

Original article

Clinico-pathological profile of benign cervico-facial masses in Eastern Nepal

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Abstract

Background: Head and neck region is a common site for both solid and cystic lesions. The etiology of these masses includes inflammation, congenital-developmental malformations and neoplasia. Thyroglossal cyst, branchial cyst and laryngocoele are the common congenital and acquired conditions. **Objective:** To assess clinico-pathological profile of benign cervico-facial masses in Eastern Nepal. **Methods:** Patients who were admitted with cervical swellings were included for the study. Acute inflammatory and malignant conditions were excluded. This study was conducted for five years at Department of ENT and Head Neck Surgery, B.P. Koirala Institute of Health Sciences, Dharan, Nepal. **Results:** Out of total 499 patients included, female were 64.53% and male were 35.47%. Most patients (23%) were from between age 21-30 years. The cervical swellings were most commonly seen in upper lateral neck in 30.46%. Most of the patients (67.13%) presented within 2 years of the appearance of the swelling. Sixty-one percent of the swelling were of the size of 5 cm x 4 cm at presentation. Congenital and developmental malformations were seen in 27.65%. Cysts other than developmental were found in 17.02%. The acquired benign lesions were seen in 55.31%. The swelling due to the diseases of the thyroid were found in 38.28%. The most common surgical management was thyroidectomy, done in 38.28%. **Conclusion:** Benign neck masses are common clinical presentation in the general population in eastern Nepal as in any head and neck clinics all over the world and present a challenge both to the clinician as well as the surgeon.

Keywords: benign, masses, neck

Introduction

Head and neck region is a common site for both solid and cystic lesions in adult as well as in pediatric population. The etiology of head and neck masses include inflammation, congenital-developmental malformations and neoplasia. Benign neck masses are common clinical presentation in any head and neck

clinics all over the world. Half of all cervical masses seen in a general tertiary hospital are of thyroid origin. The second most is the neck mass arising due to the diseases of the salivary glands. Thyroglossal cyst, lymphangioma, branchial cleft cyst, dermoid and hemangioma are the common congenital conditions whereas ranulas, laryngocoele and pharyngeal pouches are the acquired conditions.

These conditions require systematic evaluation and management. Even after a thorough history, clinical examination and radiological studies,

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a correct diagnosis may sometimes be elusive and the final diagnosis often lies on cyto- or histopathological examination. Various benign and malignant lesions are found in the neck region involving thyroid, salivary glands, lymph nodes, upper aero-digestive tract (throat), skin, soft tissues, etc. Goiter, chronic inflammatory lesions, pleomorphic adenoma, various cysts and swellings of skin and subcutaneous tissues comprise common benign and inflammatory lesions of the neck region. Nutritional deficiencies, dietary goitrogens, viral and bacterial infections, autoimmune condition etc are responsible for this variety of lesions.^{1,2,3}

In the changing pattern of specialty it is essential that every ENT, Head and Neck surgeon should be familiar with the clinicopathological profile, diagnosis and subsequent management of cervicofacial masses as the lesions in this particular anatomical region are of common cause of concern. This study aims to present the clinicopathological characteristics of head and neck benign masses in general population in the eastern part of Nepal.

Methods

All the patients who were admitted in the ENT department with cervical swellings were included in this study. The patients with acute inflammatory conditions, abscesses and malignant conditions were excluded from the study. The study was conducted for five years, from Baisakh 2062-Chaitra 2066, at the Department of ENT and Head Neck Surgery, B.P. Koirala Institute of Health Sciences, Dharan, Nepal.

After a thorough history, clinical examination of ear, nose and throat and routine investigations, a clinical diagnosis was made in every case. Final pathological diagnosis was reached either by FNAB or surgical excision of the mass followed by histopathological report.

Results

A total of 499 patients admitted in ENT Ward requiring surgical interventions were included

in this study. Three hundred twenty-two were female (64.53%) and 177 were male (35.47%). Overall, female to male ratio was 1.82:1. Mostly, patients from between age 21-30 years comprised 115 patients (23%), followed by age group of 11-20 years and 31-40 years, comprising 105 patients (21%) and 100 patients (20%) respectively.

The cervical swellings were most commonly seen in upper lateral neck in 152 (30.46%), followed by the masses in the midline of the neck in 148 patients (29.66%). The masses were in mid lateral neck in 88 patients (17.64%), in parotid region in 32 patients (6.41%) and in lower lateral neck in 5 patients (1.00%). There were 4 patients (0.80%), who presented with bilateral swellings in the upper neck region.



Figure 1: Patient with multinodular goiter

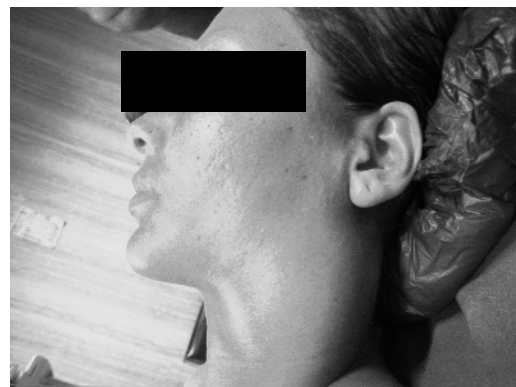


Figure 2: Patient with branchial cleft cyst

Table 1: Sites of lesion

Sites	Total (number)	Percent (%)
Upper lat. neck	152	30.46
Midline neck	148	29.66
Mid lat. neck	88	17.64
Parotid region	32	6.41
Oral cavity	23	4.60
Pinna	17	3.40
Lower lat. neck	5	1.00
B/L upper neck	4	0.80
Others	30	6.01
Grand total	499	100

Most of the patients (67.13%) presented within 2 years of the appearance of the swelling. Eighty-four patients (16.83%) presented in between 2-4 years, 45 patients (9.01%) after 6 years, and 35 patients (7.01%) presented in between 4-6 years of the appearance of the swelling.

The size of the swellings ranged from 1.5 cm x 1.5 cm to 25 cm x 15 cm. Sixty-one percent of the swelling were of the size of 5 cm x 4 cm at presentation.

The lesions were grossly divided into three groups: congenital and developmental malformations, cysts other than the developmental and acquired benign lesions. The acquired lesions were again subdivided into diseases due to thyroid origin, due to salivary glands origin and other origin.

Congenital and developmental malformations were seen in 138 patients (27.65%). Thyroglossal cyst was the most common lesion, diagnosed in 47 patients (9.42%). Branchial cleft cysts and cystic hygroma were diagnosed in 30 (6.01%), and 17 (3.41%) respectively. Likewise, ranulas and hemangioma were diagnosed in 15 (3.0%) and 12 (2.4%) cases.

Cysts other than developmental were found in 85 patients (17.02%). Among them, epidermal inclusion cysts was diagnosed in 35 patients (7.01%), retention cyst of the oral cavity was in 23 (4.60%), pseudocyst of pinna in 17 (3.41%) and sebaceous cysts in 10 patients (2.00%).

The acquired benign lesions were seen in 276 patients (55.31%). Swellings due to thyroid conditions were found in 191 (38.28%) patients.

Swelling due to salivary gland conditions were found in 64 (12.82%) and other acquired benign swellings were seen in 21 patients (4.20%).

The single most common acquired benign lesion was colloid goiter involving a single lobe, seen in 144 patients (28.86%) and multinodular goiter in 33 (6.61%).

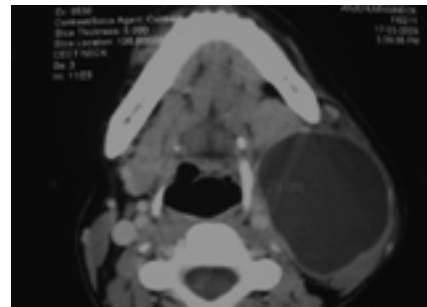


Figure 3: Axial view showing the branchial cleft cyst.

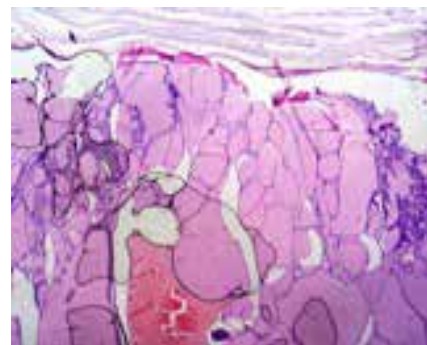


Figure 4: Multinodular goiter 200X, H&E Microscopy shows variably sized follicles distended by colloid and lined by flattened follicular epithelium.

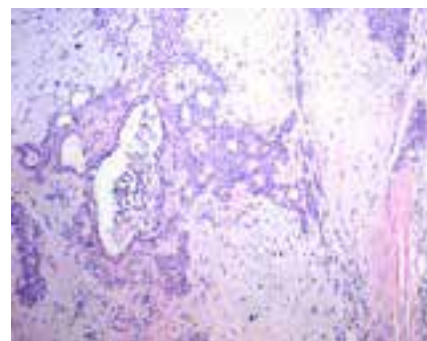


Figure 5: Pleomorphic adenoma 200X, H&E Microscopy shows epithelial element composed of ducts and strands of cuboidal epithelium and myoepithelium set in a mesenchymal chondromyxoid stroma.

Pleomorphic adenoma of parotid gland and sub mandibular glands were seen in 27 (5.41%) and 14 patients (2.80%) respectively. And 23 patients (4.60%) presented with chronic sialoadenitis.

Table 2: Distribution of cervical masses according to the final diagnosis.

1. Congenital and developmental malformations		
Lesions	No. of cases	Percentage
Thyroglossal cyst	47	9.42
Branchial cleft cyst	30	6.01
Cystic hygroma	17	3.41
Heamangioma	12	2.40
Lymphangioma	10	2.00
Ranulas	15	3.00
Dermoid cyst	7	1.40
Total	138	27.65
2. Cysts other than developmental		
Epidermal inclusion cyst	35	7.01
Retention cyst	23	4.60
Pseudocyst of pinna	17	3.41
Sebaceous cyst	10	2.00
Total	85	17.02
3. Acquired benign		
A. Thyroid diseases		
Colloid goiter involving one lobe	144	28.86
Multinodular goiter	33	6.61
Diffuse colloid goiter	7	1.40
Hashimotos with nodule	4	0.80
Thyroid cyst	3	0.60
Total	191	38.28
B. Salivary gland diseases		
Pleomorphic adenoma-parotid gland	27	5.41
Pleomorphic adenoma-submandibular gland	14	2.80
Chronic Sialoadenitis	23	4.60
Total	64	12.82
C. Other benign lesions		
Schwannoma	12	2.40
Neurofibroma	9	1.80
Total	21	4.20
Subtotal	276	55.31
Grand total	499	100

The most common surgical management was thyroidectomy, done in 191 patients (38.28%). Among the thyroidectomies, hemithyroidectomy was done in 150 patients

(30.06%), subtotal thyroidectomy in 16 (3.20%), near-total thyroidectomy in 6 (1.20%), total thyroidectomy in 15 (3.00%) and only isthmusectomy was done in 4 cases (0.80%).

Parotid surgery was performed in 27 patients (5.41%). Among them, superficial parotidectomy was done in 18(3.60%), the total conservative parotidectomy was done in 9 patients (1.80%). Likewise, excision was done in 214 (42.89%), Sistrunk operation was done in 47 (9.42%) and marsupialisation was done in 18 patients (3.61%).

Table 3: The mode of surgical management in our series.

Procedures	Total	Percentage
Thyroid Surgery		
Hemithyroidectomy	150	30.06
Subtotal thyroidectomy	16	3.20
Near-total thyroidectomy	6	1.20
Total Thyroidectomy	15	3.00
Isthmusectomy	4	0.80
Total	191	38.28
Parotid Surgery		
Superficial parotidectomy	18	3.60
Total Conservative parotidectomy	9	1.80
Total	27	5.41
Others		
Sistrunk	47	9.42
Excision	214	42.89
Marsupialisation	18	3.61
Excision through transmandibulotomy	1	0.20
Partial Excision	1	0.20
Total	281	56.32
Grand Total	499	100

Discussion

The neck region is divided into anterior and posterior triangles. The upper part of anterior triangle is commonly subdivided into the submandibular triangle and sub mental triangle. Various organs of the neck region are located in these triangles and their lesions can be identified by their specific anatomical site but can also be confused with the lymph node swellings which can be found in any of these triangles as well as various swellings of skin and soft tissues.⁴

The swellings in the cervicofacial region merit a detailed clinicopathological evaluation because of two main reasons, one being the cosmetic aspect and the other possibility of a lesion being malignant. The lesions of cervicofacial region are visible to the patient and others and cause a constant trouble to the patients.

Some of the swellings can attain a large size to be a cause of cosmetic concern. For a clinician any cervicofacial lesion may be a sign of deep seated pathology which nobody can afford to overlook.

Congenital and developmental malformations

These lesions constituted 138 cases (27.65%) of all masses in our study. This is in approximation with the findings of Rajesh et al., where these lesions constituted 30% of all head and neck masses in children.⁵

There were 47 cases (9.42%) of thyroglossal cysts in our study, with a female to male ratio of 1.47:1. Connolly and Mackenzie reported 13% of cervicofacial masses in children as thyroglossal cysts.⁶ whereas Rajesh et al. did not report any case of thyroglossal cyst in their study. The incidence of male to female ratio found in present study is consistent with other studies. All cases were managed surgically (Sistrunk's operation) without any recurrence.

In our study, branchial cyst was found in 30 patients (6.01%), with female to male ratio of 1.5:1. Twenty patients presented with right sided lesion and other 9 as left sided lesion. One male child of age 12 years was admitted in our ward with bilateral branchial cleft cyst. All the cases were managed surgically. Rajesh et al. reported incidence of branchial cyst/fistula of 4% in their study⁵. Connelly and Mackenzie reported 25 cases (9%) of branchial remnant lesions in the histopathology of non-lymphadenomatous benign lesions.⁶

Cystic hygroma and lymphangioma constituted 17 (3.41%) and 10 (2%) cases of all cervicofacial masses respectively in this study. There were 7 cases of cystic hygroma in the posterior

triangles, 4 in anterior triangles and 3 each in both submandibular regions in the present study, with a male to female ratio of 1.43:1. Low incidence 1.2 to 2.8/1000 has been reported by Thomas et al.⁷ Some reported a much higher rate in the male population, although the male to female ratio appears to be equal in most reports.⁸

Six cases of lymphangiomas were in the submandibular region, 3 in the posterior triangles and one in the supraclavicular region in the present study. Female to male ratio was 1.5:1. Lymphangiomas were managed surgically.

Hemangiomas constituted 12 cases (2.4%) of all 499 cervicofacial masses, out of which 6 were in the submandibular region, 3 were in the posterior triangle and one each in the upper lip, submental and supraclavicular region. Female, male ratio was 2:1. Out of 12 cases of haemangiomas, nine were treated first by sclerotherapy using sodium tetra desial followed by excision, and remaining three smaller lesions were excised. Hemangiomas have been reported more in females than male, in a ratio of 3:1, accounting for up to 12% of cervicofacial masses.⁹

There were 15 cases of ranulas, constituting about 3 % among all the swelling. All were either excised completely or marsupialisation was done. There were 7 cases (1.40%) of dermoid cysts in this study. Some reported 4% of cervicofacial masses in children as dermoids⁵ whereas others have reported 9% as dermoids⁶. All the dermoids were excised surgically in the present study.

Cysts other than developmental

In the present study there were 85 cases (17.02%) of cystic lesions among all the masses with a male to female ratio of 1.5:1. Cystic lesions included 35 (7.01%) cases of epidermal inclusion cysts, 23 (4.60%) cases of retention cyst, 17 cases of pseudocyst of pinna and 10 (2.00%) cases of sebaceous cyst. All were managed surgically.

In the present study epidermal inclusion cysts constituted 35 cases (7.01%) with a female to

male ratio of 1.06:1. Seventeen cases (48.57%) were in the submental region, 8 (22.86%) in post auricular region, 4 (11.43%) each in submandibular region and posterior triangle of neck and one each in pre auricular and infra-auricular region. All were managed surgically without any recurrence. No case of epidermal inclusion cyst was reported by Rajesh et. al.⁵ and Connolly and Meckenzie.⁶

There were 23 cases of the retention cysts (4.60%) with female to male ratio of 1.3:1. All were managed surgically.

There were 17 cases (3.41%) of Pseudocyst of pinna, with male to female ratio of 1.83:1. Out of these, thirteen were managed by aspiration and pressure bandage and remaining 4 cases, which were persistent were managed surgically.

Sebaceous cysts were seen in 10 cases (2.00%) with a female to male ratio of 1:1. Excision was done in all cases successfully without any recurrence.

Benign acquired lesions

Benign acquired lesions were diagnosed in 276 cases (55.31%) in the present study, which included 191 cases of (38.28%) thyroid origin, 64 (12.82%) of salivary gland origin and 21 (4.20%) cases of the other benign lesions. Female to male ratio was 2.73:1.

Among the thyroid lesions, the colloid goiter involving only one lobe, either left or right lobe, was seen in 144 cases (28.86%), with a female to male ratio of 3.23:1. Multinodular goiter was diagnosed in 33 (6.61%), with a female to male ratio of 3.71: 1.

Diffuse colloid goiter involving whole of the gland were seen in 7 cases (1.40%), five of them were female.

Hashimotos thyroiditis with nodule was seen in 4 cases (0.80%), all were females and thyroid cysts were seen in 3 cases (0.60%), among them two were females.

In a study, total 131 patients of the thyroid masses were analyzed and found that 48.1%

were benign, 65% were female and multinodular goiter was the most common diagnosis¹⁰. In another study, done in 92 patients who had undergone surgery for thyroid masses, 72 were female and 20 were male. They performed near total thyroidectomy in 40, hemithyroidectomy in 25, bilateral subtotal thyroidectomy in 16, and total thyroidectomy in 11 patients. Most common post operative histopathology diagnosis were benign colloid nodule which was found in 70 patients, followed by Graves disease, seen in two patients and rest were suffering from malignancy¹¹.

The WHO has classified seven percent of world population as suffering from clinically apparent goiter. Most patients are in developing countries, where the disease is attributed to iodine deficiency¹². The reported incidence of both benign & malignant lesions in surgically treated thyroid swellings varies widely between different geographical areas of the world.¹³

Popat et al. found non neoplastic lesions of the thyroid gland with a frequency of 92% as compared to 08% neoplastic lesions. The commonest non-neoplastic lesion was adenomatous hyperplasia thyroid gland with a frequency of 46.42%.¹⁴ We found colloid goiter involving single lobe as the most common cause of goiter (28.86%).

The second most common lesion among the benign acquired swellings was the lesions due to the salivary gland, which constituted 64 cases (12.82%). Among them 41 were in females and 23 were male (female: male =1.78:1). Pleomorphic adenoma of the parotid gland and submandibular gland was seen in 27 (5.41%) and 14 cases (2.80%) respectively. Chronic sialoadenitis involving the submandibular gland was seen in 23 cases (4.60%).

In a retrospective review of 282 patients, who were surgically treated for parotid gland tumours in 10 years, benign epithelial neoplasms were seen in 231 cases. Pleomorphic adenoma was the most common, comprising 50%-74% of all parotid tumours. Warthin's tumor was seen

in 4-14%. In such cases conservative formal parotidectomy appears to be the treatment of choice.¹⁵ Several studies have shown that benign tumors represent 45-74% of all salivary gland tumors¹⁶. Pleomorphic adenoma has been found to be the most common of all salivary gland tumors (71.4%).¹⁷ Asymptomatic mass of long duration was the most common presentation. Women are more likely to be affected than men.¹⁷ But in the study done by Popat and colleagues males were predominately affected¹⁴.

Among other benign acquired lesions, schwannoma and neurofibroma were seen in 12 (2.40%), and 9 cases (1.80%) respectively. Alexander et al. in their study of 1007 cases of head and neck tumors of children reported 30.6% malignant, 27.8% as benign, 17.4% as congenital and 24.2% as tumor-like conditions. The overall sex ratio was 1.5:1 in favor of males.¹⁸

In this study, FNAB was performed in 472 (94.59%) cases, and histopathological examination was done in 461 (92.38%) cases. Histopathological examination did not correspond to FNAB diagnosis in 15 cases (3.25%) which were epidermal inclusion cyst and lymphangiomas for 2 cystic hygromas; 3 epidermal inclusion cysts for dermoid cysts; 4 sebaceous cysts, 2 pleomorphic adenoma and 2 retention cyst for 10 epidermal inclusion cysts; and 2 epidermal inclusion cyst for sebaceous cyst.

Most common complications noted in the series were pain and oedema. Recurrence was noted in 6 patients (1.2%) including 4 pseudocyst pinna (repeated aspiration was done in all cases) and 2 hemangiomas in which sclerotherapy was performed as initial treatment, both needed repeat sclerotherapy and were excised later on.

Conclusion

Head and neck region is a common site for the both solid and the cystic lesions in adult as well as in pediatric patients. Benign neck

masses are common clinical presentation in the general population in eastern Nepal as in any head and neck clinics all over the world and present a challenge both to the clinician as well as the surgeon. The masses ranged from small retention cysts of the oral mucosa to the huge pleomorphic adenoma of the parotid gland and colloid goiter, which is the most common single lesion in this part of Nepal among the benign cervical lesions, these are cosmetically very ugly and socially unacceptable. An orderly and sequential approach is all that is needed to manage these lesions.

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