

# Histopathology of Dermal Adnexal Tumours - A Four Years Study

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**Abstract:** ***Background:** Dermal adnexal tumours (DAT) are a large and diverse group of benign and malignant tumours which exhibit morphological differentiation towards one of the different types of adnexal tumours present in normal skin: pilosebaceous unit, eccrine and apocrine. **Methods:** 50 cases of skin adnexal tumours diagnosed in histopathological study over a period of 4 years (May 2012 to September 2016) in the Department of Pathology, PDU Medical College, Rajkot. Histopathological study is done in Formalin fixed, Paraffin embedded tissue sections stained with Haematoxylin and Eosin. **Results:** Skin adnexal tumours found most common in the age group of 21 to 60 years (74%, 37/50). Male to female ratio was 1:1.2. 98% cases found benign with only a single case (2%) malignant. The sweat gland tumors formed the largest group involving 52% of cases followed by hair follicle tumors (40%), sebaceous gland tumors (6%) and mixed (2%). Nodular hidradenoma (22%) and trichilemmal cyst (22%) found the most common benign tumours. Chondroid syringoma with malignant changes is the only malignant adnexal tumour reported in our study. **Conclusion:** Dermal adnexal tumours are relatively rare. Benign adnexal tumors are far more common than their malignant counterparts. Female preponderance is observed. Histopathological examination is mandatory in their diagnosis as they have very wide spectrum and frequency of differentiation along different lines in the same lesion.*

**Keywords:** Dermal adnexal tumour (DAT), Nodular hidradenoma, Chondroid syringoma, Haematoxylin and Eosin

## 1. Introduction

DAT may display more than one line of differentiation, rendering precise classification of these neoplasms difficult [1]. Adnexal tumors arising from the skin are usually missed clinically as most of the DATs present as asymptomatic papules or nodules. Diagnosis of skin adnexal tumors is possible by performing an elliptical skin biopsy, submitting for haematoxylin and eosin staining and histochemistry. Most DAT are benign, but a malignant counterpart of every DAT has been described [1]. Malignant skin adnexal tumors are rare, locally aggressive and have the potential for nodal involvement and distant metastasis with a poor clinical outcome. The aim of the current study is to recognize various histomorphology of skin adnexal tumors, their frequency, age and site distribution.

## 2. Materials and Methods

In above mentioned period histopathological study is done on formalin fixed paraffin embedded tissues. Haematoxylin and Eosin stained sections were examined. Age and gender prevalence, comparison of clinical diagnosis, site of involvement with biopsy diagnosis were done.

## 3. Results

During this study period, 50 adnexal tumors of skin were diagnosed on histopathological examination (Table 1). Benign adnexal tumors constituted 98% (49/50) cases and only one case of malignant adnexal tumor (2%) was noted. In the present study, skin adnexal tumors were observed in all age groups ranging from 7 to 80 years (Table 2). The highest incidence was observed in the age group of 21-30 years and

41-50 years. The Male: Female ratio was 1:1.2. The head and neck region was the most common site affected followed by lower limb and upper limb (Table 3). In head and neck region, scalp was the most common site followed by forehead and cheek. The sweat gland tumors formed the largest group involving 52% of cases followed by the hair follicle tumors and sebaceous gland tumors. Amongst the benign tumors, nodular hidradenoma was the most common tumor representing 22% of all cases. A single case of chondroid syringoma with malignant change was the only malignant adnexal tumor reported in our study. Benign tumors were observed in age ranging from 7-80 years. Various dermal adnexal tumors found as mentioned in Table 4. Comparison of observations from the present study and other published studies is shown in Table 4.

## 4. Discussion

Adnexal tumors of the skin, though rare have been recognised from the later part of 19th century [4]. We also observed that adnexal tumors of skin appear to be relatively uncommon tumors. Mendelian inheritance and P53 mutations are important contributing factors [3]. The histogenesis of these tumors are from either primary epithelial germ cells or pluripotential cells or cells of pre-existing structure [5]. Skin adnexal tumors have a wide range of age distribution. In our study, commonest age group was 21 to 60 years and Male: Female ratio was found to be 1:1.2; Head and neck region was the most common site of occurrence. All these findings were consistent with the results with the study by Radhika et al [5].

Incidence of benign tumors was more as compared to malignant cases. This finding was consistent with other studies. The occurrence of benign tumors in our study was 98% and

2% (Only one case) was malignant. Nair et al<sup>6</sup> observed that tumors of sweat gland differentiation were most common followed by hair follicle tumors and then sebaceous glands tumors [6]. The present study showed similar results with sweat gland tumors constituting the largest group (52%), followed by hair follicle tumors (40%) and sebaceous gland tumors (6%) and mixed (2%).

Nodular hidradenoma (Figure 1) was the most frequently encountered benign sweat gland tumor in the present study. Similar observations were reported by Radhika et al [5] and Reddy et al [4]. Histopathologically most of these tumors are circumscribed and solid with few showing cystic change. Tumor is composed of varying sizes of tubules and papillary projections lined by inner cuboidal and outer myoepithelial cell layer. Solid portions of the tumor show nodules comprised of clear and polygonal cells [2]. Chondroid syringomas usually present as well circumscribed lobulated masses centered in deep dermis or subcutaneous fat, with prominent chondroid or myxoid stroma, tubulo-alveolar structures lined by epithelial- myoepithelial cell bilayer, ducts lined by single layer of epithelium, nests of polygonal cells and sometimes keratinous cysts. (Figure 2)

Syringocystadenoma papilliferum (Figure 3) is a rare adnexal neoplasm. We observed 2 cases in our study. Microscopically there are papillary projections with squamous epithelial lining and ductal invaginations. These ductal structures are lined by inner columnar and outer cuboidal cells [2].

Cylindroma (Figure 4), Eccrine poroma, eccrine and apocrine hidrocystoma are the least common sweat gland tumors in the present study accounting for single case of each. On histopathological study cylindroma show non encapsulated dermal nodules composed of islands and cords of basaloid cells surrounded by a thick hyalinized, Periodic acid-Schiff (PAS) positive basement membrane.

Chondroid syringoma with malignant transformation show histopathology of chondroid syringoma with cells showing features of malignancy like nuclear pleomorphism, prominent nucleoli, scanty and eosinophilic cytoplasm. In sebaceous adenoma two type of cells can be recognized: basaloid and sebaceous with no cytological atypia (figure 5)

In pilomatrixoma, the histopathological hallmark is that of basaloid lobules which are contiguous with eosinophilic ghost cells or *shadow cells* (Figure 6). Dystrophic calcifications are usually present. Trichoepithelioma histologically

is a symmetric lesion that contains a mixture of epithelial elements ranging from hair germs associated with capillary mesenchymal bodies to small horn cysts, to lace like reticular basaloid structures to mature hairs.

## 5. Conclusion

Dermal adnexal tumours are relatively rare. Benign adnexal tumors are far more common than their malignant counterparts. Female preponderance is observed head and neck is the commonest site for occurrence of DATs. Nodular hidradenoma and trichilemmal cyst is the most frequently encountered tumour among all SATs. Histopathological examination is mandatory in their diagnosis as they have very wide spectrum and frequency of differentiation along different lines in the same lesion

**Table 1**

Sr no	Line of differentiation	No of cases	Percentage incidence %
1	Sweat gland tumours	26	52
2	Hair follicle tumour	20	40
3	Sebaceous	03	06
4	Benign mixed	01	02

**Table 2**

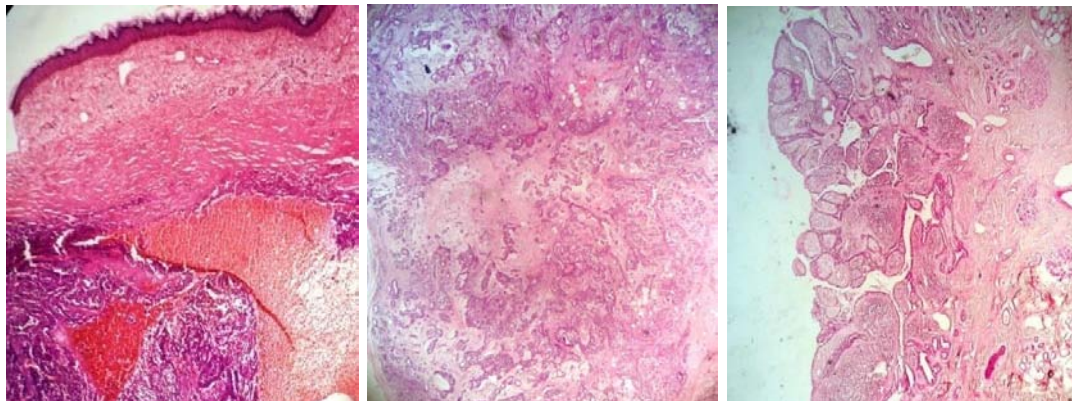
S No	Age group in years	No of cases	Percentage of incidence
1	<10	2	4
2	20-Nov	6	12
3	21-30	11	22
4	31-40	7	14
5	41-50	11	22
6	51-60	8	16
7	61-70	3	6
8	71-80	2	4
9	TOTAL	50	100

**Table 3**

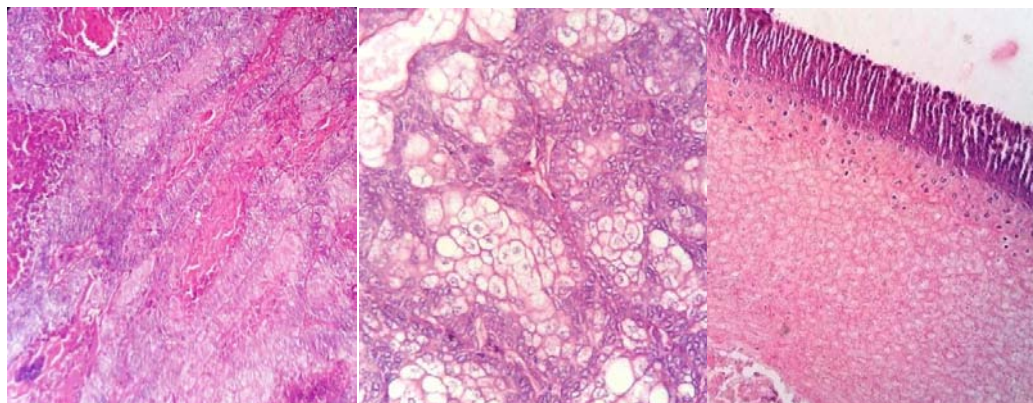
Sr No	Site of tumour	Male	Female	Total	%
1	Head and neck				
	Forehead	4	4	8	16
	Scalp	6	6	12	24
	Cheek	1	7	8	16
	Eyelid	3	1	4	8
	Preauricular region	2	1	3	6
	Nose	2	2	4	8
	Trunk	0	2	2	4
2	Upper limb	3	2	5	10
3	Lower limb	2	2	4	8
4	Total	23	27	50	100

**Table 4**

Tumour	Nair PS et al <sup>6</sup> (n=33)		Reddy et al <sup>4</sup> (n=85)		Radhika et al <sup>5</sup> (n = 35)		Present study (n=50)	
	Total	%	Total	%	Total	%	Total	%
<b>Sweat glands</b>								
Nodular hidradenoma	1	3.0	<b>29</b>	<b>34.1</b>	<b>5</b>	14.2	11	<b>22</b>
Hidradenoma papilliferum	-	-	-	-	3	8.5	-	-
Hidrocystoma	-	-	-	-	-	-	2	4
Syringoma	<b>14</b>	<b>42.2</b>	3	3.5	1	2.8	3	6
Syringocystadenoma papilliferum	1	3.0	3	3.5	-	-	2	4
Chondroid syringoma	-	-	2	2.4	-	-	3	6
Cylindroma	1	3.0	1	2.2	1	2.8	1	2
Eccrine spiradenoma	2	6.1	2	3.5	3	8.5	2	4
Eccrine poroma	-	-	-	-	-	-	1	2
Unclassified	-	-	3	3.5	-	-	-	-
Sweat gland carcinoma	-	-	11	12.9	4	11.4	1	2
<b>Sebaceous gland</b>								
Sebaceous gland adenoma	-	-	3	3.5	-	-	2	4
Nevus sebaceous	2	6.1	-	-	5	14.2	-	-
Sebaceous hyperplasia	-	-	-	-	-	-	1	2
Sebaceous carcinoma	-	-	15	7.7	2	5.7	-	-
<b>Hair follicle</b>								
Hair nevus	-	-	-	-	-	-	-	-
Trichofolliculoma	-	-	-	-	1	2.8	-	-
Trichoepithelioma	9	27.3	4	4.7	2	5.7	3	6
Pilomatrixoma	1	3.0	9	10.6	2	5.7	5	10
Proliferating trichilemmal tumour	-	-	-	-	-	-	1	2
Piloleiomyoma	-	-	-	-	3	8.5	-	-
Trichillemal cyst	2	6.1	-	-	-	-	<b>11</b>	<b>22</b>
Tricholemmal carcinoma	-	-	-	-	2	5.7	-	-
<b>Miscellaneous</b>								
Benign mixed adnexal tumour	-	-	-	-	-	-	1	2
Fordyce's spot	-	-	ND	-	1	2.8	-	-



[1] NODULAR HIDRADENOMA [2] CHONDROID SYRINGOMA [3] SYRINGOCYSTADENOMA P.



[4] CYLINDROMA [5] SEBACEOUS ADENOMA [6] PILOMATRIXOMA

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