



## HISTOPATHOLOGICAL SPECTRUM OF EYELID TUMORS IN A TERTIARY CARE CENTER IN THE STATE OF ANDHRA PRADESH, INDIA

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### ABSTRACT

**Introduction:** Eye lid tumors comprise of a host of histopathological varieties and these not only cause disfigurement of eyelids but also pose difficulty to treating surgeons. Hence it is important to diagnose malignant tumors early to prevent distant spread and advancement of the disease.

**Objective:** To ascertain the incidence, study the histomorphological spectrum and assess the prevalence of primary eye lid tumors of both benign and malignant types.

**Methods:** A retrospective study of the data obtained from archives of the Department of Pathology, GSL Medical College, Rajamahendravaram, a tertiary care center in Andhra Pradesh, South India, on histopathologically diagnosed cases of both benign (including cystic lesions) and malignant tumors of the eyelids encountered over a span of 6 years (January 2013 – December 2018).

**Results:** Out of a total of 25 neoplastic lesions analysed, benign tumors (14) out-numbered malignant tumors (11). The most common benign lesion was epidermal cysts (21.42%) followed by intradermal naevi (2), retention cysts (2), sudoriferous cysts (2) and others. Sebaceous carcinoma was the most common malignant tumor and accounted for 44.45% of all malignant tumors in our study and found to be the most common malignant tumor of the eyelid in Indian population. Patients age ranged from 9 - 65yrs for benign tumors with mean age of 39.28years and 30 to 75 years for malignant tumors with a mean age of 57.73years. M: F ratio was 1: 3.16 showing a female preponderance.

**KEYWORDS :** Basal cell carcinoma, Cystic lesions, Eye lid tumors, Sebaceous carcinoma, Schwannoma

### INTRODUCTION

Eyelid masses are disturbing lesions to both patients and treating surgeons. The lesions diagnosed clinically are to be confirmed histopathologically, as many a times the clinical diagnosis of the tumors as either benign or malignant may not conform to their histopathological features. Early histopathological confirmation gives proper information for further management of the case by ophthalmic surgeons and helps to prevent cosmetic disfigurement and distant metastasis in cases of malignancies. Eye lid masses encountered may be neoplastic and non-neoplastic. Distribution of eyelid tumors varies in incidence globally. Biopsies of eyelid lesions are not common at pathology department and literature about their incidence is meagre. The literature on the histopathological patterns of eyelid lesions in India is quite small and its contribution especially on behalf of pathologists is very small. Most of the studies are contributed by ophthalmology departments and are on all lesions which include inflammatory, non-neoplastic and neoplastic lesions.

The specimens were sent for histological examination from Department of Ophthalmology to the Department of Pathology in our tertiary care center. We encountered more benign eye lid tumors than malignant like all other studies.<sup>1, 2, 3, 4, 5</sup> Though the total number of specimens is less (25), this article is being presented for the wide variety of histological types we encountered. Most common malignant tumor was sebaceous carcinoma (SGC) in contrary to basal cell Carcinoma (BCC) which was the most common in other countries. The benign lesions included were cysts, nevi, neural and vascular tumors.

### METHODS

A retrospective study over a period of 6 years from 2013 to 2018 in the department of pathology, GSL medical college, a tertiary care center in Andhra Pradesh, South India. The data of eye lid tumors with respect to age, gender, final histopathological diagnosis was retrieved and reviewed from the histopathology registers in the Department of pathology and available information was taken into consideration in correlation with Department of Ophthalmology.

In the present study neoplastic eyelid lesions both benign and malignant tumors including cysts were taken into consideration, inflammatory lesions and lesions other than eyelids were excluded

from the study. Though clinical diagnosis of the cases varied, only histopathologically confirmed diagnosis were included in the study. All the cases were processed by formalin fixation, paraffin embedding and Hematoxylin and Eosin staining. Immunohisto chemistry (IHC) was done in cases of diagnostic dilemma.

### RESULTS

Total number of 25 eye lid masses were identified during the study period (Table 1), out of total 25 neoplastic lesions analyzed 14(56%) were benign tumors and 11(44%) were malignant tumors and benign tumors out-numbered the malignant tumors.<sup>1,2,3,4,5,6,7</sup> Age of patients ranged from 09-65yrs for benign tumors with mean age of (39.28) and 30-75yrs for malignant tumors with a mean age of 57.73 years. M: F ratio was 1: 3.16, showing a female preponderance.

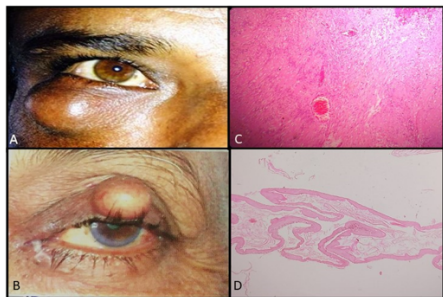
**Table 1- Incidence of different Eyelid tumors (n-25)**

Benign	No of Cases	% of cases	Malignant	No of Cases	% of cases
Epidermal cyst	3	21.42	Sebaceous carcinoma	5	45.45
Retention cyst	2	14.28	Basal cell carcinoma, including Adenoid basal cell carcinoma	3	27.27
Ruptured cysticercosis	1	7.14	Malignant Acrospiradenoma	1	9.09
Cavernous haemangioma	1	7.14	Adenoid cystic carcinoma	1	9.09
capillary hemangioma - Schwannoma	1	7.14	Low grade MPNST	1	9.09
Intradermal Nevus	2	14.28			
Seborrheic Keratosis	1	7.14			
Sudoriferous cyst	2	14.28			
Total benign tumors	14		Total malignant tumors	11	

In the present study the benign lesions with age and gender prevalence showed (Table 2) epidermal cysts 3(21.42%) to be common in the age group of 25-65years, with M:F ratio of 1:2, followed by retention cysts 2(14.28%) more common in the age group of 26-50years with male and female ratio is 1:1. Sudoriferous cysts 2(14.28%), both of which were seen in females in the age group of 40-50years, hemangiomas 2(14.28%) one cavernous and capillary (lobular capillary hemangioma) occurred at earlier ages of 12-21years, while the case of cysticercosis was seen at youngest age of 09years. Intra dermal nevi 2(14.28%) both cases were seen in females at an older age group of 60-65years. Schwannoma(7.14%) and seborrheic keratosis (7.14%) one in male and one in female respectively in the age group of 32-48years (Figure-1&2).

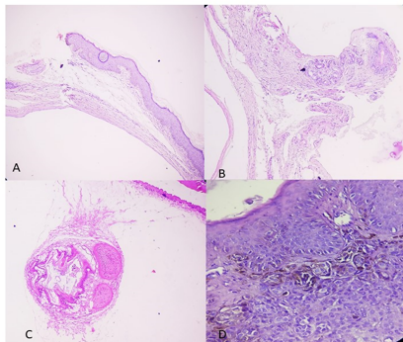
**Table 2 - Incidence of benign lesions with age and gender prevalence(n=14)**

Benign	No of Cases	% of cases	Female %	Male %	M:F ratio	Age in years
Epidermal cyst	3	21.42	66.6	33.33	1: 2	25-60
Retention cyst	2	14.28	50	50	1:1	26-50
Ruptured cysticercosis	1	7.14	100	-		9
Cavernous hemangioma	1	7.14	-	100		12
capillary hemangioma -	1	7.14	100	-		21
Schwannoma	1	7.14	-	100		32
Intra dermal Nevus	2	14.28	100	-		60-65
Seborrheic Keratosis	1	7.14	100	-		48
Sudoriferous cyst	2	14.28	100	-		40-50
Total benign tumors	14					



**Figure 1**

- A. Non-tender, firm nodule Rt lower eye lid – Schwannoma,
- B. Nontender, firm nodule over Rt upper eye lid- Epidermal cyst
- C. Histophotograph showing sweeping fascicles of spindle shaped cells and cellular (AntonyA) and acellular (AntonyB) areas (H&E) x10
- D. Histophotograph showing a cyst lined by stratified squamous epithelium, lumen contains keratin material - Epidermal cyst.



**Figure 2**

- A&B-Histophotographs showing a cysts lined by two layered epithelium of sweat duct- Sudoriferous cysts A(Eccrine) &B(apocrine)(H&E) x20
- C. Histophotographs showing an intact parasitic cyst- Cysticercosis

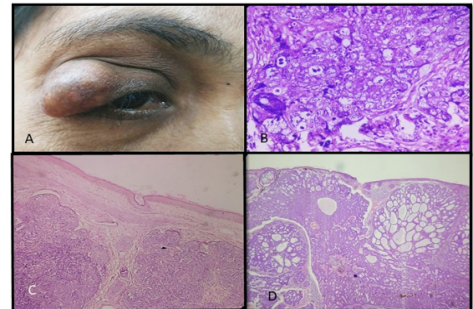
Rt eye lower lid (H&E) x20

D. Theques of nevus cells and melanophages in the dermis - Intra dermal naevus (H&E) x40.

Sebaceous Carcinomas 5 (44.45 (Table 3) were most common malignant eyelid tumors encountered of all malignant tumors with M:F ratio of 1:4 and were in the age group of 40-75 years, followed by basal cell carcinomas 3(27.27%). All the three cases of basal cell carcinomas were seen in females in the age group of 30-72years. Malignant acrospiradenoma (9.09%), low grade malignant peripheral nerve sheath tumor (MPNST) (9.09%) one each seen in only females in the age group of 32-55years. One case (9.09%) of adenoid cystic carcinoma occurred in male at the age of 64 years. Figures (3&4).

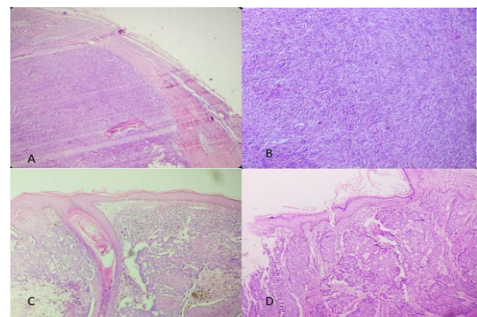
**Table 3 -Incidence of malignant lesions with age and gender prevalence (n=11)**

Malignant	No of Cases	% of cases	Female %	Male %	M:F ratio	Age grp
Sebaceous carcinomas	5	45.45	80	20	1: 4	40-75
Basal cell carcinoma, including Adenoid basal cell carcinoma	3	27.27	100	-		30-72
Malignant Acrospiradenoma	1	9.09	100	-		55
Adenoid cystic carcinoma	1	9.09	-	100		64
Low grade MPNST	1	9.09	100	-		32
Total no. of cases	11					



**Figure 3**

- A. Non-tender firm nodule Rt upper eye lid- Sebaceous carcinoma
- B. Histophotograph of A showing lobules foamy cells containing vacuolated eosinophilic cytoplasm and undifferentiated cells- Sebaceous carcinoma (H&E) x20
- C. Histophotographs showing lobules of basaloid cells showing retraction artefacts and peripheral palisading- Basal cell carcinoma (H&E) x20
- D. Another case of Basal cell carcinoma showing adenoid cystic pattern (H&E) x20



**Figure 4**

Histophotographs of A&B. showing a capsulated tumor showing fascicles of pleomorphic spindle shaped cells with few atypical Mitotic figures (H&E) x10 &20 - Low grade MPNST, C.&D showing tumor cells in adenoid and cystic pattern - Adenoid cystic Carcinoma (H&E) x10&20.

**DISCUSSION**

In total number of 25 eye lid masses that were identified and analyzed during the study period of 6years in the present study, 14 (56%) were

benign tumors which out-numbered the malignant tumors 11(44%) which was similar to other studies<sup>1,2,3,5,6,7</sup>. Age of the patients ranged from 9- 65yrs for benign tumors with mean age of (39.28yrs) and 30to75 years for malignant tumors with a mean age of 57.73yrs. M: F ratio was 1: 3.16 showing a female preponderance. A study of eye lid tumors from Hyderabad by Karan S, Nathani M, Khan T, Ireni S, Khader A<sup>3</sup> showed occurrence of benign lesions as 84.21% and 15.7% for malignant lesions, with age presentation for benign lesions ranged from 0-70yrs and 30-70yrs for malignant tumor. The most common age groups in their study were 31-40 and 41-50 yrs respectively. Rathod et al<sup>4</sup> reported 100 cases of eyelid tumors which presented at mean age of 58.59±11.27 for malignant eyelid tumors and

37.02±16.84, for benign tumors, which shows wide variation of presentation of age of benign tumors.

In the present study the most common benign lesion (Table 4) was epidermal cyst (21.2%) which is similar with other Indian studies<sup>1,2,3</sup>. Paul R, Islam MN, Kabir E, Khan HR, Kundu UK. from Bangladesh(26.9%)<sup>6</sup>, and Mary Ho, David TL Liu, Kelvin KL Chong, HK Ng, Dennis SC Lam from Hong Kong<sup>7</sup> show intradermal nevus as the most common benign tumor of eye lid tumor (22.0%) while Karan S, Nathani M, Khan T, Ireni S, Khader A. reported dermoid cysts (37.50%) as most common benign lesion followed by epidermal cyst(16.6%)<sup>4,5</sup> in their studies.

**Table- 4 Comparison of eye lid lesions from different parts of India**

	Present study	Kottayam South India	Central India Nagpur	Hyderabad India	South Karnataka
No. of cases and period of study	25 (6yrs)	197 (10yr)	27 (6yr)	57 (3yr)	235 (5yr)
M:F ratio	1:3.16	1:1.53	1:2	1:2.16	1:1.42
Age range for benign neoplastic lesions	9-65yrs	5-90yrs		0-70yrs	20-60yrs
% of benign tumors	56	37.7		84.21	91.9
Most Common benign neoplastic lesion	Epidermal cyst	Intradermal nevus		Dermoid cyst (37.5%)	Epidermal cyst (66%)
Age range of malignant lesion	30-75yrs	50-80yrs	32-66yrs	30-70yr	62.2yr (mean age)
% of malignant lesions	44	9.9	100	15.71	8.1
Most common malignant lesion	SGC(45.45%)	SGC (2.4%)	BCC (44.5%)	SGC (55.56%)	SGC (31.6%)
Other malignant lesions	BCC (27.27%)	SCC (2.2%)	SGC (37.0%)	BCC (33.33%)	BCC (26.3%)
	ACC (9.09%)	BCC (1.5%)	SCC (14.8%)	SCC (11.11%)	SCC (21.0%)
	MA (9.09%)		HMP (3.7%)		MAL MEL (10.5%)
	LOW GR MPNST (9.09%)				MERKEL CEL CA (5.3%)
	SCC (0%)				LYMPHOMA (5.3%)

SGC-sebaceous carcinoma, BCC-basal cell carcinoma, SCC- Squamous cell carcinoma, ACC- Adenoid cystic carcinoma, MA- malignant acrospiradenoma, HMP- hemangiopericytoma, MAL MEL- Malignant melanoma, MPNST- Malignant peripheral nerve sheath tumor

**Table 5- Comparison of malignant lesion prevalence in various other countries**

	Present study	Japan	Taiwan	Hong Kong	Sanfrancisco	Olmsted Minnesota	Singapore	Bangladesh
No. of cases	25 (6yr)	38 (17yr)	1166 (21yr)	198 (10yr)	855 (3yr)	174 (15yr)	325	93 (2Yr)
Mean age		72.0	62.6	68.0	60.1		63	43
Age range	30-75yrs	45-92yrs			1-69yrs		14-98yrs	26-50yrs
Malignant lesions								
% of malignant lesions	44	100	9.6	14	24.1	100	100	35.48
Most common malignant lesion	SGC (45.45%)	BCC (39.5%)	BCC (65.1%)	BCC (43%)	BCC (71.8%)	BCC (90.8%)	BCC (84%)	BCC (36.4%)
	BCC (27.27%)	SGC (28.9%)	SCC(12.6%)	SCC(18.0%)	SCC (9.7%)	SCC (0.6%)	SGC (10.2%)	SGC (27.3%)
	ACC (9.1%)	SCC (10.5%)	SGC (7.9%)	SGC (7%)	SGC (7.3%)	-	SCC (3.4%)	-

SGC-Sebaceous carcinoma, BCC-Basal cell Carcinoma, ACC- Adenoid Cystic Carcinoma, SCC- Squamous cell Carcinoma.

In our study we encountered 11 various histological types of (Table -5) malignant tumors and sebaceous carcinoma (5) was the most frequent of all malignant types, which correlate with most Indian and some Asian studies<sup>1,2,3</sup> followed by BCC (3) and Malignant Acrospiradenoma (1) and adenoid cystic carcinoma (1). Maximum age of incidence for malignant lesions was 75years in the present study

The finding in studies from India by Krishnamurthy H, Tanushree V, Venkategowda H. T, Archana S, Mobin G, et al; Mohan BP, Letha V; and Karan S, Nathani M, Khan T, Ireni S, Khader A. are in correlation with the present study, for their studies also show sebaceous carcinoma as the most common malignant tumor and basal cell carcinoma as the second most common malignant tumor. However study by Mohan BP, Letha V<sup>2</sup> and studies from other countries Japan, Thailand, Hong Kong Sanfrancisco, Olmstead, Minnesota, Singapore and Bangladesh<sup>8,9,10,11,12,13,14,&15</sup> showed basal cell carcinoma as the most common malignant eye lid tumor, followed by squamous cell carcinoma or sebaceous carcinomas. In the present study we have not come across any squamous cell carcinomas. Though less prevalent squamous cell carcinomas of eye lid were reported in one Indian study and studies outside the India.<sup>1-12</sup>

### Conclusion

In the present study we encountered wide spectrum of benign and malignant neoplasms, benign were more common than malignant with

female preponderance. The most common benign tumor was epidermoid cyst and malignant was sebaceous carcinoma. Most Indian studies show sebaceous carcinoma as the commonest malignant eye lid neoplasm while one study from India and studies from other countries globally quoted intradermal nevi (benign) and basal cell carcinomas(malignant) to be more common.

Hence, we would like to emphasize that early histological diagnosis helps for proper management especially in cases of malignancies thereby reducing the morbidity.

**Conflicts of interest:** None

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