International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/



(CASE REPORT)

Check for updates

CONJUNCTIVAL CARCINOMA IN SITU MIMICKING A PTERYGIUM: A CASE REPORT

A. Hajjaji [1,*], M. El Mhadi [2], S. Sadiki [3], A. Bouzidi [1] and A. El Ouafi [1]

[1] Department of Ophthalmology, Moulay Ismail Military Hospital, Meknes, Morocco.
[2] Department of Ophthalmology, 5th Medical-Surgical Center, Errachidia, Morocco.
[3] Department of Ophthalmology, Military hospital Mohammed V, Rabat, Morocco.
* Corresponding Author

ORCID Details
Adel Hajjaji: https://orcid.org/0009-0001-8731-5296

International Journal of Science and Research Archive, 2026, 21(01), 764–769

Publication history: Received on 22 September 2026; revised on 29 October 2026; accepted on 31 October 2026

Article DOI: https://doi.org/10.30574/ijsra.2026.21.1.1957

Copyright © 2026 Author(s) retain the copyright of this article. This article is published under the terms of the Creative Commons Attribution License 4.0

ABSTRACT

Introduction: Ocular surface squamous neoplasia (OSSN) encompasses a spectrum of epithelial lesions ranging from mild dysplasia to invasive squamous cell carcinoma, and may closely mimic benign conditions such as pterygium. Clinical diagnosis is unreliable, and histopathology remains the gold standard.

Case presentation: A 65-year-old man with no medical history presented with a foreign-body sensation in the right eye. Slit-lamp examination revealed a 6-mm reddish, elevated, poorly demarcated, slightly nodular perilimbal lesion of the nasal bulbar conjunctiva, extending slightly onto the cornea, with surface microvessels and a superonasal feeder vessel. Best-corrected visual acuity was 9/10 in both eyes, and intraocular pressure and fundus examination were normal. After a short course of topical anti-inflammatory treatment and artificial tears, the lesion was excised with intraoperative application of 0.02% mitomycin C. Histopathology showed conjunctival carcinoma in situ with clear surgical margins. Adjuvant topical mitomycin C 0.02% was administered (two 15-day cycles separated by a two-week interval). The course was favorable, with no recurrence at follow-up.

Conclusion: Any atypical, vascularized or poorly demarcated conjunctival growth, even when resembling a pterygium, should be excised and systematically submitted to histopathological examination. Prolonged follow-up is essential because late recurrences may occur.

Keywords: Ponjunctival carcinoma in situ; Ocular surface squamous neoplasia; Pterygium; Mitomycin C; Conjunctival intraepithelial neoplasia

1 INTRODUCTION

Ocular surface squamous neoplasia (OSSN) is the umbrella term for the spectrum of squamous epithelial proliferations of the conjunctiva and cornea, from mild dysplasia (conjunctival intraepithelial neoplasia, CIN) and carcinoma in situ to invasive squamous cell carcinoma [1,2]. It is the most common non-pigmented malignant tumor of the ocular surface [3]. Its clinical appearance is highly variable (papillary, gelatinous, leukoplakic or nodular), and some forms closely resemble benign lesions such as pterygium, pinguecula or papilloma [3,4].

Because the clinical features do not allow a reliable distinction between benign, pre-malignant and malignant lesions, the diagnosis rests on histopathology [2,5]. Failure to consider OSSN in the differential diagnosis of an apparently banal conjunctival growth may lead to incomplete excision, delayed diagnosis and, in the long term, stromal invasion [3,6].

We report a patient who presented with a conjunctival growth initially suggestive of a simple excrescence, which proved to be a carcinoma in situ on histological examination, and we review the epidemiology, diagnosis and management of this entity.

2 CASE REPORT

A 65-year-old man with no significant medical history consulted for a foreign-body sensation in the right eye. Best-corrected visual acuity was 9/10 in both eyes.



Figure 1: Slit-lamp photograph of the right eye showing a reddish, slightly elevated, poorly demarcated perilimbal nasal conjunctival lesion with surface microvessels and a superonasal feeder vessel.

Slit-lamp examination of the right eye showed a reddish lesion measuring 6 mm along its long axis, located on the nasal bulbar conjunctiva in a perilimbal position (from 3 to 5:30 o'clock) and extending slightly over the limbus onto the cornea. The lesion was elevated, with poorly defined margins and a mildly nodular surface bearing fine surface microvessels. It was mobile over the underlying sclera, and a superonasal feeder vessel was visible (Figure 1). Intraocular pressure and fundus examination were normal in both eyes. The left eye was unremarkable.

The patient was first treated with topical anti-inflammatory drops and artificial tears. Surgical excision was then performed with intraoperative application of 0.02% mitomycin C, and the specimen was sent for histopathological examination, which concluded to conjunctival carcinoma in situ with disease-free surgical margins. Postoperatively, adjuvant topical mitomycin C 0.02% was prescribed (one drop four times daily, in two 15-day cycles separated by a two-week interval). The patient was examined weekly during mitomycin C therapy, then monthly for 3 months, then every 6 months. The outcome was favorable, with no recurrence at the last follow-up.

3 DISCUSSION

3.1 Definition and epidemiology

Conjunctival carcinoma in situ is a neoplasm in which dysplastic squamous cells involve the full thickness of the epithelium without crossing the basement membrane. This distinguishes it from invasive squamous cell carcinoma, which penetrates the underlying stroma and carries a risk of regional lymphatic and, rarely, distant spread [1,2,7]. In the OSSN classification, it represents the most advanced pre-invasive stage, after mild-to-moderate dysplasia [1,8].

OSSN is the most frequent non-pigmented tumor of the ocular surface [3], and its incidence varies widely with geography: it increases with proximity to the equator and with ambient ultraviolet (UV) exposure [9,10], and it is particularly frequent in sub-Saharan Africa [11]. Most series report a male predominance and a presentation in the sixth to seventh decade in immunocompetent patients, whereas HIV-infected patients present markedly earlier [8,12,19]. Our patient, a 65-year-old man living in a sunny region, fits the usual demographic profile.

3.2 Risk factors and pathogenesis

The pathogenesis of OSSN is multifactorial. Chronic UV-B exposure is the best-established risk factor; it induces DNA damage, including mutations of the *TP53* tumor suppressor gene, in limbal stem cells [9,13]. Human papillomavirus (HPV, notably types 16 and 18) has been detected in a variable proportion of lesions and is considered a co-factor, although its causal role remains debated and its prevalence differs between series [13,14]. HIV infection is a strong risk factor, with a markedly increased incidence of conjunctival squamous carcinoma in endemic regions and a more aggressive course [11,15]. Other reported factors include tobacco use, chronic ocular surface inflammation, exposure to petroleum derivatives, xeroderma pigmentosum and older age [3,13]. Interestingly, pterygium itself is increasingly viewed as a UV-related stem-cell disorder with premalignant features, which may explain the frequent coexistence of the two conditions on the same limbal territory [16,17]. Our patient had no known immunodeficiency; HIV and HPV status were not evaluated in this case, and this is a limitation of our report. Given the established link with HIV, serological screening should be considered in any patient with OSSN, especially when young or when the lesion is bilateral or aggressive [11,15].

3.3 Clinical presentation and the pterygium pitfall

OSSN has a typical limbal predilection, in the interpalpebral fissure and preferentially on the nasal side, an area that is also the site of election for pterygium, which explains frequent diagnostic confusion [3,4]. Several clinical forms are described: gelatinous or papillary (sessile or pedunculated) lesions, leukoplakic plaques with surface keratinization, nodular or diffuse forms, and rare forms with a corneal-only extension [3,4,18]. Lesions are often asymptomatic or provoke only non-specific irritation, a foreign-body sensation, redness or a visible mass, as in our patient [3,4].

The lesion in our patient was initially considered a simple conjunctival excrescence. However, several features deviated from a typical pterygium: it was nodular and poorly demarcated, with a bosselated surface, surface microvessels and a prominent feeder vessel, whereas a pterygium is classically a fibrovascular, triangular, wing-shaped fold of conjunctiva that advances on the cornea. Features that should raise suspicion of OSSN include a gelatinous or leukoplakic surface, prominent or "corkscrew" feeder vessels, an irregular or fimbriated surface, atypical location, unusual rapid growth, recurrence after excision, and lack of response to medical treatment [3,4,18]. Unfortunately, none of these signs is specific. A retrospective study of excised pterygia showed that a minority of lesions that appeared clinically benign actually harbored associated OSSN [17], which has led several authors to recommend histopathological examination of every excised pterygium and conjunctival lesion [3,17]. Our case illustrates this recommendation: a specimen that would have been discarded as a benign growth in many settings led to the diagnosis of carcinoma in situ.

3.4 Diagnosis

Histopathology is the gold standard: it confirms the diagnosis, grades the degree of dysplasia (mild, moderate, severe, carcinoma in situ), identifies stromal invasion and assesses surgical margins [2,5,8]. Adjunctive non-invasive techniques have been developed to guide diagnosis and follow-up. High-resolution anterior segment optical coherence tomography (AS-OCT) typically shows a thickened, hyperreflective epithelium with an abrupt transition to normal epithelium, which helps distinguish OSSN from pterygium and pinguecula, and can be used to monitor the response to topical therapy [20]. Impression cytology is a minimally invasive method with good sensitivity and specificity for the detection of OSSN, and may be useful when excision is not immediately feasible [21]. Biopsy also remains essential when the lesion is extensive, when a topical-only strategy is planned, or when stromal invasion is suspected [5,8]. In our case, the AS-OCT was not available; we proceeded directly to excision and histological analysis, which provided a definitive diagnosis.

3.5 Management

The treatment of OSSN has evolved considerably in recent decades. Two main strategies currently coexist: surgical excision and topical chemotherapy [8,18,22].

3.5.1 Surgical excision

The classic approach is wide excision with a "no-touch" technique, with 3–4 mm margins of clinically normal tissue, partial lamellar sclerectomy and alcohol epitheliectomy for corneal involvement when needed, and cryotherapy applied to the conjunctival margins to eradicate residual neoplastic cells [23,24]. Cryotherapy, in particular, has been reported to reduce recurrence rates in the surgical management of intraepithelial and invasive conjunctival tumors [24]. Even with these precautions, recurrence rates after excision alone are reported between roughly 5% and 50%, depending on the series, the margin status and the follow-up duration [6,25,26]. Positive surgical margins are consistently the main predictor of recurrence [6,26].

3.5.2 Topical chemotherapy

Topical agents, which treat the entire ocular surface including subclinical disease, are used as adjuvant therapy after excision, as neoadjuvant treatment to reduce tumor volume, or as primary treatment for localized or diffuse lesions [8,18,22]. Three agents are mainly used: mitomycin C (0.02–0.04%), 5-fluorouracil (1%), and interferon alpha-2b (1 million IU/mL) [18,22,27].

Mitomycin C is an alkylating antibiotic that inhibits DNA synthesis. It has been shown to be effective in primary and recurrent disease, including lesions with corneal or diffuse involvement, with high resolution rates in multicenter and single-center series [28,29,30]. Its main drawbacks are ocular surface toxicity and the risk of punctal stenosis, conjunctival hyperemia, epithelial defects and, more rarely, limbal stem cell deficiency, which requires pulsed regimens (cycles of treatment with rest periods) and close monitoring [30,31]. In our patient, mitomycin C was used both intraoperatively (0.02%) and postoperatively in two 15-day cycles separated by a two-week rest, an approach consistent with pulsed regimens described in the literature and aimed at limiting toxicity and addressing possible subclinical residual disease [28,30].

5-Fluorouracil is an antimetabolite that is generally considered to be better tolerated than mitomycin C but which requires more frequent cycles; interferon alpha-2b, an immunomodulator, is well tolerated and has a low toxicity profile, but is more expensive and less accessible in many settings. A comparative study found similar resolution rates between 5-fluorouracil and interferon alpha-2b as primary treatment modalities [27]. Likewise, a comparative study of surgical versus medical treatment of OSSN showed that topical chemotherapy achieved outcomes comparable to surgery in terms of recurrence, while avoiding the specific complications of surgery [25]. These observations explain why topical therapy is today considered as a first-line option in many centers, especially for extensive lesions, lesions involving the limbus or cornea, or in patients in whom wide excision would compromise the ocular surface [22,25,32].

In the present case, the decision to combine excision with mitomycin C was justified by the limbal extension of the lesion, the sizable lesion (6 mm), and the lack of preoperative histological confirmation. The absence of intraoperative cryotherapy in our patient is another point to be discussed: it was not used here, it was replaced by intraoperative mitomycin C, and adjuvant mitomycin C was considered sufficient because margins were free on pathology. Whether combining cryotherapy with excision and topical chemotherapy provides additional benefit is not established, and available data do not allow a firm recommendation [8,22].

3.6 Prognosis and follow-up

The prognosis of conjunctival carcinoma in situ is excellent when diagnosis and treatment are prompt and adequate, because the basement membrane is intact and metastatic potential is essentially nil at this stage [2,7]. However, the risk of stromal invasion and recurrence persists if the lesion is incompletely treated [6,26]. Recurrences are most frequent in the first 2 years but may occur much later; a long-term study documented late recurrences several years after initial treatment, justifying prolonged and regular follow-up [6]. Surveillance should include slit-lamp examination of the entire ocular surface, including the fornices and the palpebral conjunctiva, with eversion of the eyelids, and the use of AS-OCT when available [8,20]. Our patient is followed with a close initial schedule (weekly during topical chemotherapy, then monthly, then every 6 months), which is in line with these recommendations. Patients should be informed about the importance of reporting any new conjunctival lesion or symptoms.

3.7 Strengths and limitations

The main strength of this report is its illustration of the pterygium pitfall and the value of systematic histology. Limitations include the single-case design, the relatively short follow-up in view of the documented risk of late recurrence, the lack of AS-OCT, HPV and HIV testing, and the absence of intraoperative cryotherapy, which may be discussed.

4 CONCLUSION

Conjunctival carcinoma in situ is the ultimate pre-invasive stage of ocular surface squamous neoplasia. Its polymorphic clinical presentation, sometimes identical to that of a simple pterygium, requires that any suspicious conjunctival lesion be excised and that the specimen be systematically sent for histopathological analysis. The prognosis is excellent with prompt and adequate management, combining complete excision and, when indicated, topical chemotherapy such as mitomycin C, but long-term regular follow-up is essential because late recurrences, although uncommon, remain possible.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

written informed consent for publication of the case and image was obtained from the patient.

REFERENCES

[1] Lee GA, Hirst LW. Ocular surface squamous neoplasia. Surv Ophthalmol. 1995;39(6):429-450.

[2] Basti S, Macsai MS. Ocular surface squamous neoplasia: a review. Cornea. 2003;22(7):687-704.

[3] Shields CL, Shields JA. Tumors of the conjunctiva and cornea. Surv Ophthalmol. 2004;49(1):3-24.

[4] Kiire CA, Srinivasan S, Karp CL. Ocular surface squamous neoplasia. Int Ophthalmol Clin. 2010;50(3):35-46.

[5] Mittal R, Rath S, Vemuganti GK. Ocular surface squamous neoplasia – review of etio-pathogenesis and an update on clinico-pathological diagnosis. Saudi J Ophthalmol. 2013;27(3):177-186.

[6] Tabin G, Levin S, Snibson G, Loughnan M, Taylor H. Late recurrences and the necessity for long-term follow-up in corneal and conjunctival intraepithelial neoplasia. Ophthalmology. 1997;104(3):485-492.

[7] Erie JC, Campbell RJ, Liesegang TJ. Conjunctival and corneal intraepithelial and invasive neoplasia. Ophthalmology. 1986;93(2):176-183.

[8] Cicinelli MV, Marchese A, Bandello F, Modorati G. Clinical management of ocular surface squamous neoplasia: a review of the current evidence. Ophthalmol Ther. 2018;7(2):247-262.

[9] Newton R, Ferlay J, Reeves G, Beral V, Parkin DM. Effect of ambient solar ultraviolet radiation on incidence of squamous-cell carcinoma of the eye. Lancet. 1996;347(9013):1450-1451.

[10] Sun EC, Fears TR, Goedert JJ. Epidemiology of squamous cell conjunctival cancer. Cancer Epidemiol Biomarkers Prev. 1997;6(2):73-77.

[11] Gichuhi S, Sagoo MS, Weiss HA, Burton MJ. Epidemiology of ocular surface squamous neoplasia in Africa. Trop Med Int Health. 2013;18(12):1424-1443.

[12] Yousef YA, Finger PT. Squamous carcinoma and dysplasia of the conjunctiva and cornea: an analysis of 101 cases. Ophthalmology. 2012;119(2):233-240.

[13] Gichuhi S, Ohnuma S, Sagoo MS, Burton MJ. Pathophysiology of ocular surface squamous neoplasia. Exp Eye Res. 2014;129:172-182.

[14] Scott IU, Karp CL, Nuovo GJ. Human papillomavirus 16 and 18 expression in conjunctival intraepithelial neoplasia. Ophthalmic Surg Lasers. 2002;33(1):100-104.

[15] Ateenyi-Agaba C. Conjunctival squamous-cell carcinoma associated with HIV infection in Kampala, Uganda. Lancet. 1995;345(8951):695-696.

[16] Chui J, Coroneo MT, Tat LT, Crouch R, Wakefield D, Di Girolamo N. Ophthalmic pterygium: a stem cell disorder with premalignant features. Am J Pathol. 2011;178(2):817-827.

[17] Hirst LW, Axelsen RA, Schwab I. Pterygium and associated ocular surface squamous neoplasia. Arch Ophthalmol. 2009;127(1):31-32.

[18] 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. 2017;6(2):109-120.

[19] Lee GA, Hirst LW. Retrospective study of ocular surface squamous neoplasia. Aust N Z J Ophthalmol. 1997;25(4):269-276.

[20] Thomas BJ, Galor A, Nanji AA, et al. Ultra high-resolution anterior segment optical coherence tomography in the diagnosis and management of ocular surface squamous neoplasia. Ocul Surf. 2014;12(1):46-58.

[21] Tole DM, McKelvie PA, Daniell M. Reliability of impression cytology for the diagnosis of ocular surface squamous neoplasia employing the Biopore membrane. Br J Ophthalmol. 2001;85(2):154-158.

[22] Sayed-Ahmed IO, Palioura S, Galor A, Karp CL. Diagnosis and medical management of ocular surface squamous neoplasia. Expert Rev Ophthalmol. 2017;12(1):11-19.

[23] Shields JA, Shields CL, De Potter P. Surgical management of conjunctival tumors. The 1994 Lynn B. McMahan Lecture. Arch Ophthalmol. 1997;115(6):808-815.

[24] Fraunfelder FT, Wingfield D. Management of intraepithelial conjunctival tumors and squamous cell carcinomas. Am J Ophthalmol. 1983;95(3):359-363.

[25] Nanji AA, Moon CS, Galor A, Sein J, Oellers P, Karp CL. Surgical versus medical treatment of ocular surface squamous neoplasia: a comparison of recurrences and complications. Ophthalmology. 2014;121(5):994-1000.

[26] Höllhumer R, Williams S, Michelow P. Ocular surface squamous neoplasia: management and outcomes. Eye (Lond). 2021;35(6):1562-1573.

[27] Venkateswaran N, Mercado C, Galor A, Karp CL. Comparison of topical 5-fluorouracil and interferon alfa-2b as primary treatment modalities for ocular surface squamous neoplasia. Am J Ophthalmol. 2019;199:216-222.

[28] Frucht-Pery J, Rozenman Y. Mitomycin C therapy for corneal intraepithelial neoplasia. Am J Ophthalmol. 1994;117(2):164-168.

[29] Frucht-Pery J, Sugar J, Baum J, et al. Mitomycin C treatment for conjunctival-corneal intraepithelial neoplasia: a multicenter experience. Ophthalmology. 1997;104(12):2085-2093.

[30] Gupta A, Muecke J. Treatment of ocular surface squamous neoplasia with mitomycin C. Br J Ophthalmol. 2010;94(5):555-558.

[31] Russell HC, Chadha V, Lockington D, Kemp EG. Topical mitomycin C chemotherapy in the management of ocular surface neoplasia: a 10-year review of treatment outcomes and complications. Br J Ophthalmol. 2010;94(10):1316-1321.

[32] Gichuhi S, Macharia E, Kabiru J, et al. Topical fluorouracil after surgery for ocular surface squamous neoplasia in Kenya: a randomised, double-blind, placebo-controlled trial. Lancet Glob Health. 2016;4(6):e378-e385.