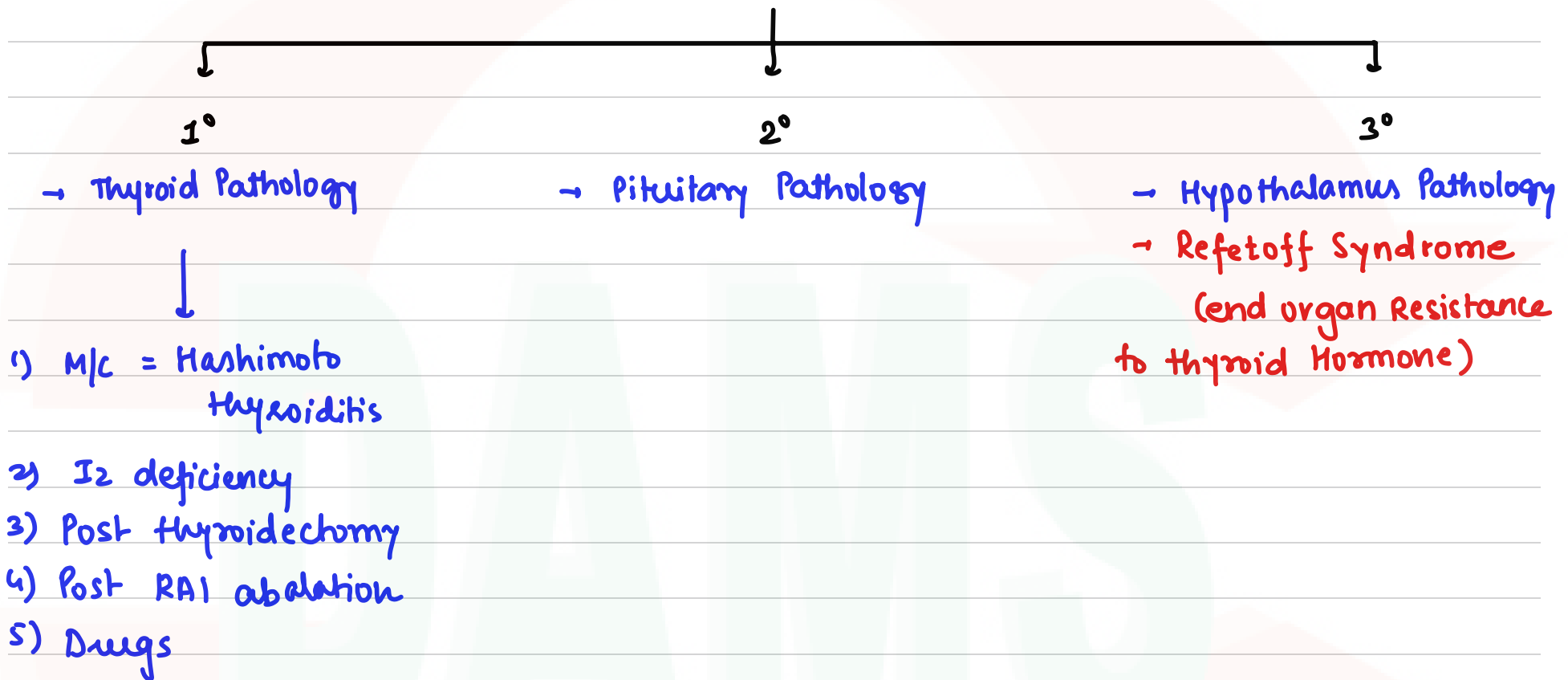


THYROID - BENIGN DISORDERS

HYPOTHYROIDISM



→ C/F :-

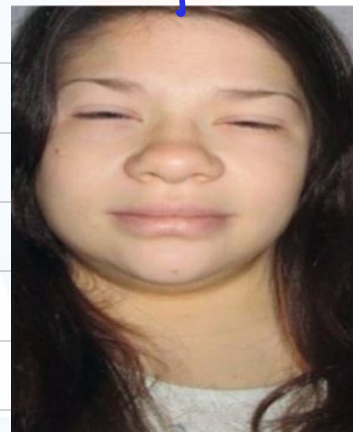
Symptoms =

- Cold intolerance
- Wt. Gain
- ↓ Appetite
- Lethargy
- Constipation.
- Menorrhagia

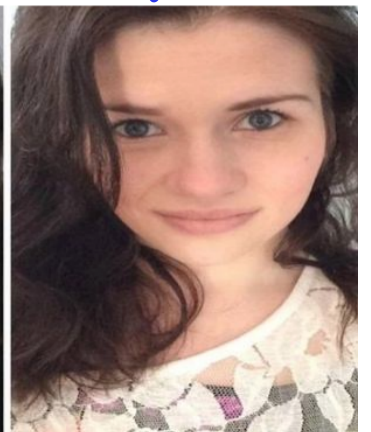
Signs =

- Bradycardia
- Bradykinesia
- Dry skin
- Periorbital Puffiness
- Delayed Relaxation of Deep Tendon Reflexes
(Woltmann Sign)

Before



After Rx



→ TSH ↑

→ Rx :- oral thyroxine (50 mcg - 200 mcg)

→ MYXEDEMA :-

→ Hypothyroidism + Supraclavicular Puffiness + yellowish Tinge to skin + Malar flush

→ Rx :- oral thyroxine.

→ MYXEDEMA COMA :- Myxedema + Hypothermia + Hypotension + Altered Consciousness

→ Rx :- i/v T₃/T₄ + i/v fluids.

Wolf Chalkoff Effect	Jod - Basedow Phenomenon	Thyrotoxicosis Factitia
→ Acute high dose of I₂ ↓ thyroid Stops functioning → Hypothyroidism	→ chronic excessive intake of I₂ ↓ Temporary hyperthyroidism	Excessive thyroid intake ↓ Temporary Hyperthyroidism - also ca Hamburger thyrotoxicosis.

GOITRE

→ Excessive enlargement of thyroid.

→ Simple Goitre :- Pts. are euthyroid / Hypothyroid

eg. 1) Diffuse hyperplastic Goitre
2) Multinodular Goitre (MNG)

3) Solitary Adenoma

→ Toxic Goitre :- Pts. are Hyperthyroid

- eg. 1) Grave's disease
2) Toxic MNG
3) Toxic Adenoma } Plummer disease.

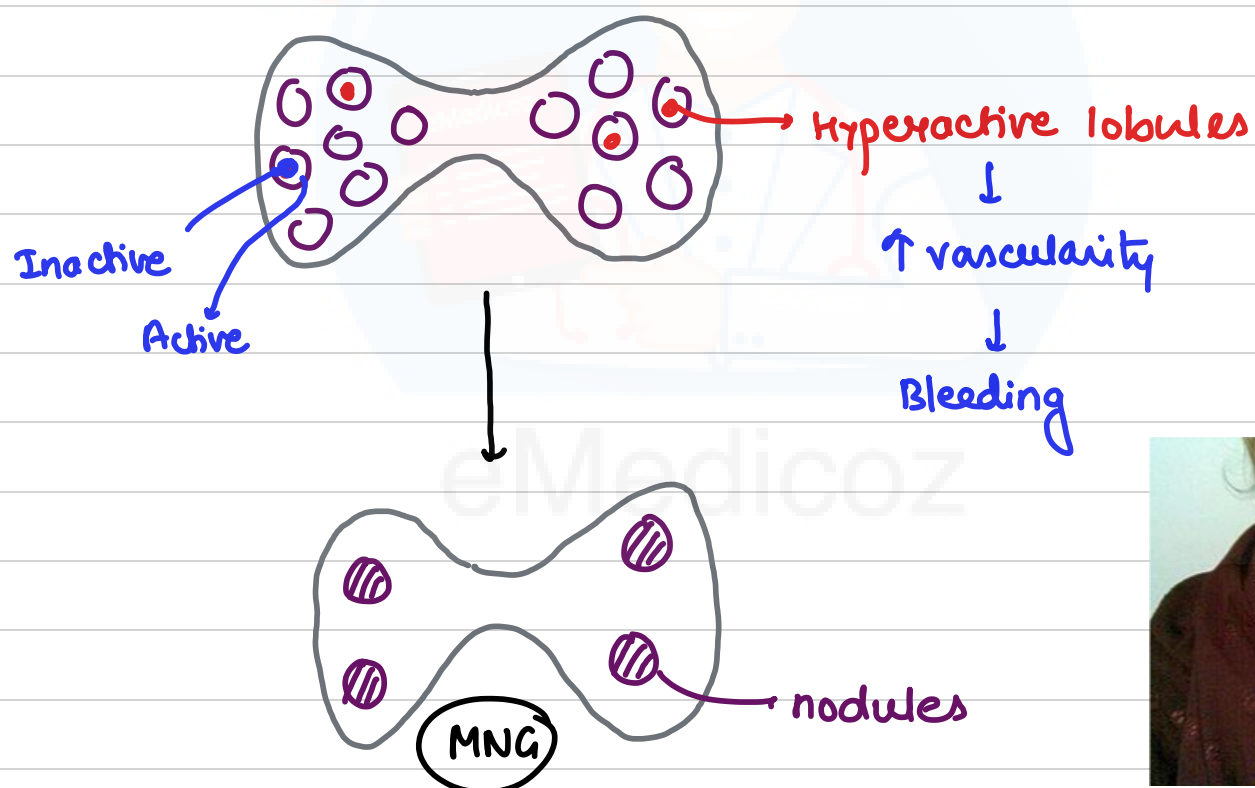
→ Neoplastic Goitre

→ Thyroiditis

DIFFUSE HYPERPLASTIC GOITRE

→ Smooth Enlargement of thyroid

- Causes :-
- 1) Puberty, Pregnancy
 - 2) I₂ deficiency
 - 3) Dysmaturation
 - 4) Goitrogens (cabbage, kale, Rape)
 - 5) Drugs (Lithium, Amiodarone)



MNG

MNG $\rightarrow$ $\uparrow$ Risk of Follicular thyroid ca

$\rightarrow$ (Ex) (MNG) :- Total thyroidectomy

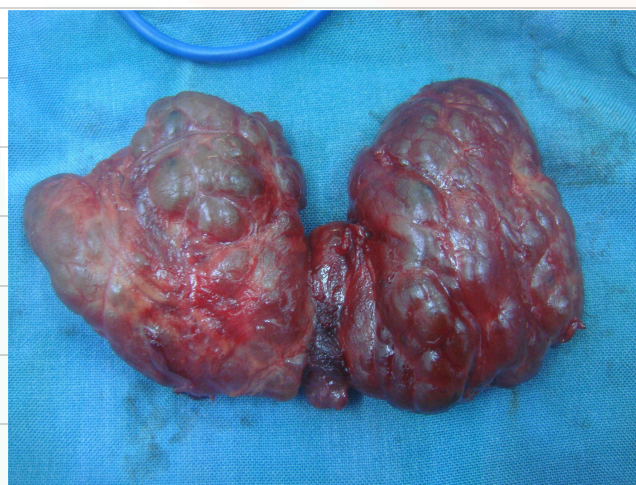
Indications :-

- 1) Cosmetic
- 2) Dyspnea
- 3) Dysphagia
- 4) voice change
- 5) Suspicion of malignancy

} Compressive Symptoms



DNG

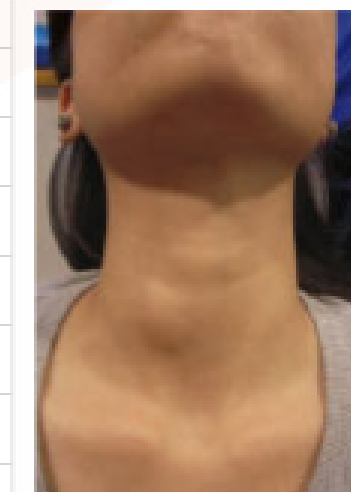
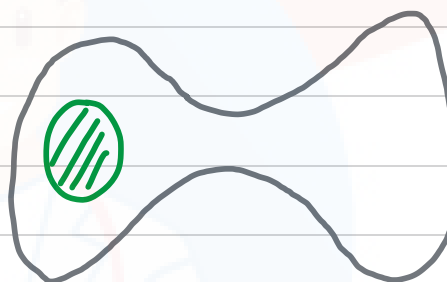


MNG

SOLITARY THYROID NODULE (STN)

$\rightarrow$ D/D :-

- 1) Colloid Goitre (MLC)
- 2) Follicular Adenoma
- 3) Malignancy
- 4) Thyroid Cyst
- 5) Thyroiditis
- 6) Metastasis



$\rightarrow$ Management :-

STN
 $\downarrow$
 H/O & clinical Examination
 $\downarrow$
 Thyroid Profile

• Hyperthyroid •



Thyroid / Radioiodine Scan

1-3mCi

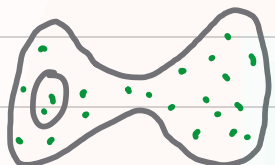
(I^{123} / Tc^{99} Pertechnate / I^{131})

Risk of Ca

<1%

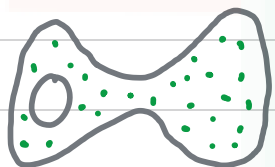


→ Hot nodule



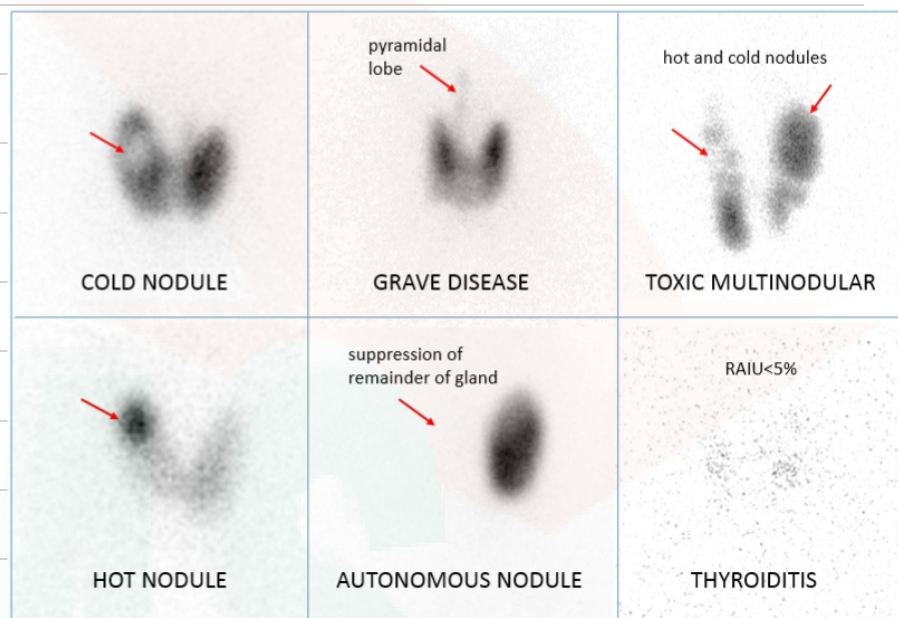
→ Warm nodule

5%



→ Cold nodule

15-20%



- Hot nodule : 1) Antithyroid drugs
2) RAI Ablation

→ Hypo/Euthyroid / warm or cold Hyperthyroid ←

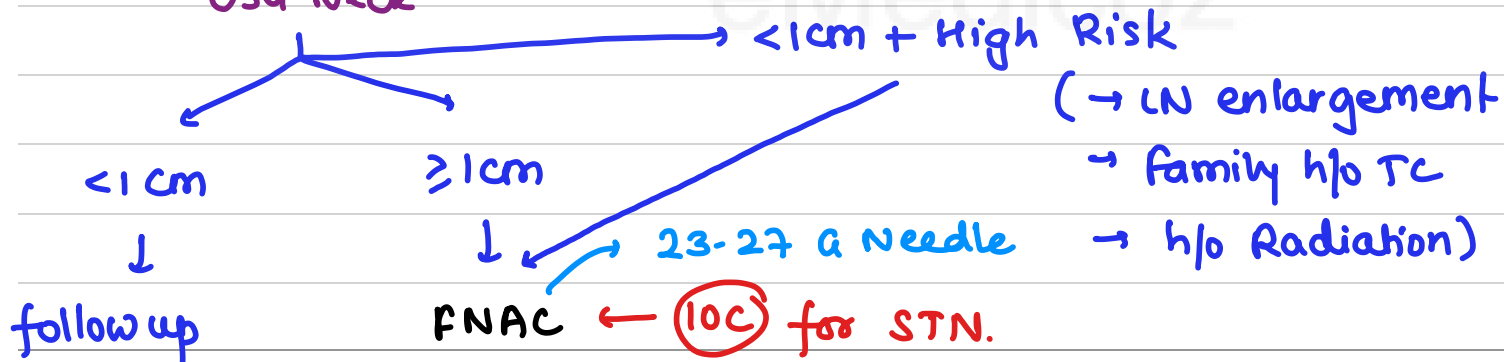


USG Neck

- Features Suggestive of malignancy :-
 - 1) Solid
 - 2) Hypoechoic
 - 3) Taller than wide
 - 4) Irregular border
 - 5) Microcalcification.

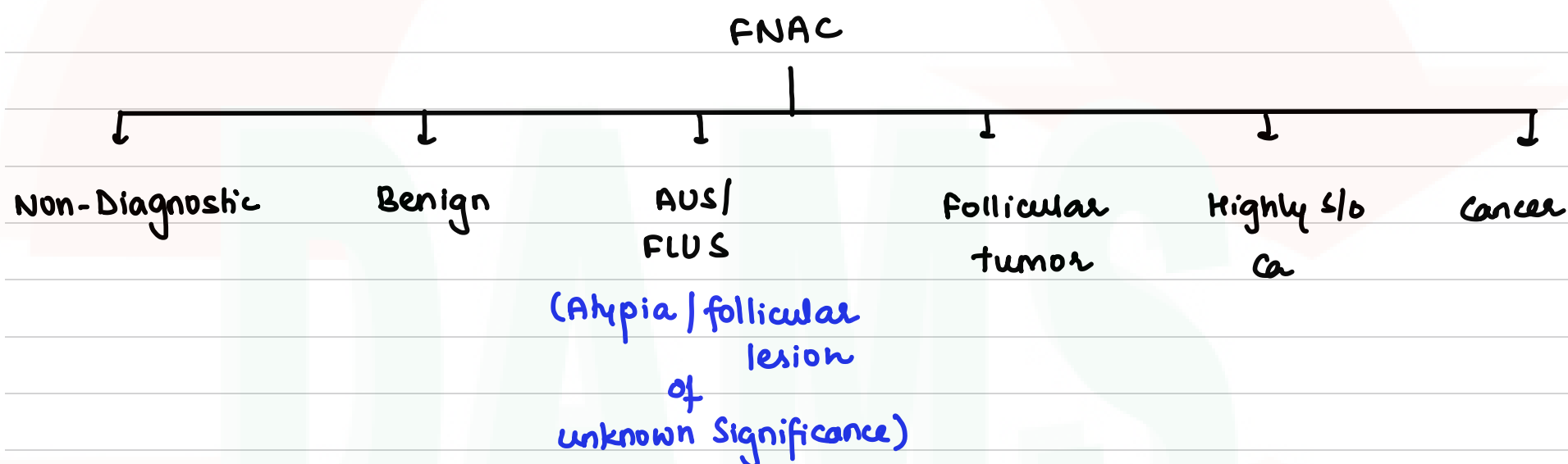
TIRADS

- USG Neck



→ Cutoff size for FNAC :-

- 1) Solid = 1cm
- 2) Solid + cystic = 1.5cm
- 3) Spongiform = 2cm
- 4) Cystic = FNAC is not indicated.



Bathesda classification :-

1 2 3 4 5 6

British classification :-

Thy-1

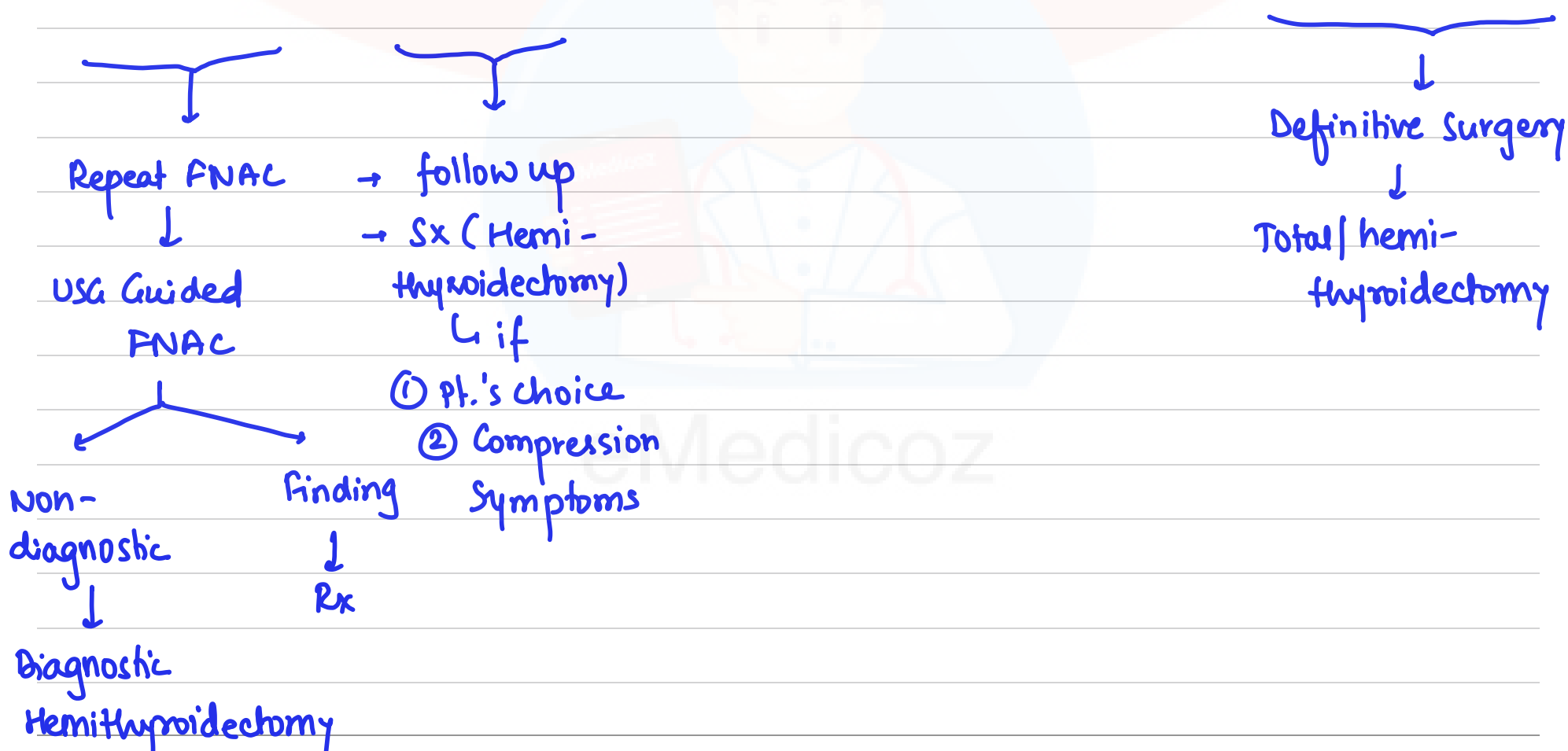
Thy-2

Thy-3'a'

Thy-3'f'

Thy-4

Thy-5



- AUS / FLUS →
- 1) Follow up
 - 2) Repeat FNAC
 - 3) Diagnostic Hemithyroidectomy
 - 4) Molecular Markers

- Genetic

- ↳ BRAF = Papillary Thyroid Ca (TC)
- RAS = Follicular Thyroid Ca
- RET = Medullary thyroid Ca
- p53 = Anaplastic thyroid Ca

- Immunocytochemical

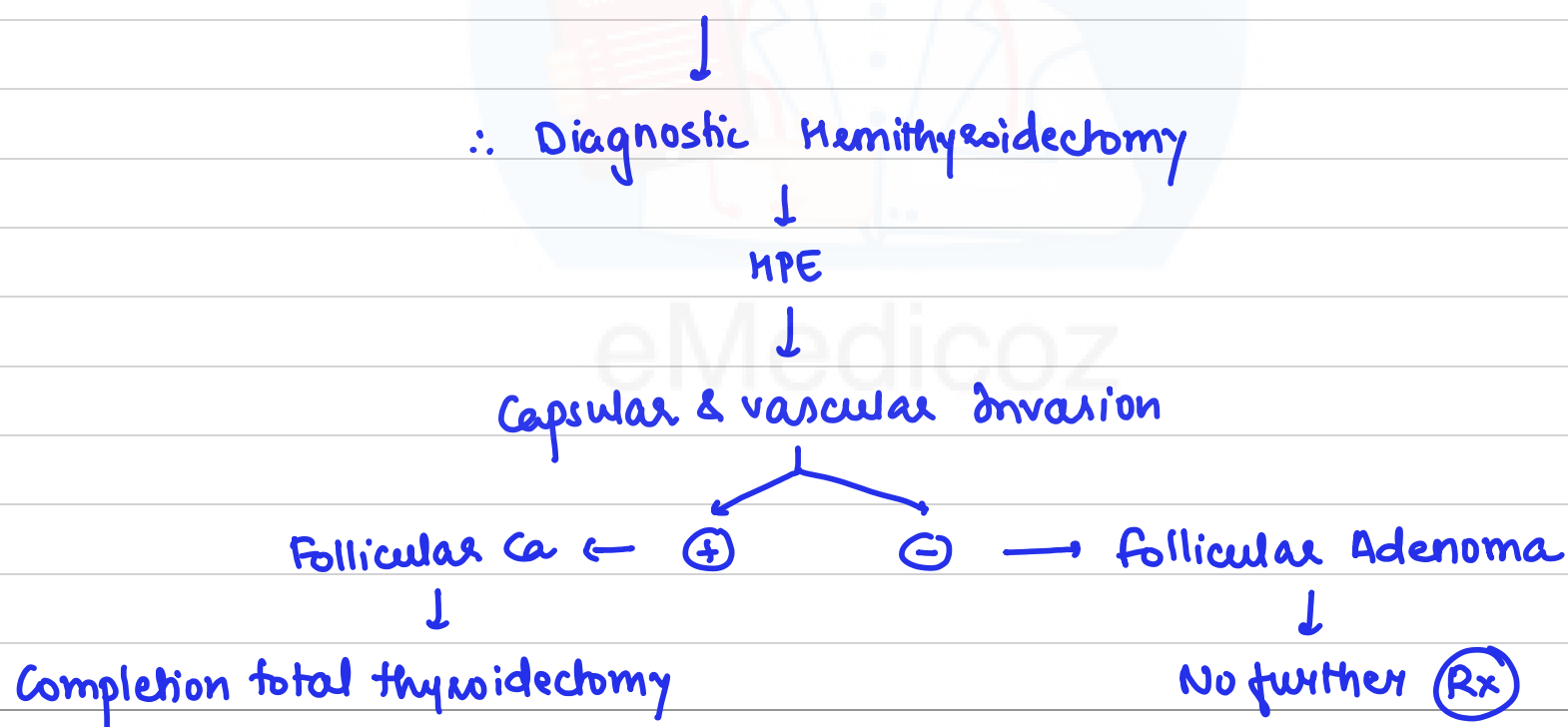
- ↳ Glacin-3,1 = Papillary TC
- HBME-1 = Papillary TC
- Cytokeratin 19 = Papillary TC
- Cytokeratin 7/18 = Medullary TC

- Epigenetic

- ↳ DNA methylation
- ↳ Micro RNA Silencing

→ Follicular Tumor :-

↳ FNA Can't differentiate b/w Adenoma & Carcinoma.



⇒ TIRADS :-

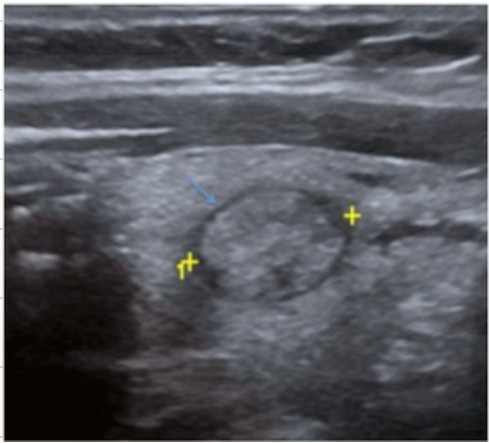
→ Composition → Cystic/Spongiform = 0
Solid + Cystic = 1
Solid = 2

→ Echogenicity → Anechoic = 0
Hyper/Isoechoic = 1
Hypoechoic = 2
very Hypoechoic = 3

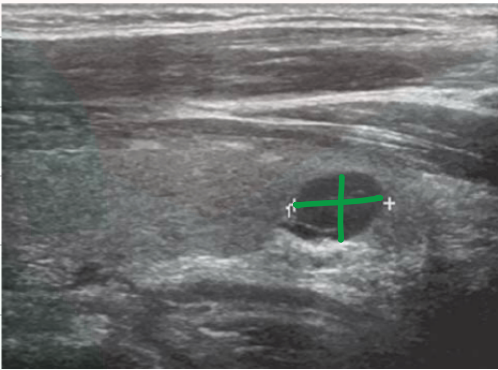
→ Shape → wider > Tall = 0
Taller > wide = 1

→ Margins → Smooth = 0
Irregular = 2
Extrathyroidal Extension = 3

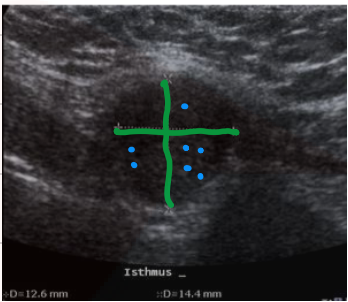
→ Echogenic foci (Calcification) → None = 0
Macrocalcification = 1
Peripheral / Rim calcification = 2
Punctate Echogenic foci = 3



Isoechoic

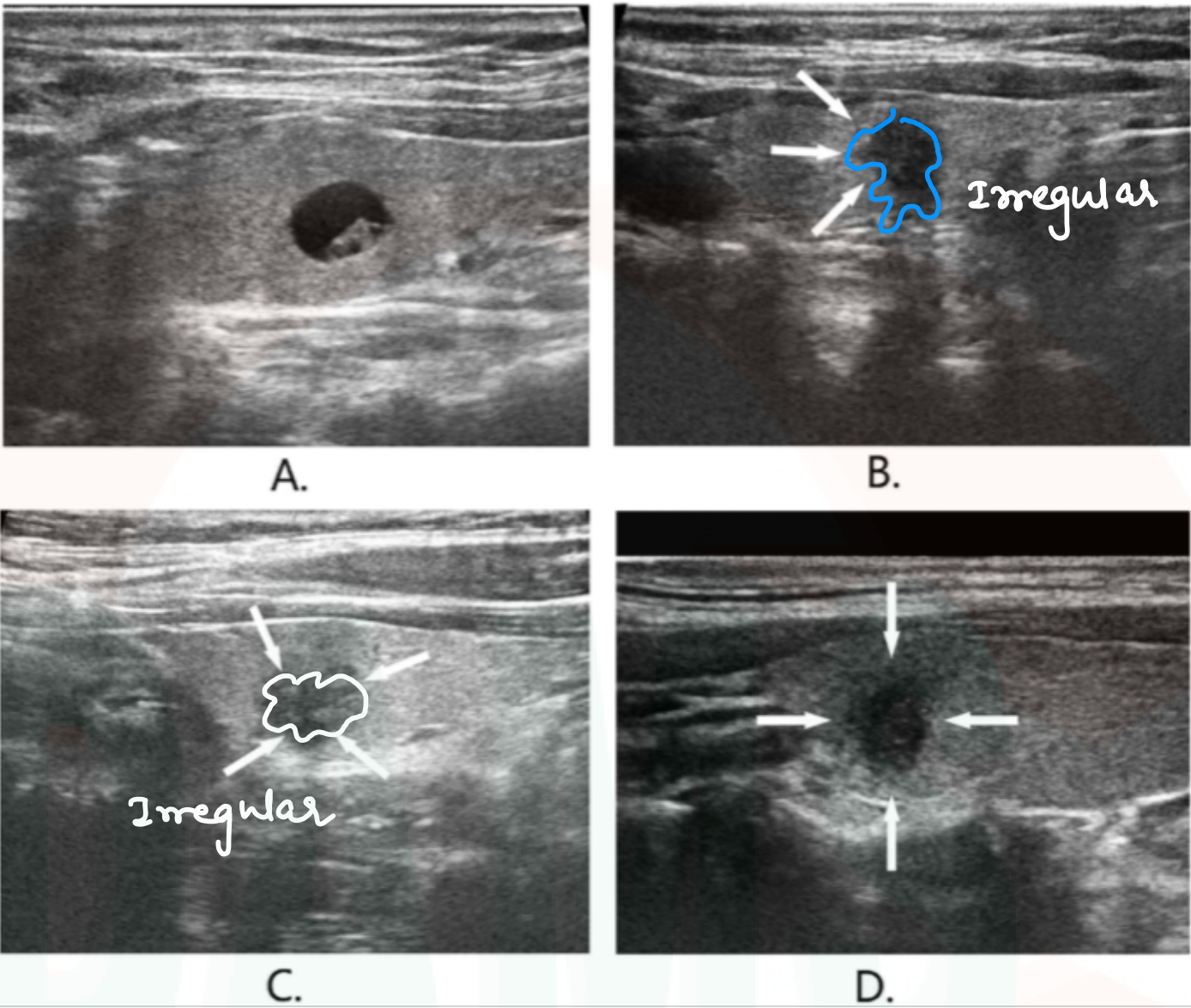


wider > Tall



Taller > wide
Punctate
Echogenic foci

⇒ Total :-	0	2	3	4-6	≥ 7
	TR-1	TR-2	TR-3	TR-4	TR-5
	↓	↓	↓	↓	↓
	Benign	Not Suspicious	Mildly Suspicious	Moderately Suspicious	Highly Suspicious
	NO FNAC		FNAC if ≥ 2.5cm	FNAC if ≥ 1.5cm	FNAC if ≥ 1.0cm



ACR TI-RADS

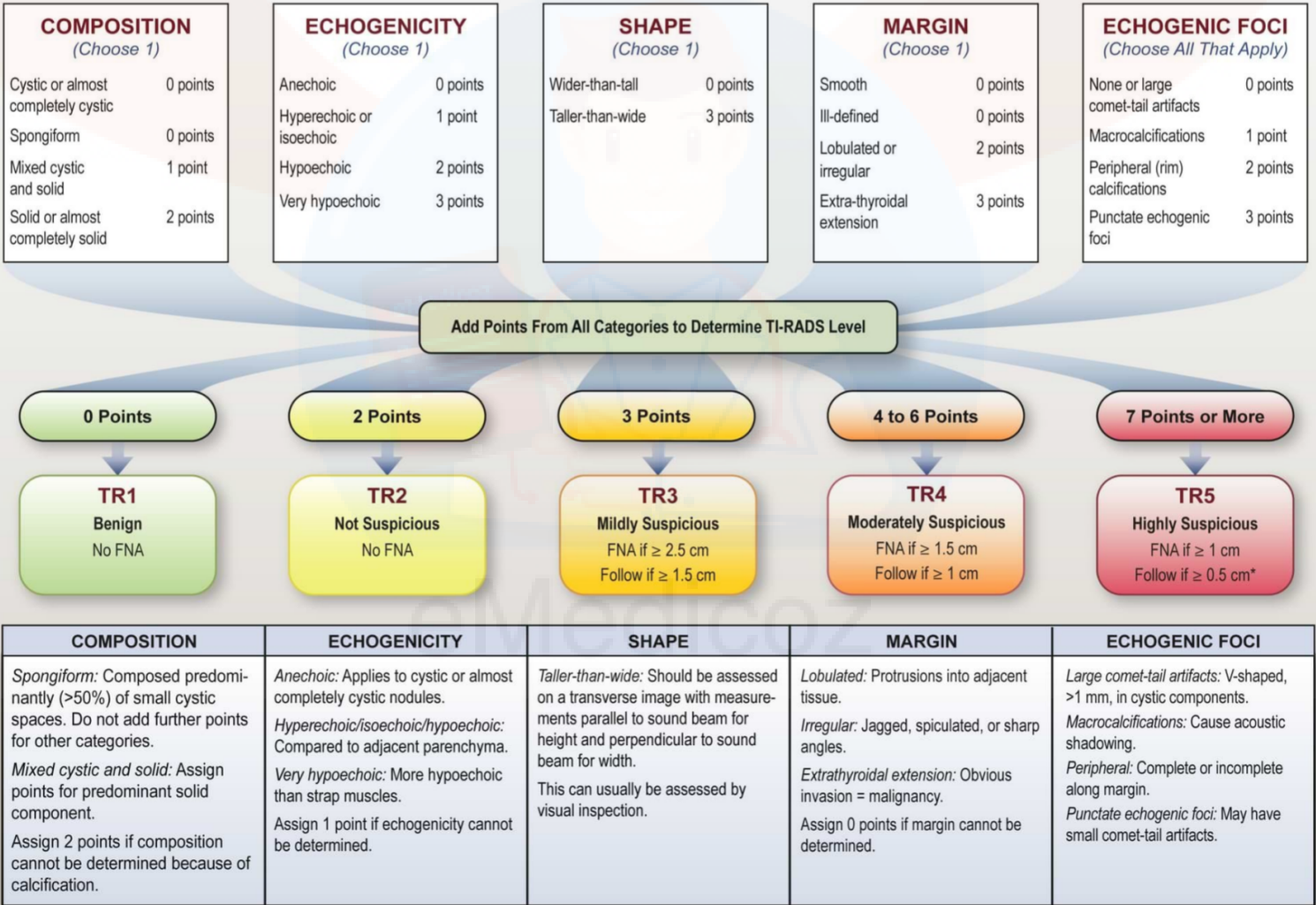




Figure 12.43 A patient with a solitary lesion confined to the right lobe of the thyroid gland.

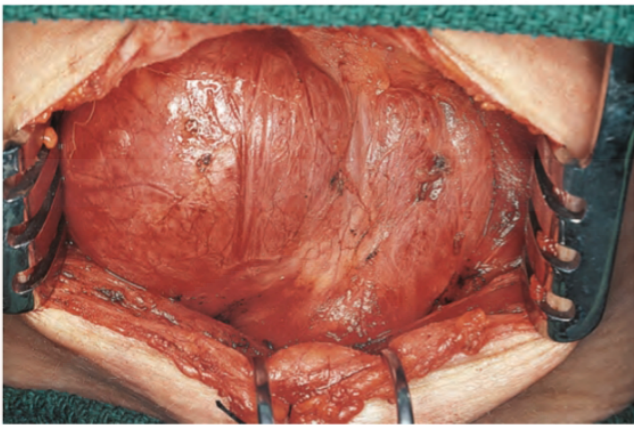


Figure 12.46 The anterior surface of the thyroid gland is exposed.

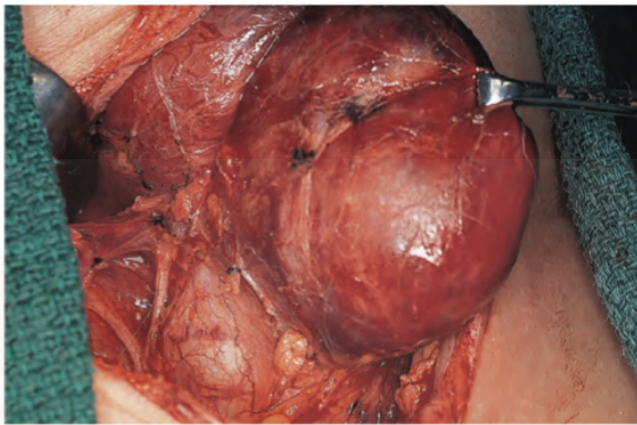


Figure 12.47 The recurrent laryngeal nerve is traced cephalad until it enters the cricothyroid membrane.

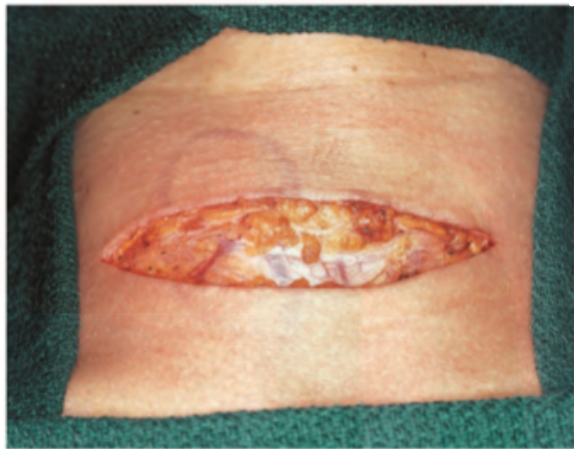


Figure 12.44 The skin incision.



Figure 12.45 The strap muscles covering the thyroid gland are exposed.

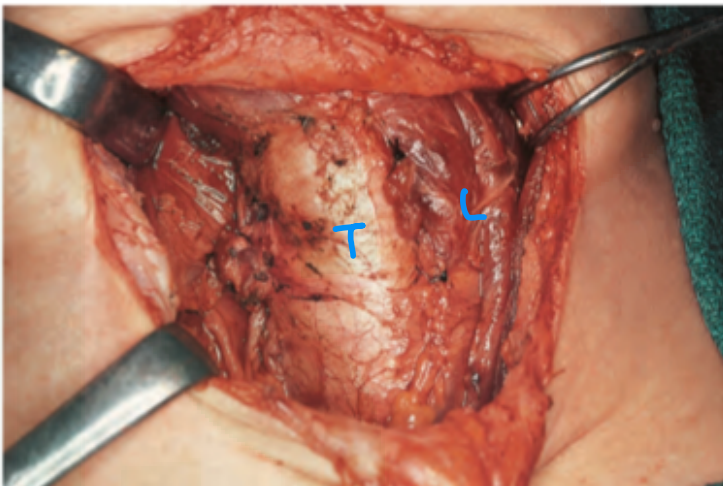
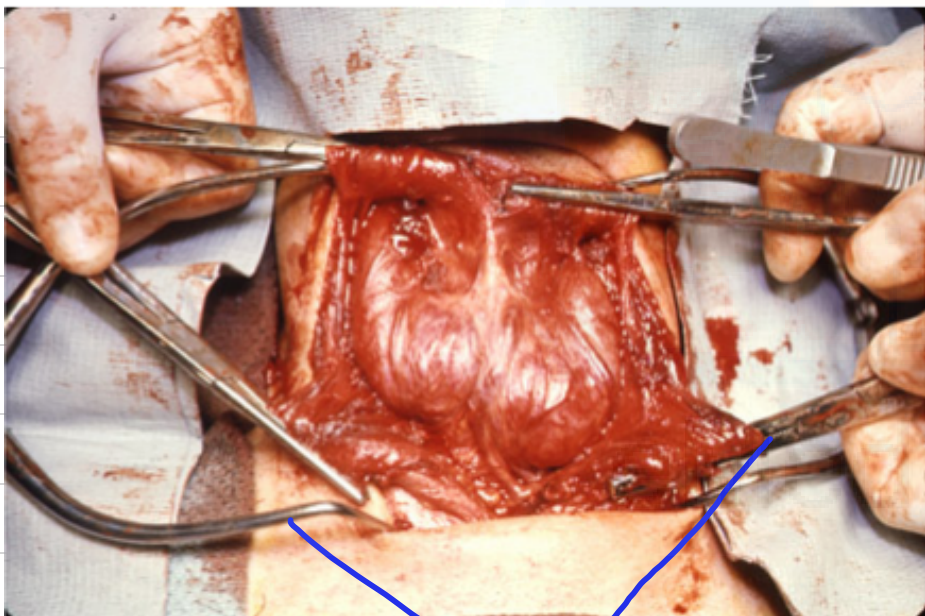


Figure 12.50 The intact recurrent laryngeal nerve and the parathyroid glands.



Figure 12.51 The strap muscles are reapproximated in the midline after a Penrose drain is placed in the thyroid bed.



JOLL'S RETRACTOR



Figure 12.52 The incision is closed in layers with the Penrose drain brought out through the center of the incision.