International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Website: https://ijmpr.in/

Original Article

Clinicopathological Study of Conjunctival Lesions: A 10-Year Retrospective Study at The Regional Institute of Ophthalmology

Dr Madhukar Reddy Ladaru[1*], Dr. Akifa zahid[2], Dr Soumya v[3], Dr Annunayi J[4], Manisha gaikwad[5]

[1]Assistant professor (SDEH) Department of Pathology, Osmania Medical College, Hyderabad
[2]Assistant professor, Department of Pathology, Osmania Medical College, Hyderabad.
[3]Assistant professor, Department of Pathology, Osmania Medical College, Hyderabad.
[4]Professor, Department of Pathology, Osmania Medical College, Hyderabad,
[5]post graduate, Department of pathology, osmania medical college, Hyderabad.

Corresponding Author:

Dr Madhukar Reddy Ladaru
Assistant professor(SDEH)
Department of Pathology,
Osmania Medical College,
Hyderabad

Received: 16-03-2026
Accepted: 13-04-2026
Published: 18-04-2026

ABSTRACT

Background: Conjunctival and ocular surface lesions form a diverse spectrum, ranging from non-neoplastic conditions to premalignant and malignant tumors. Their occurrence vary across geographical regions influenced by environmental factors particularly exposure to ultraviolet radiation. Histopathological examination remains the gold standard for definitive diagnosis and to detect early dysplastic changes even in lesions that appears clinically benign.

Objectives:
To analyze the clinicopathological spectrum of conjunctival and ocular surface lesions diagnosed over a 10-year period in a regional eye hospital in South India, and to compare the findings with those reported in national and international studies.

Methods:
A retrospective analysis was conducted on 889 conjunctival and eye surface lesions specimens excised between 2015 and 2025. Clinical data were taken from patient records. All samples were studied and reported according to the WHO 5th Edition of the Eye Tumour classification (2022). Statistical analysis was performed to study age distribution, gender ratio and frequency of lesions in each histological subgroup.

RESULTS:
Non neoplastic lesions constituted 46.7% of all cases with pterygium 18.1% being the most common. A proportion of pterygium cases showed epithelial dysplasia. Benign tumors formed 18.2% of all lesions, predominantly melanocytic nevi. Premalignant lesions were 24.2%, mainly ocular surface squamous intraepithelial neoplasia. Malignant lesions formed 10.9%, with squamous cell carcinoma being the most frequent. The average age of patients was 44.2 years and males were more affected. The majority of lesions were seen in the 21-45 year age group.

Conclusion:
Identification of dysplastic changes in pterygium cases shows that every excised conjunctival lesion should undergo histopathological examination. This helps in early detection and prevention of malignant changes.

Keywords: *Conjunctival lesions, ocular surface squamous neoplasia, dysplastic pterygium, retrospective study.*

INTRODUCTION

The conjunctiva is a flexible, transparent mucous membrane that covers the sclera, extending from the palpebral surfaces of the eyelids to the bulbar conjunctiva and the corneoscleral limbus [1]. This specialized tissue provides a smooth and lubricated ocular surface, enabling proper eyelid movement over the globe and contributing to the maintenance of tear film stability [3]. Histologically, it is composed of non-keratinizing stratified squamous epithelium interspersed with mucin-secreting goblet cells, supported by an underlying vascularized stromal connective tissue. Together, these layers serve as a crucial protective and immunological barrier for the ocular surface [1, 2, 3].

Conjunctival lesions encompass a wide range of pathological entities, including non-neoplastic inflammatory or degenerative conditions, benign proliferative growths, and aggressive malignant tumors with potential for vision loss and systemic spread. Due to the superficial nature of the conjunctiva, these lesions are typically visible during routine eye examinations, facilitating early detection and timely clinical intervention [4].

Degenerative lesions such as Pterygium and Pinguecula are common worldwide and are strongly linked to chronic ultraviolet (UV) exposure, hot and arid climates, and outdoor occupations. In contrast, neoplastic conjunctival lesions demonstrate considerable geographical and ethnic variation. Ocular surface tumors can originate from various conjunctival components, including the squamous epithelium, melanocytes, and resident lymphoid cells. Among these, epithelial dysplasia, carcinoma in situ, and invasive squamous cell carcinoma—collectively referred to as ocular surface squamous neoplasia (OSSN)—are particularly prevalent in tropical and subtropical regions such as India, Africa, and South America where intense UV exposure and higher rates of human papillomavirus (HPV) and HIV infection contribute to increased incidence. Conversely, melanocytic lesions, including conjunctival nevi, primary acquired melanosis (PAM), and malignant melanoma, are relatively more common in Western countries, where fair-skinned populations are disproportionately affected [5].

Histopathological examination remains the gold standard for diagnosis, as clinical features alone can be deceptive. For example, a benign-appearing Pterygium may conceal underlying OSSN, while conjunctival melanoma may mimic benign pigmented lesions. As such, all excised conjunctival lesions should undergo histopathological evaluation to ensure accurate diagnosis and inform appropriate management strategies [1]. In ambiguous or poorly differentiated cases, adjunctive immunohistochemistry (IHC) can provide additional diagnostic clarity.

Despite the significant burden of conjunctival diseases in India, there is a lack of long-term, systematic studies. A thorough understanding of the epidemiological trends, demographic patterns, and histopathological spectrum is essential for improving early detection, refining clinical decision making, optimizing treatment protocols, and enhancing the overall utilization of healthcare resources.

AIMS AND OBJECTIVE

1. To conduct a comprehensive analysis of the frequency and distribution patterns of conjunctival lesions diagnosed over a ten-year period at a tertiary care institution.
2. To evaluate demographic characteristics associated with these lesions, including age, sex, and laterality.
3. To investigate the correlation between initial clinical diagnoses and final histopathological findings.
4. To assess the diagnostic utility of immunohistochemistry (IHC) in cases with ambiguous or challenging histopathological features.
5. To compare local epidemiological and clinicopathological trends with data reported in national and international studies.

MATERIALS AND METHODS

Study design and setting:

This was a retrospective observational study conducted in the Department of Pathology, Sarojini Devi Eye Hospital, Hyderabad. The study included all conjunctival lesions submitted for histopathological examination over a 10-year period, from August 2015 to July 2025.

Case selection:

Inclusion criteria: All conjunctival lesions received over the 10-year study period, submitted as biopsy or excision specimens, with adequate tissue and available clinical details.
Exclusion criteria: Inadequate or autolyzed specimens, samples lacking conjunctival tissue, cases with incomplete clinical data, and repeat biopsies of the same lesion.

Data Collection and Specimen Processing

Demographic details (age and sex) and clinical information (site, laterality, and provisional diagnosis) were obtained from the pathology requisition forms.

All specimens were fixed in 10% neutral buffered formalin, grossed according to standard protocols, routinely processed, and embedded in paraffin blocks. Sections of 3–5 µm thickness were prepared and stained with hematoxylin and eosin (H&E).

Immunohistochemistry (IHC) was applied in diagnostically challenging cases to confirm cell lineage or to exclude histological mimickers, using a focused panel: p63, showing strong nuclear positivity in squamous epithelial lesions, confirmed epithelial differentiation; HMB-45, demonstrating cytoplasmic positivity in melanocytic lesions, established melanocytic lineage; and CD20, showing membranous staining in B-cells, differentiated lymphoid proliferations from reactive hyperplasia. The IHC results were interpreted in conjunction with routine morphology to establish the final diagnosis.

Lesions were classified according to the World Health Organization (WHO) Classification of Eye Tumors, 5th Edition, 2023. They were broadly categorized into the following groups:

- Epithelial lesions: including squamous papilloma, conjunctival intraepithelial neoplasia/dysplasia, carcinoma in situ, and invasive squamous cell carcinoma, collectively referred to as ocular surface squamous neoplasia (OSSN).
- Melanocytic lesions: including nevus, primary acquired melanosis (PAM) with or without atypia, and malignant melanoma.
- Lymphoid proliferations: comprising reactive lymphoid hyperplasia and conjunctival lymphomas.
- Mesenchymal and vascular tumors: true neoplasms of mesenchymal or vascular origin.
- Tumor-like lesions (Non neoplastic lesions): including cystic, inflammatory, degenerative, infective, choristomatous lesions, and pyogenic granuloma.

The prevalence of lesions across these histopathological subgroups was analyzed in relation to patient characteristics, including age, sex, and laterality. For age-based analysis, patients were stratified into four groups: 1–20 years (childhood and adolescence), 21–45 years (young adults), 46–65 years (middle age), and >65 years (elderly).

Statistical analysis

Statistical analysis was performed using appropriate software. Descriptive statistics were applied, with categorical variables summarized as frequencies and percentages. Cross-tabulations were constructed to assess associations between demographic factors and lesion types. The chi-square test was employed to evaluate the significance of these associations, and a p-value <0.05 was considered statistically significant.

RESULTS

A total of 889 conjunctival biopsy specimens were analyzed. Patients ranged in age from 2 to 93 years (mean: 44.2 years). There was a male predominance with 498 males (56%) and 391 females (44%), corresponding to a male to female ratio of 1.2:1. Lesions involved the right eye in 489 cases (55.0%), the left eye in 399 cases (44.9%), and were bilateral in 1 case (0.1%).

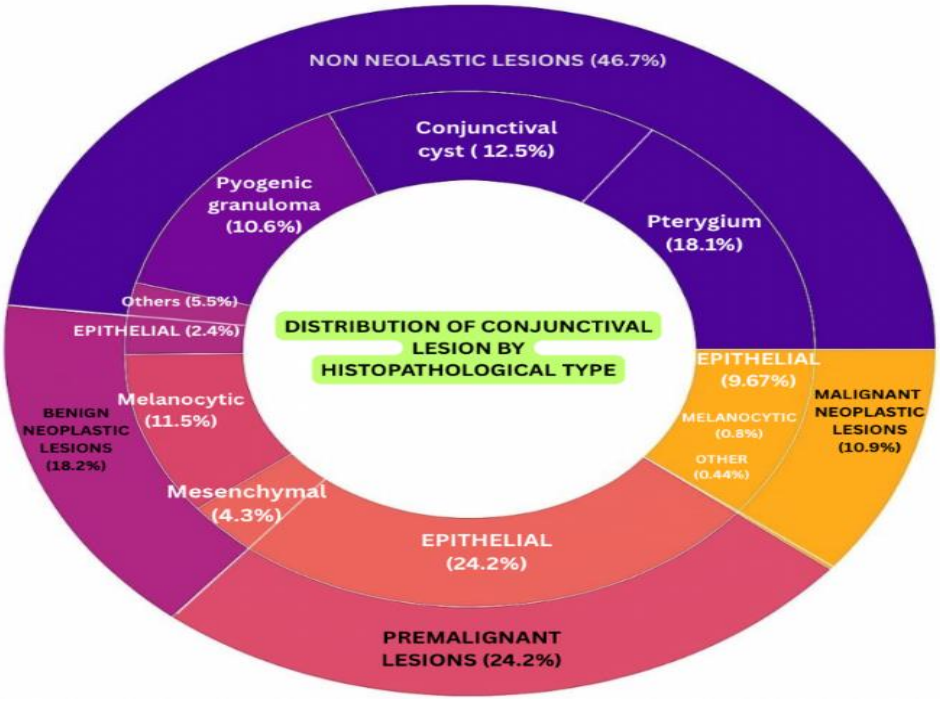


Fig 1 - Distribution of conjunctival lesion by histopathological type.

In the present study of 889 conjunctival and ocular surface lesions [Fig. 1], [Table: 1] non-neoplastic lesions were the most frequent, accounting for 46.7% of cases. Pterygium (18.1%) was the single most common lesion, characterized by fibro vascular proliferation beneath elastotic epithelium, and occurred predominantly in the 21–45 year group. Cystic lesions (12.5%), including conjunctival inclusion, retention, and epidermoid cysts, were observed across all age groups, reflecting both congenital and acquired etiologies. Pyogenic granuloma (10.6%) showed lobular capillary proliferation with inflammatory infiltrates, typically following trauma or surgery. Choristomas (2.8%), such as dermoids and dermolipomas, were usually seen in younger patients, while inflammatory/reactive lesions (2.0%) and rare entities like hamartoma (0.1%) and xanthoma (0.2%) highlighted the spectrum of non-neoplastic pathology.

Benign lesions collectively comprised 18.4% of cases. The largest subgroup was benign melanocytic lesions (11.6%), mainly naevi (9.8%), which predominated in the 0–20 year age group. Primary acquired melanosis without atypia (1.8%)

was less frequent and typically affected middle-aged individuals. Benign epithelial neoplasms (2.4%) were mostly squamous papilloma's (2.1%), histologically showing papillary fronds of acanthotic squamous epithelium, while keratoacanthoma (0.2%), though rare, was clinically significant because of its resemblance to squamous cell carcinoma (SCC). Mesenchymal tumors (4.4%) formed another subset of benign lesions, the majority being hemangiomas (3.4%), with fewer cases of lipoma (0.5%), schwannoma (0.2%), neurofibroma (0.1%), and myxoma (0.1%).

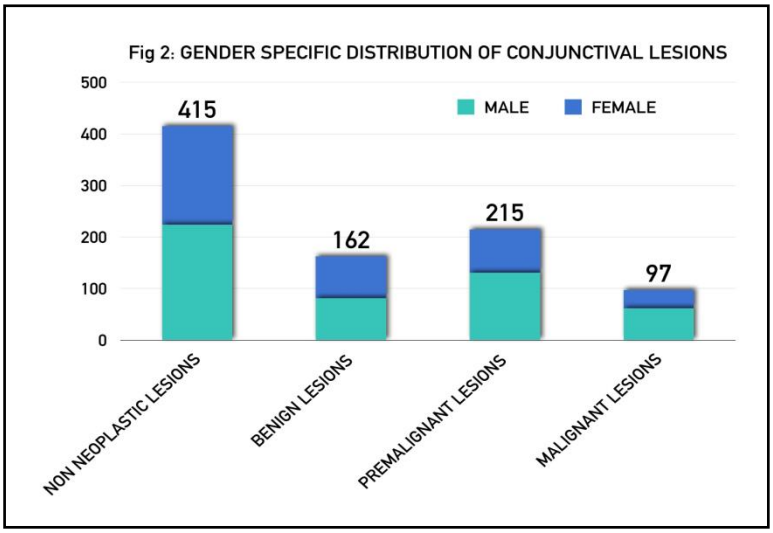
Premalignant epithelial lesions represented the largest neoplastic category, comprising 24.2% of all cases. Within this group, carcinoma in situ (7.5%) was the most frequent, followed by severe dysplasia (6.9%), moderate dysplasia (5.2%), mild dysplasia (3.5%), and dysplastic pterygium (1.1%). These lesions demonstrated progressive architectural and cytological atypia, underscoring their significance as precursors of invasive carcinoma and the importance of early recognition and management.

Malignant lesions accounted for 10.9% of cases, the majority being epithelial tumors (9.7%). SCC was the predominant malignancy, with well-differentiated (4.5%) and moderately differentiated (4.6%) tumors almost equally represented, while poorly differentiated SCC (0.6%) was rare. These lesions peaked in the 46–65 year group, reflecting the age-related risk of ocular surface squamous neoplasia. Malignant melanocytic lesions (0.8%), though uncommon, were all malignant melanomas, including both pigmented and amelanotic variants, occurring across younger and older adult

DIAGNOSIS	0-20 y n (%)	21-45y n (%)	46-65y n (%)	Over 65y n (%)	Total (%)
NON NEOPLASTIC(TUMOR LIKE LESIONS)					
· Pterygium	8 (0.9)	90(10.89)	51(5.73)	12(1.35)	161(18.1)
· Pinguecula	0	1(0.11)	1(0.11)	0	2(0.22)
· Cysts	49(5.51)	39(4.39)	17(1.91)	6(0.67)	111(12.5)
· Pyogenic granuloma	30(3.38)	44(4.94)	16(1.79)	2(0.22)	92(10.6)
· Choriostoma	4(0.45)	14(1.57)	5(0.56)	2(0.22)	25(2.8)
· Inflammation	2(0.22)	6(0.67)	3(0.34)	1(0.11)	12(1.34)
· Reactive change	1(0.11)	2(0.22)	2(0.22)	1(0.11)	6(0.67)
· Infections	0	1(0.11)	2(0.22)	0	3(0.34)
· Xanthoma	0	0	2(0.22)	0	2(0.22)
· Hamartoma	0	1(0.11)	0	0	0
NEOPLASTIC BENIGN LESIONS					
BENIGN EPITHELIAL					
· Squamous papilloma	7(0.78)	4(0.44)	6(0.67)	2(0.22)	19(2.13)
· Keratoacanthoma	1(0.11)	1(0.11)	0	0	2(0.22)
BENIGN MELANOCYTIC LESIONS					
· Naevus	57(6.41)	20(2.24)	9(1.01)	1(0.11)	87(9.78)
· PAM without atypia	4(0.44)	3(0.33)	7(0.78)	2(0.22)	16(1.79)
BENIGN MESENCHYMAL LESIONS					
· Hemangioma	12(1.34)	13(1.46)	5(0.56)	0	30(3.37)
· Lipoma	0	3(0.33)	1(0.11)	0	4(0.44)
· Schwannoma	1(0.11)	1(0.11)	0	0	2(0.22)
· Neurofibroma	0	1(0.11)	0	0	1(0.11)
· Myxoma	0	1(0.11)	0	0	1(0.11)
PREMALIGNANT LESIONS					
EPITHELIAL DYSPLASIA					
· Mild	1(0.11)	14(1.57)	13(1.46)	3(0.33)	31(3.48)
· Moderate	2(0.22)	20(2.24)	19(2.13)	5(0.56)	46(5.17)
· Severe	2(0.22)	30(3.37)	24(2.69)	5(0.56)	61(6.86)
· Dysplastic Pterygium	0	6(0.67)	3(0.33)	1(0.11)	10(1.12)
· Carcinoma in situ	1(0.11)	38(4.27)	24(2.69)	4(0.44)	67(7.53)
NEOPLASTIC MALIGNANT LESIONS					
Epithelial Malignant Lesions					
· Squamous Cell Carcinoma (SCC)	5(0.56)	30(3.37)	39(4.38)	12(1.34)	86(9.67)
~Well Differentiated SCC	2(0.22)	151.67)	18(2.02)	5(0.56)	40(4.49)
~Moderately Differentiated SCC	2(0.22)	13(1.46)	20(2.24)	6(0.67)	41(4.61)
~Poorly Differentiated SCC	1(0.11)	2(0.22)	1(0.11)	1(0.11)	5(0.56)
· Maligant Melanoma	2(0.22)	2(0.22)	0	30.33)	7(0.78)
· Lymphoma	0	1(0.11)	2(0.22)	1(0.11)	4(0.44)

In summary, among the 889 lesions studied, the most common overall was pterygium (18.1%). Premalignant epithelial lesions (24.2%), particularly carcinoma in situ (7.5%), formed the largest neoplastic group, while SCC (9.7%) was the leading malignancy. Benign melanocytic lesions (11.6%), mainly naevi, predominated in younger patients.

Analysis of age specific distribution trends further emphasized the natural history of these lesions. Non-neoplastic lesions predominated in the 21–45 year group, premalignant and malignant epithelial lesions were most common in 46–65 years, benign melanocytic lesions predominated in the 0–20 year group, mesenchymal tumors were scattered across young and middle age, and lymphomas occurred mainly in the elderly.

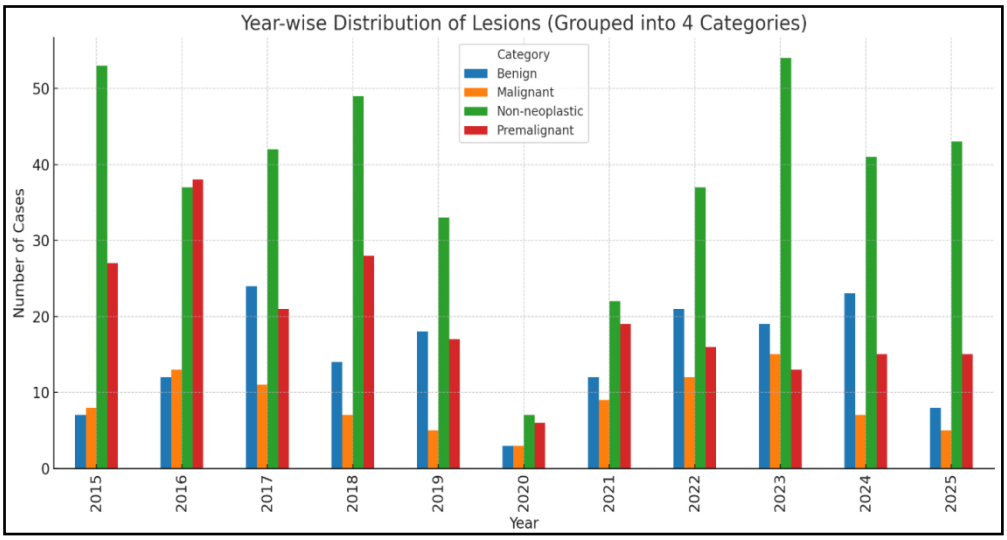


Gender specific distribution

In the present study, males 498 (56%) outnumbered females 391 (44%), with an overall male-to-female ratio of 1.2:1. [Fig 2]. Non-neoplastic lesions were the most common category 415 (46.7%), showing a nearly equal distribution between males and females. Premalignant epithelial lesions 215 (24.2%) demonstrated a mild male predominance, reflecting higher exposure to predisposing risk factors such as ultraviolet radiation and outdoor activity. Malignant lesions 97 (10.9%), predominantly squamous cell carcinoma, also showed a male excess, peaking in the older age groups. Benign lesions 162 (18.2%) were relatively balanced between sexes, with only a slight male preponderance. This overall pattern underscores the greater burden of both premalignant and malignant ocular surface disease among males, emphasizing the need for targeted screening and preventive measures in high-risk male populations.

Year wise distribution of conjunctival lesions.

Over the ten-year period (Fig 3), non-neoplastic lesions remained the predominant conjunctival pathology, with pterygium and cystic lesions forming the majority. Premalignant epithelial lesions constituted a significant proportion and showed a gradual rise, reflecting improved clinical recognition of ocular surface squamous neoplasia. Malignant lesions, though less frequent, also demonstrated a modest increase, predominantly represented by squamous cell carcinoma, while benign neoplasms remained relatively stable. Notably, a dip in case numbers was observed during the pandemic years, attributable to reduced hospital visits and elective specimen submissions. These trends highlight the need for vigilant screening, timely biopsy, and preventive strategies to reduce the progression from premalignant to invasive disease.



DISCUSSIONS

Sr. No	NAME OF STUDY	YEAR	REGION	COHORT (n)	1ST MOST COMMON LESION %	2ND MOST COMMON LESION %	3RD MOST COMMON LESION %
1	Alkatan et al.	2022	Saudi Arabia	110	Pterygium (degenerative) 53.6%	Inflammatory lesions 10.9%	Melanocytic lesions 9.8%
2	Findik et al.	2019	Turkey	401	Pterygium (degenerative) 54.8%	Nevus & benign pigmented lesions 9.5%	SCC (malignant) 3.5%
3	Ravindra & Muddebihal et al	2019	India	46	Chalazion 24.3%	Nevus 21.6%	Cyst 10.8%
4	Giri Punja et al.	2019	South India	288	Pterygium 32.6%	OSSN 22.2%	Cysts 13.2%
5	Sundeep & Vinutha et al.	2016	India	144	Pterygium 72.2%	Epithelial lesions 9.7%	Vascular lesions 6.9%
6	Aliakbar-Navahi et al.	2015	Iran	663	Pterygium 76.7%	Squamous cell carcinoma (SCC) 8.5%	OSSN 6.5%
7	Hemalatha et al	2014	India	134	Nevus 18.7%	Inflammatory lesions 14.93%	Foreign body granuloma 13.43%
8	Mondal SK et al.	2012	Eastern India	120	Pterygium (Degenerative lesions) 31.7%	Premalignant & malignant epithelial 22.5%	Benign epithelial lesions 19.2%
9	Sharma et al.	2012	Nepal	120	Nevus 23%	OSSN 14%	Melanoma 12%
10	Elshazly et al	2011	Egypt	192	Pyogenic granuloma 30.7%	Pigmented epithelial tumors 22.9%	Cystic lesions 12.0%
11	Benito et al.	2008	Spain	314	Melanocytic lesions 48%	Epithelial lesions 39.6%	–
12	Amoli & Heidari et al.	2006	Iran	447	Nevus — 38.7%	Squamous cell carcinoma (SCC) 25.1%	Epithelial lesions (Papilloma) 7.8%
13	Present study	2025	India	889	Pterygium 18.1%	Cyst 12.5%	Pyogenic granuloma 10.6%

In the present study of 889 conjunctival and ocular surface lesions, non-neoplastic lesions constituted the largest group (46.7%), followed by premalignant epithelial lesions (24.2%), benign neoplasms (18.4%), and malignant tumors (10.9%). Pterygium (18.1%) was the single most frequent lesion, consistent with observations from Egypt where Elshazly et al. reported 33.9% of cases [6], and from Iran where Amoli and Heidari found 47.4% [7]. Indian reports have also emphasized the predominance of pterygium, with Hemalatha et al. (23.6%) and Aliakbar-Navahi et al. (28.0%) documenting similar findings [8,9]. This high prevalence in tropical and subtropical regions underscores the etiological role of chronic ultraviolet (UV) radiation, outdoor occupations, and environmental dust exposure. The peak incidence in the 21–45 year group in our series further highlights its impact on working-age adults.

Cystic lesions (12.5%) and pyogenic granulomas (10.6%) were the other major non-neoplastic entities. Comparable rates of cysts were reported by Alkatan et al. (11.8%) in Saudi Arabia [10]. The frequency of pyogenic granulomas reflects their reactive nature, often following trauma or prior ocular procedures.

Among benign neoplasms, melanocytic lesions accounted for 11.6% of cases, with conjunctival naevi (9.8%) being the commonest, predominantly in the 0–20 year group. This trend is in line with Egyptian [6] and Turkish [11] studies that reported nevi in 10–12% of conjunctival lesions. Primary acquired melanosis (1.8%) occurred in middle-aged adults, consistent with its acquired nature and higher prevalence in older patients [9, 11]. Benign mesenchymal tumors (4.4%), mainly hemangiomas, were less frequent, but their presence has also been highlighted in other large series [10, 11].

Premalignant epithelial lesions were strikingly common in our study (24.2%), with carcinoma in situ (7.5%) and severe dysplasia (6.9%) comprising the majority. This proportion is higher than the 13.6% documented in Tehran [7] and 16.5%

in southern Iran [9]. The discrepancy may be attributed to referral bias in our tertiary oncology setting and heightened clinical suspicion for ocular surface squamous neoplasia (OSSN). Male predominance was observed, likely reflecting greater UV exposure and outdoor occupational risks.

Malignant tumors formed 10.9% of all lesions, with squamous cell carcinoma (SCC) being the leading malignancy (9.7%). Comparable frequencies have been reported by Amoli et al. (10.3%) in Iran [7], Hemalatha et al. (8.8%) in India [8], and Alkatan et al. (7.4%) in Saudi Arabia [10]. SCC was most common in the 46–65 year age group, corresponding to cumulative UV damage over decades. Malignant melanoma was infrequent (0.8%), similar to the 1–2% reported in other series [6, 11]. Conjunctival lymphoma was rare and confined to elderly patients, in keeping with the known age-related distribution.

A temporal increase in premalignant and malignant epithelial lesions was noted in our series, echoing findings from Alkatan et al. (2022) [10], possibly reflecting improved detection, increased biopsy rates, and longer patient survival. The decline during the COVID-19 pandemic corresponded to reduced elective procedures, underscoring the impact of healthcare disruptions on case accrual.

Overall, our findings corroborate the global distribution of conjunctival lesions while emphasizing regional differences. The high burden of pterygium and OSSN in our cohort highlights UV radiation as a major risk factor in tropical climates. The relatively high proportion of premalignant lesions underscores the critical role of early biopsy and histopathological confirmation in preventing malignant transformation.

CONCLUSION

In this large series of conjunctival and ocular surface lesions, pterygium was the most frequent lesion, while premalignant epithelial lesions formed the largest neoplastic group, highlighting their significance as precursors of ocular surface squamous neoplasia. Squamous cell carcinoma was the leading malignancy, most often encountered in middle-aged to elderly patients. These findings underscore the spectrum from benign to malignant pathology and reinforce the indispensable role of biopsy and histopathological evaluation in accurate diagnosis, early detection of malignant transformation, and appropriate patient management.

REFERENCES

1. Akatli AN, Dikci S. Clinicopathological analysis of conjunctival lesions: An experience from the eastern part of Türkiye. Ann Med Res. 2023;30(3):382-8. doi:10.5455/annalsmedres.2023.01.09
2. Spencer, W. Conjunctiva. In:Ophthalmic Pathology. An Atlas and Textbook. 4th edition. WB Saunders Co, Philadelphia, PA: 1996:40-42.
3. Giri Punja M, Bharathi M, Shashidhar HB. A 10-year retrospective study of histopathological spectrum of conjunctival lesions in a tertiary care centre from South India. Indian Journal of Pathology and Oncology. 2019 Jul-Sep; 6(3):365–367.
4. Banakar R, Muddebihal S. Clinicopathological study of conjunctival and epibulbar lesions. Indian J Clin Exp Ophthalmol. 2019; 5(1):108–113. doi:10.18231/2395-1451.2019.0025.
5. Hollhumer R, Williams S, Michelow P. Ocular surface squamous neoplasia: Population demographics, pathogenesis and risk factors. Afr Vision Eye Health. 2020;79(1):a553. doi:10.4102/aveh.v79i1.553
6. Elshazly LHM. A clinicopathologic study of excised conjunctival lesions. Middle East Afr J Ophthalmol. 2011;18:48-54.
7. Amoli FA, Heidari AB. Survey of 447 patients with conjunctival neoplastic lesions in Farabi Eye Hospital, Tehran, Iran. Ophthalmic Epidemiol. 2006;13:275-9.
8. Hemalatha K, Manjuladevi N, Tanushree V, Venkategowda HT, Bharathi M, Archana S, et al. Clinical and histopathological analysis of conjunctival tumours at a tertiary care centre in Indian population. J Evol Med Dent Sci. 2014;3(58):13092-100.
9. Aliakbar-Navahi R, Ashraf MJ, Seirfar N. Conjunctival lesions: a histopathologic review in Fars province. Iran J Ophthalmic Vis Res. 2015;10(2):98-101.
10. Alkatan HM, Alshomar KM, Helmi HA, et al. Conjunctival lesions: a 5-year basic demographic data and clinicopathological review in a tertiary eye care hospital. J Epidemiol Glob Health. 2022;12(1):25-39.
11. Findik S, Turk N, Belviranli S, et al. Histopathological analysis of conjunctival lesions: a 10-year experience. Selcuk Med J. 2019;35(3):159-64.
12. Mondal SK, Mandal PK. Conjunctival biopsies: A histopathological study in Eastern India. J Clin Diagn Res. 2013;7(6):1065-7.
13. Ravindra S, Muddebihal M. A study of histopathological spectrum of conjunctival lesions in a tertiary care hospital. Int J Clin Exp Ophthalmol. 2019;5(1):46-50.
14. Punja G, Srinivasan S, Krishnappa A. A 10-year retrospective study of histopathological spectrum of conjunctival lesions in a tertiary care centre from South India. Indian J Pathol Oncol. 2019;6(3):378-82.
15. Silas OA, Aligbe JU, Olugbenga SA, Mandong BM. Histopathological pattern of conjunctival lesions in Jos, Nigeria: A 12-year review. Niger J Ophthalmol. 2017;25(1):22-6.
16. Benito C, Blanco G, Arnáiz J, Cabrera M, Olmo N, Murube J. Conjunctival tumors: A clinicopathologic review of 314 cases. Arch Soc Esp Oftalmol. 2008;83(9):537-42.

17. Shields CL, Shields JA. Tumors of the conjunctiva and cornea. Surv Ophthalmol. 2004;49(1):3-24.
18. Sharma A, Pokharel S, Chaurasia S, Chaudhary S. Histopathological spectrum of neoplastic conjunctival lesions: A hospital-based study from Nepal. J Pathol Nepal. 2012;2(3):249-52.
19. Sundeep V, Vinutha MB, Lakshmi N, Geetha S. A prospective clinicopathological study of conjunctival lesions in a tertiary care hospital. Int J Contemp Med Res. 2016;3(8):2393-5.