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## Clinico pathological study of thyroid swellings at tertiary care hospital

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### Abstract

**Introduction:** A thyroid enlargement whether diffuses or in the form of nodules have to be investigated to rule out neoplasm. FNAC is the first line of investigation. USG and TFT are also used. The cases which are at high risk are considered for surgery. Aims and objectives of the study was the clinical presentation of thyroid swellings, incidence of various thyroid swelling, benign versus malignant lesion and to correlate the clinical diagnosis with that of pathological diagnosis.

**Aims and Objectives:** Aim is to study the clinical presentations of thyroid swellings, incidence of various thyroid swellings, benign versus malignant lesions and to correlate the clinical diagnosis with that of pathological diagnosis.

**Materials and Methods:** A case series study of 120 patients attending surgical OPD/IPD with symptoms of thyroid swelling in Shadan Institute of Medical Sciences, Hyderabad, Telangana, India between 01/01/2015 to 30/06/2016. After detailed history, thorough clinical examination was carried out. All the patient underwent routine investigations, TFT, FNAC, USG Neck. Few patients underwent surgery and all the excised thyroid specimen were sent for HPE and the clinical diagnosis is correlated with that of pathological diagnosis.

**Results:** Of 120 cases, female to male ratio of 9:1. The age group involved is between 31-40 yrs (31.67%). Duration of goitre is < 1 year in 60% of cases. The Chief complaint was swelling in front of the neck (100%). Duration of swelling ranged from 15 days to 15 years. Toxic features were present in 18.33% of cases. But after TFT the toxic cases were only 6.67%. Most of the patients showed colloid goitre (43.33%) on FNAC. Out of 120 cases only 44 cases did undergo surgery. Histopathological specimen was colloid/nodular goitre in 81.82% (out of 44 cases only).

**Conclusion:** Thyroid swellings are more common in females. They occur in 3<sup>rd</sup> and 4<sup>th</sup> decade most commonly. FNAC is very useful in the diagnosis. The main indications of surgery are cosmetic problem, pressure effect symptoms and suspicion of malignancy.

**Keywords:** FNAC, HPE, USG, subtotal thyroidectomy

### Introduction

Normal thyroid gland is impalpable. Enlargement of thyroid gland is the most common manifestation of thyroid disease. The enlargement may be either generalized or localized. Which again may be toxic or nontoxic. The nontoxic goiter is further divided on etiological basis as endemic goiter and sporadic goiter. The endemic goiter is defined as one where more than 10% of population shows thyroid enlargement. 3 Lesion of thyroid are predominantly confined to females in the ratio of 5:1.

And this has been attributed to variation of thyroid hormones during female reproductive function and physiological events such as puberty, pregnancy and lactation. A thyroid enlargement whether diffuses or in the form of a nodule has to be investigated to rule out neoplasm. FNAC is the first line of investigation and others like ultrasound, thyroid function test, thyroid scan and antibody levels are done subsequently with an aim to select who require surgery and those that can be managed conservatively. The limitations of cytology are well recognized in the diagnosis of some thyroid malignancies, in particular is not able to differentiate between follicular adenoma and carcinoma and also in the detection of some papillary carcinomas because of associated thyroid pathologies including MNG thyrotoxicosis and marked cystic changes [1-4]. Worldwide, MNG is the most common endocrine disorder affecting 500-600 million people, where iodine deficiency is often the culprit.

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Lesions of thyroid are predominantly confined to females in the ratio of 5:1 and this has been attributed to variations of thyroid hormone during female reproductive function and physiological events such as puberty, pregnancy and lactation.

A thyroid enlargement whether diffuse or in the form of a nodule has to be investigated to rule out neoplasm.

FNAC is usually the first line of investigation and others like ultrasound study, thyroid function tests (TFT), thyroid scan and antibody levels are done subsequently with an aim to select patients who require surgery and those that can be managed conservatively.

The limitations of cytology is well recognized in the diagnosis of some thyroid malignancies, in particular it is not able to differentiate between follicular adenoma and carcinoma and also in the detection of some papillary carcinomas because of associated thyroid pathology including MNG, thyrotoxicosis and marked cystic changes.<sup>3</sup>

Thus even if non-surgical and non-invasive techniques can provide a diagnosis, the ultimate answer rests in the histopathologic examination of the excised thyroid tissue.

The risk of cancer in a thyroid swellings can be expressed as a rule of 12. The risk is greater in isolated Vs dominant swellings, solid Vs cystic swellings and men Vs women.<sup>4p750</sup>

### Objectives

The aims and objectives of this study are

1. To study the clinical presentations of thyroid swellings at SIMS, Hyderabad.
2. To study the proportion of various thyroid swellings.
3. To study the proportion of Benign versus Malignant lesions.
4. To correlate the clinical diagnosis with that of pathological diagnosis in various thyroid diseases.

### Material and Methods

**Study design:** Observational prospective study

**Place of study:** All Patients attending surgical OPD/IPD with symptoms and Signs of thyroid swelling in SIMS, Hyderabad, Telangana, India.

**Period of study :** Between 01/01/2015 to 30/06/2016 (18 months).

**Sample size :** 60

### Inclusion Criteria

All patients presenting with thyroid swelling attending OPD/IPD.

### Exclusion Criteria

- Patients below 12 years of age.
- Patients with recurrent thyroid swelling.

### Method of study

Patients presenting with thyroid swelling attending OPD/IPD are selected except those mentioned in exclusion criteria and data collected by, direct interview with patient and obtaining a detailed history, thorough clinical examination. Clinical findings noted. Relevant routine investigations like Hb%, CBC, BT, CT, ESR, RBS, Blood Urea, Serum Creatinine, HIV, HBSag, Urine routine, ECG,

Chest X-ray and specific investigations like FNAC of thyroid swelling, TFT (serum T3 T4 TSH), USG Thyroid, X-ray neck AP/Lateral, Indirect laryngoscopy, CT scan of neck and thorax (only if necessary for retrosternal extension and metastasis), Thyroid isotope scan (only if required), HPE of the resected specimen (only in cases who undergo surgery) are performed and the clinical diagnosis is correlated with that of pathological diagnosis.

### Results

The present study is carried out on 120 patients with Thyroid swelling attending Surgical OPD and IPD between 1<sup>st</sup> Jan 2015 to 30<sup>th</sup> June 2016. A detailed history was taken and clinical examination was done. And the patients were investigated with TFT, USG, FNAC and the cases who underwent surgery were subjected to Histopathological examination.

### IPD/OPD cases

**Table 1:** Shows the NO of IPD Vs OPD cases.

	No	%
IPD	50	41.66
OPD	70	58.33

### Sex Distribution

The Table 2 shows sex distribution of the cases. Out of 60 cases, there were 6 Male and 54 Female patients, with incidence of 10% and 90% respectively.

**Table 2:** Sex Distribution

Sex	No	Percentage
Male	12	10
Female	108	90

### Age Distribution

The Table 3 Shows the age distribution. Maximum Number of cases were in the Third decade and Second decade of life. (31.67% and 26.67% respectively). The Oldest is 70 Years and Youngest is 14 years of age. And mean age is 38.55 years. The standard Deviation is 14.6.

**Table 3:** Age Distribution

Age in Years	No.	%
12-20	8	6.67
21-30	32	26.67
31-40	38	31.67
41-50	14	11.67
51-60	14	11.67
61-70	14	11.67
	120	100

### Duration of Goitre

The duration of the Goitre is as shown in the Table 4. Maximum cases were in the duration of 0-1 year (60%). And followed by 1-5 years (31.67%) and lastly above 5 years (8.33%).

**Table 4:** Duration of Goitre

Duration in years	No of Cases	Percentage
0-1	72	60
1-5	38	31.67
>5	10	8.33
	120	100

**Lobes Involved**

The Table 5 shows involvement of lobes in thyroid swellings. The Bilateral involvement of the lobes was seen in 71.66% cases. Right lobe was involved in 20% of cases as compared with left (8.33%).

**Table 5:** Lobes involved:

Lobes	No	%
Bilateral	86	71.66
Left	10	8.33
Right	24	20
	120	100

**Clinical Features Distribution**

Clinical features distribution is described as in the Table 6. Swelling was present in the 100% of the cases as presenting symptom. Followed by this Pain was present in 20% of the cases and Dysphagia in 18.33% and Hyperthyroid feature was seen 18.33% of cases.

**Table 6:** Clinical Features Distribution:

Clinical feature	No of Case	%
Pain	24	20
Dyspnoea	4	3.33
Dysphagia	22	18.33
Others	2	1.67
Voice change	2	1.67
Hyperthyroid	22	18.33
Hypothyroid	4	3.3

**Comparison between Toxic and Nontoxic Goitre, Clinically and Investigation Wise**

Table 7 shows the comparison between Nontoxic and Toxic cases both clinically and Investigation wise (TFT). Clinically there were total 81.67% (98) of the Nontoxic cases and Investigation wise (TFT) 93.33% (112) of the cases were Nontoxic. Similarly 18.33% (22) cases were toxic clinically but only 6.67% (8) of cases were toxic after TFT. This Table shows that clinically 14 cases which were having hyperthyroid symptoms were in Euthyroid State after TFT. Hence, only hyperthyroid symptom doesn't indicate

toxicity and needs TFT to label it as Toxic Goitre.

**Table 7:** Comparison between Toxic and Nontoxic Goitre, Clinically and Investigation Wise

	Toxic	Nontoxic
Clinically(No)	22	98
Investigation wise TFT (No)	8	112
Clinically (%)	18.33	81.67
Investigation TFT wise (%)	6.67	93.33

**Clinical Diagnosis**

The Table 8 shows the Clinical Diagnosis. About 48.33% of the cases were Diffuse Nontoxic Goitre followed by 25% of the Solitary Nontoxic goitre. 6.67% of the MNG Nontoxic cases and 6.67% of the Toxic Diffuse Goitre. Carcinoma accounted for 5% of the cases.

**Table 8:** Clinical Diagnosis

Clinical Diagnosis		No.	%
Diffuse	Non Toxic	58	48.33
Diffuse	Toxic	8	6.67
MNG	Non Toxic	8	6.67
MNG	Toxic	6	5
SNG	Non Toxic	30	25
SNG	Toxic	4	3.33
Carcinoma		6	5
		120	100

**Comparison of clinical diagnosis with that of USG**

Table 9 shows Comparison of Clinical Diagnosis with that of USG. As this is Clinico Pathological study, USG was not made mandatory for every case. Only those who were willing for USG Thyroid did undergo USG. Remaining cases due to financial concern refused to undergo USG. Hence only 58 cases out of 120 did undergo USG. Out of 22 cases who diagnosed as Diffuse non toxic Goitre, 10 cases showed Thyroiditis and 10 cases were Colloid cyst and one case was Solitary nodule thyroid. And out of 10 cases of Nontoxic Solitary nodule, 18 showed Solitary nodule and one case showed Adenoma. One case of Carcinoma showed as Abscess on USG.

**Table 9:** Comparison of Clinical Diagnosis with That Of USG:

Clinical diagnosis	No.	USG	Thyroiditis	Colloid cyst	Solitary Nodule	MNG	Adenoma	Abscess	Hypervascular nodule
Diffuse nontoxic goitre	58	22	10	10	2				
Nontoxic MNG	8	4				4			
Nontoxic solitary nodule	30	20			18		2		
Toxic MNG	6	4			2	2			
TOXIC SOLITARY Nod	4	4			2				2
Toxic diffuse goitre	8	2	2						
Carcinoma	6	2						2	
Total	120	58	12	10	24	6	2	2	2

**Comparison between Clinical Diagnosis and FNAC**

Out of 58 cases which were diagnosed as Diffuse Nontoxic Goitre, 26 cases were Colloid goiter, 16 were Hashimotos and 2 were Granulomatous Thyroiditis. And Out of 30 Nontoxic solitary Nodule cases, 4 were Hashimotos, 14

were colloid, 6 cases were Benign follicular lesion, and 4 were Colloid cyst. 6 cases were diagnosed as Malignancy

**Comparison between Benign and Malignant Cases**

Out of 60 cases, clinically 95% (114) cases were Benign and 5% (6) cases were Malignant. But out of 60 cases, 90%

(108) were reported as Benign and 10% (12) cases were Malignant. However not all cases did undergo surgery. Hence only 44 cases underwent surgery for which HPE was done. Out of this only 3.33% were Malignant and 33.33%

were Benign. The remaining cases were either managed conservatively and or advised surgery, however patient didn't turn up.

**Table 10:** Comparison between Benign and Malignant Cases

		No	%
Clinically	Benign	114	95
	Malignant	6	5
FNAC	Benign	108	90
	Malignant	12	10
HPE	Benign	40	33.33
	Malignant	4	3.33

**Comparison between Clinical Diagnosis and HPE**

Comparison between Clinical diagnosis and HPE. Out of 58 cases of Diffuse nontoxic goitre, only five cases underwent surgery, out of which 5 cases were diagnosed as Colloid Goitre. And Out of 8 cases of MNG, all showed Colloid Goitre. Out of 30 Nontoxic Solitary Nodule Thyroid, Only 22 did undergo surgery, out of which 16 cases were Colloid, 4 were Benign follicular and 2 was carcinoma (Hurthle cell Neoplasm). One case of Malignancy, showed Papillary carcinoma on HPE.

**Comparison between FNAC and HPE**

Comparison between FNAC and HPE. Out of 120 cases all cases were underwent FNAC. However only 44 Cases did undergo Surgery. Out of which 30 cases which were diagnosed as Colloid Goitre on FNAC were diagnosed as Colloid/ Nodular colloid goitre on HPE. 4 cases which were diagnosed as Primary Hyperplasia on FNAC, was given as Colloid goitre on HPE. And 4 cases were Benign Adenomas and 4 cases were Carcinomas.

**Table 11:** Comparison between FNAC AND HPE

FNAC	Cases	HPE		
		Colloid Goitre/ Nodular	Benign follicular	Carcinoma
Colloid goitre	30	30		
Primary Hyperplasia	4	4		
Benign follicular	4		4	
Carcinoma	4			4
Colloid cyst	2	2		
	44	36	4	4

**Discussion**

The present study "CLINICOPATHOLOGICAL STUDY OF THYROID SWELLINGS" was conducted in 60 Patients attending OPD and IPD, from 1<sup>st</sup> January 2015 to 30<sup>th</sup> June 2016 at SIMS, Hyderabad. The Aim of the study was to know the clinical presentations of various Thyroid swellings and to study the proportion of these swellings. And also to know the proportion of Benign Vs Malignant lesions, with correlation of Clinical diagnosis and Pathological diagnosis. In the present study of 60 cases of thyroid swellings, there were 90% of female patients Vs 10% of male patients giving a ratio of 9:1 for females to males. There is a wide variation in the ratio ranging from 2.3:1 to 11.5:1. The Table D1 shows the ratio of F:M in the various study and the present study.

**Table 12:** Sex Incidence (F:M) Table D1

Sl No	AUTHORS	Total Cases	F:M
1	Abdulla H <i>et al.</i> (2006) <sup>[5]</sup>	110	3.2:1
2	Muhammad Saddique <i>et al.</i> (2008) <sup>[6]</sup>	60	6.5:1
3	P K Bagga <i>et al.</i> (2010) <sup>[7]</sup>	252	7.7:1
4	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	75	11.5:1
5	Arun Sengupta <i>et al.</i> (2011) <sup>[8]</sup>	178	3.8:1
6	khageshwar <i>et al.</i> (2011) <sup>[12]</sup>	76	2.3:1
7	Kiran Rao <i>et al.</i> (2011) <sup>[13]</sup>	100	6.14:1
8	Pinki Pandey <i>et al.</i> (2012) <sup>[9]</sup>	447	5.8:1
9	NR <i>et al.</i> (2012) <sup>[10]</sup>	50	11.5:1
10	Present study (2016)	120	9:1

**Age Incidence**

**Table 13:** Age Incidence (Table D2)

SL No	Authors	No of cases	0-10	11_20	21_30	31_40	41_50	50 and more
1	Muhammad <i>et al.</i> (2008) <sup>[6]</sup>	60	-	13.3	33.3	20	23.3	8
2	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	75	-	-	12	44	32	12
3	Arun Sengupta <i>et al.</i> (2011) <sup>[8]</sup>	178	3.93	7.3	35.39	40.45	9.55	3.38
4	NR <i>et al.</i> (2012) <sup>[10]</sup>	50	-	2	-	34	-	54
5	KC S <i>et al.</i> (2012) <sup>[14]</sup>	56	-	7.14	25	30.36	19.64	17.86
6	Present study (2016)	120	-	6.67	26.67	31.67	11.67	23.34

In the present study the maximum incidence of Thyroid swellings was seen in the age group of 31\_40 Years

(31.67%). This is in agreement with NR *et al.*, KC S *et al.*, with incidence of 34%, 30.36 respectively.

**Mean Age**

**Table 14:** Mean Age (Table D3)

SL No	Authors	No of cases	Mean Age
1	Suresh K <i>et al.</i> (2005) <sup>[15]</sup>	89	38.5
2	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	75	38.7
3	Pinki Pandey <i>et al.</i> (2012) <sup>[9]</sup>	447	39
4	Meraj Abed <i>et al.</i> (2013) <sup>[16]</sup>	80	40.21
5	Present study (2016)	120	38.6

In the present study Mean age of the cases was 38.6 Years as comparable to Suresh K *et al* 38.5, Manoj Gupta *et al* 38.7 and Pinki Pandey *et al* 39 Years.

**Symptomatology Duration and Distribution**

**Table 15:** Symptoms – Duration and Distribution

SL No	Authors	NO of cases	Duration in yrs	Change in voice%	Dysphagia%	Dyspnoea%	Toxicity%
1	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	75	0.1_2	—	8	—	—
2	Wahid FI <i>et al.</i> (2012) <sup>[17]</sup>	82	0.1-15	2.43	3.65	4.87	-
3	Sengupta A <i>et al.</i> (2012) <sup>[8]</sup>	178	0.05-18	3.3	12.9	10.1	-
4	Present study (2016)	120	0.05_15	1.67	18.33	3.33	8.33

The present study shows the duration of the goitre is from 15 days to 15 Years which is similar to Sengupta *et al.* and Wahid *et al.* with duration of 15 days to 18 yrs and 30 days

to 15 years respectively.

**Goitre Lobe Involved**

**Table 16:** Goitre Lobe Involvement (Table D5)

SL No	Authors	Nor of cases	Bilateral %	Right %	Left %
1	Muhammad <i>et al.</i> (2010) <sup>[6]</sup>	50	—	52	36
2	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	75	—	60	28
3	Meraj Abed <i>et al.</i> (2013) <sup>[16]</sup>	80	3.5	38.8	72.5
4	Present study (2016)	120	71	20	8.33

The Present study shows that right lobe involvement is more than left lobe.

The Table D5 shows the lobe involvement in various studies.

**Table 17:** Histopathological Distribution

SL No	Authors	No of Case	Colloid Goitre	Adenoma	Carcinoma	Thyroiditis	Thyroglossal cyst	Others
1	Abdulla H <i>et al</i> (2006) <sup>[5]</sup>	110	45.5	15.5	24	7	—	—
2	Muhammad saddique <i>et al.</i> (2008) <sup>[6]</sup>	60	48.33	15	18.33	6.66	—	11.66
3	Manoj Gupta <i>et al.</i> (2010) <sup>[11]</sup>	74	56	16	24	4	—	—
4	Arun Sengupta <i>et al.</i> (2011) <sup>[8]</sup>	178	72.47	7.3	11.8	8.43	—	—
5	khageshwar <i>et al.</i> (2011) <sup>[12]</sup>	76	53.95	5.26	10.52	10.53	19.74	—
6	Kiran Rao <i>et al.</i> (2011) <sup>[13]</sup>	100	40	25	19	2	—	—
7	Pinki Pandey <i>et al.</i> (2012) <sup>[9]</sup>	112	46.43	26.79	21.43	5.36	—	—
8	NR <i>et al.</i> (2012) <sup>[10]</sup>	50	42	32	16	4	—	6
10	Present study	44(120)	81.82	9.1	9.1	—	—	—

The Histological data was taken from only 44 cases (Out of 120 total cases) who underwent Thyroid surgeries. Hence the percentage is calculated to 44 cases only. In the present

study Benign adenoma was seen in 9.1% and Carcinoma was seen in 9.1% which is similar to that observed in Arun Sengupta *et al* ie: 7.3% and 11.80% respectively.

**Table 18:** Percentage of Malignancy

SL No	Authors	No. of Cases	Carcinoma	%
1	Abdulla H <i>et al.</i> (2006) <sup>[6]</sup>	110	26	23.64
2	Muhammad saddique <i>et al.</i> (2008)	60	11	18.33
3	Manoj Gupta <i>et al.</i> (2010) <sup>[10]</sup>	75	18	24
4	Arun Sengupta <i>et al.</i> (2011)	178	21	11.8
5	khageshwar <i>et al.</i> 2011) <sup>[12]</sup>	76	8	10.52
6	Kiran Rao <i>et al.</i> (2011) <sup>[13]</sup>	100	19	19
7	Pinki Pandey <i>et al.</i> (2012) <sup>[9]</sup>	112	24	21.43
8	NR <i>et al.</i> 2012) <sup>[10]</sup>	50	12	24
10	Present study	44(120)	2	9.1

Out of total 120 cases only 44 cases have underwent surgery. Hence percentage is calculated for 44 cases only. The present study showed 9.1% of the carcinoma as compared to Khageshwar *et al* and Arun Sengupta *et al* ie: 10.52% and 11.8% respectively.

### Conclusions

The following conclusions were drawn from the study

1. The Thyroid swellings are most common in 3<sup>rd</sup> and 4<sup>th</sup> decade of life, but can present at extremes of ages also.
2. The Ratio of Females to Males is 9:1.
3. The duration of goitre is ranged from 15 days to 15 years with Maximum patients in the age group of 0-1 Years( 60%).
4. In the clinical presentation, most common symptom was swelling in the neck(100%), followed by pain( 20%) and Dysphagia (18.33%) of the cases.
5. Clinically 18.33% of the cases were Hyperthyroid, but Investigation wise it was about 6.67% cases.
6. Bilateral Lobe involvement was seen 71.66 % and Right lobe in 20% and Left Lobe in 8.33% of cases.
7. Maximum cases were Diffuse Goitre (55%) followed by solitary nodule Thyroid(28.33%) and MNG (11.67%).
8. FNAC was done in all cases. It showed 26 cases to be colloid goitre. 12 cases to be Hashimotos Thyroiditis. Papillary carcinoma was seen in 4 cases while Hurthle cell neoplasm in 4 cases.
9. Out of 120 cases around 44 cases did undergo surgery. Few cases were advised conservative management and remaining were advised surgery, However the cases didn't turn up for surgery.
10. Histopathology showed the most common lesion was to be colloid /Nodular colloid goitre 81.81%.
11. Proportion of malignancy was 9.1% cases on HPE (Out of 44 operated cases).
12. Fine needle aspiration cytology is found to be easy, safe and dependable pre operative diagnostic aid with greatest accuracy. Complication of this procedure is found to be zero
13. Complications of the surgery were low with only some minor complications.

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### Conflict of Interest

None

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