progression of ulceration, lack of response to antiviral and antibiotic therapy, and subsequent improvement upon initiation of doxycycline and topical steroids confirmed the rosacea-related etiology.

The differential diagnosis included herpetic keratitis, which was excluded by the complete lack of response to antiviral therapy; microbial keratitis, ruled out by the ulcer's morphology and negative cultures; PUK and Mooren's ulcer, excluded through negative autoimmune testing and lack of typical clinical features; and Terrien's marginal degeneration, excluded due to active inflammation and epithelial defects.

Topical steroids and systemic tetracyclines represent the cornerstone of therapy for rosacea-associated marginal keratitis. Their efficacy is linked to inhibition of matrix metalloproteinases and collagenases responsible for stromal degradation [12,13]. In this case, improvement after doxycycline supported the diagnosis and highlighted the importance of evaluating skin disease in patients with unexplained corneal ulcers.

CONCLUSION

This case highlights how a cutaneous inflammatory disorder such as rosacea may severely affect the ocular surface and even lead to sight-threatening conditions, including impending perforation. Proper assessment of the eyelids and skin is essential, particularly in patients with atypical or non-responsive corneal ulcers. Only after the patient's rosacea was reconsidered did the correct diagnosis and appropriate therapy emerge. This case underscores the importance of integrating dermatologic findings into the evaluation of corneal disease.

Video 1: Anterior segment-optical coherence tomography volumetric acquisition after the surgical procedure of patching with a multi-layered human amniotic membrane

Video 2: Anterior segment-optical coherence tomography volumetric acquisition of patient's affected eye 1 month after surgery with human amniotic membrane revealing the descemetocoele

AUTHOR'S CONTRIBUTIONS

Clinical evaluation, assessment, and clinical therapeutic management of the patient by all three authors. Surgery by Dr. Marco Messina. Follow-up by all three authors.

REFERENCES

1. Tavassoli S, Wong N, Chan E. Ocular manifestations of rosacea: A clinical review. *Clin Exp Ophthalmol* 2021;49:104-17.
2. Redd TK, Seitzman GD. Ocular rosacea. *Curr Opin Ophthalmol* 2020;31:503-7.
3. Cohn H, Mondino BJ, Brown SI, Hall GD. Marginal corneal ulcers with acute beta streptococcal conjunctivitis and chronic dacryocystitis. *Am J Ophthalmol* 1979;87:541-3.
4. Jayamanne DG, Dayan M, Jenkins D, Porter R. The role of staphylococcal superantigens in the pathogenesis of marginal keratitis. *Eye (Lond)* 1997;11 Pt 5:618-21.
5. Gupta Y, Kishore A, Kumari P, Balakrishnan N, Lomi N, Gupta N, *et al.* Peripheral ulcerative keratitis. *Surv Ophthalmol* 2021;66:977-98.
6. Hassanpour K, ElSheikh RH, Arabi A, Frank CR, Elhusseiny AM, Eleiwa TK, *et al.* Peripheral ulcerative keratitis: A review. *J Ophthalmic Vis Res* 2022;17:252-75.
7. Crawford GH, Pelle MT, James WD. Rosacea: I. Etiology, pathogenesis, and subtype classification. *J Am Acad Dermatol* 2004;51:327-41; quiz 342-4.
8. Wilkin J, Dahl M, Detmar M, Drake L, Feinstein A, Odom R, *et al.* Standard classification of rosacea: Report of the national rosacea society expert committee on the classification and staging of rosacea. *J Am Acad Dermatol* 2002;46:584-7.
9. Ghanem VC, Mehra N, Wong S, Mannis MJ. The prevalence of ocular signs in acne rosacea: Comparing patients from ophthalmology and dermatology clinics. *Cornea* 2003;22:230-3.
10. Akpek EK, Merchant A, Pinar V, Foster CS. Ocular rosacea: Patient characteristics and follow-up. *Ophthalmology* 1997;104:1863-7.
11. Vieira AC, Hofling-Lima AL, Mannis MJ. Ocular rosacea--a review. *Arq Bras Oftalmol* 2012;75:363-9.
12. Dougherty JM, McCulley JP, Silvano RE, Meyer DR. The role of tetracycline in chronic blepharitis. Inhibition of lipase production in staphylococci. *Invest Ophthalmol Vis Sci* 1991;32:2970-5.
13. Awais M, Anwar MI, Iftikhar R, Iqbal Z, Shehzad N, Akbar B. Rosacea-the ophthalmic perspective. *Cutan Ocul Toxicol* 2015;34:161-6.

Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Bianchi E, Tucci D, Messina M. Challenging management of a corneal ulcer in a patient affected with rosacea. *Indian J Case Reports*. 2026; 12(1):11-13.