

## A HISTOPATHOLOGICAL SPECTRUM OF NECK LESIONS IN A RURAL HOSPITAL

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### ABSTRACT

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#### BACKGROUND

A multitude of lesions occur in the neck and patients come to hospital on account of morbidity associated with these lesions. Therefore a histopathological study of the spectrum of neck lesions was undertaken.

#### MATERIALS AND METHODS

All histologically diagnosed lesions of the neck from January 2014 to December 2015 were noted. Details of gender, age, location and diagnosis were recorded. The lesions were classified based on anatomic location, gross and histological features and clinically. Clinically, lesions were classified as congenital, inflammatory/infective and neoplastic. Incidence of age, gender and location of different lesions was calculated using percentage, and median. The findings were compared with other studies.

#### RESULTS

A total of 140 neck lesions were included in the current study. Neck lesions were predominant in females with 94 cases. The median age group involved was the 21-30 group. Anterior neck lesions were more common. Anterior midline lesions were 74 and mostly thyroid and thyroglossal duct origin. Lesions of the lymph node were greater in the posterior triangle. 122 lesions were solid and 18 were cystic. Histologically, there were 64 thyroid gland lesions, 40 lymph node lesions, 13 soft tissue tumours, 8 salivary lesions, 10 thyroglossal cysts and 5 skin/adnexal lesions. Clinically, congenital/developmental lesions were 11, inflammatory/infective lesions were 68 and neoplastic lesions were 61. Of the neoplastic lesions, 17 were malignant.

#### CONCLUSION

Non-neoplastic lesions of the neck were common in our study in accordance with findings in other studies. The most common malignancy was Papillary carcinoma of thyroid.

#### KEYWORDS

Histopathological, Neck Lesions, Clinical, Inflammatory, Neoplastic.

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**HOW TO CITE THIS ARTICLE:** Surapaneni SL, Gangadharan V, Kuppli VMM. A histopathological spectrum of neck lesions in a rural hospital. J. Evid. Based Med. Healthc. 2016; 3(60), 3233-3237. DOI: 10.18410/jebmh/2016/700

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**INTRODUCTION:** The neck is home to a large number of pathological lesions ranging from congenital, inflammatory/infective and neoplastic lesions. The anatomical extent of the neck is an area that extends from below the mandible up to the level of the superior border of the clavicle in front. The neck is divided anatomically into anterior and posterior triangles by the sternocleidomastoid muscle.<sup>[1]</sup> The anterior triangle is further divided into submandibular, submental and anterior midline regions. The use of these divisions permits effective location of palpable masses in the neck. Common lesions are those arising from the thyroid, lymph nodes, salivary glands, and various soft

tissues like fat, muscle, nerves, blood vessels, etc. Of all these structures, the lymph nodes are most abundant. There are about 70 lymph nodes in the neck.<sup>[2]</sup>

**AIMS AND OBJECTIVES:** To study the histological spectrum of neck lesions in a rural hospital.

1. To study the incidence of neck lesions in respect to age, gender and location.
2. To study the gross and histopathological features of the different lesions.
3. To classify lesions clinically into congenital, inflammatory and neoplastic type.
4. To compare the findings in this study with other studies.

**MATERIALS AND METHODS:** A study of neck lesions occurring in a period of two years from January 2014 to December 2015 was done in NRI Institute of Medical Sciences, Sangivalasa. Details of patients with records of age, gender, location and histological features were noted.

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*Financial or Other, Competing Interest: None.*  
*Submission 20-06-2016, Peer Review 30-06-2016,*  
*Acceptance 17-07-2016, Published 27-07-2016.*  
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 DOI: 10.18410/jebmh/2016/700

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The patients were categorised into three age groups, the young, (1-20) middle aged (21-60) and older age group (>60). These lesions were classified by anatomic location, on gross and histological features and clinically. The lesions were classified clinically into congenital, inflammatory lesions and neoplastic lesions. Incidence of age, gender

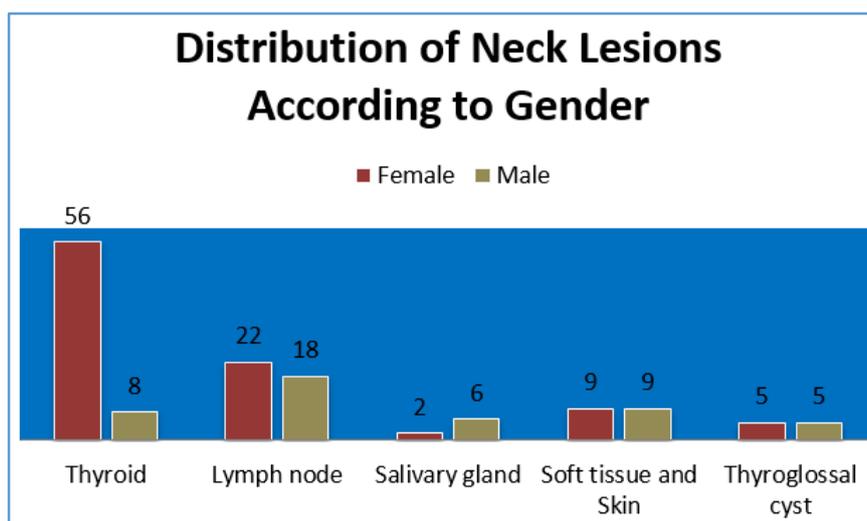
predilection of different lesions of each of the categories was calculated using percentage and median. The findings in this study were compared to that in other studies.

**RESULTS:** A total of 140 neck lesions were included in the current study. Overall, lesions were more common in females with 94 cases and 46 cases in males. The median age group involved was the middle age group of 21-30 years. (Table 1)

Age Group in years	Thyroid	Lymph node	Salivary Gland	Soft tissue tumour	Thyroglossal cyst	Skin/adnexal	Total
1-20	4	20	1		3	1	29
21- 60	58	18	7	13	7	4	107
>60	2	2					4

**Table 1: Distribution of Neck Lesions according to Age**

There were 100 lesions in the anterior triangle and 40 in the posterior triangle. Midline lesions were mostly of thyroid and thyroglossal duct origin. Lesions of the lymph node were more common posteriorly. On gross examination, there were 122 solid lesions and 18 were cystic. There were 64 thyroid gland lesions, 40 lymph node lesions, 13 soft tissue tumours, 8 salivary lesions, 10 thyroglossal cysts and 5 cases of dermoid/epidermoid cysts or adnexal lesion.



**Figure 1**

Of thyroid lesions, there were 26 multinodular goitres, 22 follicular adenomas, 12 papillary carcinomas and 4 cases of Hashimoto’s/Lymphocytic thyroiditis (Table 2). All the thyroid lesions were more common in females in the middle age group.

Sl. No.	Type of lesion	No. of cases	Percentage (%)	Female	Male
1	Multinodular goitre	26	40.62	24	2
2	Follicular adenoma	22	34.37	20	2
3	Papillary carcinoma	12	18.75	8	4
4	Hashimoto’s thyroiditis	4	6.25	4	0

**Table 2: Distribution of Thyroid lesions in relation to Gender**

Among lymph node lesions, there were 24 cases of reactive lymphadenitis, 10 cases of tuberculous lymphadenitis, 2 of lymphoma, 3 metastatic deposits and one case of hemangioma of the lymph node. (Table 3) Lymph node lesions were more common in the posterior triangle. Metastatic deposits were more common in males.

Sl. No.	Lesion	No. of cases	Female	Male
1	Reactive lymphadenitis	24(60%)	14	10
2	Tuberculous lymphadenitis	10(25%)	6	4
3	Lymphoma	2(5%)	1	1
4	Metastatic deposits	3(7.5%)	-	3
5	Capillary haemangioma	1(2.5%)	1	-

**Table 3: Lymph node Lesions in relation to Gender**

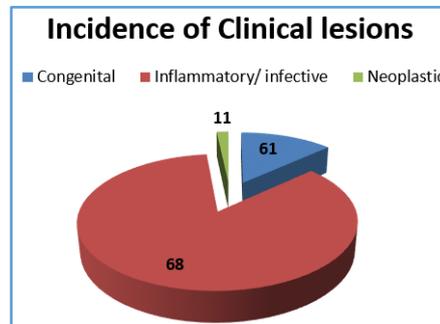
Salivary lesions were few with 4 cases of chronic nonspecific sialadenitis and 4 cases of pleomorphic adenoma, mostly involving the submandibular gland. There were 13 soft tissue tumours, which were all benign and mostly seen posteriorly, involving predominantly females, the most common being 9 cases of lipoma. Other lesions were mainly 10 thyroglossal cysts and 1 midline dermoid and 3 epidermal cysts and 1 adnexal tumour (Table 4).

Sl. No.	Type	No. of cases (36)	Males (19)	Females (17)
1	Lipoma	9	3	6
2	Dermatofibroma	1	-	1
3	Schwannoma	3	1	2
4	Epidermal cyst	3	2	1
5	Adnexal tumour	1	1	-
6	Dermoid	1	1	-
7	Thyroglossal cyst	10	5	5
8	Sialadenitis	4	3	1
9	Pleomorphic adenoma	4	3	1

**Table 4: Distribution of Soft tissue, Skin Lesions, Thyroglossal Cysts and Salivary Lesions**

There were 18 cystic lesions in the neck distributed in the midline as well as laterally. The most common was the thyroglossal cyst. Of 11 midline cystic lesions, 10 were thyroglossal cysts and one dermoid. Laterally, there were three lymph nodes showing metastatic deposits and the rest were 3 epidermal cysts and 1 adnexal lesion.

Clinically, there were 11 congenital/developmental lesions, 68 inflammatory/infective lesions and 61 neoplastic lesions (Fig 2).



**Figure 2**

Congenital lesions were most common in young adults. Inflammatory lesions were seen in all ages and benign neoplastic lesions were more common in middle age. Metastatic deposits were more common in older age except for papillary carcinoma of thyroid. Of the neoplastic lesions, 17 were malignant and the rest were benign. The most common malignant lesion in the neck was papillary carcinoma of thyroid.

**DISCUSSION:** Neck lesions are one of the most common lesions for which patients come to the hospital. They occur in all age groups and are easily accessible to surgery. Lesions in the neck are distributed in both anterior and posterior triangles as well as nape of the neck. Thyroid lesions, thyroglossal cysts and dermoids are more common in the anterior midline of the neck. Lymph node lesions are distributed in all areas of the neck.

Neck lesions were more common in the middle age group predominantly involving 21-50 years. Inflammatory lesions of lymph nodes were more common in the 11-20 years age group. In general, neck lesions were common in females but salivary, skin and adnexal lesions were more common in males. Thyroglossal cysts were distributed equally in both genders. The age and gender distribution of neck lesions was similar to various studies done by Popat et al,<sup>[3]</sup> Basista et al,<sup>[4]</sup> Ozkiris et al,<sup>[5]</sup> Irani S et al<sup>[6]</sup> and Suryavanshi et al<sup>[7]</sup>(Table 5). Anterior lesions were 71.42% and comparable to the study done by S. Irani et al where anterior lesions were 54.1%.

Sl. No.	Histological Lesions	Popat et al No (%)	Basista et al No (%)	Ozkiris et al No (%)	Irani S et al No (%)	Suryavanshi et al No (%)	Present study No (%)
1	Thyroid	30(29.12)	26(47.27)	-	431(35.67)	63(38.73)	64(45.71)
2	Lymph node	19(18.44)	13(23.63)	100(49.75)	417(34.51)	74(36.09)	40(28.57)
3	Salivary gland	7(6.79)	7(12.72)	46(22.88)	131(10.8)	39(19.02)	8(5.71)
4	Thyroglossal cyst	2(1.94)	2(3.63)	18(8.95)	-	5(2.43)	10(9.28)
5	Soft tissue & Skin	7(6.79)	-	37(18.40)	-	24(11.70)	18(12.85)
6	Miscellaneous	39(37.86)	7(12.72)	-	229(18.95)	-	-
	Total	103	55	201	1208	205	140

**Table 5: Distribution of Neck Lesions in Comparison with other Studies**

The most common neck lesions were 64 thyroid lesions and more common in females in this study similar to studies done by Popat et al, Basista et al, Ozkiris et al, Irani S et al and Suryavanshi et al. Neoplastic thyroid lesions at 53.12% were more common than either goitre, inflammatory or autoimmune lesions similar to a study done by Irani S et al at 48.7%. The most common age group involved was the middle age group as in all the above studies. Nodular goitre at 40.62% was the most common non-neoplastic lesion similar to studies done by Basista et al at 34.54%, Suryavanshi et al at 38.73% and discordant with study done by Popat et al at 75%. Of the 34 neoplastic lesions, 34.37% were benign Follicular adenomas. Follicular adenomas were 64.70% of all neoplastic lesions in contrast to a study done by Suryavanshi et al where they were 83.33%. The most common malignant lesion was papillary carcinoma of thyroid at 18.75% nearly twice that of a study done by Irani S et al at 9.4% and compared to 16.66% cases in a study done by Suryavanshi et al.

The second most common lesion in the neck was lymph nodal lesion at 28.57% which was comparable to studies done by Basista et al with 23.63%, Popat et al with 20.38% and Suryavanshi et al with 36.09%. The most common lesion reactive lymphadenitis was 60% followed by tuberculous lymphadenitis at 25% and then lymphomas and metastatic deposits at 12% similar to a study done by Vachhani et al<sup>[8]</sup> and Suryavanshi et al. Reactive lymphadenitis and tuberculous lymphadenitis was more common in the first three decades in our study in contrast to a study done by Vachhani et al where the third and fourth decade was involved. Lymph node lesions were more common in the younger age group.

Lymphomas at 5% and metastatic deposits at 7.5% were the most common malignant lesions in the lymph node comparable to a study done by Suryavanshi et al where lymphomas were 1.35% and metastatic deposits were 8.01% and in contrast to a study done by Vachhani et al where primary lymphomas were 2% and metastatic deposits were 23%. Metastatic deposits were more common in males than females.

There was a rare case of haemangioma of submental lymph node, only about 21 cases have been reported worldwide.<sup>[9]</sup>(Fig. 3)



**Figure 3: Gross appearance of Haemangioma of Lymph Node**

Salivary lesions were only 5.71% of all neck lesions, involving mostly the submandibular gland. Males comprising 75% were more commonly affected similar to a study done

by Irani S et al with 54.1%. The most common non-neoplastic lesion was chronic sialadenitis and neoplastic benign tumour was pleomorphic adenoma. Sialadenitis was seen in 50% of the cases in our study compared to 28.20% seen in a study done by Suryavanshi et al. Pleomorphic adenomas were 50% of the cases in the present study similar to the study done by Suryavanshi et al with 51.26% cases. Pleomorphic adenomas were more common in the 21-30 age group while chronic nonspecific sialadenitis was more common in the older age group of 51-60 years.

All the 13 soft tissue tumours in our study were benign. The most common tumour was Lipoma followed by Schwannoma. Lipomas are more common in the upper half of the body i.e. trunk followed by the neck.<sup>[10]</sup> In a study done by G Vahini,<sup>[11]</sup> lipomas constituted 34.7% of all benign soft tissue tumours and were most common in the head and neck region, similar to our study where they constituted 69.23% of all soft tissue tumours. Females were more commonly involved in our study in contrast to the study done by G Vahini where males were more commonly involved. Schwannomas are encapsulated tumours which are common in the 20-50 years age and have predilection for head and neck and flexor surfaces of the extremities.<sup>[12]</sup> All the cases in this study were in the mid-twenties.

Among cystic lesions, thyroglossal cysts are the most common congenital midline cystic mass and usually present in the first decade, but now are more common in young adults.<sup>[13]</sup> The cyst occurs along the residual tract left by the thyroid gland after descent during development. Thyroglossal cyst comprised 55.55% of all cystic lesions in the present study with equal incidence in both genders and in the 21-30 years age group comparable to a study by Darshan Goyal.<sup>[14]</sup> Thyroglossal cysts were 7.14% in our study compared to 2.43% in the study done by Suryavanshi et al. Dermoid and epidermoid cysts may occur anywhere in the body, with 7% presenting as head and neck lesions, most commonly lateral to the eyebrow.<sup>[13]</sup> Dermoid cysts are lined by the epithelium and contain skin appendages such as sebaceous glands and hair follicles within the cyst wall. Dermoid cysts of the head and neck usually manifest during the second and third decades of life usually in the sub-mandibular or sublingual space.<sup>[13]</sup> In our study, we had one case of midline dermoid in a male aged 25 years.



**Figure 4: Midline Dermoid Cyst attached to Hyoid**

Epidermoid cysts manifest earlier in life, with most lesions evident during infancy.<sup>[13]</sup> In our study, epidermal cysts were more common in the 11-30 years age group. Lesions of skin and adnexae were more common in males. 3 Epidermoid and 1 dermoid cyst and 1 adnexal tumour were the lesions of the skin and adnexae. Epidermal cysts were 5.85% in a study done by Suryavanshi et al compared to 2.85% in our study.

Metastatic nodes from head and neck malignancy, especially papillary carcinoma of the thyroid, are the most common types of nodal metastases presenting as cystic masses in the neck.<sup>[13]</sup> Of three metastatic deposits seen in our study, only one was a deposit of papillary carcinoma of thyroid and others were deposits of squamous cell carcinoma (Fig. 5).



**Figure 5: Metastatic Deposit of Papillary Carcinoma of Thyroid**

Clinically, congenital lesions were 7.85%, inflammatory were 48.57% and neoplastic lesions were 43.57% similar to the study done by Irani S et al where congenital were 8.8%, inflammatory/infectious were 38.4% and neoplastic lesions were 52.7%. Congenital lesions were more common in young adults. Inflammatory lesions were ubiquitous to all ages and benign neoplastic lesions were more common in the middle age. Metastatic deposits were more common in the older age except for papillary carcinoma thyroid.

**CONCLUSION:** The neck though comprising a small anatomical area is the site for many pathological lesions of varied histology depending on the tissue of origin. They can be cystic or solid and most were common in females except for salivary and skin lesions which were more common in males. Benign and non-neoplastic lesions predominate in the neck. Histopathological examination is the gold standard for diagnosing lesions, though FNAC can play a major role in giving a provisional diagnosis for planning treatment protocols. The study done in our institution compared favourably with studies done elsewhere and provides the statistical trend and demographic details of neck lesions in this geographic area.

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