World Journal of Current Medical and Pharmaceutical Research
Content available at www.saap.org.in ISSN: 2582-0222

OCULAR SURFACE SQUAMOUS NEOPLASIA MASQUERADING AS DIVERSE OCULAR SURFACE LESIONS: A FIVE-CASE SERIES HIGHLIGHTING DIAGNOSTIC PITFALLS AND MANAGEMENT

PRAKRITI TRIPATHI[1]*, SURABHI KUMARI[2], ADITYA G. VED[3]

[1]Senior Resident, Department of Ophthalmology, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow, Uttar Pradesh, India.
[2]Senior Resident, Department of Ophthalmology, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow, Uttar Pradesh, India.
[3]Senior Resident, Department of Ophthalmology, Naraina Medical College and Research Centre, Kanpur, Uttar Pradesh, India.

DOI: https://doi.org/10.37022/wjcmpr.v8i3.471

ARTICLE HISTORY
Received on: 09-07-2026
Revised on: 24-10-2026
Accepted on: 12-11-2026

Keywords: *ocular surface squamous neoplasia; conjunctival intraepithelial neoplasia; anterior-segment optical coherence tomography; interferon alfa-2b; mitomycin-C; diagnostic delay.*

Corresponding Author
Dr. Prakriti Tripathi, Senior Resident, Department of Ophthalmology, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS), Lucknow, Uttar Pradesh, India.

ABSTRACT

Purpose: To describe the varied clinical presentations of ocular surface squamous neoplasia (OSSN), the diagnostic pitfalls that delayed recognition, and the management outcomes in five patients treated at a tertiary eye-care centre in Uttar Pradesh.

Case Series: This retrospective descriptive case series includes five patients (three men and two women; mean age, 55.8 years; range, 42–72 years). Lesions were initially considered to represent inflamed pterygium/pinguecula, nodular scleritis, foreign-body granuloma, conjunctival papilloma, or conjunctival lymphoma. The largest lesion measured approximately 14 × 10 mm. Anterior-segment optical coherence tomography (AS-OCT), when documented, demonstrated thickened hyperreflective epithelium with an abrupt transition from normal to abnormal epithelium. Three patients received primary topical chemotherapy (interferon alfa-2b in two and mitomycin-C in one); two patients with larger lesions received mitomycin-C for chemoreduction followed by excision biopsy. Histopathology confirmed high-grade conjunctival intraepithelial neoplasia/carcinoma in situ in the surgically treated cases. No local recurrence was documented during the available follow-up (12–19 months in four cases; follow-up in the fifth case was reported as 15 months in the case narrative). One patient died from systemic complications of chronic kidney disease, without documented ocular recurrence before death.

Conclusion: OSSN can mimic inflammatory and benign conjunctival disorders, including scleritis, pterygium, granuloma, papilloma, and lymphoma. Persistent, enlarging, vascularized, or treatment-resistant lesions warrant reassessment, appropriate imaging and histopathological confirmation when indicated. Early recognition may permit less invasive treatment and reduce ocular-surface morbidity.

This article is licensed under a Creative Commons Attribution-Non-commercial 4.0 International License.
Copyright © 2026 Author(s) retains the copyright of this article.

INTRODUCTION

Ocular surface squamous neoplasia (OSSN) describes a spectrum of dysplastic and malignant squamous epithelial lesions involving the conjunctiva and cornea, ranging from intraepithelial neoplasia to invasive squamous cell carcinoma [1,2]. Clinical morphology is variable: lesions may be gelatinous, leukoplakic, papillary, nodular, or diffuse and salmon-pink, creating overlap with benign, inflammatory, and lymphoproliferative disorders [1,2]. Chronic ultraviolet exposure is an established risk factor; tobacco exposure and immunosuppression may also be relevant in selected patients [1,3].

AS-OCT can support clinical assessment by demonstrating epithelial thickening, hyperreflectivity, and an abrupt transition between normal and abnormal epithelium, although it does not replace histopathology when tissue diagnosis is required [2,4]. Management is individualized according to lesion size, extent, suspected invasion, ocular-surface status, and patient factors. Options include topical interferon alfa-2b, mitomycin-C, 5-fluorouracil, and excision using a no-touch technique with adjunctive cryotherapy

[2,3,5]. We report five cases in which OSSN initially resembled other ocular-surface conditions, emphasizing diagnostic reassessment and treatment outcomes.

CASE SERIES

Five patients were managed at a tertiary eye-care centre in Uttar Pradesh. Three were men and two were women; the mean age was 55.8 years (range, 42–72 years). All five lesions had initially been assigned an alternative clinical diagnosis. Case-level details are presented below.

Case 1: OSSN initially treated as inflamed pterygium/pinguecula

A 62-year-old male farmer presented with redness, foreign-body sensation, and a slowly progressive fleshy growth on the nasal aspect of the right eye for 8 months. He reported more than 35 years of outdoor work and substantial ultraviolet exposure. There was no history of trauma, ocular surgery, or immunocompromised state. The lesion had initially been diagnosed elsewhere as inflamed pterygium and treated with lubricants and intermittent topical corticosteroids for 4 months; congestion temporarily decreased, but the lesion enlarged.

Best-corrected visual acuity (BCVA) was 6/9 in the right eye and 6/6 in the left eye. Examination showed a raised gelatinous nasal limbal lesion measuring approximately 6 × 4 mm, with feeder vessels, focal leukoplakia, and 2 mm of corneal extension. Regional lymphadenopathy was absent. AS-OCT showed thickened hyperreflective epithelium with an abrupt transition between normal and abnormal epithelium. A provisional diagnosis of OSSN was made. Given the localized lesion and absence of clinically apparent deep scleral invasion, topical interferon alfa-2b (1 million IU/mL) was administered four times daily. Progressive regression occurred over 12 weeks, with complete clinical resolution by month 4. Treatment continued for an additional month after resolution. At 12 months, the ocular surface remained stable without recurrence and BCVA was 6/6.

Learning point: A persistent or atypical "inflamed pterygium" that enlarges or fails to respond as expected should prompt consideration of OSSN.

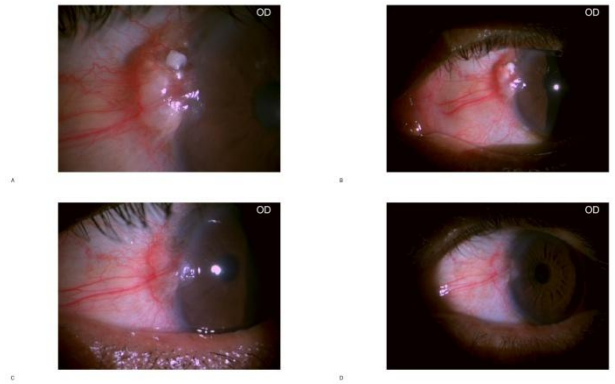


Figure 01: Case 1: Clinical appearance of a nasal limbal lesion initially treated as inflamed pterygium/pinguecula. Panels show representative slit-lamp views of the lesion and its vascularized, gelatinous/leukoplakic appearance. (Clinical photographs supplied by the authors.)

Case 2: OSSN mimicking nodular scleritis

A 55-year-old female schoolteacher presented with painful localized redness over the temporal aspect of the right eye for 7 months. She had no known systemic autoimmune disease. The lesion had been diagnosed as nodular scleritis and treated with oral nonsteroidal anti-inflammatory drugs and topical corticosteroids; the source presentation records 5 months of treatment, which is inconsistent with the stated 5-month symptom duration and requires verification. Symptoms partially improved, but the nodule enlarged.

BCVA was 6/6 in both eyes. Examination showed a 5 × 5 mm elevated, vascularized temporal limbal nodule with surface keratinization, a gelatinous surface, intrinsic vascularity, and minimal scleral tenderness. Superficial corneal extension was minimal or absent. Autoimmune investigations were unremarkable. AS-OCT demonstrated epithelial thickening inconsistent with isolated scleritis and suggestive of OSSN. Topical interferon alfa-2b (1 million IU/mL) four times daily was initiated. Vascularity and lesion size gradually decreased, with complete clinical regression at approximately 14 weeks; treatment continued for one additional month. At 18 months, there was no clinical recurrence and visual acuity remained unchanged.

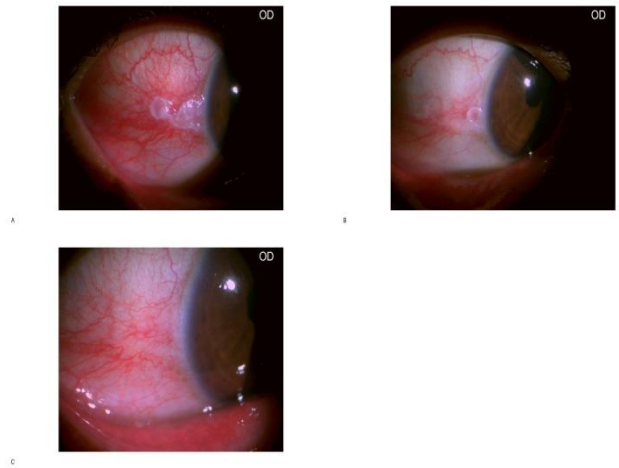


Figure 02: Case 2: Temporal limbal nodule initially diagnosed as nodular scleritis. Representative slit-lamp views demonstrate the elevated vascularized lesion. (Clinical photographs supplied by the authors.)

Case 3: OSSN mimicking foreign-body granuloma

A 48-year-old male construction worker presented with a persistent conjunctival mass in the left eye, associated with irritation and watering for 6 months. He recalled minor occupational ocular trauma. The lesion was presumed to be a foreign-body granuloma and treated with topical antibiotics and corticosteroids for 3 months, despite gradual enlargement. BCVA was 6/6 in both eyes. A pink, raised, vascularized conjunctival mass measuring 4 × 2.5 mm was present near the temporal limbus at the 4-o'clock position. Its surface was irregular and keratinized, with prominent feeder vessels; no retained foreign body was identified. AS-OCT showed markedly thickened hyperreflective epithelium, raising suspicion of OSSN. Topical mitomycin-C 0.04% was given in cycles of 1 week on treatment followed by 1 week off, with intensive lubrication. The lesion decreased markedly after the first cycle and had completely resolved after three cycles. Only mild transient ocular-surface irritation was reported. At 15 months after treatment, there was no recurrence and visual acuity and ocular-surface anatomy were preserved.

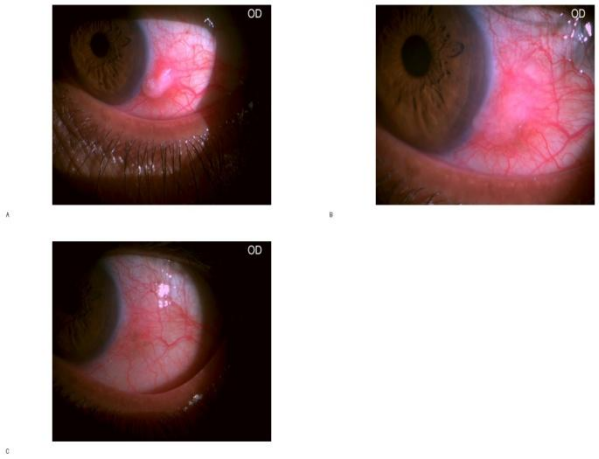


Figure 03: Case 3: Temporal limbal conjunctival lesion initially considered a foreign-body granuloma. Representative slit-lamp views show a raised vascularized lesion. (Clinical photographs supplied by the authors.)

Case 4: OSSN initially diagnosed as conjunctival papilloma in a patient with chronic kidney disease

A 72-year-old male farmer with prolonged occupational ultraviolet exposure and chronic tobacco consumption presented with an enlarging right conjunctival mass of nearly 18 months' duration, foreign-body sensation, watering, and gradual visual diminution. He had stage IV chronic kidney disease. Approximately one year earlier, a local ophthalmologist had considered the diffuse pink fleshy lesion involving the superior bulbar and tarsal conjunctiva to be a conjunctival papilloma and managed it conservatively. Referral was delayed by approximately 10 months.

BCVA was 6/24 in the right eye and 6/9 in the left eye. A pedunculated, papilliform mass with a cauliflower-like surface involved the superior tarsal conjunctiva and extended onto the superior bulbar conjunctiva. It measured approximately 14 × 10 mm and showed intrinsic vascularity, feeder vessels, focal keratinization, mechanical ptosis, superior corneal pannus, and ocular-surface irregularity. Regional lymphadenopathy was not palpable. AS-OCT showed markedly thickened hyperreflective epithelium with an abrupt transition, favoring OSSN. Because primary excision was expected to cause substantial ocular-surface morbidity, topical mitomycin-C 0.04% four times daily was used in cycles of 1 week on and 1 week off. After four cycles, tumor bulk and vascularity regressed. Excision biopsy using a no-touch technique with adjunctive cryotherapy was then performed. Histopathology showed high-grade conjunctival intraepithelial neoplasia/carcinoma in situ with negative margins.

Postoperative healing was satisfactory, and mechanical ptosis improved. The supplied presentation reports BCVA as improving to 6/18 but also states that the last recorded BCVA was 6/24; this discrepancy needs confirmation. There was no documented local recurrence before the patient died approximately 9 months after surgery from systemic complications related to chronic kidney disease.



Figure 04: Case 4: Extensive superior conjunctival papilliform lesion initially considered conjunctival papilloma in a patient with chronic kidney disease. Panel A shows the clinical appearance; panel B reproduces the histopathology composite supplied in the presentation. The original slide labels and histopathology details should be checked before submission.

Case 5: OSSN initially suspected to be conjunctival lymphoma

A 52-year-old male farmer presented with a gradually progressive right conjunctival mass of 6 months' duration and a history of prolonged outdoor occupational sun exposure. The salmon-pink appearance led to an initial suspicion of conjunctival lymphoma and referral to the tertiary centre after approximately 6 months.

BCVA was 6/60 in the right eye and 6/6 in the left eye. An elevated fleshy salmon-pink lesion with diffuse margins and a lobulated surface involved the nasal bulbar conjunctiva and limbus. It measured approximately 8–10 × 6–7 mm and extended about 5 mm onto the cornea. Feeder vessels were present; leukoplakia was minimal to mild. Ocular motility was full and regional lymphadenopathy was absent. AS-OCT showed thickened hyperreflective epithelium with an abrupt transition between normal and abnormal epithelium. The patient received two cycles of topical mitomycin-C 0.04% for preoperative chemoreduction (1 week on treatment followed by 1 week off), followed by complete excision using a no-touch technique and double freeze–thaw cryotherapy to the conjunctival margins. Histopathology confirmed OSSN/carcinoma in situ with an intact basement membrane. Postoperative follow-up was reported as 19 months, with no recurrence. BCVA at the last visit was 6/24.

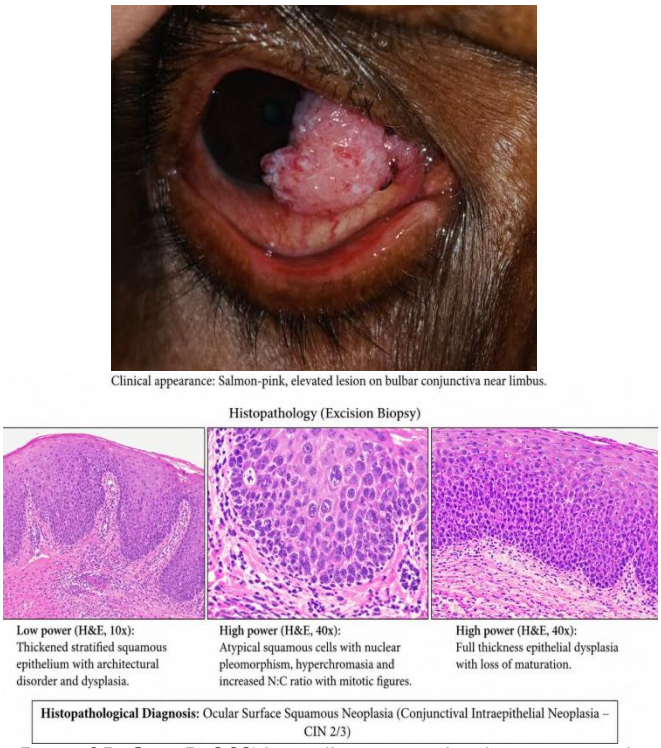


Figure 05: Case 5: OSSN initially suspected to be conjunctival lymphoma. The supplied clinical/histopathology montage is reproduced; panel orientation, histopathology labels, and the association of each image with this case should be verified against the original clinical record before submission.

Summary of cases

Case	Age/ sex	Initial diagnosis	Management	Reported follow-up/outcome
1	62/M	Inflamed pterygium/pinguecula	Topical interferon alfa-2b	12 months; no recurrence
2	55/F	Nodular scleritis	Topical interferon alfa-2b	18 months; no recurrence
3	48/M	Foreign-body granuloma	Topical mitomycin-C 0.04%	15 months; no recurrence
4	72/M	Conjunctival papilloma	Mitomycin-C chemoreduction + excision/cryotherapy	9 months; no recurrence before death from CKD complications
5	52/M	Conjunctival lymphoma	Mitomycin-C chemoreduction + excision/cryotherapy	19 months; no recurrence

Abbreviations: CKD, chronic kidney disease; M, male; F, female; MMC, mitomycin-C; OSSN, ocular surface squamous neoplasia.

DISCUSSION

This series illustrates five clinically distinct presentations of OSSN that were initially attributed to inflammatory or benign conjunctival disease. The range of initial diagnoses—pterygium/pinguecula, nodular scleritis, foreign-body granuloma, papilloma, and lymphoma—reflects the recognized morphological diversity of conjunctival tumors and the potential for clinical overlap [1,2]. Persistent growth despite anti-inflammatory or conservative treatment, prominent feeder vessels, keratinization/leukoplakia, and an atypical lesion surface were important reasons to reconsider the initial diagnosis.

Prolonged ultraviolet exposure was documented in several patients, particularly those with outdoor occupations. This is consistent with the established association between solar ultraviolet exposure and OSSN [1,3]. Tobacco use was documented in Case 4. These risk factors should inform clinical suspicion but are not diagnostic in isolation.

AS-OCT findings were described in the cases in which imaging was performed. Thickened, hyperreflective epithelium with an abrupt transition to normal epithelium is a characteristic feature that can support the diagnosis and help define lesion extent [2,4]. Nevertheless, AS-OCT cannot reliably establish histological grade or exclude invasive disease in every case. Histopathology remains important when excision is undertaken, particularly for large, atypical, or clinically suspicious lesions.

Treatment was individualized. Two localized lesions regressed with topical interferon alfa-2b, and one lesion resolved after topical mitomycin-C. Two larger lesions underwent mitomycin-C chemoreduction followed by no-touch excision and cryotherapy; the available histopathology reports described carcinoma in situ/high-grade intraepithelial neoplasia and negative margins in Case 4, and carcinoma in situ with an intact basement membrane in Case 5. Topical agents are established options for selected OSSN lesions, while surgery with appropriate margin control and cryotherapy remains an important approach, particularly when tissue diagnosis or removal is needed [2,3,5]. Treatment selection should consider lesion extent, suspected invasion, ocular-surface toxicity, patient comorbidities, adherence, and follow-up capacity.

The principal clinical message is that a persistent, enlarging, or treatment-resistant ocular-surface lesion should not be assumed to be benign solely on the basis of its initial appearance. Earlier recognition and referral may reduce lesion burden and the complexity of treatment. The limitations of this series include its small sample size, descriptive design, lack of a comparator group, and incomplete availability of standardized imaging and histopathology details for all cases. Follow-up duration and visual-acuity documentation also require reconciliation in two cases.

LIMITATIONS OF THE STUDY

The present case series is limited by its small sample size and single-centre setting, which restrict the generalizability of the findings. The varied clinical presentations, initial diagnostic impressions, and treatment approaches across the five cases preclude meaningful comparison of treatment outcomes. In addition, the absence of a comparison group limits the ability to establish whether early clinical recognition directly influenced treatment outcomes. Although the cases highlight the importance of considering ocular surface squamous neoplasia (OSSN) in atypical conjunctival lesions, larger multicentre studies with standardized diagnostic evaluation and management protocols are required to validate these observations.

CONCLUSION

OSSN may mimic common inflammatory, benign, and lymphoproliferative ocular-surface lesions. Clinical vigilance, reassessment of atypical or nonresponsive lesions, AS-OCT where available, and histopathological confirmation when indicated are central to accurate diagnosis. Early diagnosis may facilitate appropriate medical therapy or planned excision while limiting ocular-surface morbidity.

ETHICAL APPROVAL

The study was approved by the Institutional Ethical Committee of a tertiary care teaching hospital. The study adhered to the tenets of the Declaration of Helsinki

PATIENT CONSENT

Written informed consent was obtained from the patients/next to their kin for publication of their clinical details and clinical photographs, including potentially identifiable photographs.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest

ACKNOWLEDGEMENTS

The authors have no acknowledgements to declare

REFERENCES

1. Lee GA, Hirst LW. Ocular surface squamous neoplasia. Surv Ophthalmol. 1995;39(6):429-450. doi:10.1016/S0039-6257(05)80054-2.
2. Nanji AA, Sayyad FE, Karp CL. Clinical management of ocular surface squamous neoplasia: a review of the current evidence. Ophthalmology. 2017;124(4):547-555. doi:10.1016/j.ophtha.2016.12.015.
3. Shields CL, Chien JL, Surakiatchanukul T, Sioufi K, Lally SE, Shields JA. Conjunctival tumors: review of clinical features, risks, biomarkers, and outcomes—the 2017 J. Donald M. Gass Lecture. Asia Pac J Ophthalmol (Phila). 2017;6(2):109-120. doi:10.22608/APO.201710.
4. Kieval JZ, Karp CL, Abou Shousha M, et al. Ultra-high resolution optical coherence tomography for differentiation of ocular surface squamous neoplasia and pterygia. Ophthalmology. 2012;119(3):481-486. doi:10.1016/j.ophtha.2011.08.028.
5. Monroy D, Serrano A, Galor A, Karp CL. Medical treatment for ocular surface squamous neoplasia. Eye (Lond). 2023;37:195-205. doi:10.1038/s41433-022-02214-5.