EVALUVATION OF INCIDENCE OF MALIGNANCY IN GOITER OF THYROID

Dissertation submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

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This is to certify that the dissertation entitled "**EVALUVATION OF INCIDENCE OF MALIGNANCY IN GOITER OF THYROID"** is a bonafide dissertation done by **DR. ELANGO.P** in Department of General Surgery, Coimbatore Medical College and Hospitaland is submitted in partial fulfillment of the requirement for the Degree of M.S. General Surgery, Branch I of the Tamilnadu Dr. M.G.R. Medical University, Chennai.

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DECLARATION

I solemnly declare that the dissertation titled "**EVALUVATION OF INCIDENCE OF MALIGNANCY IN GOITER OF THYROID "**was done by me from January 2018 to December 2018 under the guidance and supervision of **DR.T.SRINIVASAN M.S.,** Professor, Department of General Surgery, Coimbatore Medical College and Hospital.

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Dear **Dr.Elango P**

The Institutional Ethics Committee of Coimbatore Medical College, reviewed and discussed your application for approval of the proposal entitled **"Evaluvation of incidence of malignancy in goiter of thyroid."**No.0110/2017.

The following members of Ethics Committee were present in the meeting held on 30.11.2017.conducted at MM - II Seminar Hall, Coimbatore Medical College Hospital Coimbatore-18

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We approve the Proposal to be conducted in its presented form.

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The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

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INTRODUCTION

BACKGROUND:

Thyroid malignancy is the most common endocrine malignancy. Its incidence is on increasing trend in recent years. Thyroid cancer is a cancer that develops from tissues of thyroid gland.it is a disease in which cells grow abnormally and have the potential to spread to other parts of the body. women are more affected often than men. asian descent are more commonly affected.It most commonly occurs between ages of 35 to 65 years.

AIMS AND OBJECTIVES OF THE STUDY:

1. To evaluate incidence of thyroid carcinoma in goitre of thyroid in relation to age.
2. To determine the incidence of adenoma, carcinoma and thyroiditis as a cause for goitre of thyroid in Coimbatore Medical College Hospital, Coimbatore.
3. To evaluate the incidence of malignancy among its types.
4. To evaluate the incidence of goiter malignancy in relation to sex.

Multinodular goiter is the most common seen goiter and malignancy incidence is of 7- 17%. [1]

Papillary carcinoma is the most commonest malignancy of thyroid seen in literature [1]

REVIEW OF LITERATURE

HISTORICAL REVIEW:

Goiters (from latin gutter, throat) defined as enlargement of thyroid gland. The term Thyroid gland (greek thyroeides,shield shaped). (3)

Thyroid surgery for goitre was first given by Roger frugardi in 1170 during failure of medical treatment, two setons were inserted at right angles in to goitre and tightened twice daily until separated, open wound treated with caustic powder and allowed to heal.

The most eminent thyroid surgeons were Emil theodor kocher and C.A.Theodor billroth performed thousands of operations with success results. kocher was awarded nobel prize for medicine in recognition for "his works on physiology and surgery of thyroid gland."

Fig . Emil theodor kocher

EMBRYOLOGY:

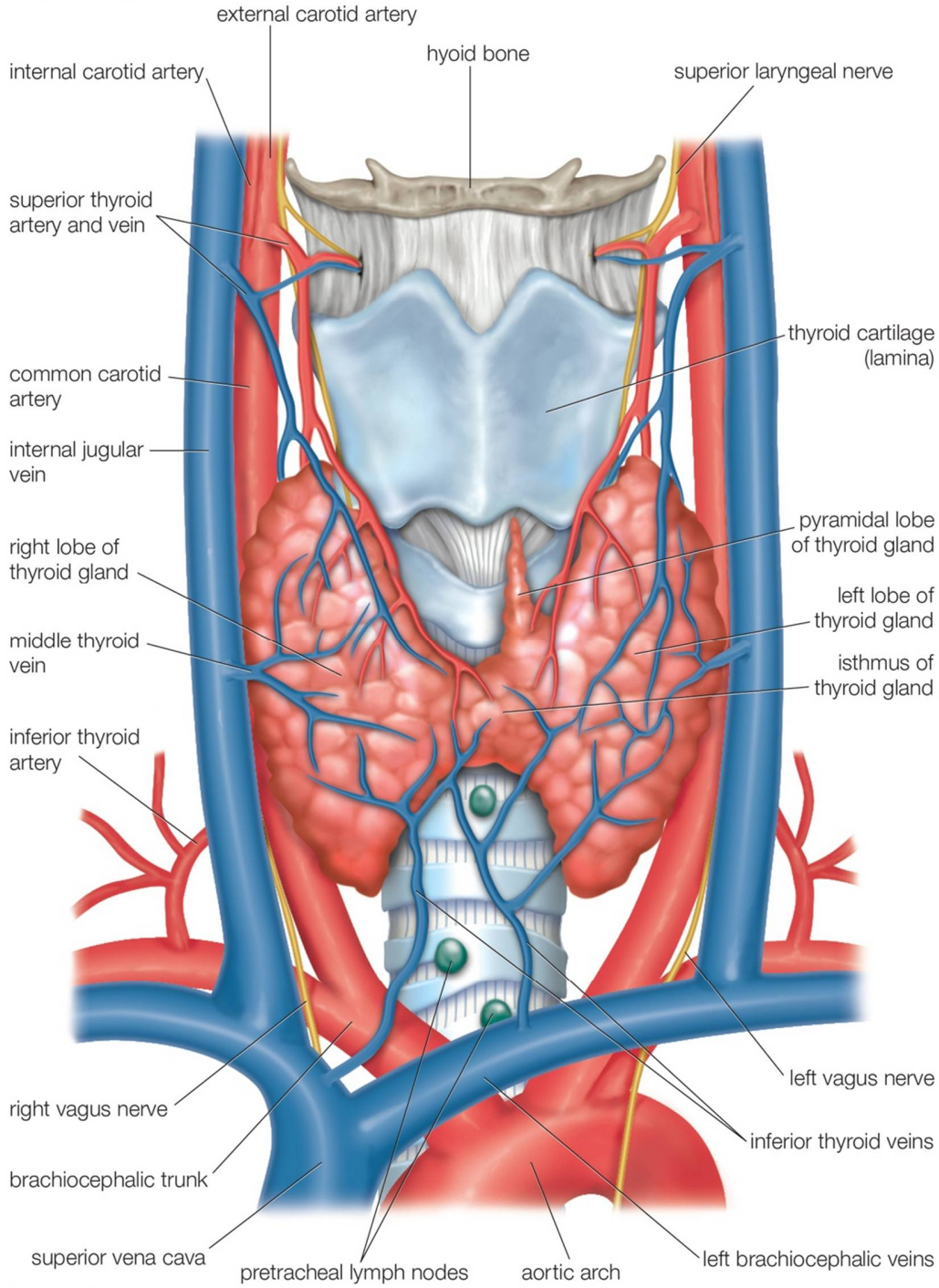
Thyroid gland appears by end of third week as epithelial thickening in floor of pharynx at the level of first pharyngeal pouch. Median thyroid analage may be diverticulum or solid bud. Cranial growth of tongue with embryo elongation forms origin of thyroid gland far cranial to gland. Site of origin is foramen cecum of adult tongue.

The thyroid gland attached with foramen caecum , solid thyroglossal duct passes through or anterior to hyoid bone. By 5^{th} week of gestation, thyro glossal duct fragmented in fifty percent of population duct can be distally traced to pyramidal lobe.

The developing gland formed as irregular plate at first, later two lateral wings connected by isthmus. Follicles appears during second month of gestation and progresses through 4^{th} month. Formation of colloid and radioactive iodine uptake begins at 11^{th} week. The ultimo branchial body lost in developing thyroid gland and its cells dispersed as calcitonin cells among thyroid follicles.

Current evidence suggests that primary origin of calcitonin producing cells is neural crest of embryo. c cells belongs to neural derivatives known as APUD(Amine precursor uptake and decarboxylation) cells. Tumours of APUD are called “apudomas”.

Thyroid gland



Lingual thyroid:

Thyroid gland is usually not in normal cervical position. It lies beneath epithelium of tongue at foramen cecum. It results from failure of median anlage to descend from pharynx. It is usually small but normal and only thyroid tissue present. It is diagnosed by radioactive iodine scintigraphy. Total excision of lingual thyroid is necessary. It is well vascularised by lingual arteries. 2 out of 12 lingual thyroids were malignant. If it is not malignant in frozen sections, excised tissue can be implanted in to anterior abdominal wall.

Thyroglossal duct accounts common congenital mass of the neck. All fragments of duct, mid portion of hyoid bone should be excised called as **"SISTRUNK PROCEDURE"**. Failure to remove entire duct results in recurrence.

Lateral Aberrant Thyroid

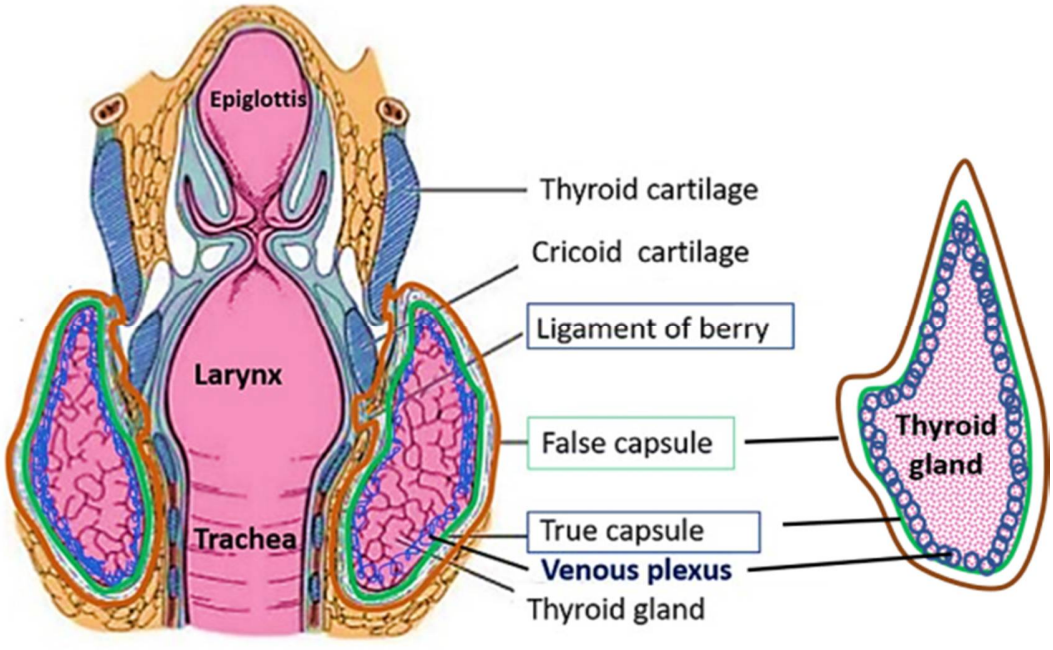
The lateral aberrant thyroid tissue is located lateral to jugular vein, it should be always considered possibility of metastatic thyroid cancer of lateral aberrant thyroid nodules.

ANATOMY:

Its extent normally lies at level of 5th cervical vertebrae to body of 1st thoracic vertebrae. Each lobe approximates 5cm in length. Isthmus connecting two lobes is about 1.3cm breadth.

Capsule:

True capsule of thyroid have connective tissue capsule continuous with septa forms stroma of organ. False capsule or surgical capsule derived from pre tracheal fascia. The false capsule is not removed with thyroid gland during thyroidectomy. The capsule of thyroid gland is thin and loose posteriorly, hence the thyroid gland enlarges posteriorly.



Blood supply

Arterial supply:

Thyroid gland is supplied by superior and inferior thyroid arteries and thyroid ima artery. (4)

- **Superior Thyroid Artery**

The superior thyroid artery branches from the external carotid artery at the bifurcation of the common carotid artery. It enters downward and anteriorly towards the superior pole of the thyroid gland. It parallels the external branch of the superior laryngeal nerve during its course. There are six branches of the superior thyroid artery - the infrahyoid, sternocleidomastoid, superior laryngeal, cricothyroid, inferior pharyngeal constrictor, and terminal branches of the artery for the blood supply of the thyroid and parathyroid glands. There are two branches to the thyroid , the anterior and posterior, sometimes third, lateral branch.

- **Inferior Thyroid Artery**

The inferior thyroid artery branches from the thyrocervical trunk, sometimes it arises directly from the sub clavian artery. The inferior thyroid artery runs behind the carotid artery and the internal jugular vein, passing medially and posteriorly on the anterior surface of the longus coli

muscle. After piercing the pre vertebral fascia, the artery divides into two or more branches as it enters the recurrent laryngeal nerve. The recurrent laryngeal nerve may pass anterior or posterior to the artery, or between its branches . The lowest branch sends a twig to the inferior parathyroid gland and supplies the lower pole of the thyroid gland. The upper branch supplies the posterior surface of the gland, sometimes anastomosing with a descending branch of the superior thyroid artery. On the right, the inferior thyroid artery is absent in about 2 percent of individuals. On the left, it is absent in about 5 percent. The artery is sometimes double.

- **Thyroid Ima Artery**

It branches from the brachiocephalic artery, the right common carotid artery, or the aortic arch. It occurs in about 10 percent of individuals, according to Montgomery. Its position is important during tracheostomy in relation to trachea.

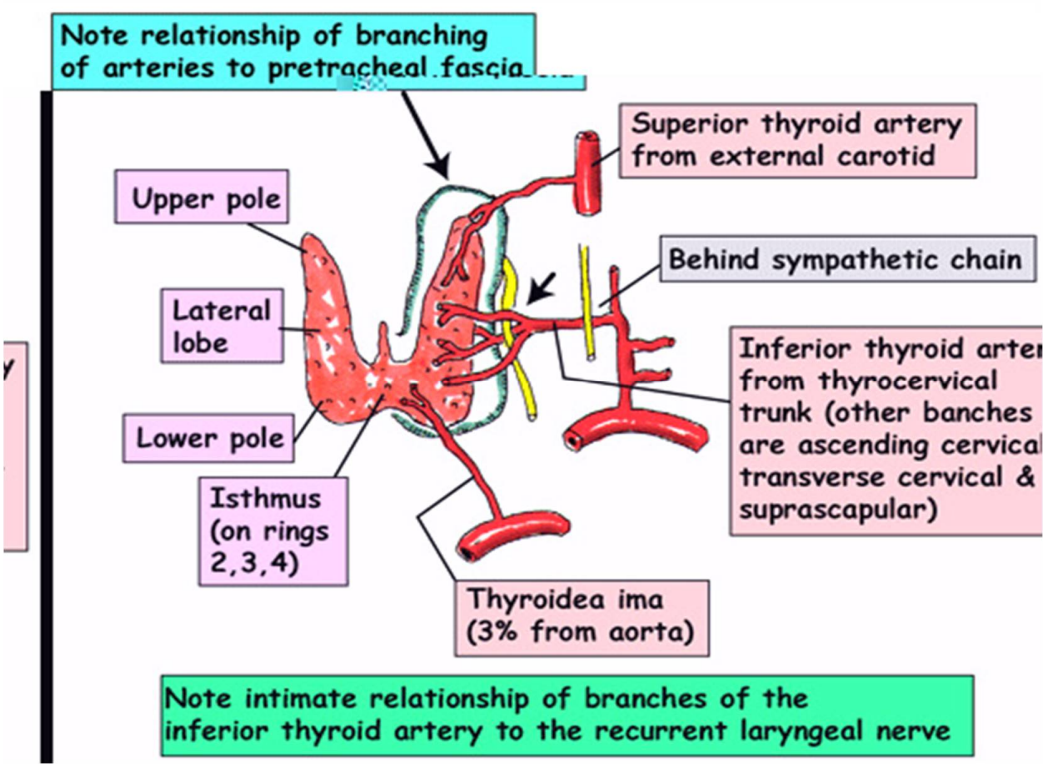


Fig .Arterial supply of thyroid gland

Venous drainage:

Venous drainage is formed by a plexus of vessels lying in the substance and on the surface of the gland which is drained by three pairs of veins, the superior, middle, and inferior thyroid veins.

- **Superior Thyroid Vein**

The superior thyroid vein parallels the superior thyroid artery.

- **Middle Thyroid Vein**

The middle thyroid vein not accompanied by artery. The extra vein runs inferior to the normal one; it is called the fourth thyroid vein. Middle thyroid veins are important during thyroidectomy due to their vulnerability.

- **Inferior Thyroid Vein**

The inferior thyroid vein is the largest and most variable of the thyroid veins. This common trunk is called the thyroid ima vein

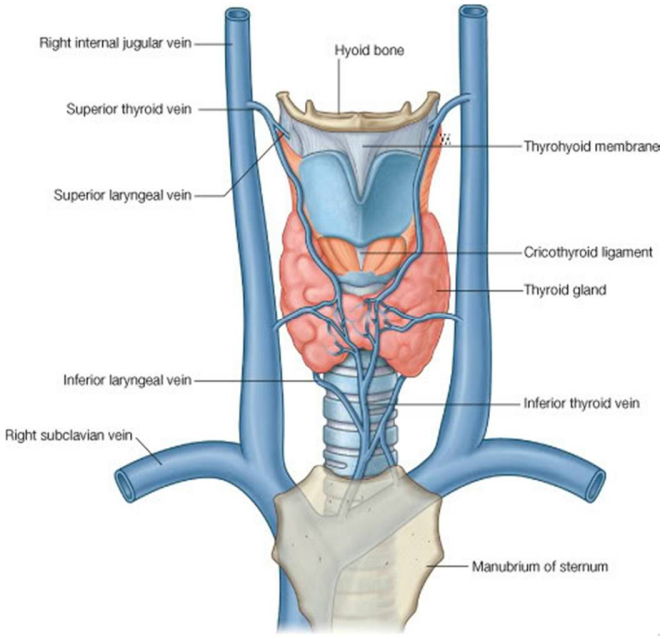


Fig .Venous drainage of thyroid

Lymphatic drainage :

Patterns of Drainage

- **Median Superior Drainage**

Three to six vessels branches from the superior margin of the isthmus and from the medial margins of the lateral lobes. It runs upward in front of the larynx to end in the digastrics lymph nodes. It enters one or more pre laryngeal ("Delphian") nodes just above the isthmus. Secondary drainage is usually up to upper jugular nodes on either side or to pre tracheal nodes below the thyroid by a vessel passing from the Delphian nodes downward over the front of the thyroid. Its connection between the lymphatic drainage of the superior thyroid artery and the orbit by way of the jugular chain of cervical lymph nodes. In neither the orbit nor the eye itself can lymphatic vessels be identified. The exophthalmus associated with thyroid disease is the enlargement of the extraocular muscles, especially the inferior rectus muscle and inferior oblique muscle.

- **Median Inferior Drainage**

It drains the lower part of the isthmus and lower medial portions of lateral lobes. It follows the inferior thyroid veins to end in the pre tracheal and brachio cephalic nodes.

- **Right and Left Lateral Drainage**

It arise from the lateral border of each lobe. Superiorly they runs upward with the superior thyroid artery and vein. Inferiorly they courses the inferior thyroid artery.. in between , some vessels pass laterally, anteriorly or posteriorly to the carotid sheath to reach the lymph nodes of the internal jugular chain. Sometimes it drains into the right sub clavian vein, jugular vein, or thoracic duct without passing through a lymph node.

- **Posterior Drainage**

It arises from the infero medial surfaces of the lateral lobes which Drains into nodes along the recurrent laryngeal nerve. Sometimes, a posterior ascending trunk from the upper part of the lobe reaches the retropharyngeal nodes.

Nerve supply:

Innervation of thyroid gland is by the sympathetic system from the superior, middle, and inferior ganglia of the cervical chain. During thyroidectomy, the recurrent and superior laryngeal nerves of the parasympathetic (vagus) system (which play no role in the innervation of the gland) are of utmost importance.

Recurrent laryngeal nerve its branches from vagus and recurs around arch of aorta on left and the sub clavian artery on the right. Its

significance is that the left side nerve have more distance in which to reach tracheoesophageal groove and runs in medial plane. On right side it has less distance and it runs obliquely to reach trachea esophageal groove. It runs posteriorly to thyroid and enters larynx at cricothyroid joint. This entry point is at the level of berrys ligament. This point is most risk for injury during thyroidectomy in relation to tracheoesophageal groove it forms one side of beahrs triangle.(the other sides are carotid artery and inferior thyroid artery).

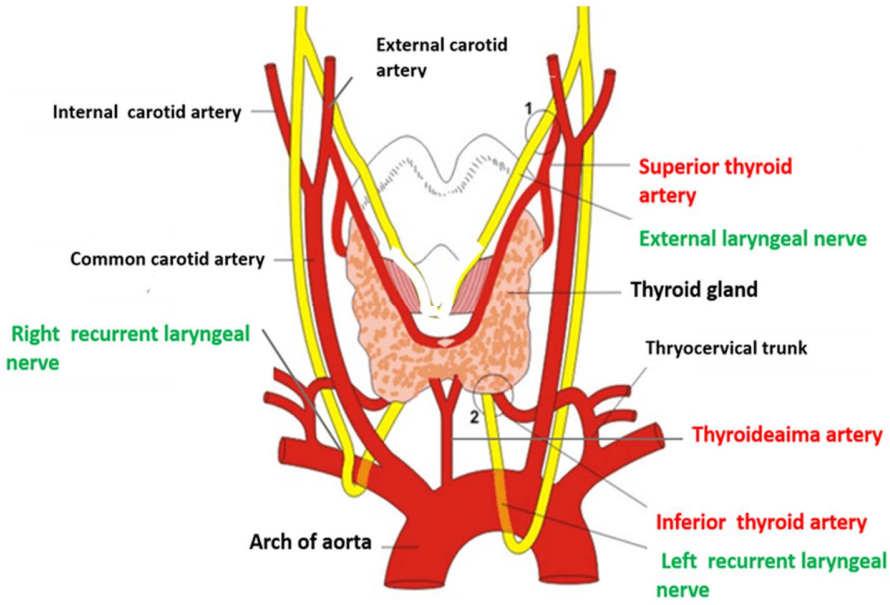
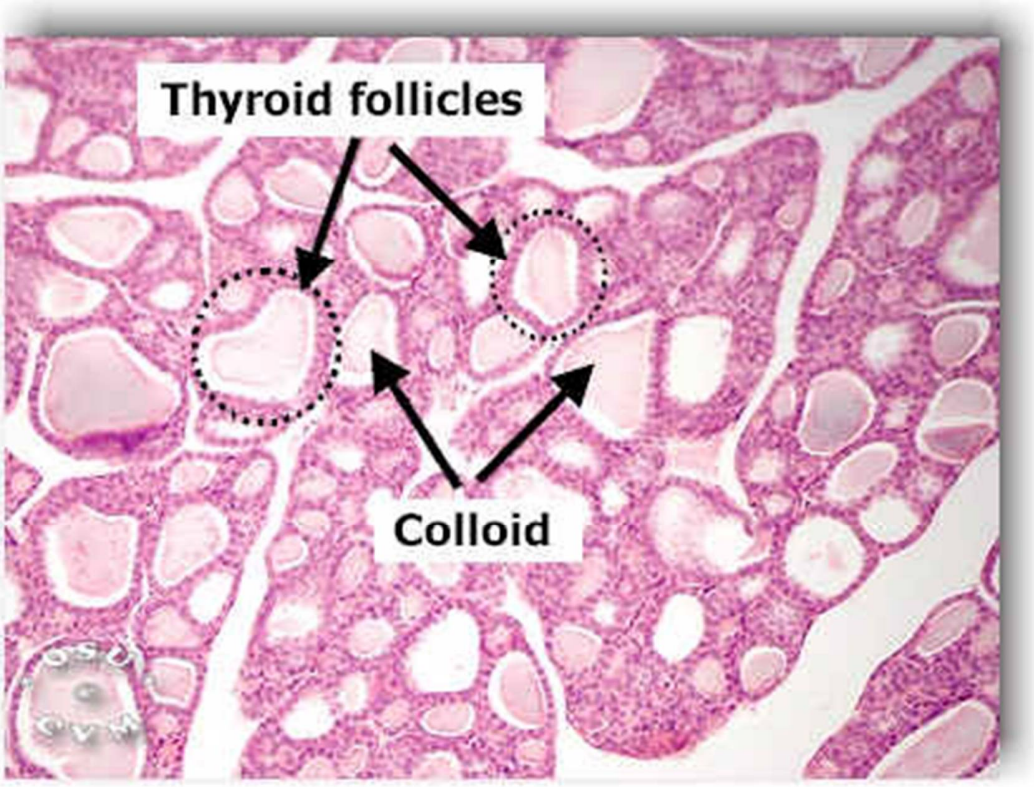


Fig. Nerve supply of Thyroid gland

Histology:

It is made up two following types of secretory cells. (4)

1. Follicular cells lines follicles of the gland which secretes tri-iodothyronin and tetra iodothyronin which stimulates basal metabolic rate and somatic and psychic growth of the individual. During active phase, the lining is columnar and in resting phase, its cuboidal.
2. Para follicular cells (c cells) lies in between follicles it secretes thyrocalcitonin ,which promotes deposition of calcium salts in skeletal and other tissues .Its effects are opposite to those of parathormone.

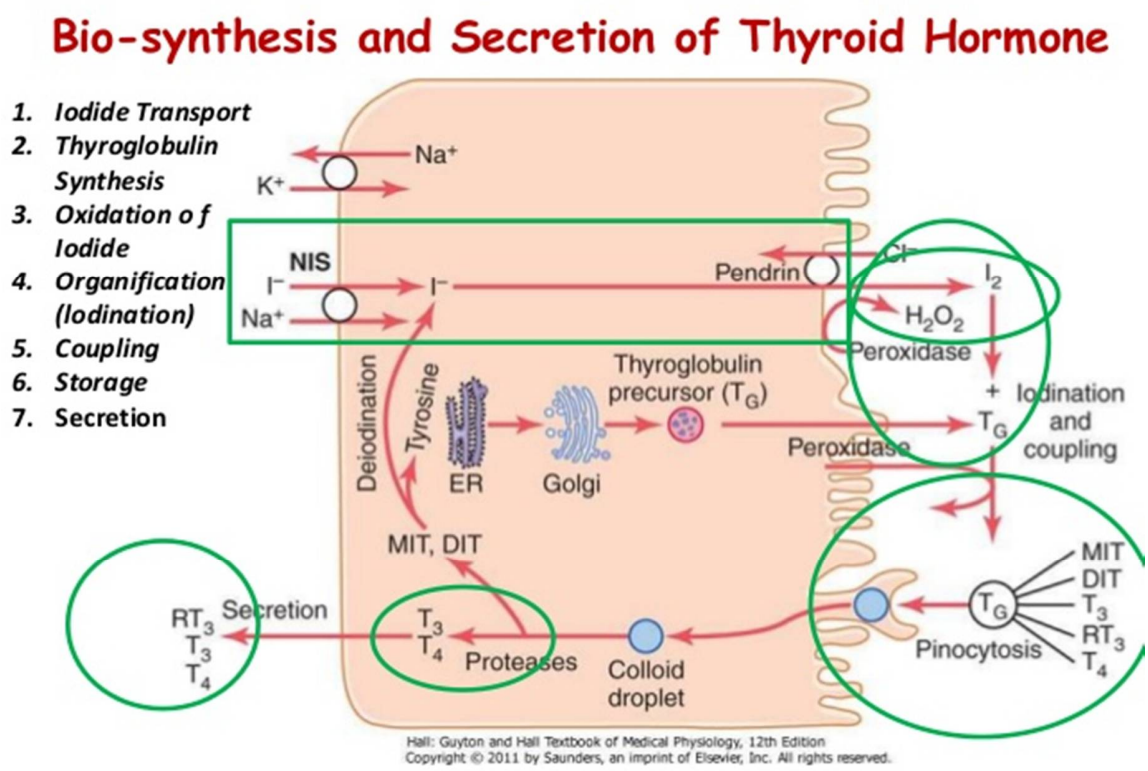


Physiology:

The tri-iodothyronine (t3) and l-thyroxine are bound to thyro globulin within colloid. (5)

Steps:

1. Trapping Of Inorganic Iodide From Blood.
2. Oxidation Of Iodide To Iodine
3. Binding Of Iodine With Tyrosine To Form Iodo tyrosine
4. Coupling Of Monoiodotyrosine And Di-Iodotyrosine To Form T3 And T4.



Metabolic effects:

- The metabolic effects of thyroid hormone are due to unbound free t4 and t3. T3 is the most important physiological hormone and it is produced by peripheral conversion from t4.
- Calcitonin (Parafollicular c cells produces calcitonin)
- Serum TSH
- The synthesis and release of thyroid hormones is controlled by thyroid stimulating hormone from anterior pituitary.

- Thyroid auto antibodies (TSH receptor antibodies are present in graves disease.)

TYPES OF GOITRE

1. **Simple Goitre:**

It develops as result of stimulation of gland by TSH ,or in response to chronically low level of circulating thyroid hormones. The most important factor in endemic goitre is dietary deficiency of iodine. The daily requirement of iodine is about 0.1-0.15mg. All types of simple goitre are more common in female than in male due to presence of ostrogen receptors in thyroid tissue. (7)

Goitrogens

Well known goitrogens are vegetables of brassica family, para-aminosalicyclic acid and anti thyroid drugs, Thiocyanates and perchlorates interferes with iodide trapping, carbimazole and thiouracil interferes with oxidation of iodine to tyrosine.

Stages of goitre formation

- Persistent growth stimulation causing diffuse hyperplasia leading to form diffuse hyper plastic goitre.
- Fluctuation stimulation causes areas of active and inactive lobules.
- Vascularised active lobules causes central necrosis.
- Necrotic lobules coalesce to form nodules filled either with iodine-free colloid or mass of new but inactive follicles.
- Continued repetition causes nodular goitre. Most nodules are inactive, active follicles are present only in internodular tissue.

2. Diffuse hyperplastic goitre

It usually occurs at puberty when metabolic demands are high. If TSH stimulation ceases goitre regress but recurs at later at times of stress as pregnancy. It is soft, diffuse.

3. Colloid goitre

It is the late stage of diffuse hyperplasia when TSH stimulation had fallen off and many follicles are inactive and full of colloid.

Classification of thyroid swellings

Simple Goitre	Diffuse Hyperplastic	Physiological Puberty Pregnancy
	Multinodular Goitre	
Toxic	Diffuse (Grave's Disease)	
	Multinodular	
	Toxic Adenoma	
Neoplastic	Benign	
	Malignant	
Inflammatory	Autoimmune	Chronic Lymphocytic Thyroiditis
		Hashimotos Thyroiditis
	Granulomatous	De Quervains Thyroiditis
	Fibrosing	Riedels Thyroiditis
	Infective	Acute (Bacterial, Viral,Subacute)
		Chronic (Tuberculous,Syphilitic)
	Other	Amyloid

Normal values of thyroid hormones

- **T4 10 – 30 nmol/l**
- **T3 3.5 – 7.5 umol/l**
- **TSH 0.3 – 3.3 mU/l**
- **Thyroglobulin 0.5 – 50 ug/L**

EPIDEMIOLOGY AND INCIDENCE:

Disorder of thyroid occur worldwide, goitre in Euthyroid individual is common in clinical practice occurring upto 4% of general population, their incidence increase with age.

SEX INCIDENCE:

Thyroid disorders are confined to females in the ratio of 6:1 due to variations of thyroid hormone demand during female reproductive function such as puberty, pregnancy, lactation. Incidence of goitre is also high in females.

AGE INCIDENCE:

Goitre occur at all ages, the reported age range from 15-69 years with maximum incidence in 30-40 years. Goitre is rare in children, the incidence of carcinoma under 25 years of age is around 50% and 75% in patient under 15 years.

AETIOLOGY OF THYROID NEOPLASMS:

a) Radiation:

b) Ingestion of radioisotopes and malignancy

c) Diet

d) Sex:

e) Genetic predisposition

INVESTIGATIONS:

1. **Essential investigations**
    - Serum TSH (t3 and T4 if abnormal)
    - Thyroid auto antibodies
    - FNAC of palpable discrete swellings
    - Ultrasound neck
2. **Optional**
    - Corrected serum calcium
    - Serum calcitonin
3. **Imaging**
    - Chest radiograph and thoracic inlet if tracheal deviation or retrosternal goitre
    - Ultrasound,ct and MRI scan for known cancer.

- Isotope scan if discrete swellings and toxicity co exist.
- Ultrasound –the workhorse investigation in thyroid disease. It is cheap, non invasive, fine needle aspiration can be done. The gold standard investigation to determine the physical characteristics of thyroid swellings.
- Plain chest xray – it is used to identify retro sternal extension.
- Contrast enhanced ct is useful for determining the extent of airway invasion.
- MRI scan is superior for determining presence of pre vertebral fascia invasion.
- Positron emission tomography is useful in recurrent thyroid cancer.

4. Fine Needle Aspiration Cytology

It is reliable in identifying papillary thyroid cancer but cannot distinguish between follicular adenoma. It is both highly specific and sensitive.

Classification of FNAC reports

Thy 1	Non diagnostic
Thy 1c	Non diagnostic cystic
Thy 2	Non neoplastic
Thy 3	Follicular
Thy 4	Suspicious of malignancy
Thy 5	malignant

5. Laryngoscopy

Flexible laryngoscopy and indirect laryngoscopy used preoperatively to determine the mobility of vocal cords.

6. Core biopsy

It is rarely indicated in thyroid masses due to vascularity of gland and risk of post procedure hemorrhage

THYROIDITIS

1. **Chronic lymphocytic (autoimmune thyroiditis)**

   Most common presentation is goitre. It is usually associated with raised titres of thyroid antibodies. It may be diffuse or nodular with characteristic bosselated feel or with established or subclinical thyroid failure.

2. **Granulomatous thyroiditis (subacute thyroiditis)**

   It usually follows viral infection. Patients presented usually with pain in the neck, fever, malaise and firm enlargement of one or both lobes. There is raised inflammatory markers, absent thyroid antibodies. It is self limiting.

3. **Riedels thyroiditis**

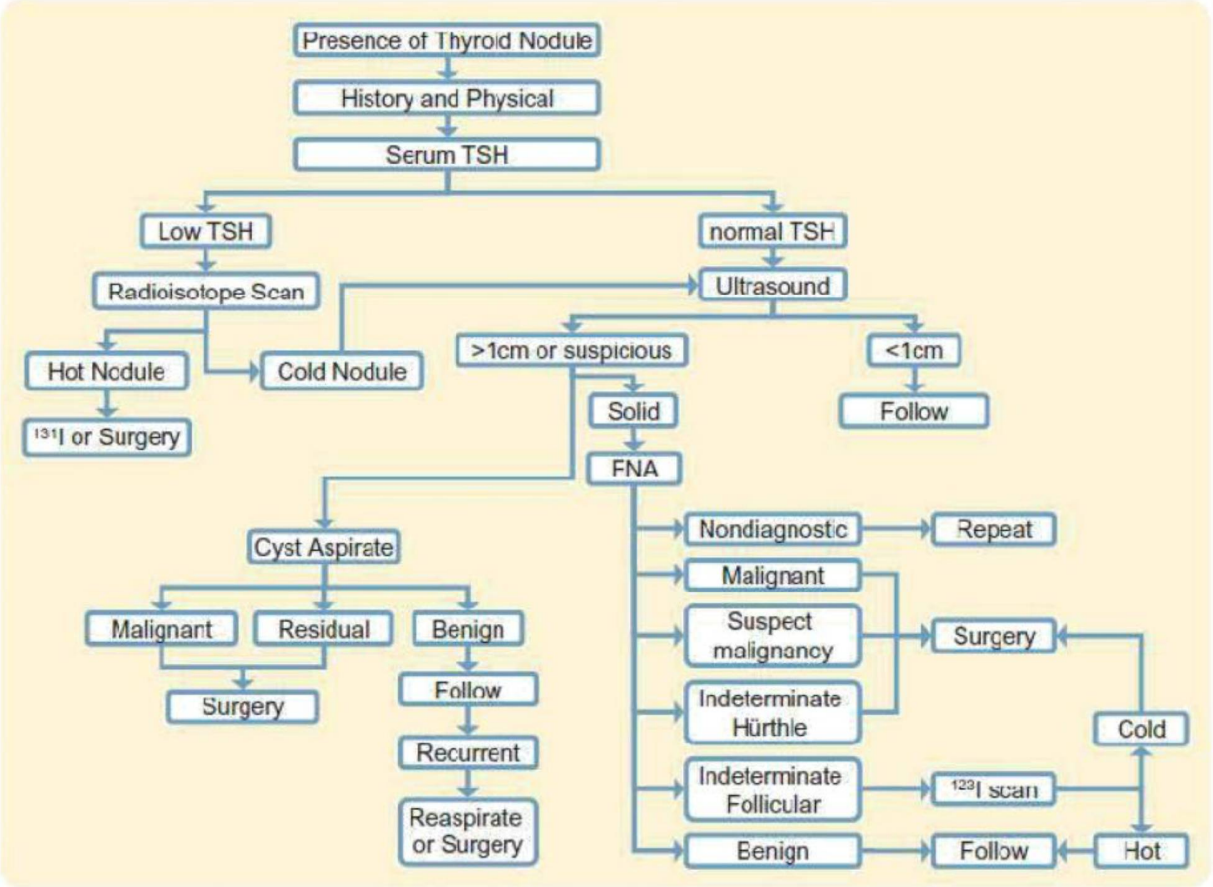
   It is replaced by cellular fibrous tissue, infiltrates through capsule in to muscles , parathyroids, recurrent nerves and carotid sheath. It is mostly a collagen disease. Goitre may be unilateral or bilateral and very hard and fixed. Treatment is high dose steroid, tamoxifen and thyroxine replacement.

4. Acute suppurative thyroiditis:

Bacterial infections of thyroid are rare. It is more common in children and is often preceded by upper respiratory tract infection or otitis media. The resistance of the thyroid due to infection is due to protective mechanisms that include is (1) rich blood supply to and lymphatic drainage from the thyroid, (2) the high glandular content of iodine which may be bactericidal, (3) the separation of thyroid from other structures of the neck by fascial plane and complete protective fibrous capsule surrounding the gland. The most common predisposing factor to infections of the gland appears to be preexisting thyroid disease since simple goiter, nodular goiter, Hashimoto's thyroiditis or thyroid carcinoma has been observed in up to two thirds of women and half men with infections thyroiditis.

Bacterial infections (Staphylococcus aureus and streptococcus pyogenes) are the most common cause of infectious thyroiditis . Bacterial thyroiditis may occur either via spread from a distant focus through the bloodstream or lymphatic or by direct inoculation from contiguous focus.

WORK PLAN FOR SOLITARY NODULAR GOITRE



SPECIFIC INVESTIGATIONS :

i) Tests for thyroid function :

Most of the patients with solitary thyroid nodule are euthyroid, but laboratory confirmation of this is generally agreed that no single procedure, consistently yields reliable basis for diagnosis and therefore, a combination of various tests are generally required.

Total thyroid hormones: The most useful index of thyroid function is the directmeasurement of circulating thyroid hormones. Total T4 and total T3 are designated T4 and T3 respectively. These are measured by radioimmune assays.

Normal values :

T4 : 55-155 nmol/lit.

T3 : 1-3 nmol/lit.

The commonest fallacy of estimation is, it measures total T4 and fails to detect thyroid binding globulin only. It is necessary to have information of binding protein to interpret T4 and T3 values. Factors that increase thyroxine binding globulin (TBG) concentration (estrogens, pregnancy, liver disease) may elevate T4 and T3, decrease in globulin occurs. In nephriticsyndrome, Patients on androgens,glucocorticosteroids, hypoproteinemia, cirrhosis and acromegaly. In many centers, the use of T3 resin binding test is still as an indirect measurement of circulating thyroid hormone.

ii) Tests for thyroid binding proteins:

This test measures unoccupied thyroid hormone binding sites on TBG. This is done by using T3 resin uptake test (T3 RU). Radioactive T3 is inoculated with the patients serum, so that it becomes fixed to any thyroid binding

protein not already carrying T3 or T4. The amount so fixed can be measured and from this can be estimated the number of binding sites in the serum which are un-occupied . In hyperthyrodism, the number of free binding sites of TBG is low because most of them are already carrying hormone, where as in hypothyroidism the number of free sites are high. Now -a-days using sephandex or thyopac method and taking 100% as the mean normal value for free binding sites, a figure of 85% or less suggest hyperthyroidism and a figure of 120% or more suggest hypothyroidism.

iii) Thyroid hormone indices (by calculation):

Free throxine (FTI)(FT4I) can be calculated as FTI = serum T4 **x** T3 uptake percent (T3RU). Similarly free T3 (Ft3I) can also be calculated. FT4I in euthyroid patients is 0.85 to 3.50 and that of FT3I is 1.4-3.7. It is probably the best parameter of thyroid function at the present moment.

iv) Free thyroid hormone measurements:

Ft4 can be measured by two methods: equilibrium dialysis or radio immunoassay (RIA). Dialysis methods is the gold standard, however, is restricted to research laboratories as it is time consuming and only a small number of samples can be processed. Simultaneously ft4 measurements by RIA is valuable and it provides an excellent index of thyroid status in almost

any clinical situations. Normal ft3 is 1.3-3.5 nmol/l and ft4 is 170- 160 nmol/l (12-28 pmol/l).

v) Serum thyroid stimulating hormone (TSH):

Another very sensitive test of thyroid function is the serum TSH value. This is measured by immunoassay technique. The normal serum TSH level is 0.3-5miu/l. It is raised in primary hypothyroidism (may be over 40 miu/l) and almost undetectable in hypothyroidism. It is the most sensitive test of primary hypothyroidism.

vi) Tests of hypothalamic-pituitary axis of TRH test:

Thyrotropin releasing hormone (TRH) is produced in para-ventricular nucleus of hypothalamus and passes through the median eminence of anterior pituitary via the hypophyseal portal system. When TRH, a hypothalamic releasing factor is given intravenously in a dose of 200 pg to a normal individual, the level of TSH in the serum raises from the basal level of about 1μu/ml at 20 minutes and returns to normal by 120 minutes. This is a time consuming test and only occasionally gives information not obtained from routine tests of thyroid function.

vii) ***Radioiodne uptake (RAIU)test****:*

Routine isotope scanning has been abandoned except when toxicity is associated with nodularity.

viii) Thyroid scintigraphy : The use of radionuclide agents has been helpful in delineating the presence, size, and function of thyroid nodules. Two radioactive iodine isotopes have been employed, in clinical use, scanning with 123 I (dose of 1-2 Ci) has its advantage of low dose radiation (30 m rad) and short half- life (12-14 hours). This compares favourable with the use of 131 I (dose of 5 mCi) which has a higher dose of radiation (500 mrad) and longer half-life (8 to 10 days). Scanning with 123 I is usually used for Patients with differentiated thyroid carcinoma to screen for distant metastasis. The best radionuclide is 123 I but now most of them are preferring 1-2 mCi of 99m Tc pertechnate (half-life 6 hours)

given by IV injection and image after 5-10 min.123 I is trapped and bound tothyroglobulin by the thyroid follicular cells, whereas 99m Tc is only trapped but not organified. Screening with 99m Tc also shows uptake in salivary glands and major vascular structures and therefore requires high sophistication of interpretation.

99Tc pertechnate is preferred for imaging agent when:

a. Patient is taking thyroid blocking agents

b. Patients is unable to take medication orally.

c. The study must be completed less than 2 hours

d. Thyroid function (uptake measurement) is not necessary.

CLASSIFICATION OF THYROID NEOPLASM

BENIGN	Follicular adenoma		
MALIGNANT	Primary	Follicular epithelium-differentiated	Follicular Papillary
		Follicular epithelium-poorly differentiated	Anaplastic
		Parafollicular cells	Medullary
		Lymphoid cells	Lymphoma
	Secondary	Metastatic	
		Local infiltration	

Relative incidence of primary malignant tumors of the thyroid gland

MALIGNANCY	RELATIVE INCIDENCE (%)
Papillary carcinoma	80
Follicular carcinoma	10
Anaplastic caracinoma	5
Medullary carcinoma	2.5
Lymphoma	2.5

MALIGNANT VARIETIES:

1. **Papillary carcinoma of the thyroid:**

Papillary carcinoma is the most common malignancy of thyroid. It mostly presents between 30-50 years of age with M:F::1:3. There is increasing incidence of papillary carcinoma in Hashimoto's thyroiditis. Multicentricity of primary tumour is the most important feature of this cancer. It spreads through lymphatics. Minimal or occult / microcarcinoma tumors are defined as tumours of 1cm or less in size. They are non-palpable, incidental finding during surgery. Papillary carcinoma is associated with excellent prognosis (10 years survival rate is 95%).

GROSS:

Papillary carcinoma is usually non encapsulated hard, off white, sclerotic tumour with an irregular margin. Sometimes they are well encapsulated and resemble follicular adenoma. Macroscopic papillae or cyst formation may be present. Multicentricity is usually present.

Micro:

Histologic diagnosis is made on the basis of papillary architecture or typical nuclear features. True papillae have fibrovascular core and are generally lined by single row of overlapping nuclei. The nuclei have been designated ground glass nuclei, optically clear nuclei or orphan-annie nuclei.

Recently, there is increasing attention to grooved nucleus resulting from deep in folding of nuclear membrane along axis of nucleus. Like all other nuclear features, it is not 100% specific for papillary carcinoma. Psammoma bodies-calcific areas that are laminated, (quite specific for papillary carcinoma) are seen. Diagnosis is usually not based on single criteria but on constellation of findings, in particular, papillary projecting into open spaces as well as clear nuclei with prominent nuclear groove and psammoma bodies. It usually has favourable prognosis and a propensity for lymph node metastasis than haematogenous dissemination. Majority of papillary carcinoma have some follicular component.

Sub types of papillary carcinoma –

- **Insular variant :**

  Poorly differentiated tumor composed of solid clusters or nests of cells often containing micro follicles and has prognosis intermediate.

Encapsulated papillary carcinoma are surrounded by thick or thin fibrous with much better prognosis than those with infiltrating margins.

- **Tall cell variant**

  Characterized by elongated tall cells with basally oriented nuclei. These have worse prognosis than usual papillary carcinoma, with

higher incidence of extra thyroidal invasion, recurrence, distant metastasis and death.

- **Diffuse sclerosing variant:**

  More aggressive in nature. Lymphatic spread and lung metastasis often occurs.

  The most important factors associated with poor outcome are patient age over 50 yrs at diagnosis, extra thyroidal extension, tumor size greater than 1.5cm, angio invasion, male sex and possibly DNA aneuploidy.

FOLLICULAR CARCINOMA THYROID

It is the second most common thyroid carcinoma incidence is more in iodine deficient areas. They occur more commonly in female (F:M= 2.6:1), middle aged or older individual. They are more aggressive than papillary carcinoma and have a lesser survival rate.

Gross:

Solid, fleshy tumor may have focal haemorrhage or necrosis.

Micro:

Follicular carcinoma has a range of pattern similar to those found in follicular adenomas. It may be solid with little actual follicle formation, form trabeculae or cords or have micro follicles.

Follicular carcinoma has been divided into:

- **Encapsulated Or Minimally Invasive Carcinoma**
- **Widely Invasive Carcinoma**

Minimally Invasive Carcinoma: Encapsulated And Thus Follicular adenoma.They are not as colloid rich as adenomatous nodules and some follicular adenomas. They are distinguished from follicular adenomas by presence of microscopic capsular or blood vessel invasion. Capsular or blood vessel invasion is usually focal and hence many sections are required to demonstrate invasion.

Widely invasive carcinoma : non-encapsulated carcinoma and Encapsulated carcinoma with marked vascular and thyroid invasion, which may be microscopically apparent.

- **Poorly differentiated carcinoma**

Hurthle cell carcinoma:

Accounts 3% of thyroid malignancies. Its features are similar to follicular carcinoma. It occurs usually in old age (seventh decade). It is abundant of oxyphilic cells or oncocytes. It is commonly multifocal and bilateral (approximately 30%) which differs from follicular carcinoma. It doesn't take up RAI. It mostly metastasizes to local nodes and distant sites. It has high mortality rate.

Gross;

They are solid, well vascularized and encapsulated throughout, invasive tumors tend to grow into the parenchyma in a multi nodular fashion

Micro:

Growth may be follicular, trabecular or papillary. Follicular is most common. The follicles when large stimulate papillae when cut tangentially.

- **Medullary carcinoma**

  It comprises 5% thyroid malignancies. The tumor arises from parafollicular cells(C cells)-ultimobranchial bodies (supralaterally in thyroid lobe). It contains high levels of calcitonin and carcinoemryonic antigen. It is more common in female (F:M:: 1.5:1). It occurs in sixth decade of life. It is associated with syndromes (association with MEN 2A, MEN2B, familial Medullary thyroid cancer and Hirschsprung disease). It has lymph node (50-60%) and hematogenous spread. They are not TSH dependent and hence do not take up radioactive iodine. Due its familial association genetic screening is suggested. It is usually Unilateral (80%) in sporadic and multicentric & bilateral (90%) in familial patients. Presence of amyloid is diagnostic of medullary

carcinoma. Tumor markers are calcitonin, CEA,Calcitonin gene related peptide.

The various histological variants are

i. Enacapsulated - better prognosis.

ii. Follicullar.

iii. Papillary.

iv. Small cell- worst prognosis.

v. Giant cell.

vi. Clear cell .

vii. Melanontic .

viii. Oncocytic.

ix. Squanous .

x. Amphicrine.

xi. Paraganglioma like

- **Anaplastic carcinoma**

  It comprises of 1% of thyroid malignancies. Its more common in females often in 7^{th} & 8^{th} decade of life. Diagnosis is made by FNAC-giant and multinucleated cells. Local infiltration is most common and early feature. It has a very high mortality and median survival rate is 3 months.

- **Lymphomas:**

It includes less than 1% of thyroid malignancies. Most of them are non-B-cell type.

- **Secondaries** :

It usually occurs from

1. Renal cell carcinoma
2. Malignant melanoma
3. Bronchogenic carcinoma;
4. Breast carcinoma.

TNM Classification of Thyroid Tumors

Papillary or Follicular Tumors

Stage TNM

<45 y

I Any T, any N, M0

II Any T, any N, M1

≥45 y

I T1, N0, M0

II T2, N0, M0

III T3, N0, M0; T1–3, N1a, M0

IVA T4a, N0–1a, M0; T1–4a, N1b, M0

IVB T4b, any N, M0

IVC Any T, any N, M1

Medullary Thyroid Cancer

Stage TNM

I T1, N0, M0

II T2–3, N0, M0

III T1–3, N1a, M0

IVA T4a, N0–1a, M0; T1–4a, N1b, M0

IVB T4b, any N, M0

IVC Any T, any N, M1

Anaplastic Cancer

Stage TNM

IVA T4a, Any N, M0

IVB T4b, Any N, M0

IVC Any T, Any M, M1

Definitions:

Primary tumor (T)

TX = Primary tumor cannot be assessed

T0 = No evidence of primary tumor

T1 = Tumor ≤2 cm in diameter, limited to thyroid

T2 = Tumor >2 cm but <4 cm in diameter, limited to thyroid

T3 = Tumor >4 cm in diameter, limited to thyroid, or any tumor with minimal extrathyroidal invasion

T4a = any size tumor extending beyond capsule to invade subcutaneous soft tissue, larynx, trachea, esophagus, or recurrent laryngeal nerve or intrathyroidal anaplastic cancer

T4b = Tumor invading prevertebral fascia or encasing carotid artery or mediastinal vessels; extrathyroidal anaplastic cancer regional lymph nodes (N)—include central, lateral cervical and upper mediastinal nodes

NX = Regional lymph nodes cannot be assessed

N0 = No regional lymph node metastasis

N1 = Regional lymph node metastasis

N1a = Metastases to level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes)

N1b = Metastases to unilateral, bilateral, or contralateral cervical or superior mediastinal lymph nodes

Distant metastasis (M)

MX = Distant metastases cannot be assessed

M1 = No distant metastasis

Treatment of papillary and follicular carcinoma:

The treatment for papillary carcinoma is surgery. The amount of resection, regional lymph node dissection and follow up of patients are the varying with respect to the treating surgeon. Because of slow growth of well differentiated neoplasms and the overall good prognosis, recurrences of papillary and follicular malignancy occur several years after surgery. The various treatment options are discussed as follows:

A) Surgery (Total thyroidectomy/Near total thyroidectomy):

The procedure involves removal of the entire thyroid gland with identification and preservation of recurrent laryngeal nerves and parathyroid glands. Reasons for total thyroidectomy.

1. Enables effectiveness of RAI to detect and treat thyroid tissue or metastatic disease.
2. Serum thyroglobulin level more sensitive maker of recurrent or persistent disease.
3. Elimination of the contra lateral occult cancers as sites of recurrence (because up to 85% of tumors are multifocal).
4. Decreases the risk of recurrence and improves survival.
5. Reduce the 1 % risk of progression to undifferentiated carcinoma.
6. Decreases the need for re-operative surgery.

Thyroid operations:

Total thyroidectomy = 2* total lobectomy + isthumectomy

Subtotal thyroidectomy = 2 subtotal lobectomy + isthumectomy

Near total thyroidectomy = total lobectomy + isthumectomy + subtotal lobectomy (dunhill operation)

Lobectomy = Total lobectomy + isthumectomy

Indications for operation in thyroid swellings

neoplasia	FNAC positive 3-5	
	Clinical suspicion	Age
		Male
		Hard texture
		Fixity
		Recurrent laryngeal nerve palsy
		Lymphadenopathy
		Recurrent cyst
Toxic adenoma		
Pressure symptoms		
Cosmesis		
Patient's wishes		

Post-operative management:

Adjuvant therapy:

i) Suppressive therapy with thyroxine:

Thyroid hormone replacement is necessary after total or near total thyroidectomy or ablation with radio-iodine during post operative period. Thyroxine is necessary as replacement therapy in patients total thyroidectomy but also suppresses TSH and decreases growth stimulus for any residual thyroid cells. TSH suppression reduces tumor recurrence particularly in young patients with thyroid cancer. Thyroxine supplementation is started at an average dose of 100 micro gm/day just before discharge. T4 and TSH measurement done at 6 to 12 weeks after surgery. It

is essential to keep the TSH at or below the normal range (0.5 to 5.0 microU/mL)

ii. Use of RAI post-operatively:

All patients who have undergone a total or near-total thyroidectomy for a papillary or follicular carcinoma larger than 1.0 to 1.5 cm should be considered candidates for radioiodine ablation. I131 ablation of any residual normal thyroid is important for the detection of metastatic disease and

residual microscopic cancer. The dose of 131I for ablation is not standardized. Low dose ablation with less than 30 mCi given on an outpatient basis. This technique should be reserved for low-risk young patients. Increased ablative doses ranging from 100 to 150 mCi should be used for older, high-risk patients, particularly those known to have an incomplete resection of the primary tumor, an invasive primary tumor, or metastases.

iii. Chemotherapy

The most effective non-surgical treatment for well-differentiated thyroid cancer is

radio-iodine ablation.

Prognosis :

Most patients with papillary carcinoma can be expected an excellent prognosis, with the 10-years survival rate approaching 95% for the most favorable stages.

Prognostic risk classification for patients with well – Differentiated thyroid cancer

(AMES or AGES)

Age	<40	>40
Sex	Female	Male
extent	No local extension, intrathyroidal no capsular invasion	Capsular invasion, extrathyroidal extension
Metastasis	None	Regional or distant
Size	<2cm	>4cm
grade	Well differentiated	Poorly differentiated

AGES - age, pathology of tumor, extent and size of the primary tumor; AMES-age, distant metastasis, extent of the primary tumor, and size of the primary tumor.

THYROTOXICOSIS

The term thyrotoxicosis was retained because hyperthyroidism, symptoms due to a raised level of circulating thyroid hormones, was not responsible for all manifestations of disorder. (7)

Clinical types

- Diffuse toxic goiter (graves disease)
- Toxic nodular goitre
- Toxic nodule
- Hyperthyroidism due to rarer causes

Symptoms of primary thyrotoxicosis

- Loss of weight in spite of good appetite (significant symptom)
- Preference for cold
- Intolerance to heat
- Excessive sweating
- Nervous excitability
- Irritability
- Insomnia
- Tremor of hands
- Exophthalmous
- Changes in menstruation like amenorrhea

Symptoms of secondary thyrotoxicosis(generally patients are elderly)

- Palpitations (mainly cardiovascular)
- Chest pain
- Dyspnea on exertion.
- Exophthalmos and tremors are usually absent.

Signs in primary thyrotoxicosis

Five cardinal signs

1. Eye signs

2. Tachycardia

3. Tremor of the hands

4. Moist skin

5. Thyroid bruit

Eye signs

1. Lid retraction

2. Exophthalmos

3. Ophthalmoplegia

4. Chemosis.

Tests for eye signs

- Von graefes sign

The upper eyelid lags behind the eyeball as the patient is asked to look downwards.

- Joffroys sign

Absence of wrinkling of the forehead when the patient looks upwards with face inclined downward.

- Stellwags sign

Staring look and infrequent blinking of eyes with widening of palpebral fissure.

It was due to toxic contraction of fibres of levator palpebrae superioris.

- Moebius sign

Inability or failure to converge the eyeballs

- Darlymptes sign

Upper sclera was visible due to retraction of upper eyelid.

Diffuse toxic goitre

Graves disease is a diffuse goitre appearing at same time as hyperthyroidism in young women and is frequently association with eye signs.

Half of these patients have history of autoimmune endocrine diseases.

Toxic nodular goitre

It is present for a long time before hyperthyroidismin middle aged or elderly ,it was that of secondary thyrotoxicosis.

Toxic nodule

It is a solitary overactive nodule, part of a generalized nodularity or true toxic adenoma.

It will be autonomous and its hypertrophy and hyperplasia are not due to TSH –RAB.

TSH secretion was suppressed by high level of circulating thyroid hormones and normal thyroid tissue surrounding the nodule itself suppressed and inactive.

Histology

Normal thyroid contains acini lined with flat cuboidal epithelium and filled with homogeneous colloid. In hyperthyroidism, hyperplasia of acini, lined by high columnar epithelium. Most of them are empty and others contains vacuolated colloid with a characteristic scalloped pattern adjacent to the thyrocytes.

Thyroid cysts

Thyroid cysts are hard and mimic carcinoma. Bleeding in to a cyst presents with history of sudden painful swelling which resolves over period of weeks if untreated. Aspiration yields altered blood but reaccumulation is frequent, about fifty percent are due to colloid degeneration.

Papillary carcinoma are often association with cyst formation.

Ultrasound is the useful imaging modality for assessing cysts.

Selection of thyroid procedure

Diagnosis

- Risk of thyroid failure
- Risk of recurrent laryngeal nerve injury
- Risk of recurrence
- Graves disease
- Multinodular goitre
- Differentiated thyroid cancer
- Risk of hypoparathyroidism

Retrosternal goitre

It arises from the slow growth of a multinodular gland down to mediastinum. It enlarges within the thoracic inlet, pressure leading to tracheal compression and airway symptoms. Majority are removed trans cervically. All cases should have cross sectional imaging. If the gland is fixed and immobile or too large to deliver through a cervical approach, mid line sternotomy performed so that the gland can be dissected from below to achieve a safe total thyroidectomy.

Iqbal et al (in study of carcinoma thyroid in multinodular and solitary nodular goitre .out of 397 patients multinodular goitre only one patient was papillary carcinoma.in 220 patients of solitary nodular goitre 93 patients are carcinoma of thyroid with increased frequency of papillary carcinoma with female preponderance. (9)

Inayat ullah et al Multinodular goitre is traditionally thought to be low risk malignant as compared to solitary nodular goitre in various studies 7 to 17% incidence of cancer in multinodular goitre.(1)

Inayat ullah et al the most common swelling of thyroid origin was benign 85% ,15% were malignant.(1)

Inayat ullah et al out of all malignancy,papillary carcinoma was on top with percentage of 10%.(1)

Settu palo et al there was raising incidence of malignancy in multinodular goitre.(10)

Merla et al thyroid cancer was the third fastest rising cancer diagnosis in united states with annual rate of 3% and doubling incidence in past 30 yrs.(8)

Nikhil nanjappa et al the incidence of malignancy in multinodular goitre is 4 to 17%.(2)

Main Symptoms of thyroid swellings

1. Swelling

2. Does the patient spend sleepless nights

3. Pain

4. Pressure symptoms

5. Symptoms of primary thyrotoxicosis

6. Symptoms of secondary thyrotoxicosis

Pressure symptoms

1. Dyspnoea

Enlarged thyroid swelling may press on the trachea to cause dyspnoea.

2. Dysphagia

Enlarged thyroid swelling may press on the oesophagus to cause dysphagia.

3. Hoarseness of the voice

Enlarged thyroid swelling may press on the recurrent laryngeal nerve to cause hoarseness of voice.

4. Stridor

When air rushes through a narrowed trachea,a whistling sound was produced ,it is called stridor.

Clinical tests and important signs for examination of thyroid gland

1. Laheys method

2. Criles method

3. Pizillos method

4. Kochers test

5. Pembertons sign

Obstruction of major veins in the thorax causing engorgement of neck veins. It becomes obvious when the patients are asked to raise the hands above the head and the arms touch the ears.

Colloid goitre

It is usually seen between the ages of 20-30 years, after physiological hyperplasia have subsided. (7)

The whole gland becomes enlarged, soft and elastic. Pressure effects like dyspnoea, venous engorgement and discomfort during swallowing are rare unless the swelling is enormous.

Multinodular goitre

In endemic areas, It appears early between 20 to 30 years, whereas in sporadic areas, it appears late between 30 to 40years.

Multinodular goitre is six times commoner in females than males.

It presents as slowly enlarging painless lump in the neck.

Solitary nodular goitre

Half of patients who present with solitary nodules have multinodular goiters.

The common site being the junction of the isthmus and one lateral lobe.

Complications

- Hemorrhage
- Calcification
- Secondary thyrotoxicosis
- Carcinoma

Hashimotos disease (autoimmune thyroiditis)

It is the most common form of chronic thyroiditis.

Majority are common in average age of 50 years.

The most frequent symptom is enlargement of neck with slight pain with coughing.

Diagnosis is confirmed by demonstrating high titres of thyroid antibodies in the serum.

Biopsy is indicated in cases of asymmetric and nodular goiters to rule out carcinoma.

Thyroglossal fistula

It is usually an acquired one eiher from bursting or incision of inflamed thyroglossal cyst or from local removal of the thyroglossal cyst leaving behind the thyroglossal tract.it is a midline fistula.

METHODOLOGY

MATERIALS AND METHODS:

SOURCE OF DATA: patients with goitre of thyroid undergoing evaluation and surgery in surgical wards in Coimbatore medical college hospital during a period from January 2018 to January 2019

METHOD OF COLLECTING DATA: Data collection by history taking, clinical examination and operative findings, histopathological report and follow up of cases.

The study of minimum 100 cases selected by prospective cohort study technique admitted in surgical wards of Coimbatore medical college hospital, Coimbatore during the period from January 2018 to January 2019.

INCLUSION CRITERIA:

Patient admitted in surgical wards of Coimbatore medical college hospital with features of goiter.

EXCLUSION CRITERIA: patient below 18 years of age

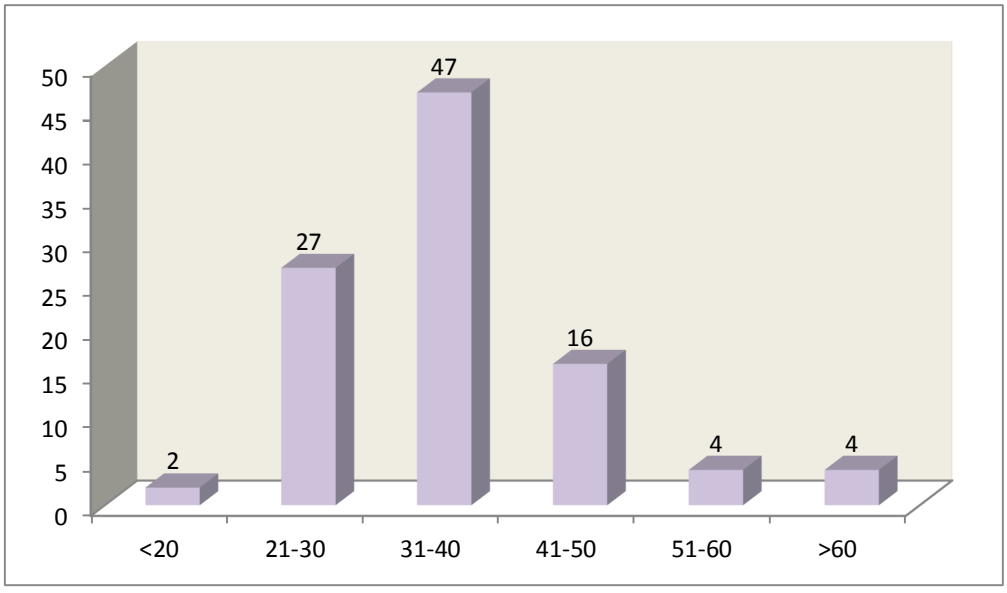
- Patient in pregnancy
- Patient with evidence of thyroid malignancy proven with FNAC/ TRUCUT biopsy.

RESULTS

Distribution of study population according to age group

Age group	Frequency	Percentage
<20	2	2
21-30	27	27
31-40	47	47
41-50	16	16
51-60	4	4
>60	4	4
Total	**100**	**100**

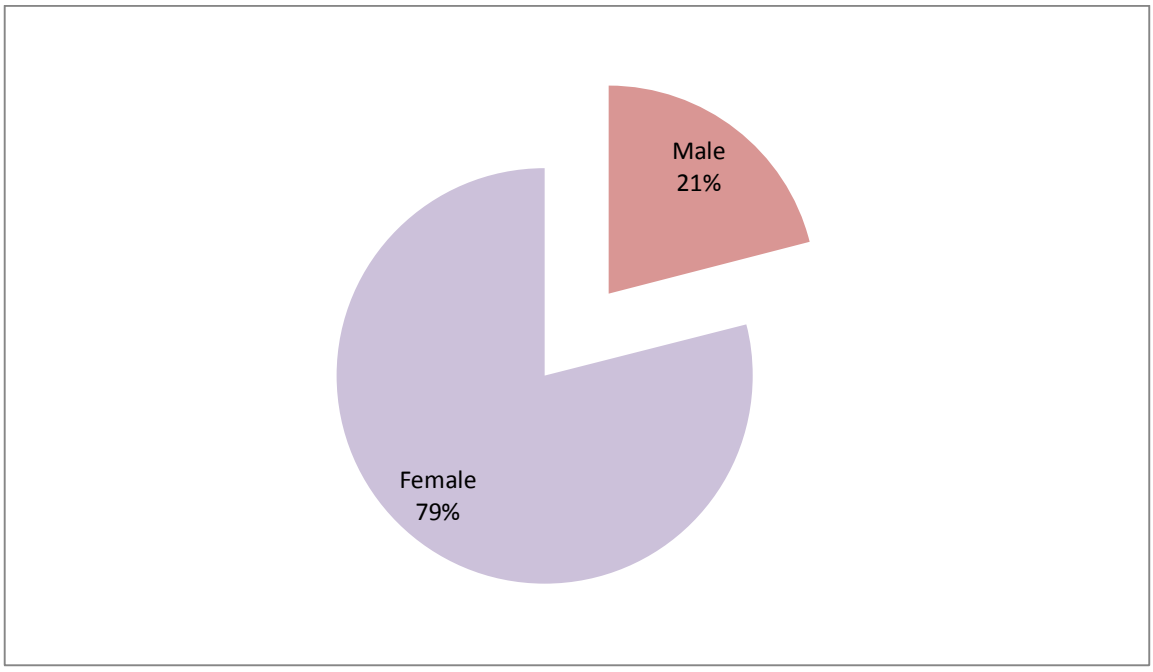
Majority of the patients are in the age group of 21-40 years(74%)



Distribution of study population according to gender

Gender	Frequency	Percentage
Male	21	21
Female	79	79
Total	**100**	**100**

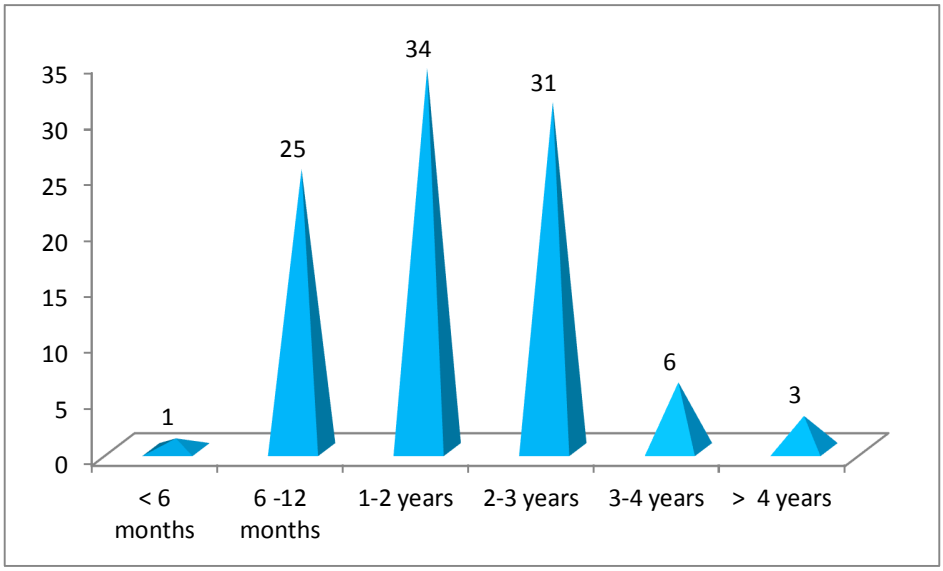
Around 79 % of study population were females



Distribution of study population according to duration of swelling

Duration of swelling	Frequency	Percentage
< 6 months	1	1
6 -12 months	25	25
1-2 years	34	34
2-3 years	31	31
3-4 years	6	6
¬ 4 years	3	3
Total	**100**	**100**

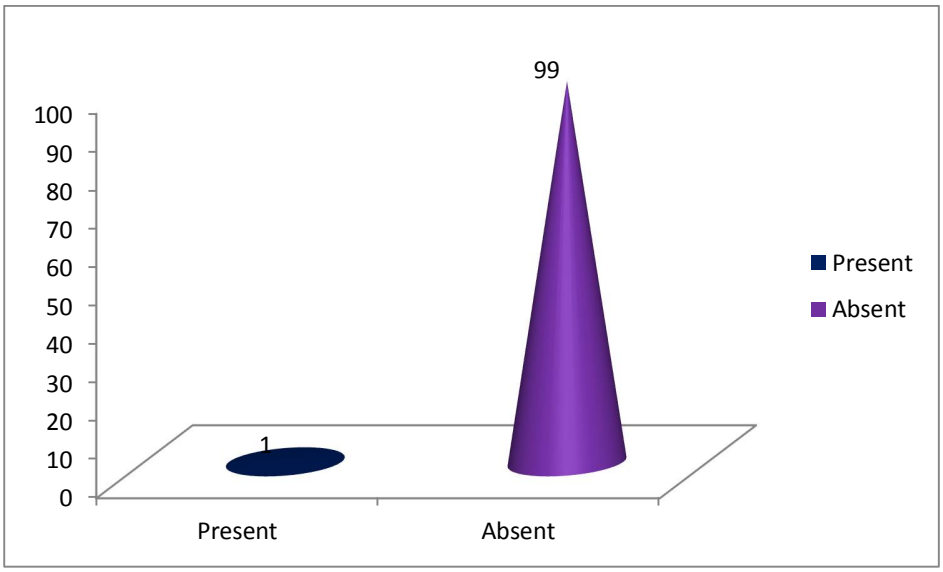
Around 34 % of study population had symptoms for 1-2 years, and about 31% had symptoms upto 2-3 years,



Distribution of study population according to presence of pain

presence of pain	Frequency	Percentage
Present	1	1
Absent	99	99
Total	**100**	**100**

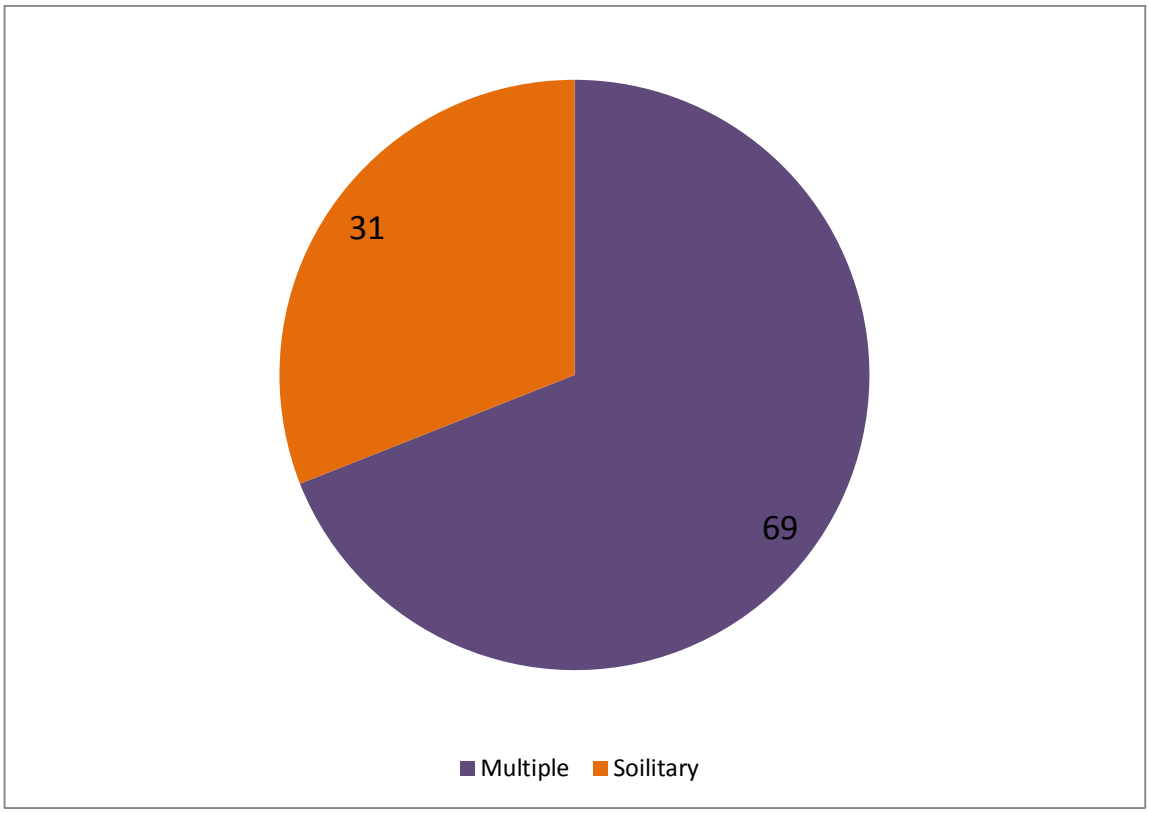
Pain was present only in one percent of study population



Distribution of study population according to type of nodule

Type	Frequency	Percentage
Multiple	69	69
Soilitary	31	31
Total	**100**	**100**

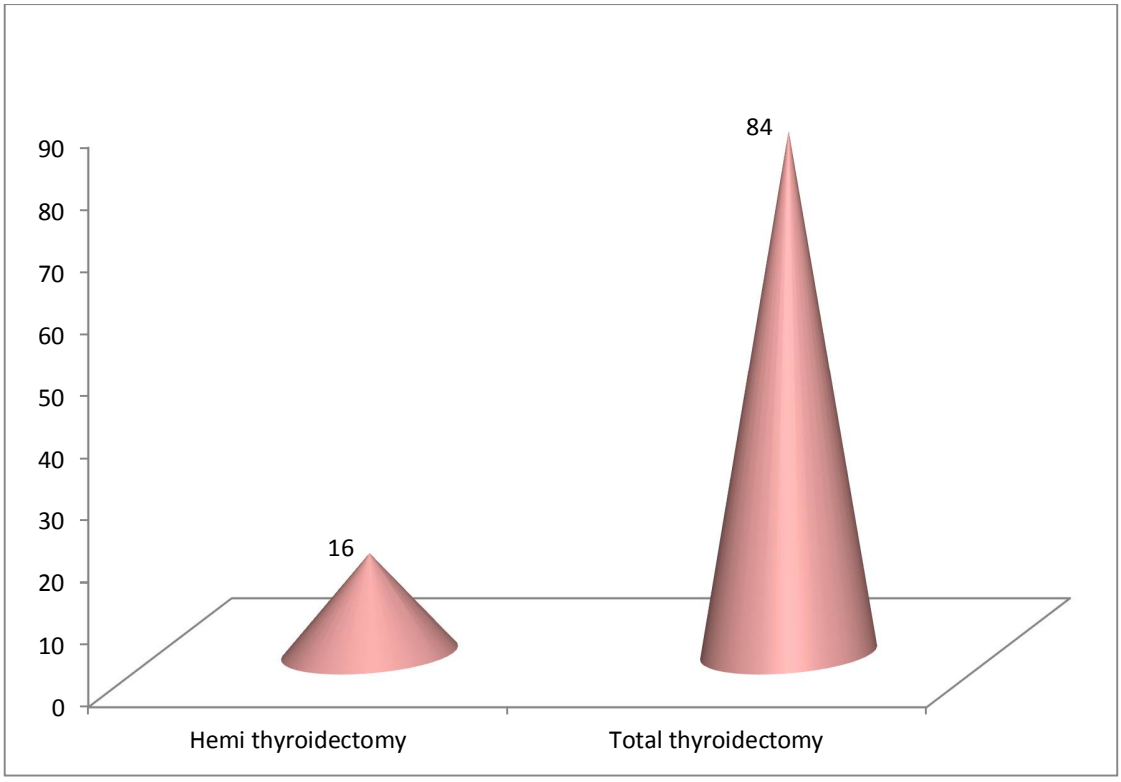
Around two third (69 %) had Multinodulargoitre



Distribution of study population according to type of surgery

Type	Frequency	Percentage
Hemithyroidectomy	16	16
Total thyroidectomy	84	84
Total	**100**	**100**

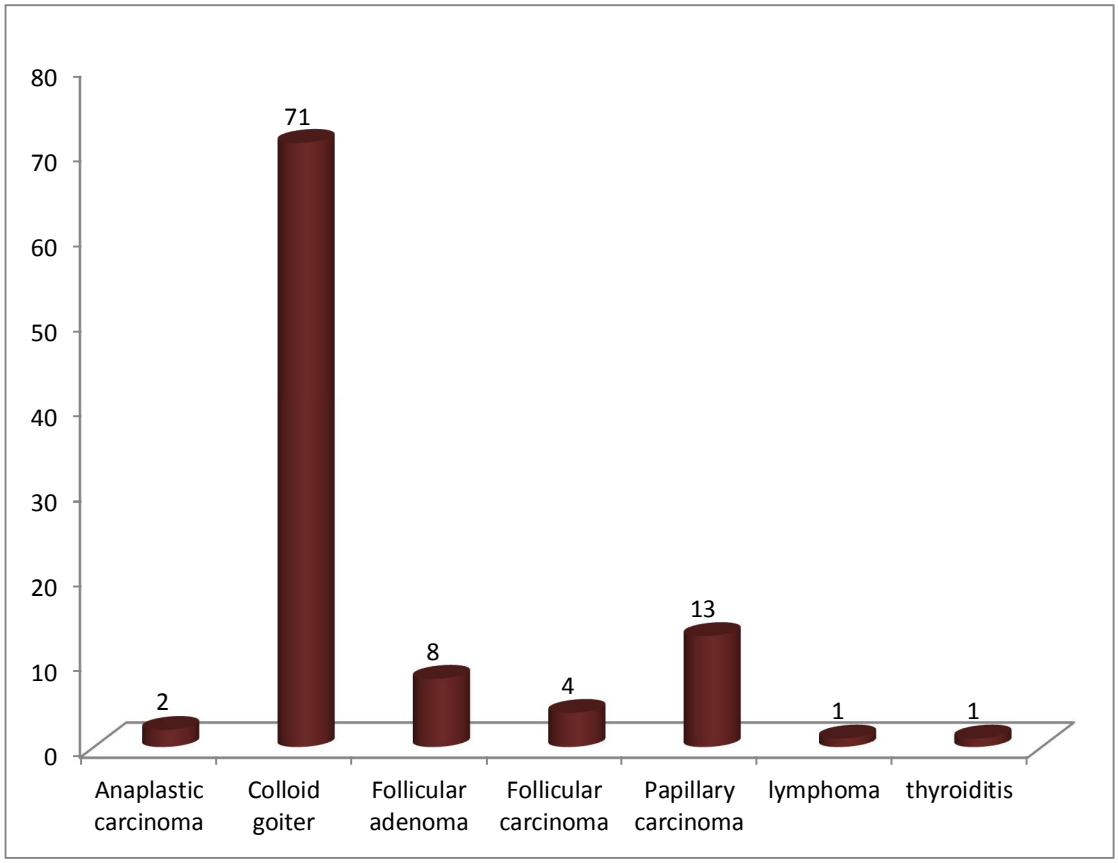
16 % of study population underwent hemi thyroidectomy while the rest 84% underwent total thyroidectomy



Distribution of study population according to Final diagnosis

outcome	Frequency	Percentage
Anaplastic carcinoma	2	2
Colloid goiter	71	71
Follicular adenoma	8	8
Follicular carcinoma	4	4
Papillary carcinoma	13	13
lymphoma	1	1
thyroiditis	1	1
Total	**100**	**100**

Majority of the study population had colloid goitre(72%), followed by papillary carcinoma (15%) and follicular adenoma (8%)



Association between gender and Final diagnosis

Gender	**Final diagnosis**							**Fischer exact Value**	**P value**
	Anaplastic carcinoma	Colloid goiter	Follicular adenoma	Follicular carcinoma	Papillary carcinoma	Lymphoma	thyroiditis	9.873	0.038
Female	0	56(78.87)	5(62.5)	4	12(92.3)	1	1		
Male	2	15(21.13)	3(37.5)	0	1(7.7)	0	0		

Around 79% of colloid goiter and 92.3 % of papillary carcinoma were present in females. Follicular carcinoma, lymphoma and thyroiditis are found only in females. Anaplastic carcinoma was found only in Males. The results are statistically significant.

Type of nodule	Final diagnosis							Fischer exact Value	P value
	Anaplastic carcinoma	Colloid goiter	Follicular adenoma	Follicular carcinoma	Papillary carcinoma	Lymphoma	thyroiditis	32.710	0.000
MNG	2	57(80.28)	2(25)	4	3(23.07)	0	1		
solitary	0	14(19.72)	6(75)	0	10(76.93)	1	0		

Association between type of nodule and Final diagnosis

Around 80% of colloid goiter was multinodular. Around 75 % of follicular adenoma and 77% of papillary carcinoma were solitary. Anaplastic carcinoma, follicular carcinoma and thyroiditis were present only in multinodular goiter. Lymphoma was present as solitary nodule alone. These results are statistically significant.

Association between age group and Final diagnosis

Age gp in years	Final diagnosis							Fischer exact Value	P value
	Anaplastic carcinoma	Colloid goiter	Follicular adenoma	Follicular carcinoma	Papillary carcinoma	Lymphoma	thyroiditis		
<20	0	2	0	0	0	0	0	67.524	0.001
21-30 years	0	22	2	1	2	0	0		
31-40 years	0	33	3	2	9	0	0		
41-50 years	0	9	2	1	2	1	1		
51 – 60 years	2	2	0	0	0	0	0		
¬ 60 years	0	3	1	0	0	0	0		

Around 77% of colloid goiter was present in the age group of 21-40 years. All the papillary carcinoma occurred between 31-50 years. Anaplastic carcinoma occurred at 51-60 years. Lymphoma and thyroiditis occurred at 41.50 years. All the results are statistically significant.

Association between duration of symptoms and Final diagnosis

Duration	**Final diagnosis**							**Fischer exact Value**	**P value**
	Anaplastic carcinoma	Colloid goiter	Follicular adenoma	Follicular carcinoma	Papillary carcinoma	Lymphoma	thyroiditis		
< 6 months	0	1	0	0	0	0	0		
6 – 12 months	1	17	2	2	3	0	0	28.542	0.772
1 – 2 years	1	24	4	1	4	0	0		
2-3 years	0	21	2	1	6	0	1		
3 – 4 years	0	5	0	0	0	1	0		
>4 years	0	3	0	0	0	0	0		

There is no significant difference between duration of symptoms and the final diagnosis

DISCUSSION

This is prospective cohort study which included around 100 patients who presented with goitre thyroid nodules are relatively more common in general population with more prevalence among women from 21 – 40 years with female predominance of 79%. Study revealed to have more multi nodular goiter than solitary nodular goitre which are discovered by palpation on physical examination.

Multi nodular goitre is defined as palpation of multiple discrete nodules over enlarged thyroid gland. Though the etiopathogenesis has not been very clear, multiple causal studies have been done some causal relationship take impairment of hormone synthesis increased sodium clearance from iodine , increased presence of thyroid stimulating Ig's have been postulated.

Multi nodular goitre is a risk factor for thyroid malignancy. Patient underwent total thyroidectomy around 84% and 16% of patients in study underwent hemithyroidectomy. Through results and observation of study, papillary carcinoma was found to be the most common malignancy in our study with incidence of about 15%, following by which it was follicular carcinoma of 4% and anaplastic carcinoma incidence of 2%.

CONCLUSIONS

The present study is a prospective analysis of 100 cases of goiter of thyroid, admitted in coimbatore medical college. Though a large number of patients are required to come to better conclusions, based on the data and results obtained in the present study, the following conclusions can be drawn:

- Goiter of thyroid is more common in females.
- Goiter of thyroid is more common the age group of 20-50years.
- Most of the patients with goiter of thyroid present with swelling alone.
- Incidence of malignancy in female patients presenting with goiter of thyroid Is more when compared to male patients presenting with the same.
- commonest cause of goiter of thyroid is multi-nodular goiter.
- Papillary carcinoma is the most common malignancy of thyroid, followed by follicular carcinoma.

SUMMARY

A prospective analysis of 100 cases of goiter of thyroid, admitted in Coimbatore medical college has been made and summarized below:

1. Commonest presentation of goiter is swelling in front of neck.
2. The peak age at presentation in goiter of thyroid is 2^{nd} to 4^{th} decade.
3. Goiter is more common in females.
4. Most of the goiter of thyroid are benign.
5. After evaluation of goiter of thyroid, clinically goiter turned out to be multi-nodular goitre.
6. Around 79% of colloid goiter and 92.3 % of papillary carcinoma were present in females. Follicular carcinoma, lymphoma and thyroiditis are found only in females. Anaplastic carcinoma was found only in Males.
7. The most common malignancy in solitary nodule thyroid is papillary carcinoma ,followed by follicular carcinoma.

BIBLIOGRAPHY

1. Inayat ullah,Muhammad hafeez,naseer ahmad,ghulam Muhammad,sanum gandapur (2014) Incidence of thyroid malignancy in multinodular goiter.j.med.sci. (Peshawar,print) October 2014,vol.22,no.4;164-165(page1)
2. Nikhil Nanjappa BA, Alok Mohanty, Tirou Aroul T, Robinson Smile S, Dhananjay Kotasthane (2012) Thyroid Carcinoma (Tc) in Nodular Goitre. Thyroid Disorders Ther 1:115. doi:10.4172/2167-7948.1000115
3. B.D.Chaurasia's human anatomy volume 35th edition.
4. B.D.Chaurasia's human anatomy volume 36th edition.
5. Guyton and hall–Textbook of Medical Physiology 13TH Edition.
6. Bailey and Love's–Short Practise of surgery,27th edition .
7. S.Das -A Manual Of Clinical Surgery, 14TH edition .
8. Merla J,Kalyanaraman.s.thyroid cancer and nodular goitre of thyroid ;an analysis of patients in rural south tamil nadu.thyroid res pract 2017;14;106-11.
9. Iqbal m, Mehmood z,rasul s,inamullah carcinoma thyroid in multi and uninodular goiter.PMID;20642922 DOI;05.2010/ JCPSP. 310312.

10. Palo s,Mishra D.Prevalence of malignancy in multinodular goiter and solitary nodule; a histopatholocical audit .int j res med sci 2016;4;2319-23.

11. Skandalakis JE, Gray SW (eds). Embryology for Surgeons, 2nd Ed. Baltimore: Williams & Wilkins, 1994;

12. Gray SW, Skandalakis JE. Embryology for Surgeons (1st ed). Philadelphia: Saunders, 1972.

13. Kamat MR, Kulkarni JN, Desai PB, Jusswalla DJ. Lingual thyroid: a review of 12 cases. Br J Surg 1979;66:537. [PubMed: 486909]

14. Gray SW, Skandalakis JE, Androulakis JA. Nonthyroid tumors of the neck. Contem Surg 26:13-24, 198

15. LiVolsi VA, Perzin KH, Savetsky L. Ectopic thyroid (including thyroglossal duct tissue). Cancer 34:1303-1315, 1974. [PubMed: 4421377]

16. Allard RHB. The thyroglossal cyst. Head Neck Surg 5:134-146, 1982. [PubMed: 7169333]

17. Nussbaum M, Buchwald RP, Ribner A, Mori K, Litwins JO. Anaplastic carcinoma arising from median ectopic thyroid (thyroglossal duct remnant). Cancer 48:2724-2728, 1981. [PubMed: 7306927]

18. Walton BR, Koch KE. Presentation and management of a thyroglossal duct cyst with a papillary carcinoma. South Med J 90(7):758-761, 1997.

19. Wang CY, Chang TC. Preoperative thyroid ultrasonography and fine-needle aspiration cytology in ectopic thyroid. Am Surg 61(12):1029-1031, 1995

20. Stahl WM Jr, Lyall D. Cervical cysts and fistulae of thyroglossal tract origin. Ann Surg 1954;139:123. [PubMed: 13114863]

21. Quigley WF, Williams LF, Hughes CW. Surgical management of subhyoid median ectopic thyroid. Ann Surg 1962;155:305. [PubMed: 14489488]

22. Bhatnagar KP, Nettleton GS, Wagner CE. Subisthmic accessory thyroid gland in man: a case report and a review of thyroid anomalies. Clin Anat 10:341-344, 1997. [PubMed: 9283734]

23. Monchik JM, Materazzi G. The necessity for a thoracic approach in thyroid surgery. Arch Surg 2000;135:467-471. [PubMed: 10768714]

24. Kumar R, Khullar S, Gupta R, Marwah A, Drm MA. Dual thyroid ectopy: case report and review of the literature. Clin Nucl Med 2000;25:253-254. [PubMed: 10750961]

25. LiVolsi VA. Surgical Pathology of the Thyroid. Philadelphia: WB Saunders, 1990.

26. Sawicki MP, Howard TJ, Passaro E Jr. Heterotopic tissue in lymph nodes: an unrecognized problem. Arch Surg 1990;125:1394. [PubMed: 2222180]

ANNEXURE-1

PROFORMA FOR EVALUATION OF INCIDENCE OF MALIGNANCY IN GOITER OF THYROID

Case No:

Name:

Hospital:

Age: Unit:

Sex: D.O.A:

Occupation: D.O.D:

Address:

Contact No:

A. **Clinical diagnosis**:

B. Chief complaint and its duration:

a. Swelling

b. Pain

c. Others

C. History of presenting illness:

a. Swelling

i. Duration

ii. Site

iii. Mode of onset

iv. Progress of the swelling

v. Presence of other swelling(s)

vi. Secondary changes

b. Pain

i. Duration

ii. Onset

iii. site

iv. Nature

v. Radiation

vi. Aggravating factors

vii. Relieving factors

c. Pressure symptoms

i. Dysphagia

ii. Dyspnea

iii. Hoarseness of voice

iv. Voice fatigue

d. Symptoms suggestive of BMR changes

i. Appetite: increased/decreased/good

ii. Weight: increased/decreased/no significant change

iii. Sweating: increased/decreased/no significant change

iv. Any preference to hot or cold environment

e. Toxic symptoms

i. Primary toxicity

1. Irritability

2. Insomnia

3. Anxiety

4. Fear

5. Tremors of hands

6. Prominence of eyes

7. Diarrhea

8. Swelling of lower limbs- pretibial myxoedema

ii. Secondary toxicity

1. Palpitation

2. Precordial pain

3. Dyspnea on exertion

4. Swelling of lower limbs

f. Hypothyroid symptoms

i. Dullness

ii. Lethargy

iii. Loss of hairs

iv. Behavior-hypoactivity

v. Response to surroundings

g. Menstrual history-menorrhagia/oligimenorrhoea/amenorrhoea

i. Flow

ii. Days

iii. Frequency

h. Symptoms suggestive of malignancy

i. Rapid increase in size

ii. Presence of other swelling(s) in neck – lymph nodes

iii. Recent onset of pressure symptoms/change in voice

iv. Chest symptoms- cough/breathlessness/hemoptysis

v. Loss of weight and loss of appetite

D. Past history:

i. h/o any drug intake

ii. h/o irradiation to neck in childhood

iii. h/o diabetes/hypertension/tuberculosis/asthma/allergy

E. Family history

iv. h/o similar complaints in family members

v. h/o similar complaints in locality

F. Personal history

vi. Diet:

vii. Appetite:

viii. Sleep

ix. Bowel and bladder habits:

x. Habits:

GENERAL PHYSICAL EXAMINATION

Appearance: Pallor:

Look: Anxious/dull/normal Icterus:

Built: thin/moderate/obese Cyanosis:

Skin: Clubbing:

Hands: warm/moist/cold Lymphadenopathy:

Nutrition:

Tremors:

Vitals: pulse – rate:

- rhythm:
- volume:
- character:

Respiratory rate:

Temperature:

BP.:

LOCAL EXAMINATION

1. Inspection

Swelling(s) - number:

- shape:
- size:
- borders:
- extent:
- surface:

- skin over the swelling:
- secondary changes: fungation/ulceration/inflammation -pulsation:
- engorged

  veins: - trachea:
- any other swelling(s)-lymph nodes

2. Palpation:

- Local rise of temperature: -Tenderness:
- Number:
- Shape:
- Size:
- Site:
- Extent:
- Borders
- Surface:
- Consistency:
- Mobility -skin fixity
- on contraction of muscle
- anatomical plane
- Position of trachea:
- Carotids: normal/Displaced/Absent -Bruit:
- Dilated veins: -Regional lymph nodes:

3. Percussion:

- over sternum: Dull/Resonant

4. Auscultation:

- Tracheal position -Bruit

5. Measurement of neck at the most prominent part:

SYSTEMIC EXAMINATION

Signs of toxicity-Primary

- Secondary

1. Cardiovascular system:

2. Respiratory system:

3. Central nervous system:

4. Per-abdominal examination:

CLINICAL DIAGNOSIS:

INVESTIGATIONS:

ROUTINE:

HB%: Total Count:

Differential Count: ESR:

Bleeding Time: Clotting Time:

Urine Routine: Albumin- ECG:

Sugar & microscopy-

Random Blood Sugar: Blood Urea:

Serum Creatinine: Chest-X-Ray:

HIV -1&2: HBsAg:

SPECIFIC INVESTIGATION

- Indirect Laryngoscopy:
- Plain X-Ray Neck:
- USG Neck:

TREATMENT:

Pre-operative:

Surgical:

- Operative Findings:

Post-operative:

HISTO-PATHOLOGICAL EXAMINATION: - Macroscopic:

- Microscopic:

FOLLOW-UP:

ANNEXURE-2

CONSENT FORM

I/We _____age_____Hosp. No. _____Ward _____, in my/our full senses hereby give my/our complete consent for _____ or any other procedure deemed fit which is a diagnostic / therapeutic procedure / biopsy / transfusion / operation to be performed on me / my son / daughter under any anesthesia deemed fit. The nature and risks involved in the procedure have been explained to me in my own language to my satisfaction. For academic and scientific purpose, the operation/ procedure may be recorded or photographed, or used for statistical measurements.

Signature/thumb impression
Of the patient/guardian

Date:

Place:

Guardian:

Relationship:

Full address

ஒப்புதல் படிவம்

நோயாளியின் பெயர்:

பாலினம் :

வயது :

பெற்றோர் பெயர் :

முகவரி :

அரசு கோவை மருத்துவக் கல்லூரியில் பொது அறுவை சிகிச்சை துறையில் பட்ட மேற்படிப்பு பயிலும் மருத்துவர் ப.இளங்கோ அவர்கள் மேற்கொள்ளும் ஆய்வில் செய்முறை மற்றும் அனைத்து விளக்கங்களையும் கேட்டுக் கொண்டு எனது சந்தேகங்களை தெரிவுபடுத்திக் கொண்டேன் என்பதை தெரிவித்துக் கொள்கிறேன்.

இந்த ஆய்வில் நான் முழு சம்மதத்துடனும், சுயசிந்தனையுடனும் கலந்து கொள்ள சம்மதிக்கிறேன்.

இந்த ஆய்வில் என்னைப் பற்றிய அனைத்து விவரங்கள் பாதுகாக்கப்படுவதுடன் இதன் முடிவுகள் ஆய்விதழில் வெளியிடப்படுவதில் ஆட்சேபனை இல்லை என்பதை தெரிவித்துக்கொள்கிறேன். எந்த நேரத்திலும் இந்த ஆய்விலிருந்து நான் விலகிக் கொள்ள எனக்கு உரிமை உண்டு என்பதையும் அறிவேன்.

இடம் :

தேதி : கையொப்பம் / ரேகை

KEY TO MASTER CHART

M	**-**	**MALE**
F	**-**	**FEMALE**
SNG	**-**	**Solitary Nodular Goiter**
MNG	**-**	**Multi Nodular Goiter**
Total THY	**-**	**Total Thyroidectomy**
HEMI THY	**-**	**HEMITHYROIDECTOMY**

S No	IP No	Name	Age	Sex	Duration	Pain	Symptoms	Type(Sol/Bi)	lymph node	Surgery Done	Outcome
1	14422	ramathal	38 yrs	f	2 yrs	painless	swelling	mng	neg	total thy	colloid goitre
2	15662	putsiodhi	65 yrs	f	1 yr	painless	swelling	mng	neg	total thy	colloid goitre
3	17586	prema	55 yrs	f	3 yrs	painless	swelling	mng	neg	total thy	colloid goitre
4	14258	usha	24yrs	f	2.5 yrs	painless	swelling	mng	neg	total thy	follicular ca
5	12356	anitha	40 yrs	f	1 yr	painless	swelling	sng	neg	hemi thy	foll adenoma
6	17854	chitra	42yrs	f	2 yrs	painless	swelling	mng	neg	total thy	foll adenoma
7	16894	eswari	40yrs	f	1 yr	painless	swelling	mng	neg	total thy	colloid goitre
8	14568	shazad	19 yrs	f	2yr	painless	swelling	sng	neg	hemi thy	colloid goitre
9	17586	vijay	27yrs	m	6 mon	painless	swelling	mng	neg	total thy	colloid goitre
10	14586	sathish	25yrs	m	8 mon	painless	swelling	mng	neg	total thy	papillary ca
11	17854	kalaiselvi	39 yrs	f	1 yr	painless	swelling	mng	neg	total thy	follicular ca
12	14568	nagamani	32yrs	f	9 mon	painless	swelling	mng	neg	total thy	papillary ca
13	14256	kalpana	32yrs	f	2.4 yr	painless	swelling	sng	neg	hemi thy	papillary ca
14	13245	thilaga	42yrs	f	1 yr	painless	swelling	mng	neg	total thy	follicular ca
15	12457	selvi	28yrs	f	9mon	painless	swelling	mng	neg	total thy	colloid goitre
16	12459	subbu	32yrs	f	1.2 yrs	painless	swelling	mng	neg	total thy	colloid goitre
17	12456	palanal	37yrs	f	1yr	painless	swelling	mng	neg	total thy	colloid goitre
18	17586	uma	31 yrs	f	10 mon	painless	swelling	sng	neg	hemi thy	colloid goitre
19	18654	lakshmi	43yrs	f	7 mon	painless	swelling	mng	neg	total thy	colloid goitre
20	19526	kaveri	34yrs	f	8 mon	painless	swelling	mng	neg	total thy	colloid goitre
21	14587	raj	49yrs	m	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
22	12358	ruckmani	36 yrs	f	1.6 yrs	painless	swelling	mng	neg	total thy	follicular ca
23	14256	andal	32yrs	f	9 mon	painless	swelling	mng	neg	total thy	papillary ca
24	17856	sasikala	40yrs	f	1.6 yrs	painless	swelling	mng	neg	total thy	colloid goitre
25	14589	kumari	31yrs	f	1yr	painless	swelling	mng	neg	total thy	colloid goitre
26	12456	banu	37yrs	f	9mon	painless	swelling	mng	neg	total thy	colloid goitre

27	13457	vani	29yrs	f	4yrs	painless	swelling	mng	neg	total thy	colloid goitre
28	14578	sekar	34yrs	m	3.5 yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
29	16578	kavitha	26yrs	f	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
30	17893	mumtaj	31yrs	f	7 mon	painless	swelling	mng	neg	total thy	colloid goitre
31	19874	saradha	24 yrs	f	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
32	16875	vimala	33yrs	f	9 mon	painless	swelling	mng	neg	total thy	colloid goitre
33	15742	haldurai	44yrs	m	1 yr	painless	swelling	mng	neg	total thy	colloid goitre
34	15789	arumugam	34 yrs	m	2yr	painless	swelling	mng	neg	total thy	colloid goitre
35	12587	selvaraj	28yrs	m	9 mon	painless	swelling	mng	neg	total thy	colloid goitre
36	15647	vijaya	31yrs	f	1 yr	painless	swelling	mng	neg	total thy	colloid goitre
37	15896	valar	29yrs	f	2.5 yrs	painless	swelling	mng	neg	total thy	papillary ca
38	16784	murugan	45 yrs	m	2 yrs	painless	swelling	sng	neg	total thy	foll adenoma
39	13458	prince	19 yrs	m	1yr	painless	swelling	mng	neg	total thy	colloid goitre
40	14567	rani	27yrs	f	3 yrs	painless	swelling	mng	neg	total thy	colloid goitre
41	18957	saveetha	32yrs	f	2.4 yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
42	16549	mahali	68yrs	m	3 yrs	painless	swelling	mng	neg	total thy	colloid goitre
43	13548	ravi	54yrs	m	3.2yrs	painless	swelling	mng	neg	total thy	colloid goitre
44	16458	parimala	28yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
45	17854	valli	36yrs	f	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
46	16894	divya	25yrs	f	1yr	painless	swelling	mng	neg	total thy	colloid goitre
47	14591	subba	32yrs	f	1.5 yr	painless	swelling	mng	neg	total thy	colloid goitre
48	13456	santhi	25yrs	f	1.2 yrs	painless	swelling	mng	neg	total thy	colloid goitre
49	16589	vidhya	26yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
50	17854	mooni	32yrs	f	3yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
51	12648	radha	50yrs	f	3.5yrs	painless	swelling	sng	neg	total thy	lymphoma
52	18965	pandian	60yrs	m	2yrs	painless	swelling	mng	neg	total thy	anaplastic ca

53	17584	jaya	39yrs	f	3yrs	painless	swelling	sng	neg	hemi thy	foll adenoma
54	16458	kanmani	29yrs	f	2.5yrs	painless	swelling	mng	neg	total thy	colloid goitre
55	17589	sendama	32yrs	f	1yr	painless	swelling	mng	neg	total thy	colloid goitre
56	14289	vino	43yrs	f	2yr	painless	swelling	mng	neg	total thy	papillary ca
57	17869	shanthi	45yrs	f	2yr	painless	swelling	sng	neg	hemi thy	colloid goitre
58	14768	saraswathy	40yrs	f	4yrs	painless	swelling	mng	neg	total thy	colloid goitre
59	13897	deivanai	38yrs	f	4 yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
60	17589	moorthy	68yrs	f	2.4yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
61	14752	buela	24yrs	f	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
62	16897	lilly	28yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
63	14285	meera	34yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
64	17854	vinitha	36yrs	f	3yrs	painless	swelling	sng	neg	total thy	colloid goitre
65	12152	haripriya	28yrs	f	2yrs	painless	swelling	sng	neg	hemi thy	foll adenoma
66	13156	menaka	45yrs	f	3yrs	painless	swelling	mng	neg	total thy	thyroiditis
67	14156	mary	38yrs	f	1.3yrs	painless	swelling	mng	neg	total thy	papillary ca
68	18154	pournami	27yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
69	17516	mahesh	32yrs	m	3yrs	painless	swelling	sng	neg	total thy	colloid goitre
70	14257	kavya	29yrs	f	2yrs	painless	swelling	sng	neg	total thy	colloid goitre
71	15361	kumari	33yrs	f	1.8yrs	painless	swelling	sng	neg	total thy	colloid goitre
72	16481	selvi	26yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
73	13179	vimala	29yrs	f	2.4yrs	painless	swelling	mng	neg	total thy	colloid goitre
74	14758	kalpana	30yrs	f	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
75	18196	sundari	32yrs	f	1yrs	painless	swelling	mng	neg	total thy	colloid goitre
76	18199	nagamani	27yrs	f	2yrs	painless	swelling	sng	neg	hemi thy	colloid goitre
77	17145	shalini	34yrs	f	2.6yr	painless	swelling	mng	neg	total thy	colloid goitre
78	17154	revathy	33yrs	f	7 mon	painless	swelling	sng	neg	hemi thy	colloid goitre

79	16548	angal	37yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
80	15489	arthy	28yrs	f	2.4yrs	painless	swelling	mng	neg	total thy	colloid goitre
81	17589	abinaya	32yrs	f	1.2yrs	painless	swelling	mng	neg	total thy	colloid goitre
82	16784	iswarya	29yrs	f	1yr	painless	swelling	sng	neg	hemi thy	foll adenoma
83	12458	ponni	34yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
84	17589	mani	42yrs	m	3yrs	painless	swelling	mng	neg	total thy	colloid goitre
85	14587	kathiravan	44yrs	m	2.4yrs	painless	swelling	mng	neg	total thy	colloid goitre
86	16789	palani	47yrs	m	1.5yrs	painless	swelling	mng	neg	total thy	colloid goitre
87	17584	damu	58yrs	m	1yrs	painless	swelling	mng	neg	total thy	anaplastic ca
88	19487	chandran	45yrs	m	2.1yrs	painless	swelling	mng	neg	total thy	colloid goitre
89	17689	ganesan	22yrs	m	3yrs	pain	swelling	mng	neg	total thy	colloid goitre
90	16487	raji	34yrs	f	2.6yr	painless	swelling	mng	neg	total thy	papillary ca
91	18947	velu	32yrs	m	2yrs	painless	swelling	sng	neg	hemi thy	foll adenoma
92	16578	shantha	34yrs	f	1.5yrs	painless	swelling	mng	neg	total thy	colloid goitre
93	13457	kamalam	35yrs	f	2yrs	painless	swelling	mng	neg	total thy	papillary ca
94	18456	tamilselvi	36yrs	f	3yrs	painless	swelling	sng	neg	total thy	papillary ca
95	17548	dharani	44yrs	f	2yrs	painless	swelling	mng	neg	total thy	colloid goitre
96	13478	sneha	34yrs	f	9mon	painless	swelling	mng	neg	total thy	colloid goitre
97	15678	karpagam	35yrs	f	2.3yrs	painless	swelling	mng	neg	total thy	papillary ca
98	14578	pasupathy	67yrs	m	3yrs	painless	swelling	mng	neg	total thy	foll adenoma
99	16784	sujitha	34yrs	f	2yrs	painless	swelling	sng	neg	total thy	papillary ca
100	15428	alamelu	43yrs	f	3yrs	painless	swelling	sng	neg	total thy	papillary ca