

# Tumors of Thyroid

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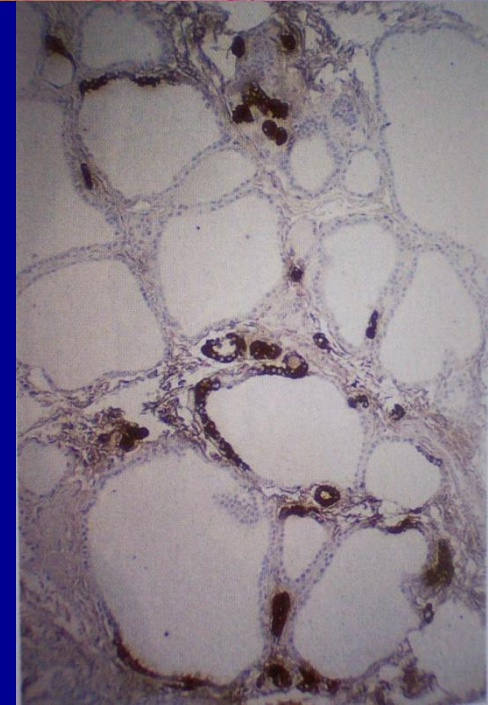
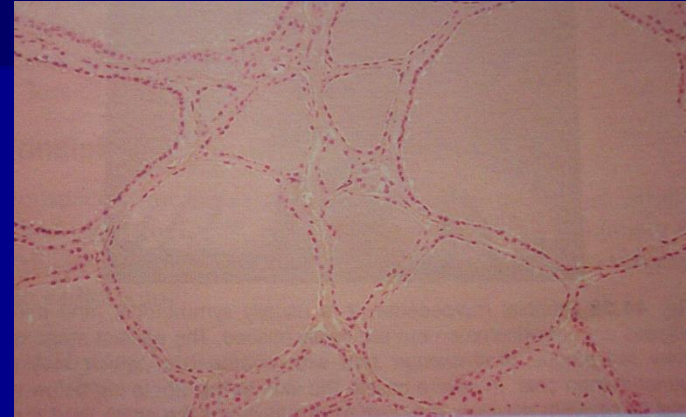
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# Classification

- Benign
  - Childhood Teratoma
  - Adenoma Papillary and Follicular
- Malignant
  - Follicular
    - Papillary
    - Follicular
    - Anaplastic
  - Parafollicular
    - Medullary



# TUMORS OF THYROID TISSUE

## BENIGN

- FOLLICULAR ADENOMA
  1. EMBRYONEAL
  2. FETAL
  3. SIMPLE
  4. COLLOID
  5. HURTHLE CELL
- PAPILLARY ADENOMA

# Malignant Tumours

Ocean, Hawaii  
www.webshots.com

## ■ DIFFERENTIATED ADENOCARCINOMA

- **PAPILLARY ADENOCARCINOMA**
  - Pure papillary, mixed Papillary and follicular
  - Tall cell Oxyphil and Solid
- **FOLLICULAR ADENOCARCINOMA**
  - Hurthle – Cell Carcinoma
  - Oxyphil carcinoma
  - Clear cell carcinoma
  - Insular carcinoma
- **MEDULLARY CARCINOMA**

## ■ UNDIFFERENTIATED ADENOCARCINOMA

- SMALL – CELL (SOLID) TYPE
- GIANT ANDE SPINDLE –CELL TYPES

## ■ MISCELLENEOUS

- Occult sclerosing carcinoma
- Squamous-cell carcinoma
- Lymphoma
- Metastatic tumours

# THYROID CARCINOMA IN ORDER OF INCREASING MALIGNANCY

	■ INCIDENCE
■ DIFFERENTI THYROID CANCER	
■ PAPILLARY CARCINOMA	60
■ MIXED PAPILLARY AND FOLLICULAR	
■ FOLLICULAR CARCINOMA	17
■ MEDULLARY CARCINOMA	6
■ UNDIFFERENTIATED THY. CAR.	13
1.SMALL CELL DIFFUSE CARCINOMA	
2.SMALL CELL COMPACT CARCINOMA	
3.LARGE CELL CARCINOMA	

# Tumors of Thyroid

## Clinically Important

- BENIGN

- Adenoma Follicular

- MALIGNANT

- Papillary adenocarcinoma

- Follicular carcinoma

- Medullary carcinoma

- Undifferentiated carcinoma

# ADENOMA OF THYROID:

- Papillary Adenoma
- Follicular Adenoma:
  - Small:
    - Foetal,
    - Embryonal,
    - Microfollicular
  - Large:
    - Colloid,
    - Macrofollicular
  - Oxyphil: Hurthle Cell.



## ADENOMA OF THYROID

# MACROSCOPY:

- Capsulated, round to ovoid.
- Surrounding parenchyma normal.
- False capsule of compressed tissue
- Consistency varies with deg. changes.  
( Cystic changes, H'ags , Infarction, fibrosis calcification).
- Differentiate from MNG

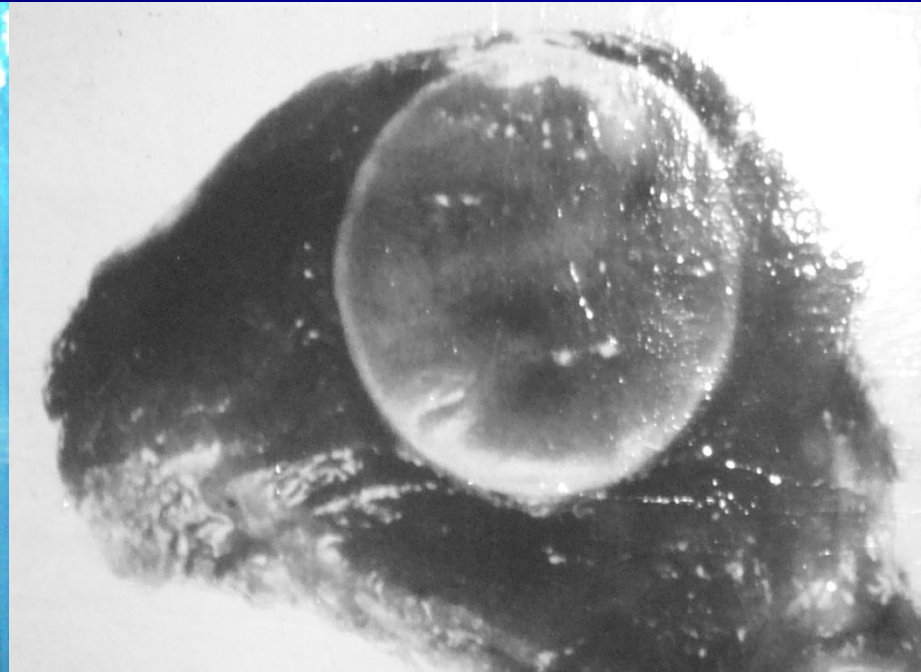
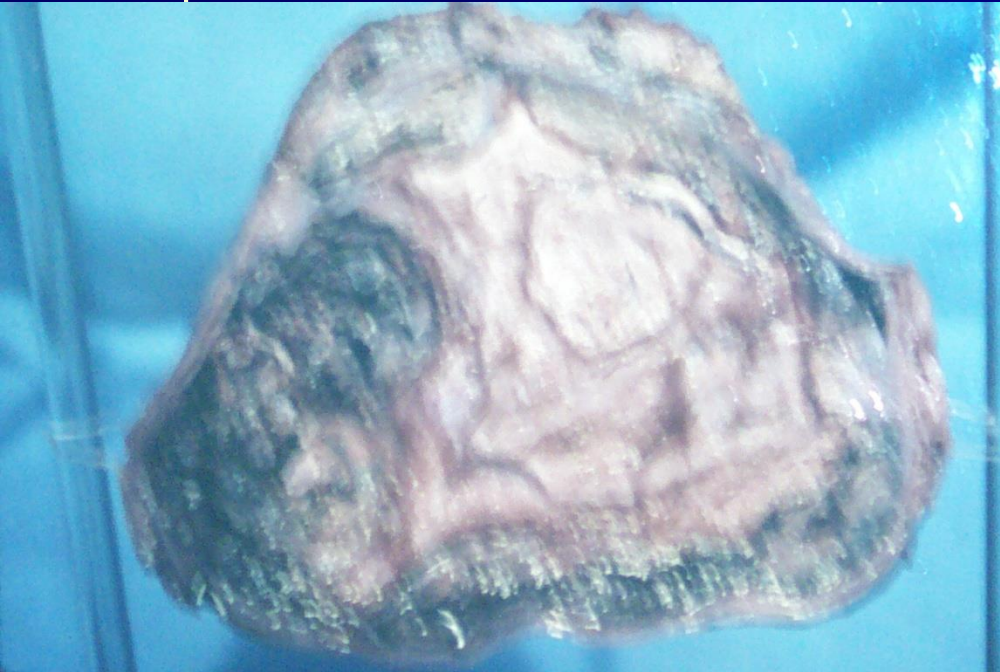


# Differentiate from Multi Nodular Goitre





**ADENOMA OF THYROID**  
**MACROSCOPY**



**Colloid adenoma**

## ADENOMA OF THYROID

# MICROSCOPY:

- Varies with    Cell Type  
                    Follicular size  
                    Degree of degeneration
- Complete capsule
- Compression of adjacent gland
- No lymphatic or vascular invasion.

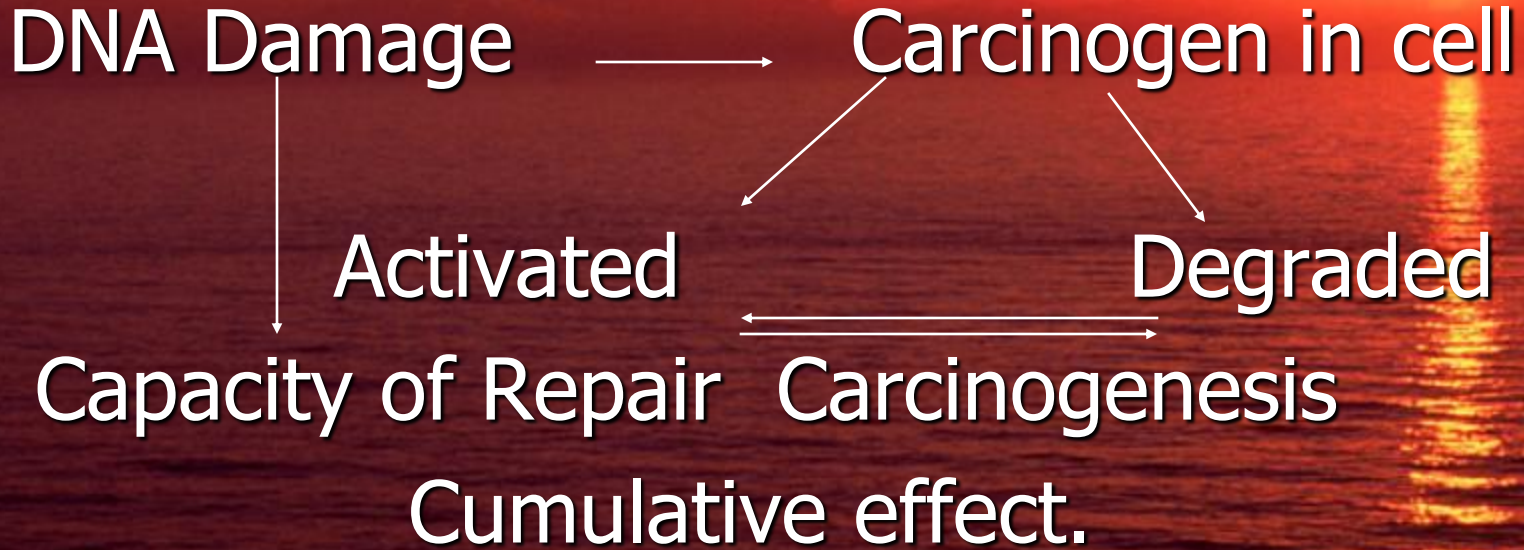
## ADENOMA OF THYROID

# COMPLICATIONS

- \* Degenerative changes
- \* Acute Haemorrhage in gland
- \* Compression
- \* Hyperthyroidism
- \* Malignant change

# Carcinogenesis:

## Initiation:



## Promotion:

Selective stimulation of initiated Cells.

Proliferation

Hyperplasia



Long Exposure

Still Reversible

# AETIOLOGY OF CARCINOMA. THYROID

- Initiating Factor:
  - Creates Permanent changes in Cell DNA
  - Mutation + Selection      Gene Structure
  - DNA From Papillary Ca Oncogens trk. ret.
- Promoting Factor:    TSH Stimulation
  - Iodine Deficiency
  - Goiterogenic Drugs    Produce tumors in Exp animals.
  - I <sup>131</sup> Administration
  - Radiation Injury



## AETIOLOGY OF CARCINOMA. THYROID

# RADIATION & CA. THYROID

### ■ Exposure of Head and Neck Region

\* Haemangioma

\* Acne vulgaris

\* Ca. Breast

\* Thymus

Risk 5 to 10 times

### ■ Hiroshima, Nagasaki

High incidence

### ■ Post-nuclear explosion











- **Chronic Low- grade exposure:**
  - Natural back ground irradiation
  - Sea level 95 mR/yr
  - Kerala Quilon Thorium in soil 1500 mR/yr.
  
- **Increased incidence of well differentiated Carcinoma in area**

# AETIOLOGY OF CARCINOMA THYROID

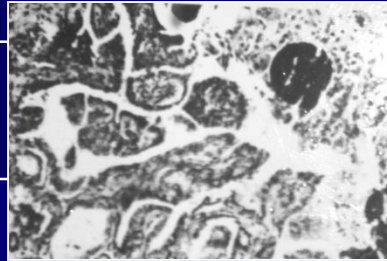
## Contd

- Genetic Factors:
- Medullary Car. Mendelian autosomal dominant, Chromosome 10
- Conflicting Reports:
  - Endemic Goitre: MNG
  - Follicular Adenoma
  - Auto immune Thyroiditis.



# PAPILLARY CARCINOMA

MICROSCOPY:  
Psammoma bodies



**Lateral Aberrant Thyroid**

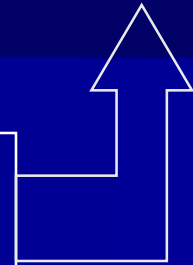
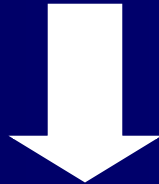
Spread:  
Lymphatic

Lymph node metastasis  
Bigger than Primary  
Better soil  
Occult Primary

Rich intrathyroidal Lymphatic Plexus

**Multiple Foci**

**TSH DEPENDANT**



# PAPILLARY CARCINOMA

**Commonest of**

**Ca. thyroid**

**Age 30 to 40 years.**

**3:1 F:M**

**Slow clinical course**

**Best Prognostic course**

## **MACROSCOPY:**

**Grayish white tumour,**

**Multifocal**

**Cut surface rough ,**

**calcific bodies**

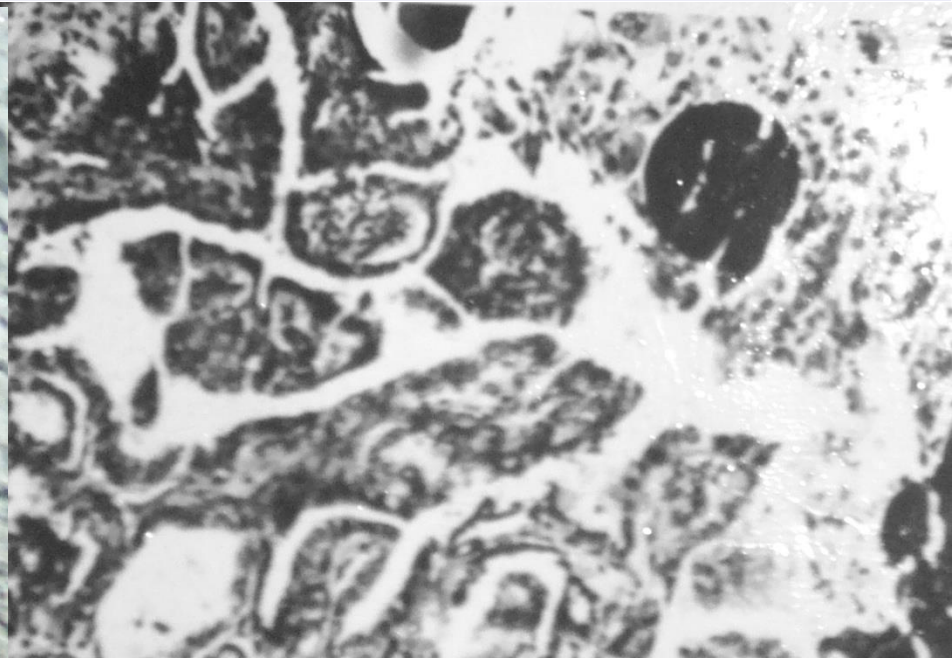
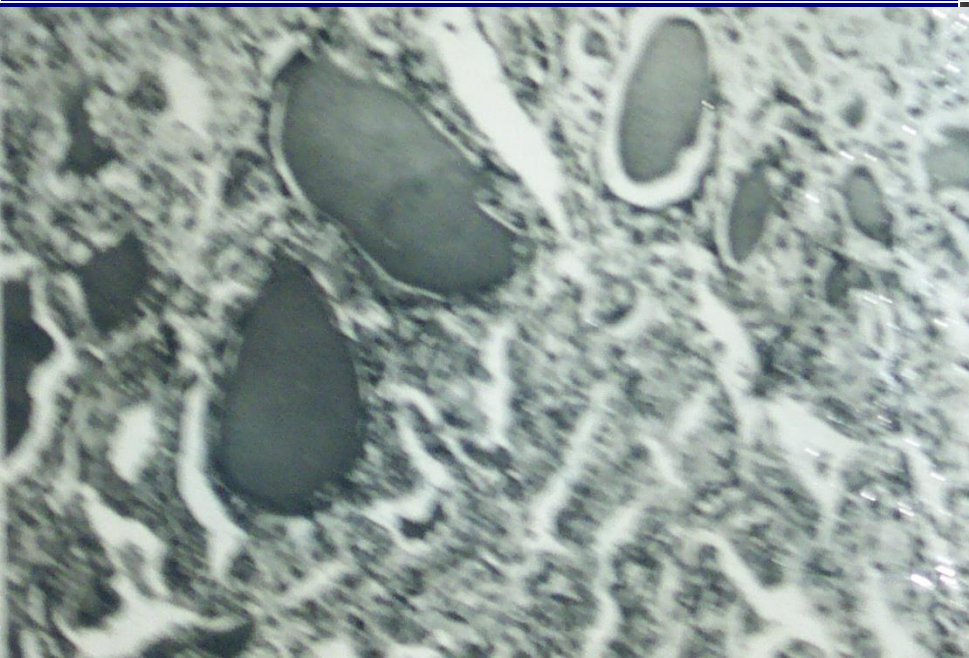
**Cystic degeneration:**

**Brawny, watery**



# Papillary carcinoma Microscopy

- **Papillary processes**
- **Delicate branching with fibrous tissue stalk covered by multiple layers of cuboidal cells showing signs of malignancy.**
- **Each cell has amphophilic cytoplasm, Looks like hyperplastic Thyroid epithelium**
- **Nuclei are quite uniform, seldom hyperchromatic, Rarely demonstrate mitosis**
- **Rounded calcific bodies – Psammoma bodies**
- **Highly characteristics of Papillary carcinoma**
- **Lymphatic invasion.**



# FOLLICULAR CARCINOMA:

Second Commonest ,40 to 50 years

M:F 1:3

## MACROSCOPY:

### **Woolner's Classification**

#### **1) Non Invasive:**

**Single Mass, Grayish white  
Tumour**

**Capsulated, looks like  
adenoma**

**Similar degenerative changes**

#### **2) Invasive:**

**Noncapsulated**

### **Types:**

- Occult,
- Lower grade encapsulated
- High grade angio invasive
- Hurthle cell type ( Multi centric)
- Clear cell type
- Insular
- Oxyphill

# FOLLICULAR CARCINOMA:

Spread by **BLOOD**

**Primary + Secondary  
look like normal gland**



**BENIGN METASTISING  
GOITRE**

**They Function like normal gland  
Some times Hyper function**



**Toxic Nodule**

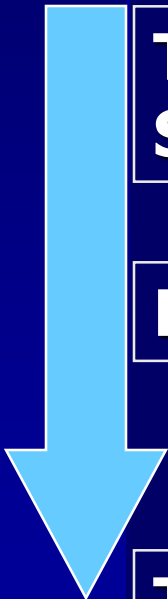
**LARGE IODINE UPTAKE**



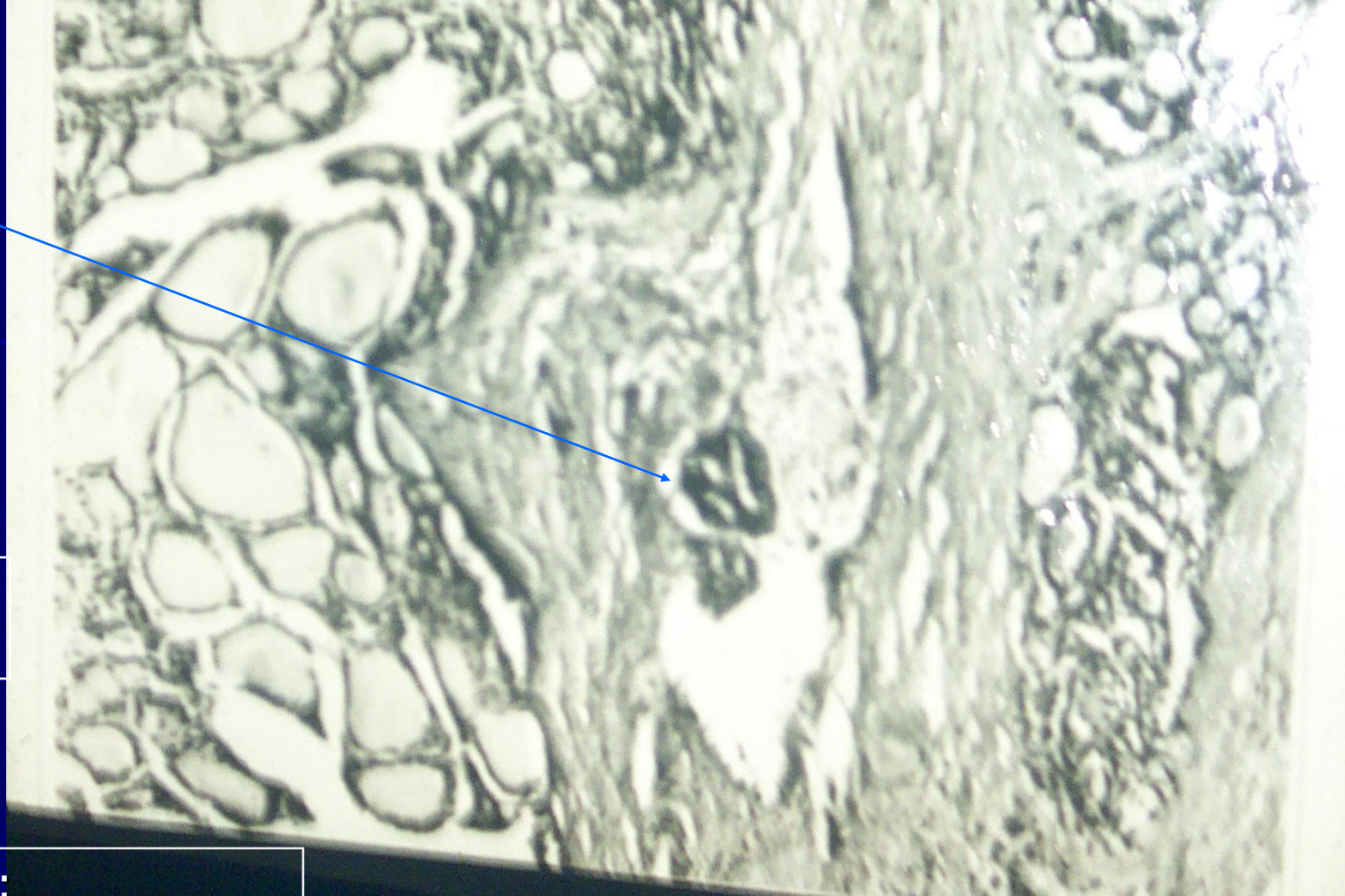
**Sensitive to  
radioactive Iodine**

**TSH NON DEPENDANT**

**MULTIPLE FOCI RARE**



Capsular  
Invasion  
Vascular  
Invasion



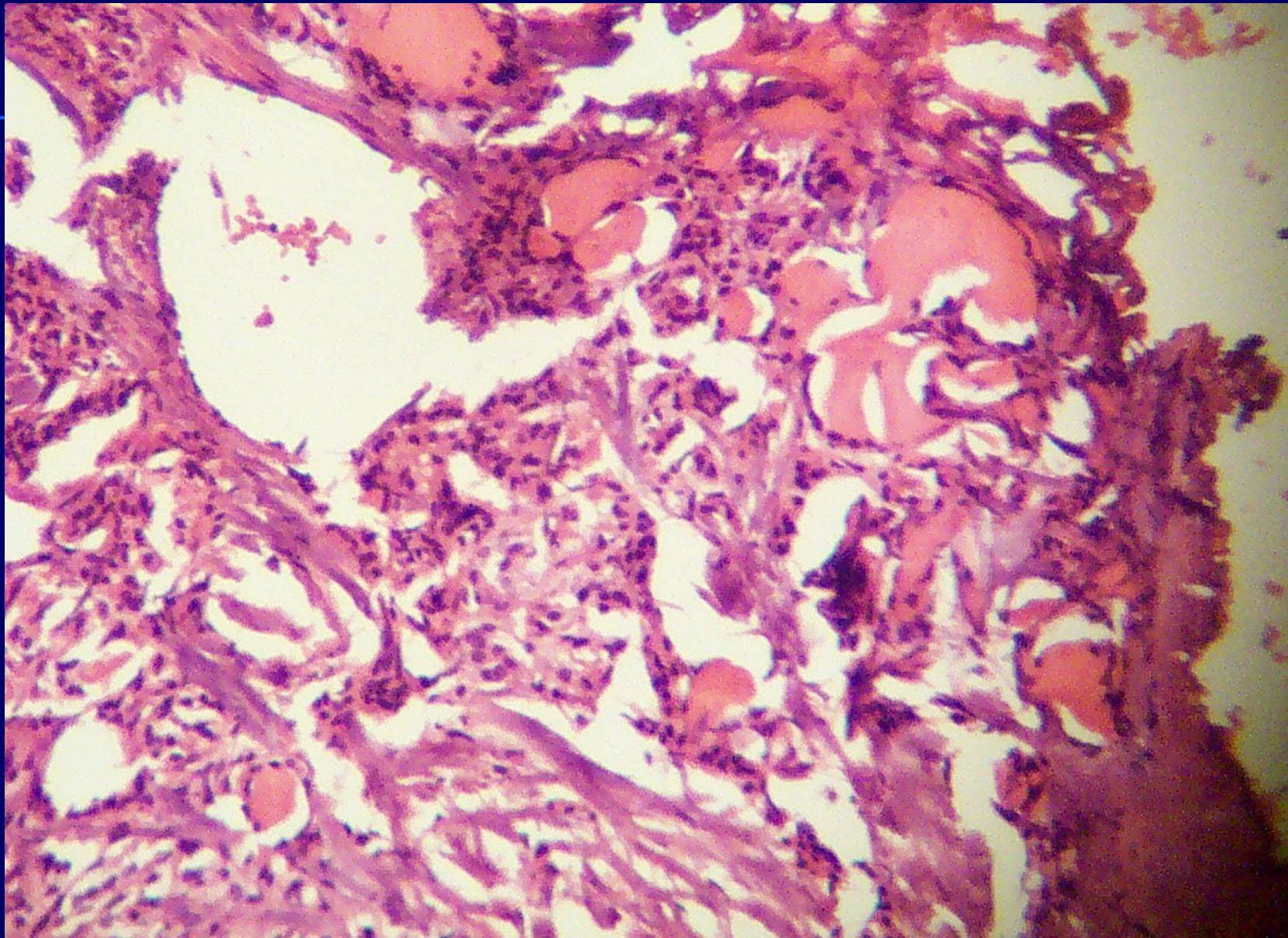
Normal looking  
Thyroid

MICROSCOPY :

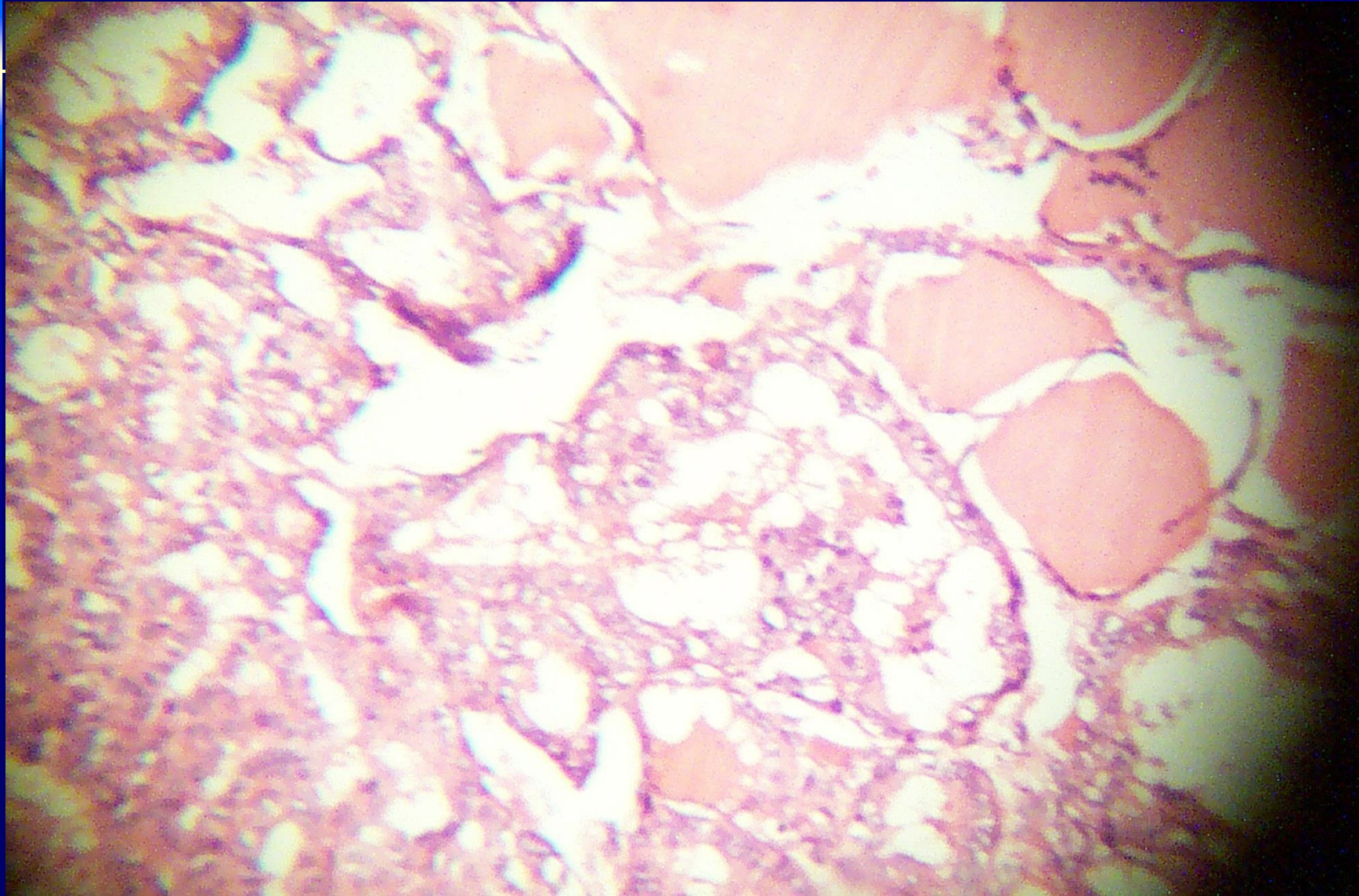
Follicular pattern comparable  
To Adenoma  
Invasion has to be there  
Lymphatic,  
Capsular,  
Vascular

**FOLLICULAR**  
**CARCINOMA**

# FOLLICULAR CARCINOMA



# FOLLICULAR CARCINOMA





# MEDULLARY CARCINOMA

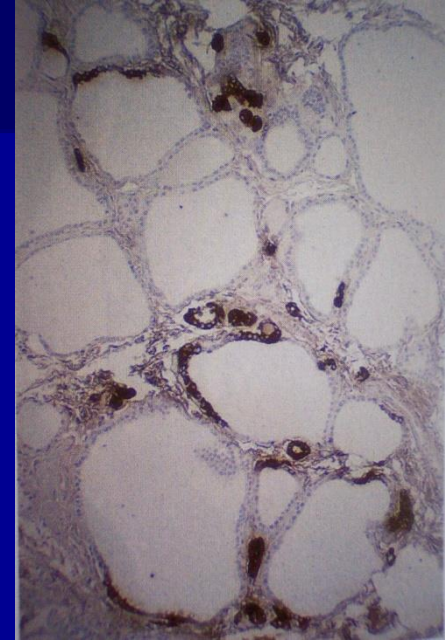
- Parafollicular 'C' Cells.
- Apudoma

## MULTIPLE ENDOCRINE ADENOMA SYNDROME

TYPE II A. Sipple Syndrome

II B. ( Phaeochromocytoma,  
Parathyroid Adenoma,  
Carcinoid, GIT neurinoma)

Secretes 5 HT, prostaglandin,  
Histamine, Calcitonin.



**GOITRE WITH EXTRATHYROIDAL SYM.**

## MEDULLARY CARCINOMA

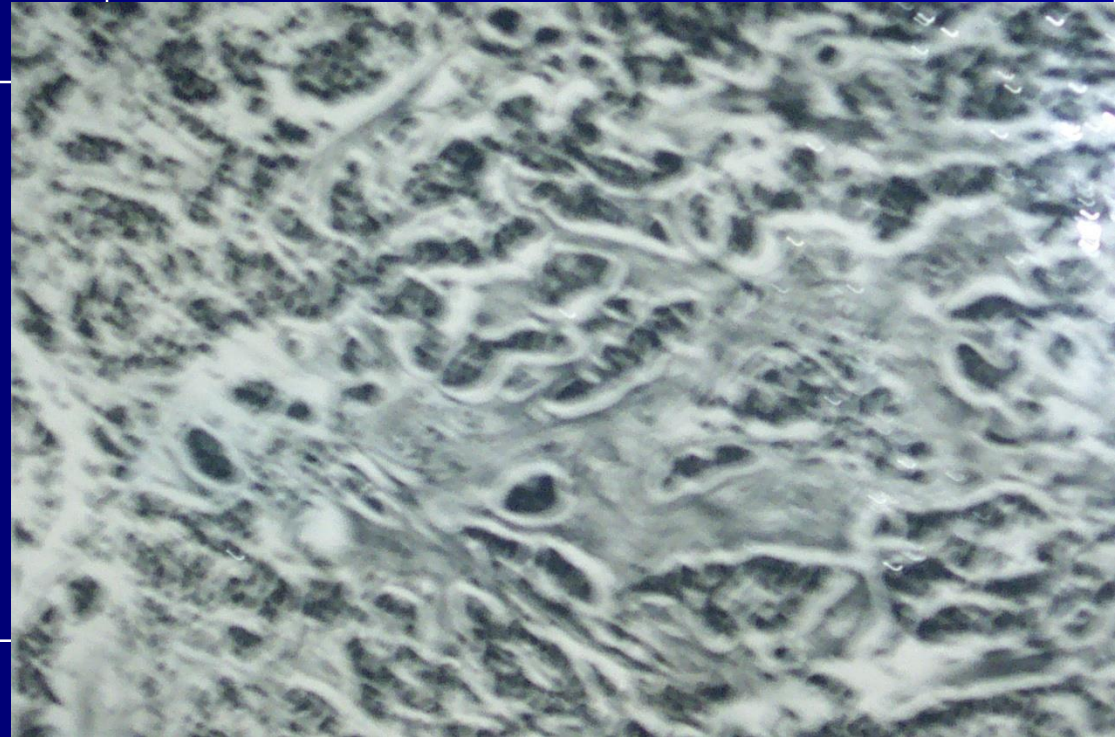
**Rare Tumour**  
**50 to 70 years**  
**M>F**

### MACROSCOPY:

**Ill defined, non capsulated Tumour**  
**Extremely firm**

### MICROSCOPY:

**Solid sheets of polyhedral cells, spindle shape**  
**Hyperchromatic,**  
**Large amount of stroma**

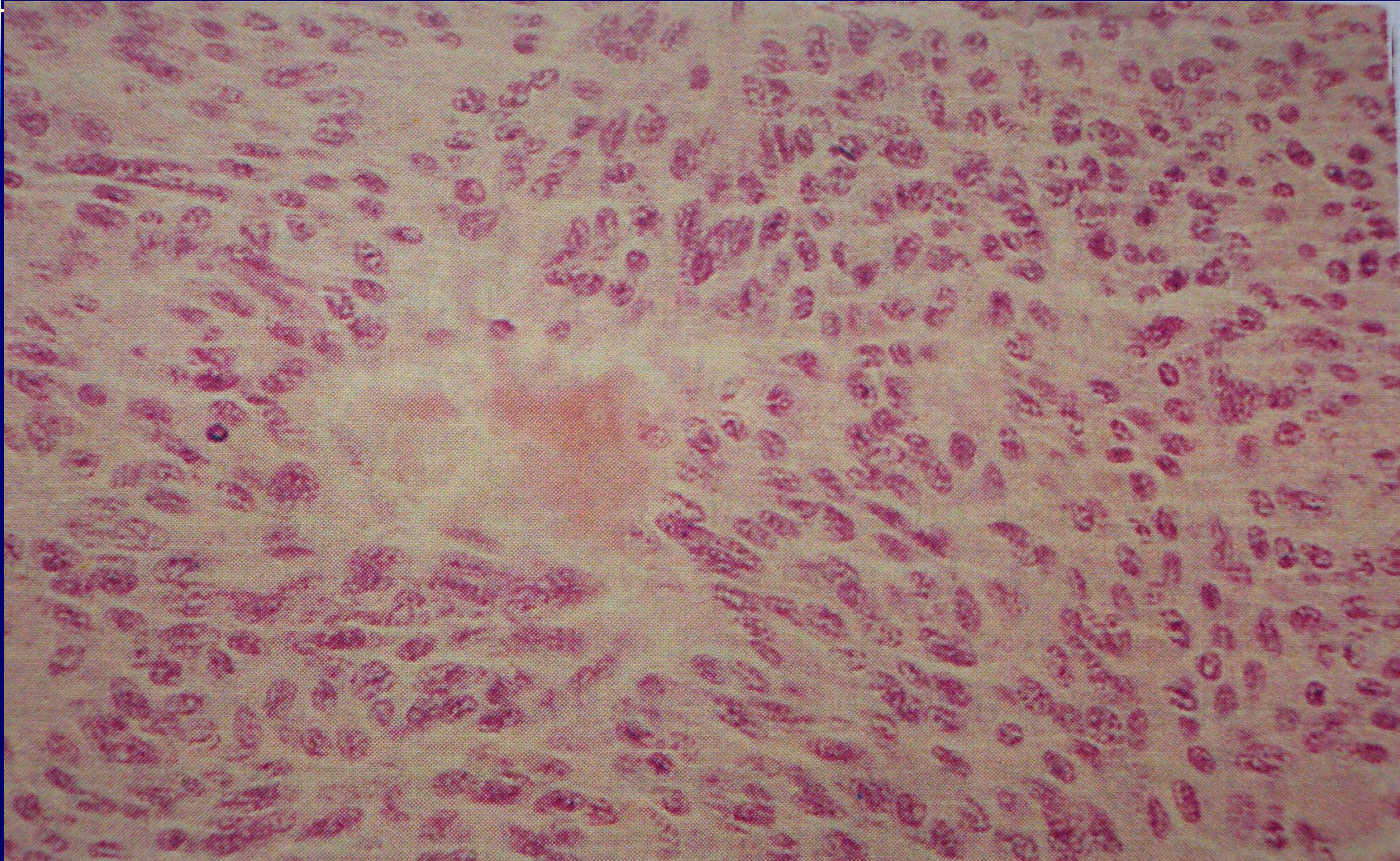


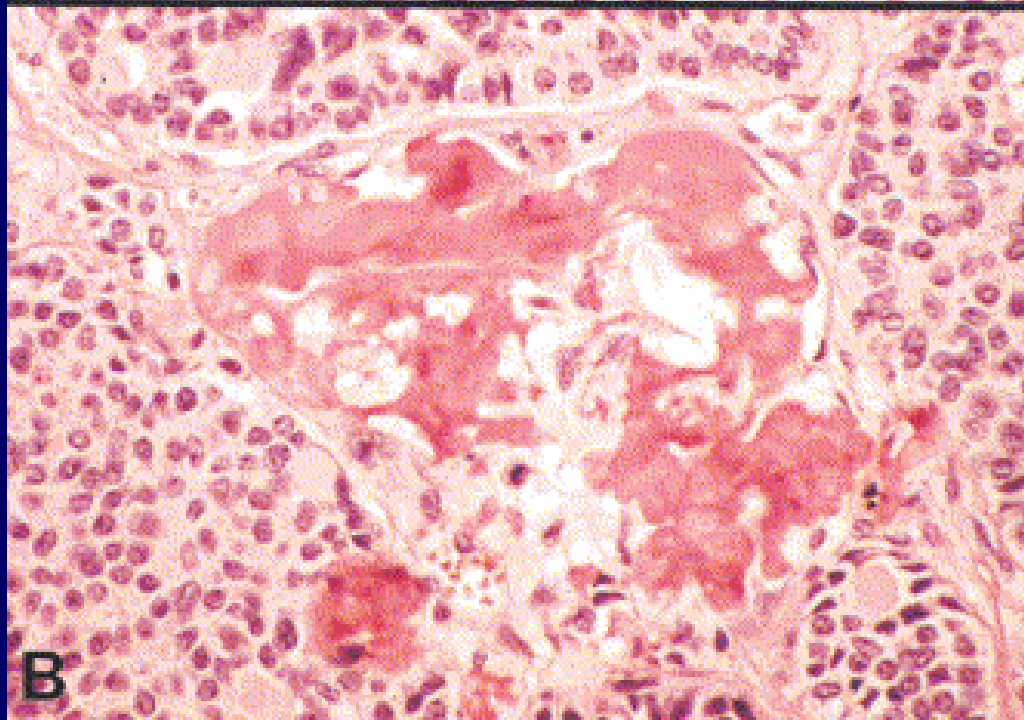
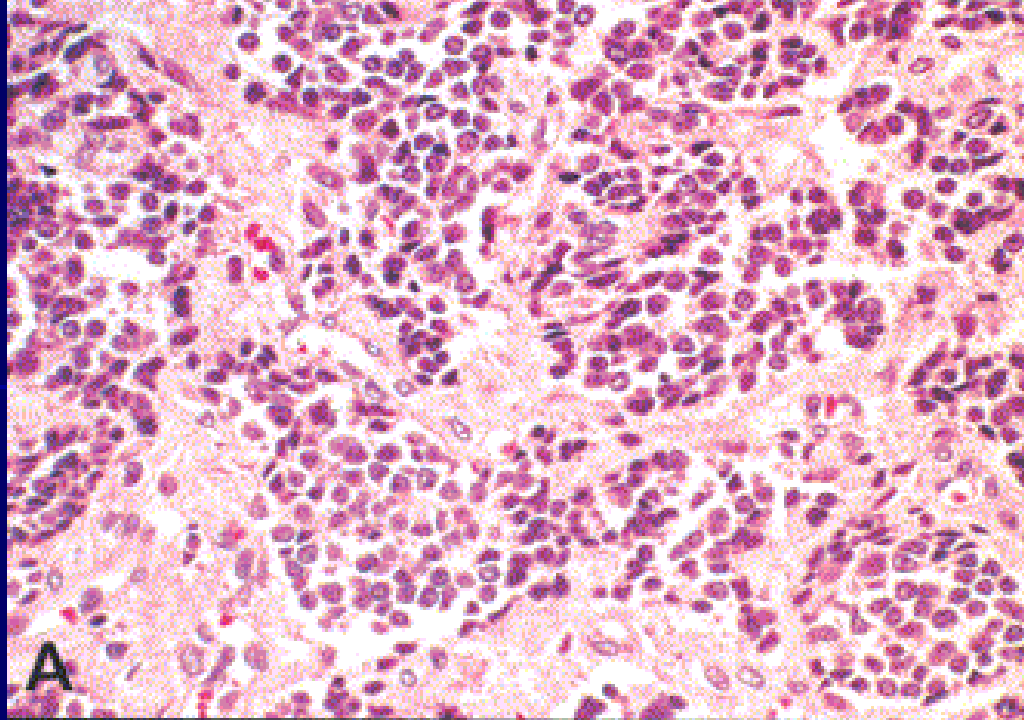
**AMYLOID DEPOSITION.**

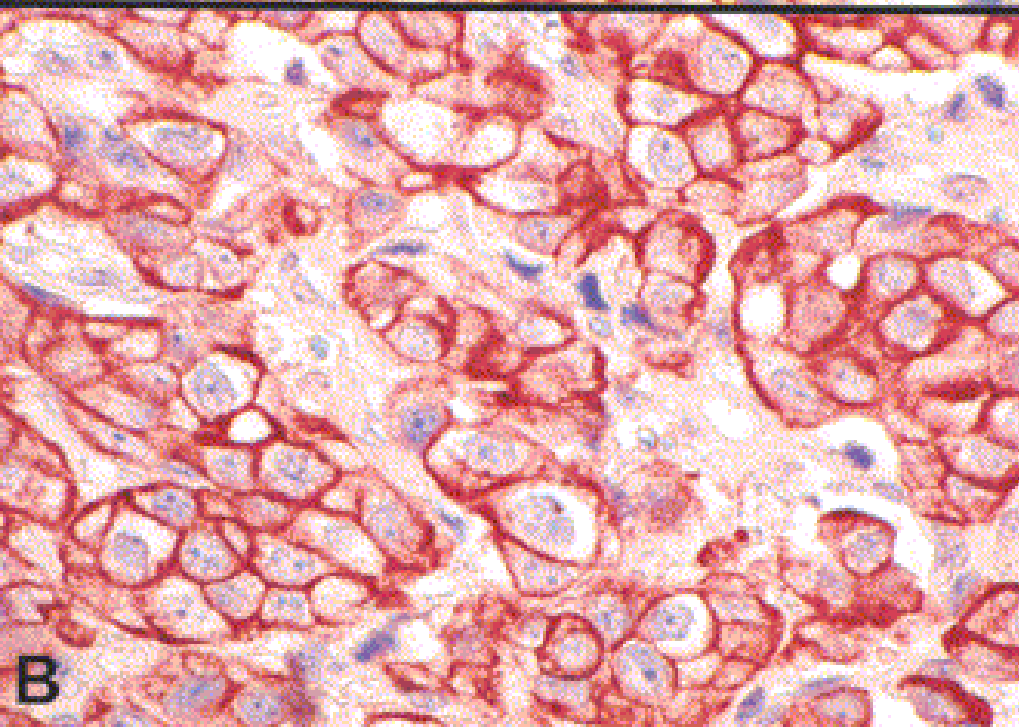
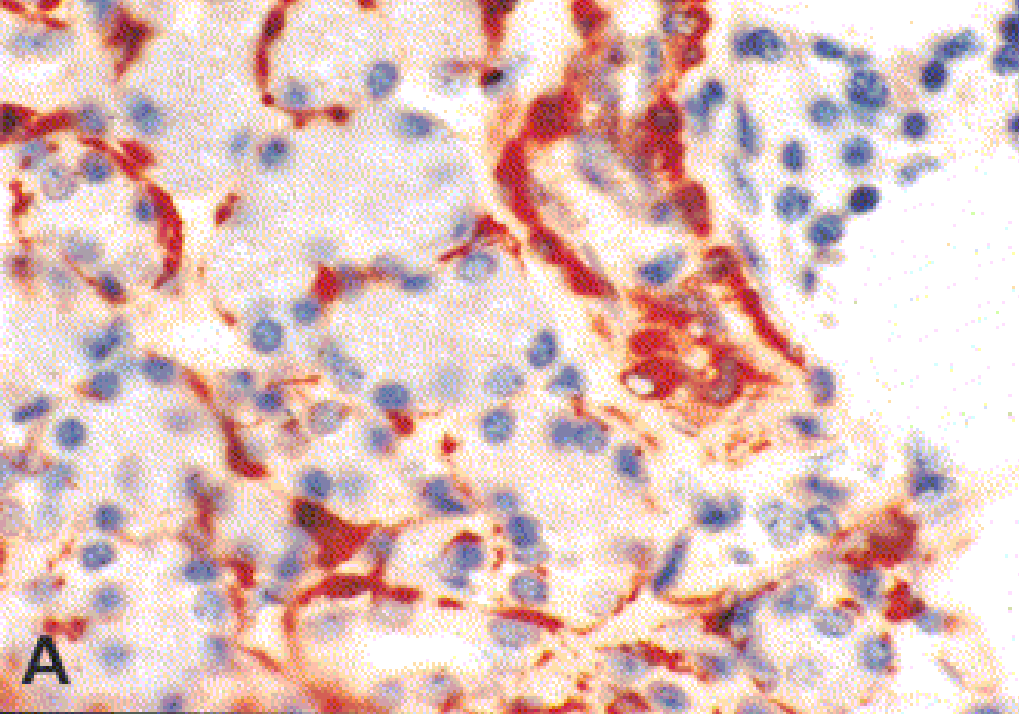
**Spread: Lymphatic**

**T.S.H. Non Dependent**

# MEDULLARY CARCINOMA







# Differences in Tumours of thyroid

	Papillary	Follicular	Anaplastic	Medullary
Age	30-40	40-50	>50	50-70
Sex:M:F	3:1	3:1	1.3: 1	M>F
Incidence	Commonest 60%	2 <sup>nd</sup> 17%	13%	Rare 6%
Multiple foci	Common	Rare	Rare	rare
Spread	Lymphatics	Blood born	Both invasive	Lymphatic 50-60 Blood born Incr.
T.S.H	Dependent	Not	Not dependent	Not dependent
Iodine uptake	Less	Normal	Less	no
Prognosis	Extremely good	Good	Worst	better
Treatment	Near Total Thyroidectomy thyroxin	Lobectomy radioiodine	Radiotherapy	Radical thyroidectomy