

*Original Research Article*

## Histopathological Spectrum of Ocular Lesions in a Tertiary Care Centre: A Retrospective Study

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### Abstract

*Background and objectives:* Ophthalmic pathology being a sub-branch of surgical pathology, deals with the characterization and diagnosis of ocular diseases. In India, not many studies on histopathological study of ocular lesions have been published. Keeping this in view, histopathological study of ocular lesions is undertaken. *Aims:* To study the histopathological spectrum of ocular lesions received in Department of Pathology, K.R. Hospital, Mysore. *Materials and methods:* All excised ocular specimens received in Department of Pathology, Mysore Medical College and Research Institute, Mysore during the study period from December 2012 to May 2014 were included in the present study. A total of 100 biopsies and whole specimen of tumours were obtained from various wards of Department of Ophthalmology. Sample for Histopathological diagnosis were obtained either through incisional or excisional biopsy. *Results:* A total of 100 ocular lesions from 100 patients were analysed. 51 were women and 49 were men and the age of the patients ranged from 1 year to 73 years. Eyelid (41%) was the most commonly involved site. Clinical diagnosis was consistent with histopathological diagnosis in 69% of cases. Among eyelid lesions, incidence of dermoid cyst was the highest, while in conjunctival lesions, Bowen's disease was highest followed by other lesions. A clinico-pathological diagnosis of malignant ophthalmic tumors was made in 11% of cases, while 83% cases were benign lesions and 6% were premalignant in nature. *Conclusion:* Out of 100 cases of ocular lesions, eyelid (41%) was the most common site affected and conjunctiva was the second commonest site. Ocular lesions showed no particular sex predilection. Clinico-histopathological correlation was seen in 69% of cases. Precise diagnosis and characterization of all excised ocular lesions by histopathological examination is very important to the clinicians for the further appropriate management of patients.

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(Received on 16.07.2018,

Accepted on 30.07.2018)

**Keywords:** Ocular Lesions; Eyelid; Conjunctiva; Dermoid Cyst.

### Introduction

Ophthalmic Pathology focuses on the diseases of the eye and its neighbouring structures. It provides the basis of our understanding of how diseases can alter the functions of the eye [1]. Ophthalmic pathology has acquired increased importance with

increased number of tissue samples being studied under the microscope that elude simple diagnosis [2].

The earliest report on structure of ocular anatomy was given by Rufus of Ephesus, Greek school of Alexandria. In 1842, Samuel Moritz Pappenheim first published a book on histology of eye in Breslau. [1].

Ophthalmic pathology had become a firmly established science by the end of the nineteenth century, that was more often than not advanced by ophthalmologists rather than pathologists. Only during the last few decades have general pathologists again become interested in the eye, thereby contributing greatly to our understanding of disease processes and enabling us to initiate a more purposeful therapy. Ocular lesions show a diverse behaviour from benign, premalignant to malignant lesions. The diagnosis of these lesions is based on the clinical as well as microscopic features.

### Methodology

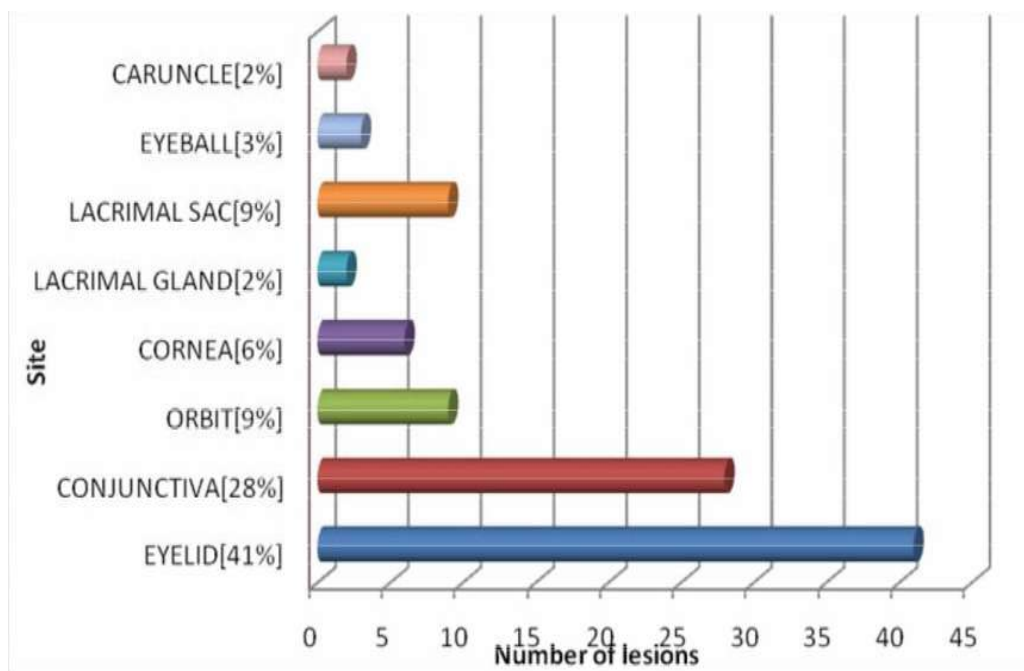
All excised ocular specimens received during the study period of December 2012 to May 2014 (18 months) in the Department of Pathology, Mysore Medical College and Research Institute, Mysore were studied retrospectively. The cases included all surgically resected ocular lesions. Clinical details like age, sex of patients, location of lesions, other relevant laboratory data and radiological data were obtained from the subject's records and the observations were entered in the proforma. The surgically resected specimens fixed in 10% formalin were received. Detailed microscopic examination of hematoxylin and eosin stained sections was done in all cases. The diagnosis in each case was established by a combination of history, clinical findings and histopathology. All the statistical calculations were done through SPSS for windows (v 16).

### Results

Eyelid was the most common site involved followed by conjunctiva and dermoid cyst was the commonest ophthalmic lesion out of the total 100 ophthalmic histopathological specimens received at the department of pathology during the study period of eighteen months [Figure 1]. Ophthalmic lesions have a wide range of age distribution. The youngest patient was 1 year old and the oldest was 73 years old [Table 1]. Ophthalmic lesions showed an almost equal incidence among both the sexes. Out of 100 cases, 83 cases were diagnosed as benign, 6 cases as premalignant and 11 cases were diagnosed as malignant. Among eyelid lesions, 37 (90.3%) were benign and 4 (9.8%) were malignant. Among conjunctival lesions, 19 (67.9%) were benign, 6 (21.4%) were premalignant and 3 (10.7%) were malignant. There were 6 (66.7%) benign and 3 (33.3%) malignant cases of orbit and 8 (88.9) benign and 1

**Table 1:** Age wise and gender wise distribution of ophthalmic lesions (at column width)

Age Group	Males	Females	Total
0 - 10	5 (5%)	2 (2%)	7 (7%)
11 - 20	4 (4%)	5 (5%)	9 (9%)
21 - 30	9 (9%)	13 (13%)	22 (22%)
31 - 40	8 (8%)	6 (6%)	14 (14%)
41 - 50	7 (7%)	8 (8%)	15 (15%)
51 - 60	6 (6%)	10 (10%)	16 (16%)
61 - 70	9 (9%)	6 (6%)	15 (15%)
71 - 80	1 (1%)	1 (1%)	2 (2%)
TOTAL	49 (49%)	51 (51%)	100 (100%)



**Fig. 1:** Distribution of Ophthalmic lesions (at column width)

(11.1%) malignant case of lacrimal sac. All the cases of cornea, lacrimal gland and caruncle and eyeball specimens were diagnosed to be benign lesions.

Patients had varied clinical presentations. Majority cases, 71 presented with growth with or without redness followed by watering with or without proptosis in 11 cases, proptosis in 7 cases, pain in 7 cases and other symptoms like blurred vision and redness in 2 cases each. Growth was the most common presenting symptom of ophthalmic lesions followed by watering from the eyes. Among lacrimal sac lesions, all of them presented with watering. The duration of presenting symptoms of the ophthalmic lesions showed a very wide distribution which ranged from 2 weeks to 18 years. Most of the cases, 52% had a history of 1 month to 6 months duration, followed by 40% cases with >6 months duration whereas only 8% cases had <1 month duration.

In this study, 85% had normal vision on ophthalmic examination and 15% had abnormal vision out of which 11 cases had unilateral abnormal vision and 4 cases had bilateral abnormal vision. In the present study, ophthalmic lesions were unilateral in 100% of cases with a left sided (62%) predominance. Most of the lesions were removed by local excision.

**Table 2:** Spectrum of benign eyelid lesions (at column width)

Lesions	Number of Cases	Percentage
Dermoid Cyst	9	23.7%
Epidermoid Cyst	4	10.5%
Apocrine Hydrocystoma	2	5.3%
Nevus	6	15.8%
Pyogenic Granuloma	4	13.2%
Sebaceous Adenoma	1	2.6%
Eccrine Spiradenoma	1	2.6%
Chalazion	3	7.9%
Trichoepithelioma	1	2.6%
Capillary Hemangioma	1	2.6%
Dermolipoma	2	5.3%
Granulomatous Lesion	1	2.6%
Molluscum Contagiosum	1	2.6%
Syringocystadenoma Papilliferum	1	2.6%
Total	38	100%

**Table 3:** Spectrum of conjunctival lesions (at column width)

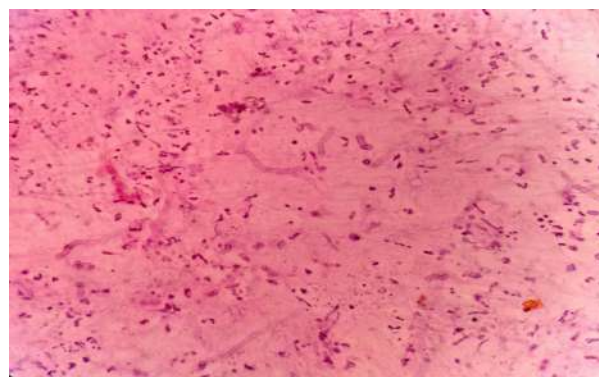
Lesions	Number of Cases	Percentage
Bowen's Disease	6	21.4%
Nevus	4	14.3%
Dermoid Cyst	3	10.7%
Squamous Cell Carcinoma	3	10.7%
Squamous Papilloma	1	3.6%
Foreign Body Granuloma	2	7.1%

In the present study dermoid cyst was the most common eyelid lesion followed by nevus [Table 2]. 9.8% of eyelid lesions were malignant, which included 2 cases of squamous cell carcinoma, 1 case each of pigmented basal cell carcinoma and sebaceous cell carcinoma. Squamous cell carcinoma is the common eyelid malignant lesion. In the present study, a predominance of upper eyelid (63.4%) involvement was seen.

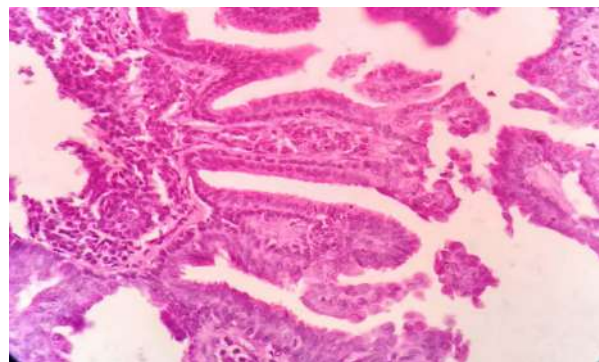
The most common conjunctival lesion was Bowen's disease accounting for 21.4% of cases followed by nevus accounting for 14.3% of cases [Table 3]. Nevus included 3 cases of intradermal nevi and 1 compound nevus. Conjunctival malignant lesions accounted for 10.7% of conjunctival lesions and all cases were of squamous cell carcinoma. Six cases of conjunctival Bowen's disease accounted for 100% of premalignant ophthalmic lesions.

**Table 4:** Spectrum of orbital lesions (at column width)

Lesions	Number of Cases	Percentage
Non-Hodgkin Lymphoma	3	33.4%
Schwannoma	1	11.1%
Accessory Lacrimal Gland	1	11.1%
Dermoid Cyst	1	11.1%
Pleomorphic Adenoma	1	11.1%
Capillary Hemangioma	2	22.2%
Total	9	100%



**Fig. 2:** Fungal corneal ulcer - Microphotograph showing non-septate fungal hyphae with no branching (x400) (at column width)



**Fig. 3:** Syringocystadenoma papilliferum - Microphotograph showing papillae lined by inner columnar and outer cuboidal cells (x400) (at column width)

3 cases of primary non-Hodgkin lymphoma of orbit was reported, which is the most common orbital lesion in our study [Table 4].

The most common lacrimal sac lesion was chronic dacryocystitis. One case of lacrimal sac tuberculosis and one case of secondary non-Hodgkin lymphoma of lacrimal sac was reported. A total of 6 corneal lesions included 2 corneal ulcers, 2 staphylomas, 1 aphakic bullous keratopathy which showed corneal decompensation and 1 case of keratitis. One case of fungal corneal ulcer showed non-septate fungal hyphae.

The study included 2 cases of pleomorphic adenoma of lacrimal gland. The caruncle lesions included 1 case of sebaceous adenoma and 1 case of squamous papilloma. Three enucleated eyeballs included 2 cases of panophthalmitis and 1 case of endophthalmitis. The clinical and histopathological diagnoses were consistent in 71% of total benign lesions and 54.5% of malignant lesions. Pre-malignant lesions showed 100% clinical accuracy in diagnosis.[Figure 2 & 3].

### Discussion

Ophthalmic lesions behave in a diverse way. In India, not many studies on histopathological study of ocular lesions have been published. Hence, this study was undertaken with the objective of determining the histopathological spectrum of ophthalmic lesions.

A retrospective study was conducted for 18

months, a total of 100 cases of ocular lesions were studied by histopathology, out of which 83 (83%) were benign, 6 (6%) were pre-malignant and 11 (11%) were malignant lesions.

Eyelid was the most common site involved followed by conjunctiva. Dermoid cyst is the most common benign lesion and squamous cell carcinoma is the most common malignant lesion. Bowen's disease accounted for 100% of pre-malignant lesions. The most common age group involved was 21-30 years with an almost equal incidence among both the sexes [Table 5]. In comparison with other studies [4-6], a younger age group was commonly involved in our study. Ophthalmic lesions showed no particular sex predilection which is comparable to other studies [3-5,14].

In the present study eyelid (41%) is the most common site involved followed by conjunctiva (28%) and orbit (9%) which is compared with most other studies [Table 6]. There was no documented retinal case during the study period. In the present study, dermoid cyst (11%) is the most common ocular lesion which was comparable with most other studies [3-5].

In present study benign ophthalmic lesions were common than the malignant ophthalmic lesions which was comparable to most of the other studies. The pre-malignant ophthalmic lesions were encountered only in the present study [Table 7]. In the present study squamous cell carcinoma was the most common malignant ophthalmic lesion which accounted for 45.5% of total ocular

**Table 5:** Comparison of age and sex distribution of ophthalmic lesions (at column width)

Studies	Total Ophthalmic Lesions	Common Age Group (Years)	Males	Females	M:F
Reddy SC et al. (1996)	89	Upto 10	46 (51.7%)	43 (48.3%)	1.07:1
Sanjay CC et al. (2012)	100	31-40	51 (51%)	49 (49%)	1.04:1
Bastola P et al. (2013)	100	31-40	51 (51%)	49 (49%)	1.04:1
Srikanth S (2014)	81	41-50	47 (58.02%)	34 (41.97%)	1.4:1
Present study (2014)	100	21-30	49 (49%)	51 (51%)	1:1.04

**Table 6:** Comparison of anatomic distribution of ophthalmic lesions [3,4,5,7] (at column width)

Anatomic Distribution	Reddy SC et al. (1996)	Sanjay CC et al. (2012)	Bastola P et al. (2013)	Present study (2014)	Kujur P. et al (2017)
Eyelid	45 (51%)	57 (57%)	57 (57%)	41 (41%)	13(21%)
Conjunctiva	28 (32%)	22 (22%)	22 (22%)	28 (28%)	14(23%)
Orbit	1 (2%)	8 (8%)	8 (8%)	9 (9%)	-
Cornea	-	-	-	6 (6%)	2(3%)
Lacrimal gland	3 (3%)	6 (6%)	6 (6%)	2 (2%)	16(26%)
Lacrimal sac	-	2 (2%)	2 (2%)	9 (9%)	-
Caruncle	1 (1%)	-	-	2 (2%)	-
Retina	10 (11%)	5 (5%)	5 (5%)	-	17(27%)
Eyeball	-	-	-	3 (3%)	-

**Table 7:** Comparison of frequency of benign, premalignant and malignant ophthalmic lesions[3-9] (at column width)

Studies	Benign	Pre-Malignant	Malignant
Reddy SC et al. (1996)	69 (77.5%)	-	20 (22.5%)
Kumar R et al. (2008)	218 (78.7%)	-	59 (21.3%)
Sanjay CC et al. (2012)	70 (70%)	-	30 (30%)
Shaikh IY et al. (2012)	113 (52.3%)	-	103 (47.7%)
Bastola P et al. (2013)	70 (70%)	-	30 (30%)
Srikanth S (2014)	53 (65.4%)	-	28 (34.6%)
Present study (2014)	83 (83%)	6 (6%)	11 (11%)

**Table 8:** Comparison of accuracy of clinical diagnosis [4,5] (at column width)

Studies	Accuracy
Sanjay CC et al. (2012)	65%
Bastola P et al. (2013)	65%
Present study (2014)	69%

malignancies. This was comparable with Kumar R et al. (28.15%) and Shaikh IY et al. (66.1%) studies [8,9]. In study by Srikanth S [6], it was found that 53.1% of eyelid lesions involved the lower eyelid and 46.9% upper eyelid. This was in contrast to the present study which involved upper eyelid (63.4%) more commonly than the lower eyelid (36.6%) [Table 8]. 9.8% of eyelid lesions were malignant as comparable with Reddy SC et al. studies (11.1%). [Table 9]. This was in contrast to other studies which showed a higher incidence of eyelid malignancies when compared with this study.

### Conclusion

The wide and varied spectrum of ophthalmic lesions in this study emphasise the need for similar studies of ophthalmic lesions from different regions of the country and perhaps worldwide. Dermoid cyst is the most common benign ocular lesion and Squamous cell carcinoma is the commonest malignant ocular lesion. No particular sex predilection was noted. Dermoid cyst and Bowen's disease are the commonest lesions in eyelid and conjunctiva respectively. Henceforth, we conclude that all surgically removed ophthalmic lesions must be subjected to microscopic examination. Histopathology always remains the mainstay of diagnosis in ophthalmic pathology.

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**Table 9:** Comparison of benign and malignant eyelid lesions [3,10-14] (at column width)

Studies	Benign	Malignant
Tesluk GC et al. (1984)	82.6%	17.4%
Reddy SC et al. (1996)	88.9%	11.1%
Abdi U et al. (1996)	58.9%	41.1%
Obata H et al. (2005)	73%	27%
Sanjay CC et al. (2012)	79%	21%
Bastola P et al. (2013)	79%	21%
Chauhan et al. (2013)	78.9%	21.1%
Gupta Y et al. (2017)	80.0%	20.0%
Present study (2014)	90.3%	9.8%

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