



Dr Nick McIvor
Head & Neck Surgeon
North Shore Hospital
Auckland City Hospital
Auckland



Dr John Chaplin
Auckland Expert Rhinoplasty
Surgeon
Gillies Hospital
Auckland

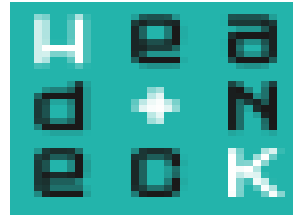
Friday, June 9, 2017

(Room 2)

14:00 - 14:55 WS #48: Managing Thyroid Nodules

15:05 - 16:00 WS #60: Managing Thyroid Nodules (Repeated)

Thyroid nodules



**Auckland
Head & Neck
Associates**

John Chaplin

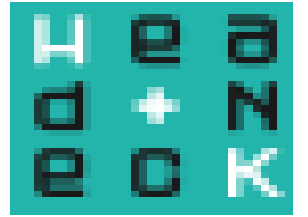
Nick McIvor

Thyroid & Head and Neck Surgeons
Auckland



Auckland Head and Neck Associates

Thyroid Nodule

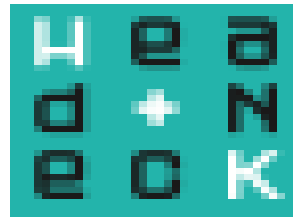


Auckland
Head & Neck
Associates

- Common
 - 3-5% palpable
 - 50-70% ultrasound
 - Increase with age
 - More in women
 - 95% benign

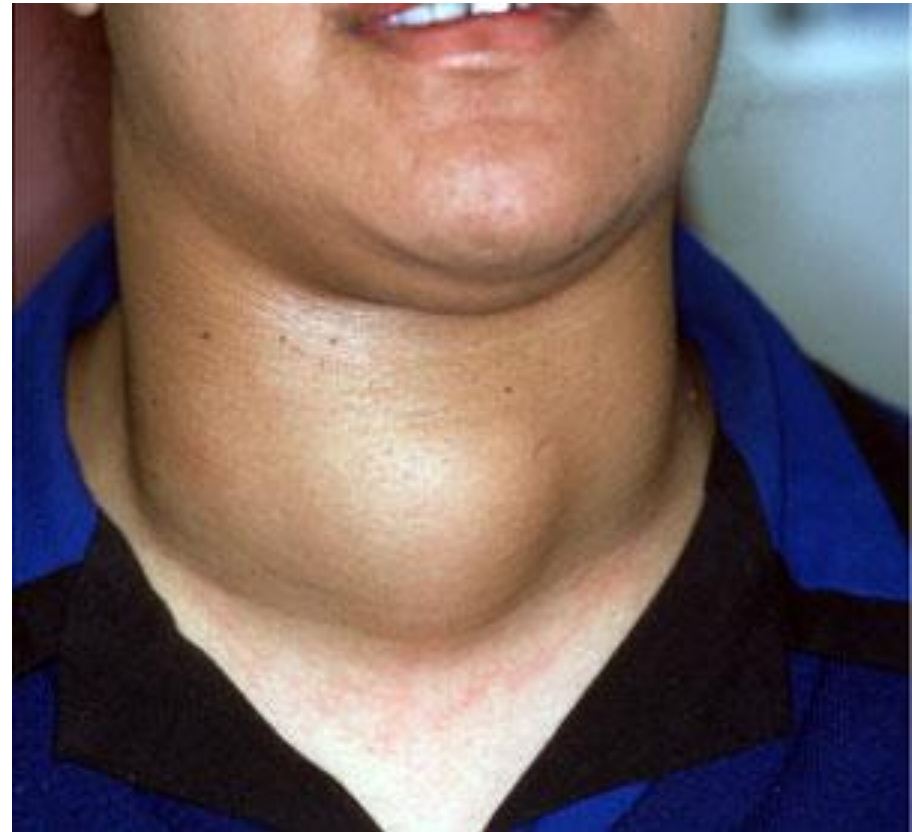


Thyroid Nodule



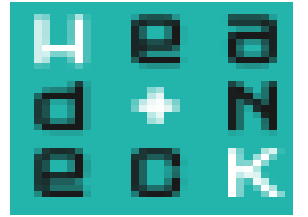
**Auckland
Head & Neck
Associates**

- What do you want to know?



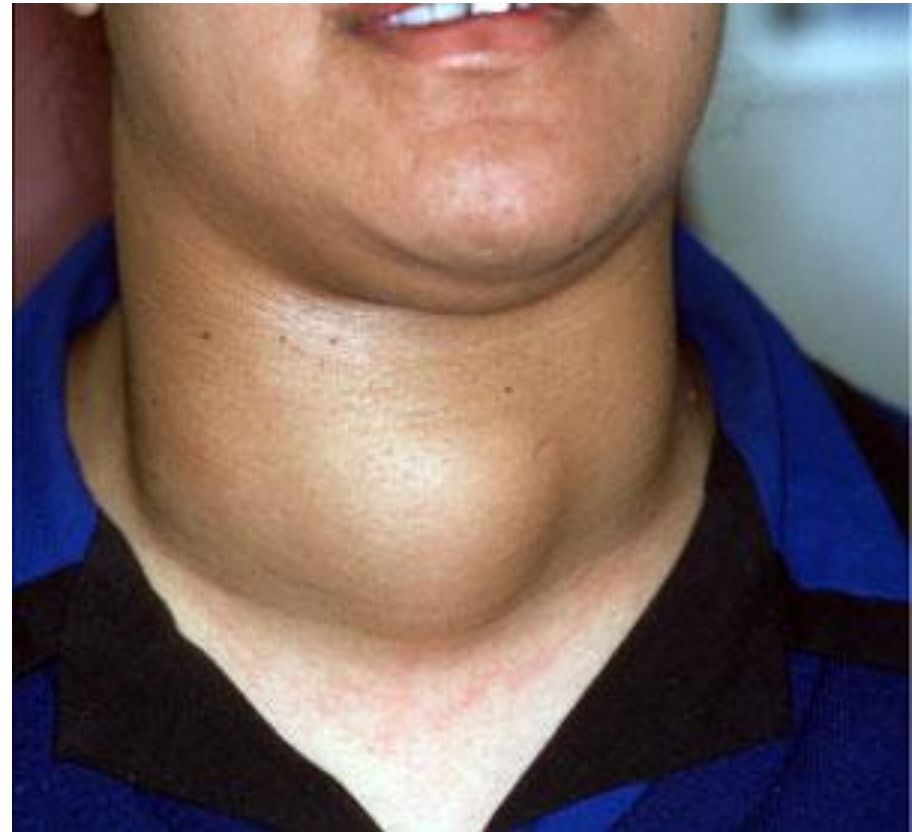
Auckland Head and Neck Associates

Thyroid Nodule

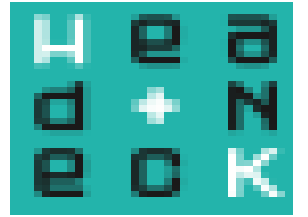


**Auckland
Head & Neck
Associates**

- What do you want to know?
 - Is it malignant?
 - Is it toxic?
 - Is it compressive?
 - Cosmetic effect?



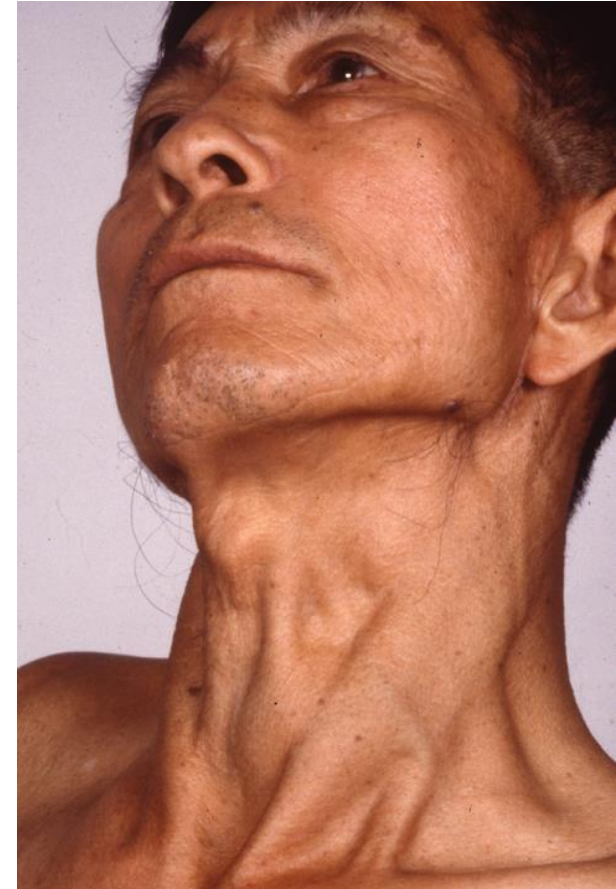
Is it malignant?



**Auckland
Head & Neck
Associates**

< 5% malignant

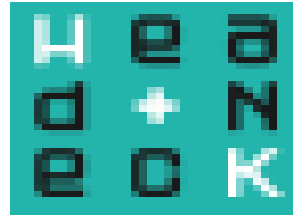
- Decision algorithm for resection based on combination of:
 - Clinical
 - History
 - examination
 - Cytology
 - Bloods
 - Radiology
 - Ultrasound
 - CT/ MRI



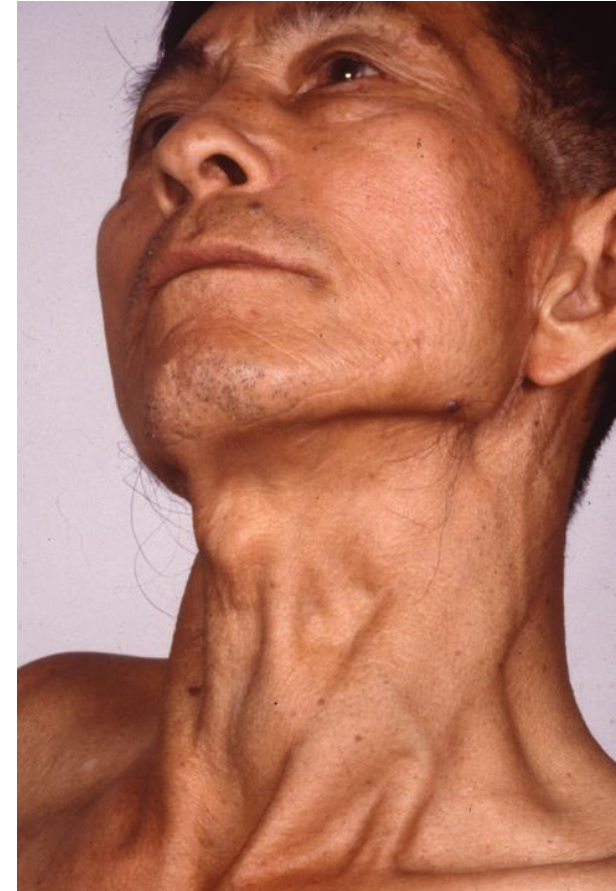
Auckland Head and Neck Associates

Is it malignant?

is it important?



**Auckland
Head & Neck
Associates**



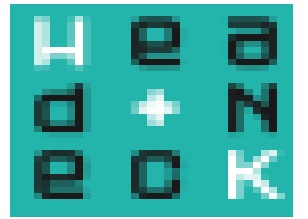
Auckland Head and Neck Associates

Is it malignant?

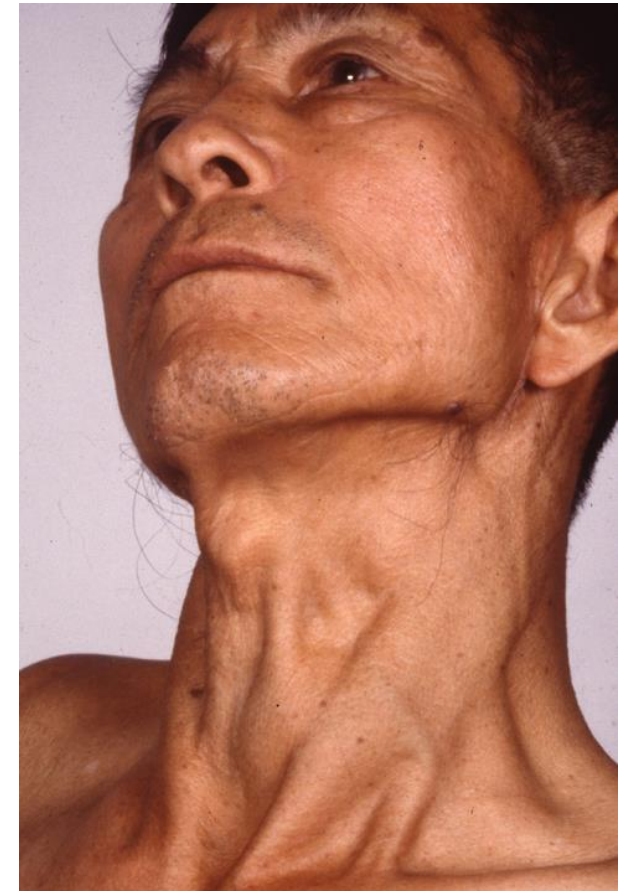
is it important?

Korea's Thyroid-Cancer "Epidemic"
— Screening and Overdiagnosis

n engl j med 371;19 nejm.org november 6, 2014



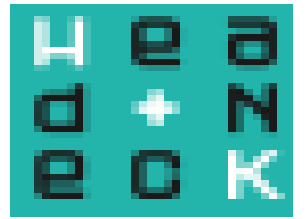
**Auckland
Head & Neck
Associates**



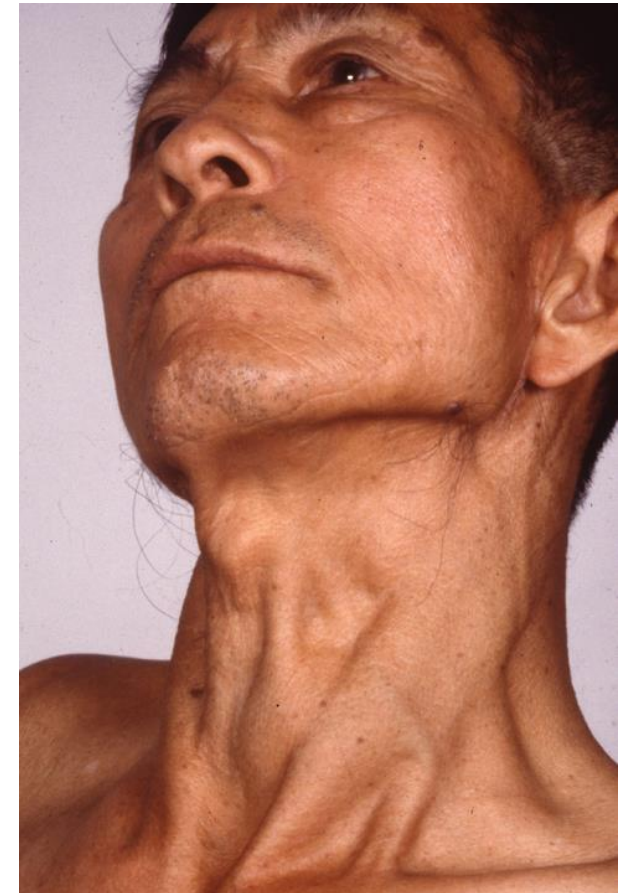
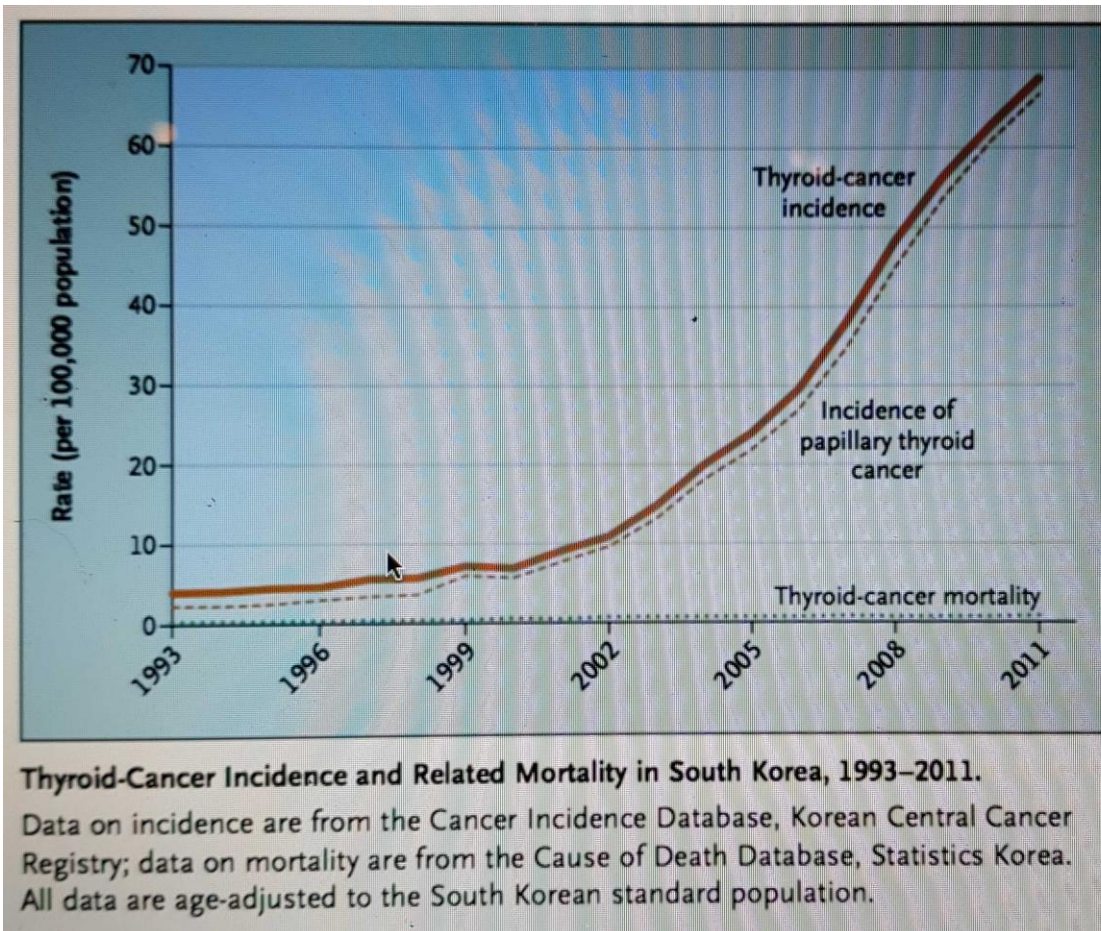
Auckland Head and Neck Associates

Is it malignant?

is it important?



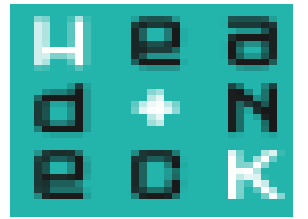
**Auckland
Head & Neck
Associates**



Auckland Head and Neck Associates

Is it malignant?

is it important?



**Auckland
Head & Neck
Associates**

JAMA. 2006 May 10;295(18):2164-7.

Increasing incidence of thyroid cancer in the United States, 1973-2002.

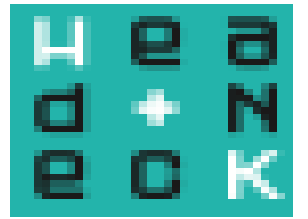
[Davies L1](#), Welch HG.

- 2.4-fold increase in incidence of thyroid cancer from 1973 to 2002
- Virtually the entire increase is attributable to an increase in incidence of papillary thyroid cancer. No significant change in the incidence of the less common histological types: follicular, medullary, and anaplastic
- 49% of the increase consisted of cancers measuring 1 cm or smaller
- 87% consisted of cancers measuring 2 cm or smaller.
- Mortality from thyroid cancer was stable between 1973 and 2002 (approximately 0.5 deaths per 100,000).

Auckland Head and Neck Associates

Is it malignant?

is it important?



**Auckland
Head & Neck
Associates**

JAMA. 2006 May 10;295(18):2164-7.

Increasing incidence of thyroid cancer in the United States, 1973-2002.

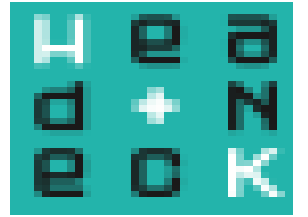
[Davies L1](#), Welch HG.

CONCLUSIONS:

- The increasing incidence of thyroid cancer in the United States is predominantly due to the increased detection of small papillary cancers.
- These trends, combined with the known existence of a substantial reservoir of subclinical cancer and stable overall mortality, suggest that increasing incidence reflects increased detection of subclinical disease, not an increase in the true occurrence of thyroid cancer.

Is it malignant?

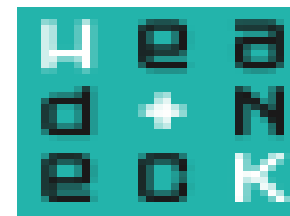
is it important?



**Auckland
Head & Neck
Associates**

ATA guidelines –

investigate suspicious nodules that are at least 1cm in size



**Auckland
Head & Neck
Associates**

Is it malignant?

history

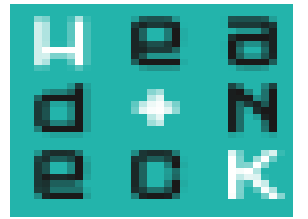
- Risk Factors
 - Family history
 - Papillary
 - 95% sporadic
 - 5% RET-PTC gene mutation
 - x2 first degree =50%
 - X3 first degree= 97%
 - Medullary
 - 25% Syndromic
 - Familial MTC
 - MEN 2a, 2b
 - » RET oncogene mutations
 - Radiation exposure
 - Therapeutic
 - Environmental
 - Nuclear
 - » power plants
 - » weapons
 - Volcanoes



Is it malignant?

clinical

- Nodule 90%
 - Can be nodule in MNG
- Nodes 10%
- Extrathyroid 3-5%
 - Hoarseness
 - Airway
 - Dysphagia
 - Skin
- Distant 3-5%



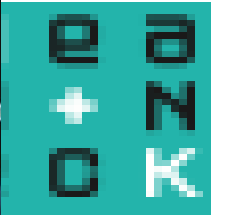
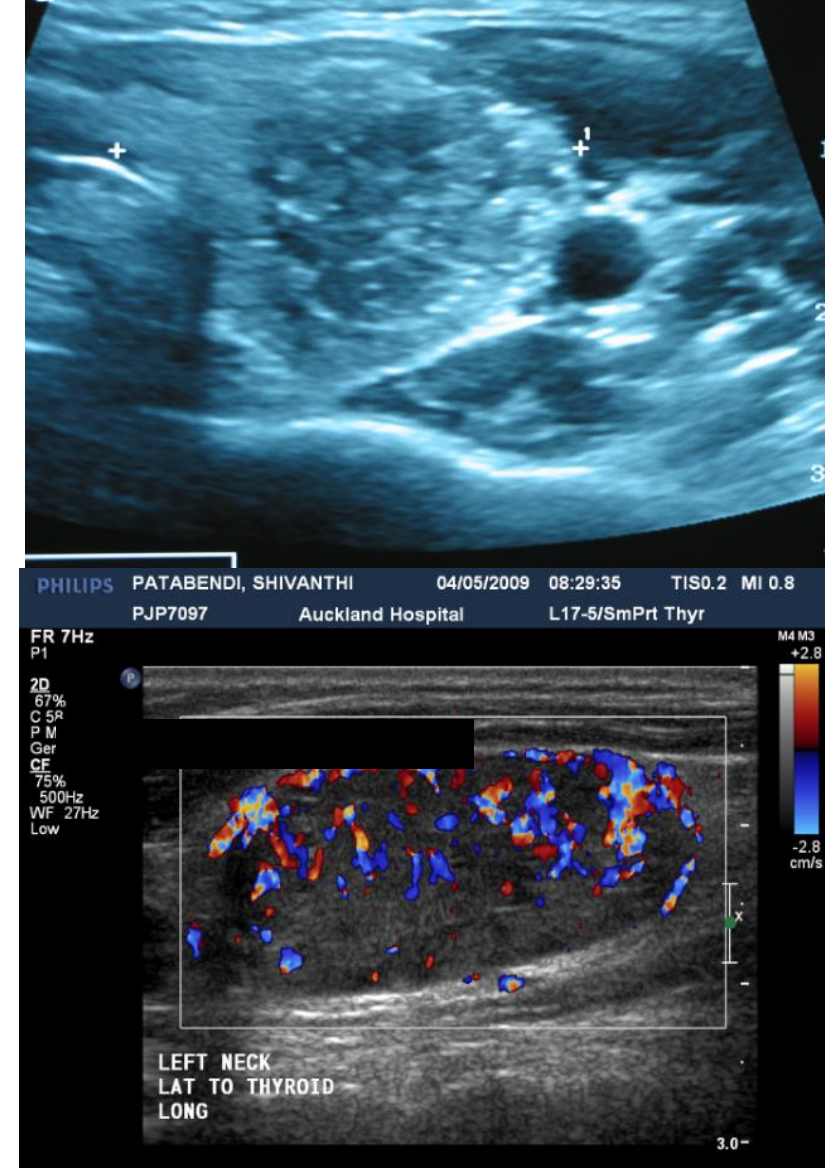
**Auckland
Head & Neck
Associates**

Is it malignant?

ultrasound

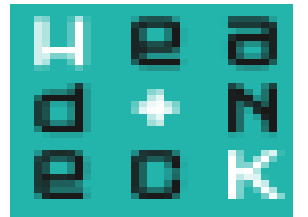
- Solid
- Hypoechoic
- Taller than wide shape
- Irregular margin
- Microcalcification
- Associated nodes with similar features

TIRADS 1-6

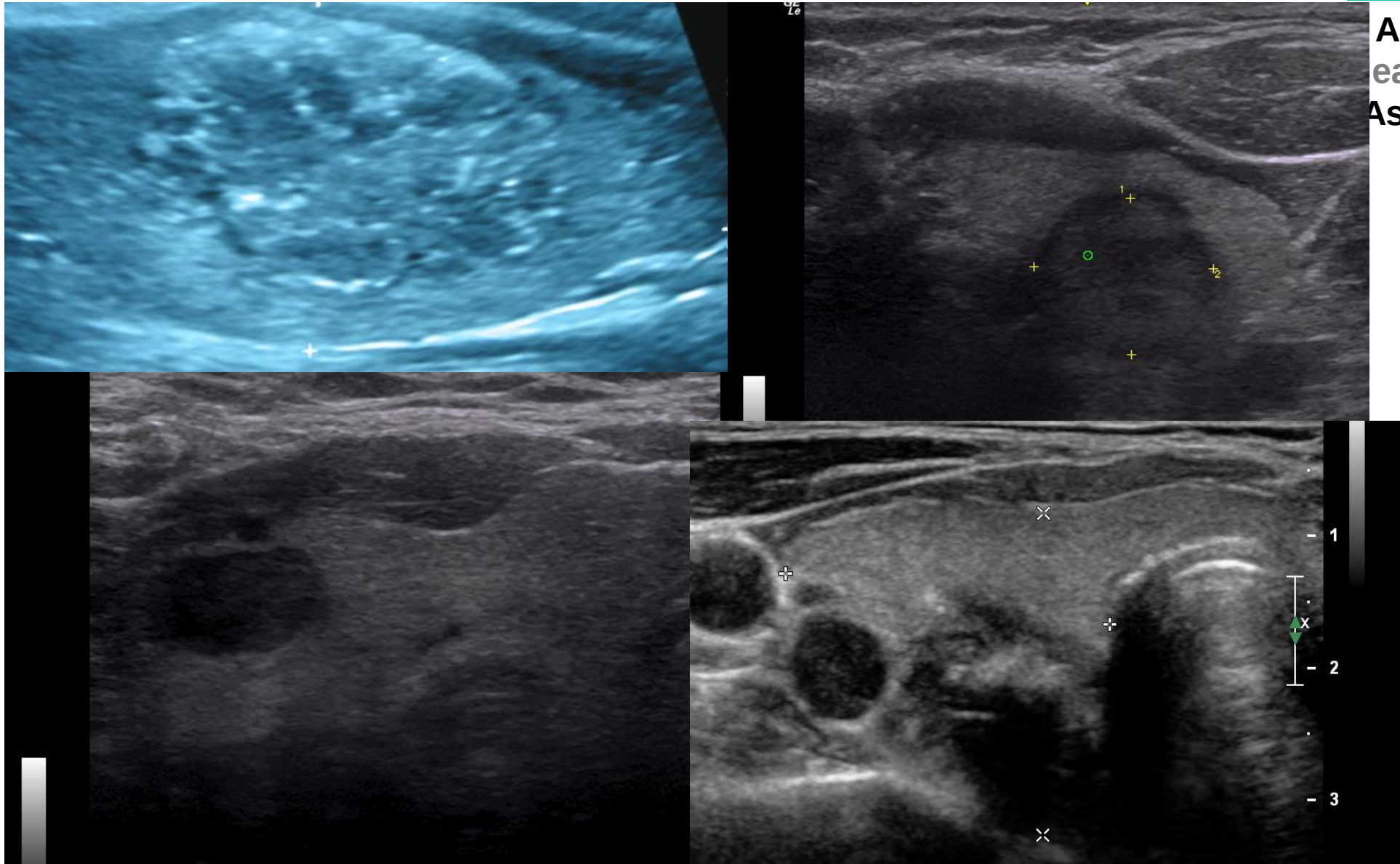


Auckland
Head & Neck
Associates

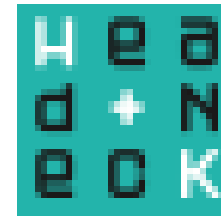
Malignant thyroid nodules



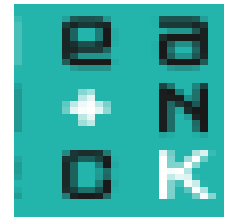
Auckland
Head & Neck
Associates



Benign Features

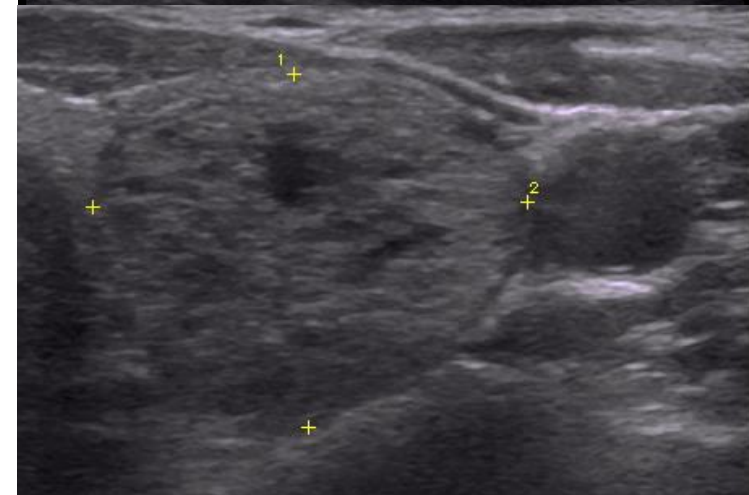
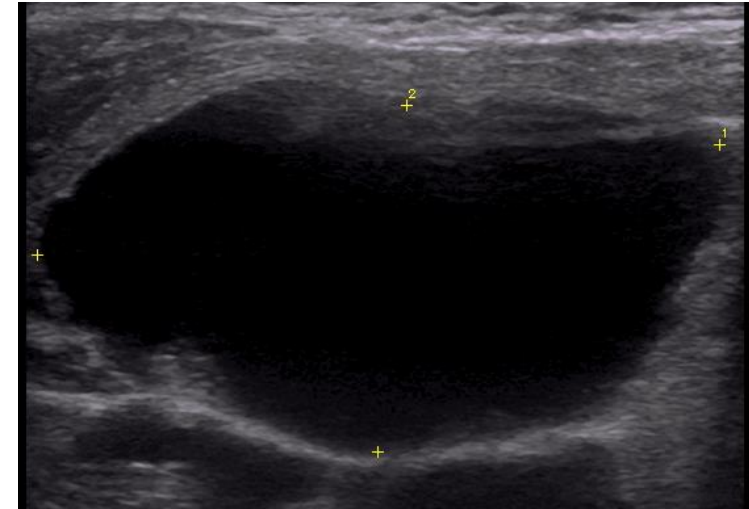


**Auckland
Head & Neck
Associates**



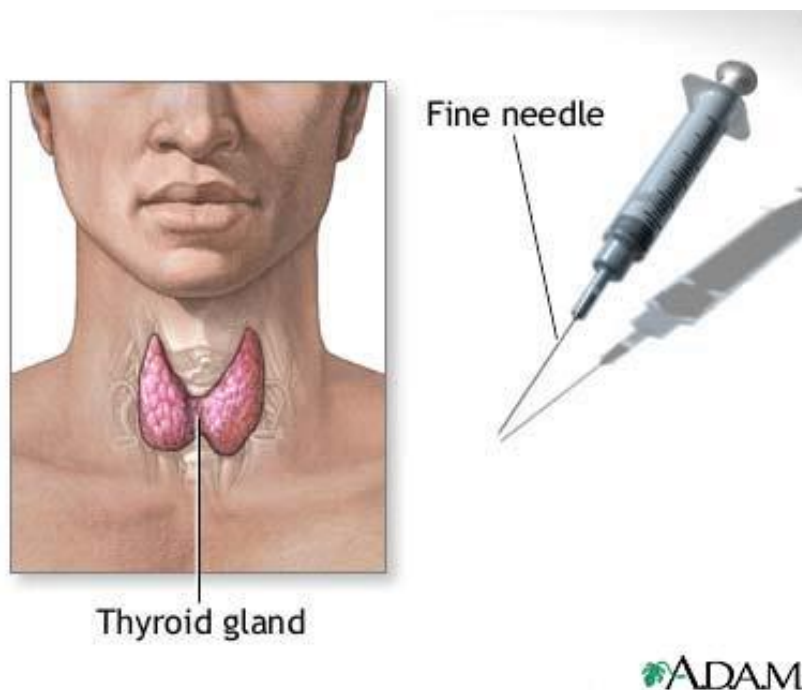
**uckland
ad & Neck
sociates**

- Simple cystic
- Spongiform
- Isoechoic



Is it malignant?

US guided FNA cytology

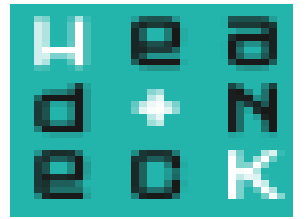


FNA is a safe test with negligible risk of seeding

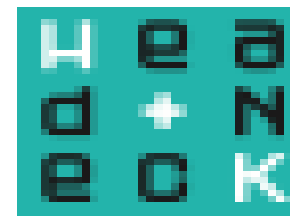
Is it malignant?

FNA cytology

Bethesda category	malig%
I. Non diagnostic	3-8%
II. Benign	0-3%
III. Atypical follicular	8-15%
IV. Follicular neoplasm	20-30%
V. Suspicious for cancer	50-60%
VI. Carcinoma	97-100%



**Auckland
Head & Neck
Associates**



**Auckland
Head & Neck
Associates**

Is it malignant?

FNA cytology

Bethesda category	malig%
-------------------	--------

I. Non diagnostic	3-8%
-------------------	------

II. Benign	0-3%
------------	------

III. Atypical follicular	8-15%
--------------------------	-------

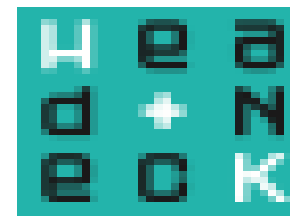
IV. Follicular neoplasm	20-30%
-------------------------	--------

V. Suspicious for cancer	50-60%
--------------------------	--------

VI. Carcinoma	97-100%
---------------	---------

observation vs surgery

surgery

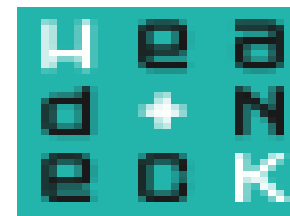


**Auckland
Head & Neck
Associates**

Is it malignant?

FNA cytology

Bethesda category		malig%	
I.	Non diagnostic	3-8%	repeat FNA
II.	Benign	0-3%	observation vs surgery
III.	Atypical follicular	8-15%	repeat FNA vs surgery
IV.	Follicular neoplasm	20-30%	surgery
V.	Suspicious for cancer	50-60%	
VI.	Carcinoma	97-100%	



**Auckland
Head & Neck
Associates**

Is it malignant?

bloods

TSH, T3, T4

- standard. TSH usually normal in ca.

Rapid swelling with hypothyroid consider lymphoma

? Thyroglobulin, Tg Ab

- useful for surveillance

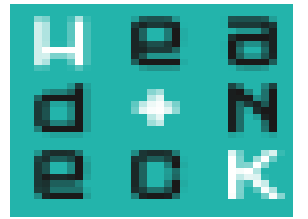
? Calcitonin

- ?Bethesda 4-6 solitary nodule, +FH

Is it toxic/hypothyroid?

History/exam

- Toxic
 - Heat intolerance
 - Irritability
 - Tremor
 - Exophthalmos
 - Lid lag
 - Goitre/ nodule
- Hypothyroid
 - Fatigue
 - Sluggish reflexes
 - Oedema
 - Alopecia
 - Dry skin
- May be subclinical

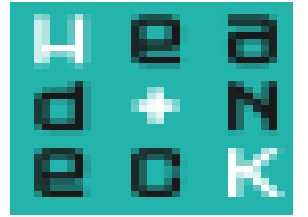


**Auckland
Head & Neck
Associates**

Auckland Head and Neck Associates

Is it toxic/hypothyroid?

Bloods



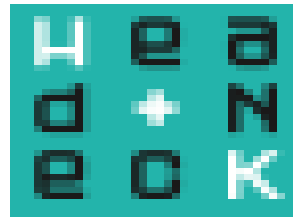
**Auckland
Head & Neck
Associates**

- **Thyrotoxic**
 - TSH= suppressed
 - T4, T3= elevated
 - Thyrd Abs +ve in 50% Graves
 - Thy Stim Ig =+ve in Graves
- **Hypothyroid**
 - TSH= elevated
 - T3,T4= low
 - Thyroid Abs = +ve 90%

TSH most sensitive. ie. can have altered TSH without T3, T4

Thyroid function Pathology

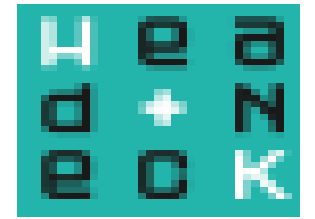
First line therapy



**Auckland
Head & Neck
Associates**

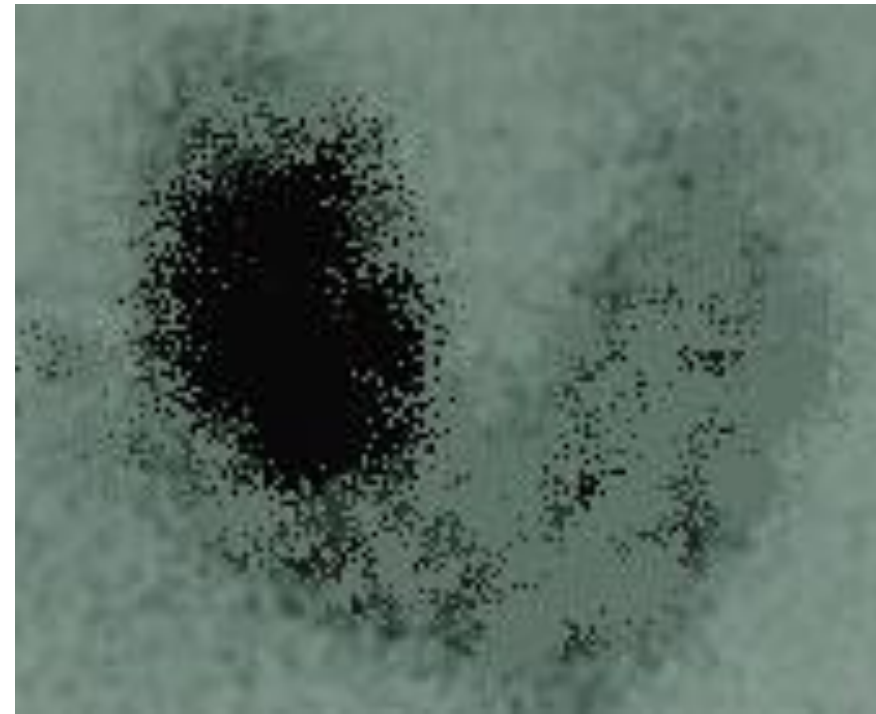
- Hyper thyroid
 - Antithyroid Drugs
 - Carbimazole
 - PTU
 - B blockers
 - Weekly TFT until euthyroid then 3 monthly
- Hypothyroid
 - Replacement
 - Thyroxine
 - WTE
 - Repeat bloods 6-8/52
 - 6/12- 1 yr once euthyroid (or if pregnant)

TSH suppressed & TSHr –ve (partic with nodule or goitre) Scintiscan



**Auckland
Head & Neck
Associates**

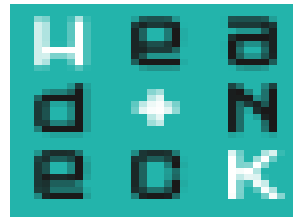
- Toxic Goitre
- Toxic Nodule(s)



Toxic nodules are almost never malignant

Thyrotoxicosis

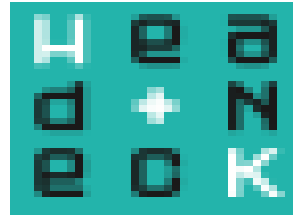
Definitive: surgery vs radio-iodine



**Auckland
Head & Neck
Associates**

- **Surgery**
 - Advantages
 - Single treatment
 - Minimal risk
hypothyroidism in
ipsilateral nodule
 - Reduced dysthyroid eye
disease in Graves
 - Better for toxic goitre
 - Disadvantages
 - Scar
 - complications
- **RAI**
 - Advantages
 - No surgery
 - May be better in small
Graves without eye
disease
 - Disadvantages
 - Need repeat doses in large
thyroid
 - Risk of hypothyroid in
toxic nodule
 - Does not remove antigen

Is it compressive?

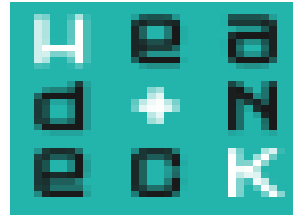


**Auckland
Head & Neck
Associates**

- Symptoms
 - Pressure
 - Dysphagia
 - Voice
 - Cough
 - Short of breath
 - Exercise intolerance
 - OSA

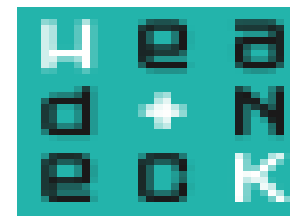


Globus Pharyngeus



**Auckland
Head & Neck
Associates**





**Auckland
Head & Neck
Associates**

Is it compressive?

- Signs
 - Stridor, wheeze, SOB
 - Absent lower border/ dull to percussion thorax
 - Sleep apnoea
 - Pemberton's sign



Compressive goitre

- Investigations
 - Resp function tests
 - Fixed obstruction
 - Laryngeal exam
 - Endoscopy
 - Voice analysis
 - CT
 - Thoracic extension
 - Airway compromise
 - Recurrence

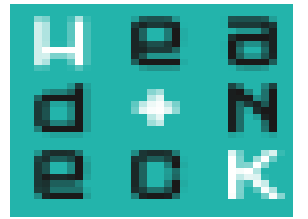


Thoracic goitre

- CT
 - Shows thoracic extension
 - Allow planning of access
 - Rare to split sternum but need CTSU surgeon



Cosmesis



**Auckland
Head & Neck
Associates**

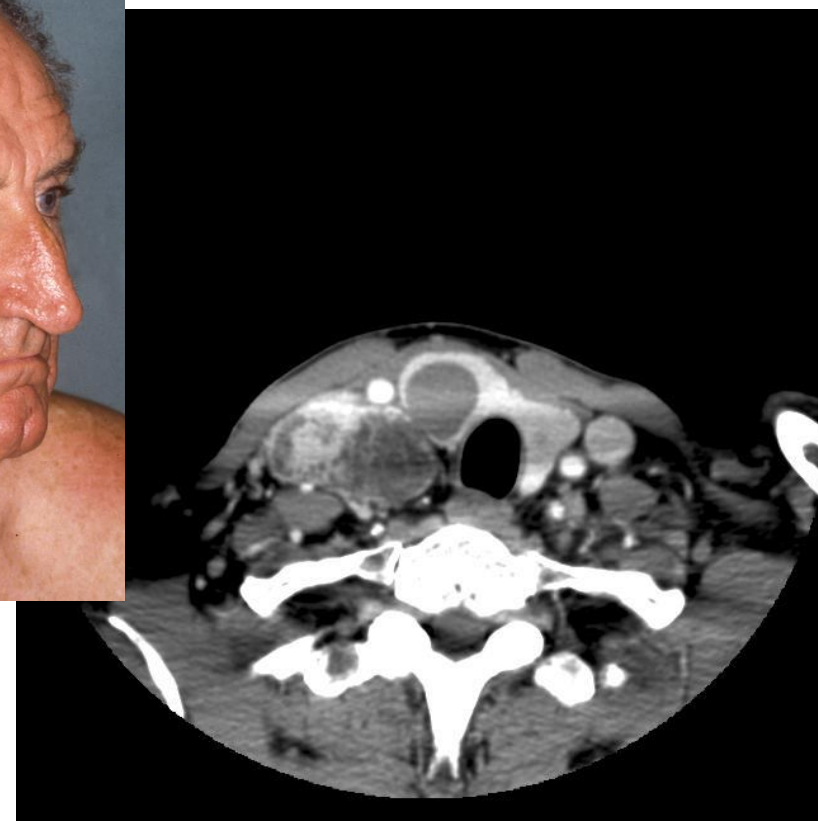
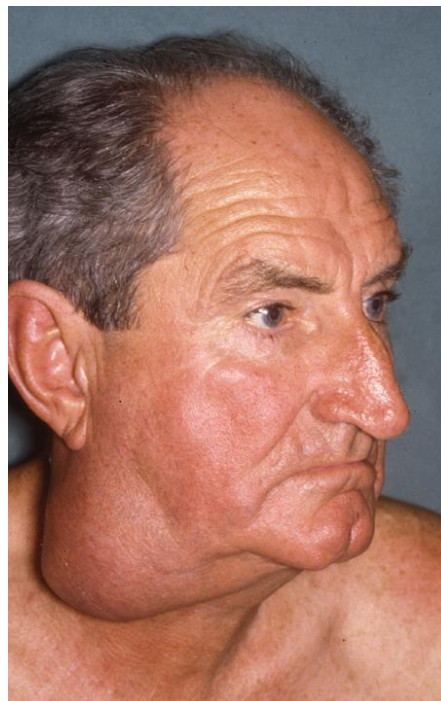
- Trade off:
 - Nodule vs scar
 - Risk op vs no op

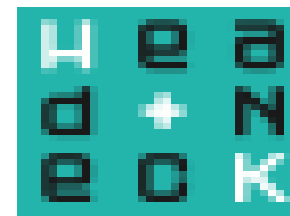


Auckland Head and Neck Associates

Case 1

- 50 yr old man
- Hard mass
low right neck
- FNA mass suggests
benign thyroid
follicular cells

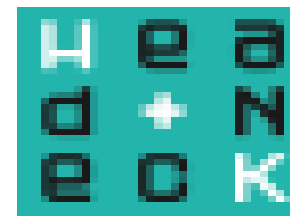




**Auckland
Head & Neck
Associates**

Case 1

- What is this most likely to be.
 - a. metastatic thyroid cancer
 - b. benign thyroid cyst
 - c. lateral aberrant thyroid tissue
 - d. pathologist error



**Auckland
Head & Neck
Associates**

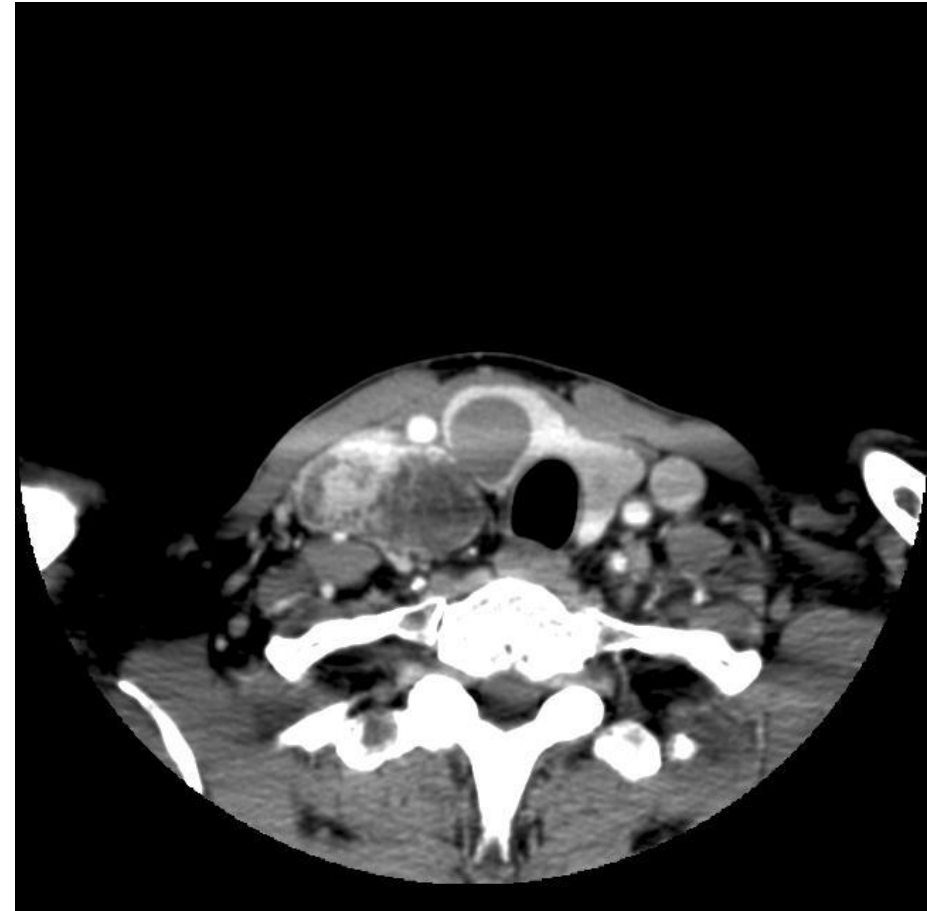
Case 1

- What is this most likely to be.
 - a. metastatic thyroid cancer
 - b. benign thyroid cyst
 - c. lateral aberrant thyroid tissue
 - d. pathologist error

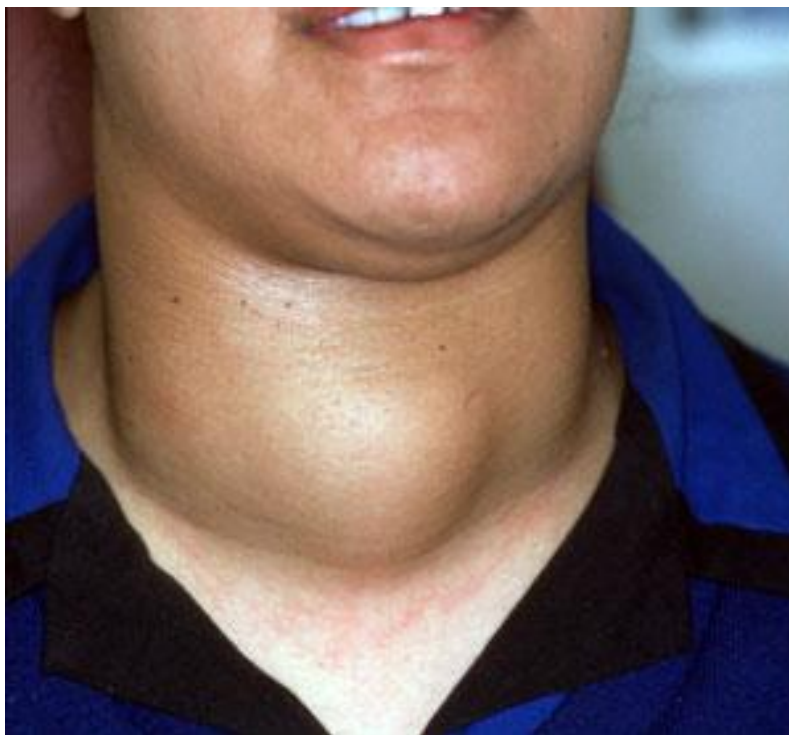
a. Metastatic thyroid cancer

Case 1

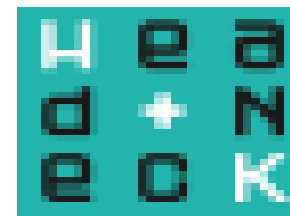
- Papillary cancer is well differentiated and cells can look benign.
- Nodal mass won't elevate like thyroid even though in same position
- Epithelial cells don't belong in a lymph node



Case 2



- 20 yr old woman
- Month history of very sore throat, pain on cough and swallow radiating to ears.
- Very tender and hard right thyroid nodule
- T4 = 32, TSH= 0.002
- ESR =40
- No toxic symptoms or signs

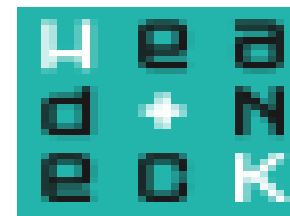


**Auckland
Head & Neck
Associates**

Case 2

Most likely diagnosis

- a. Subacute thyroiditis
- b. Graves disease
- c. Bleed into a thyroid nodule
- d. Hashimotos thyroiditis

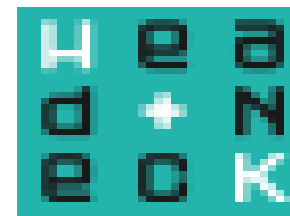


**Auckland
Head & Neck
Associates**

Case 2

Most likely diagnosis

- a. Subacute thyroiditis
 - b. Graves disease
 - c. Bleed into a thyroid nodule
 - d. Hashimotos thyroiditis
-
- a. Subacute or de Quervain's or painful thyroiditis

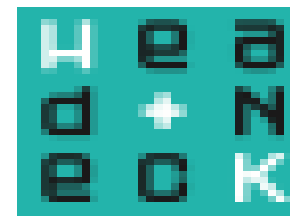


**Auckland
Head & Neck
Associates**

de Quervains subacute thyroiditis

What is best confirming test?

- a. FNA
- b. Ultrasound
- c. Thyroid lobectomy
- d. scintigraphy



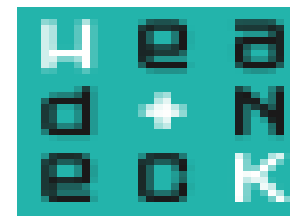
**Auckland
Head & Neck
Associates**

de Quervains subacute thyroiditis

What is best confirming test?

- a. FNA
- b. Ultrasound
- c. Thyroid lobectomy
- d. scintigraphy

d. scintigraphy- shows reduced uptake in gland



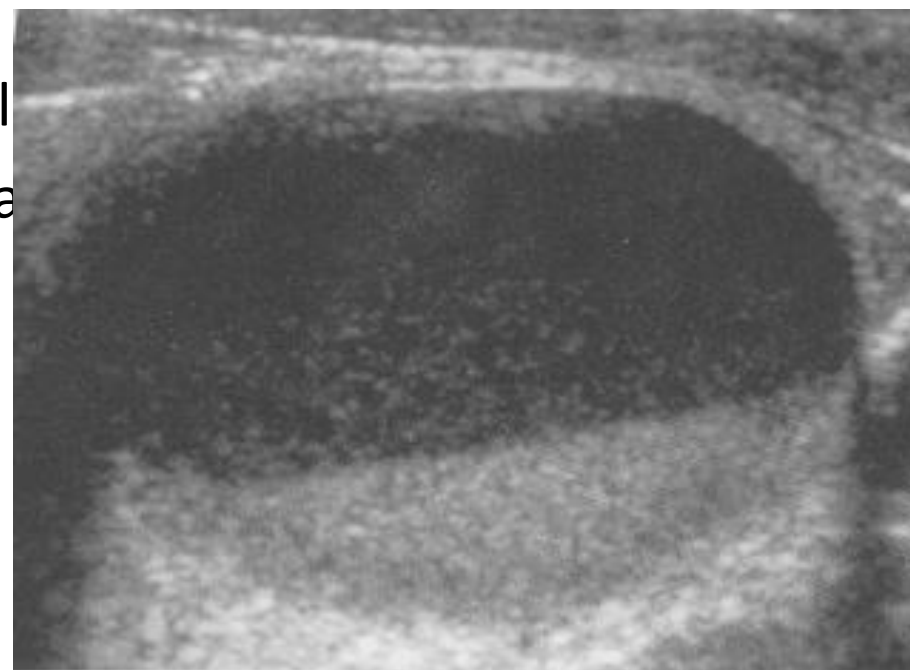
**Auckland
Head & Neck
Associates**

de Quervains subacute thyroiditis

- Inflammatory condition
 - Thought to be viral origin (occurs in clusters)
 - Can be ipsilateral, bilateral or sequential
 - Ultrasound
 - can show a suspicious, infiltrative pattern
 - FNA
 - Painful, shows inflammatory lymphocytes with giant cells
 - Treatment
 - Responds very well to anti-inflammatory steroids
 - Follow up
 - Repeat thyroid function tests monthly as high risk of developing hypothyroidism

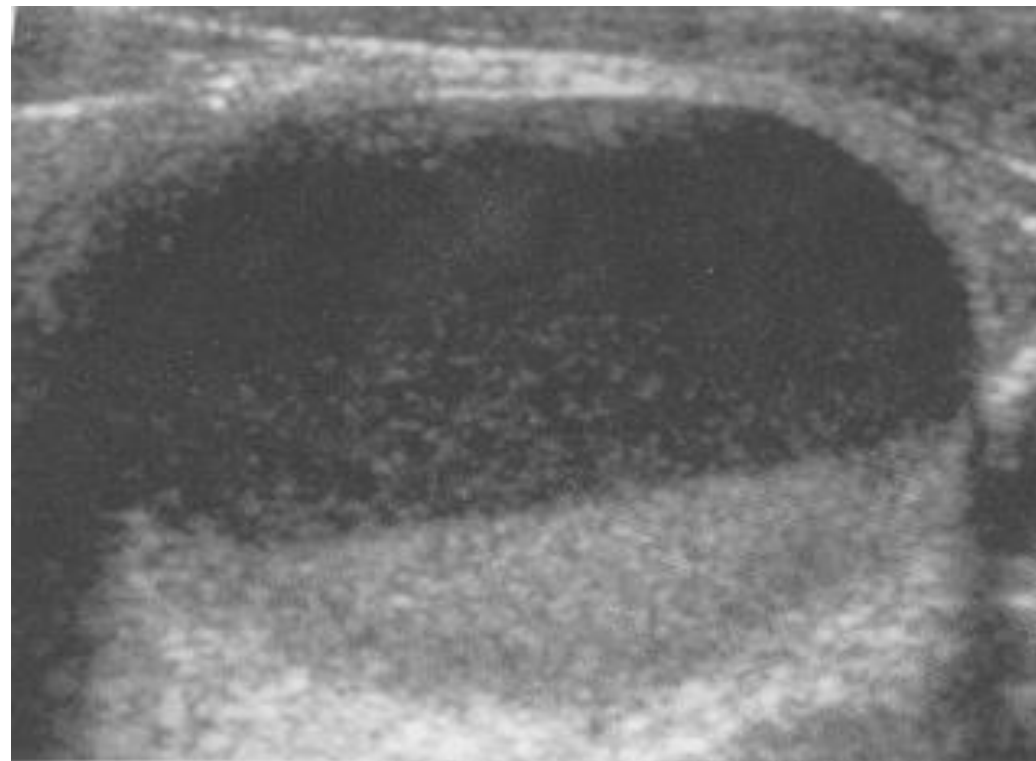
Case 3

- 35 yr old woman
- Sudden 3cm right thyroid swell
- Ultrasound shows part fluid, part solid mass
- Tender to palpation



Case 3

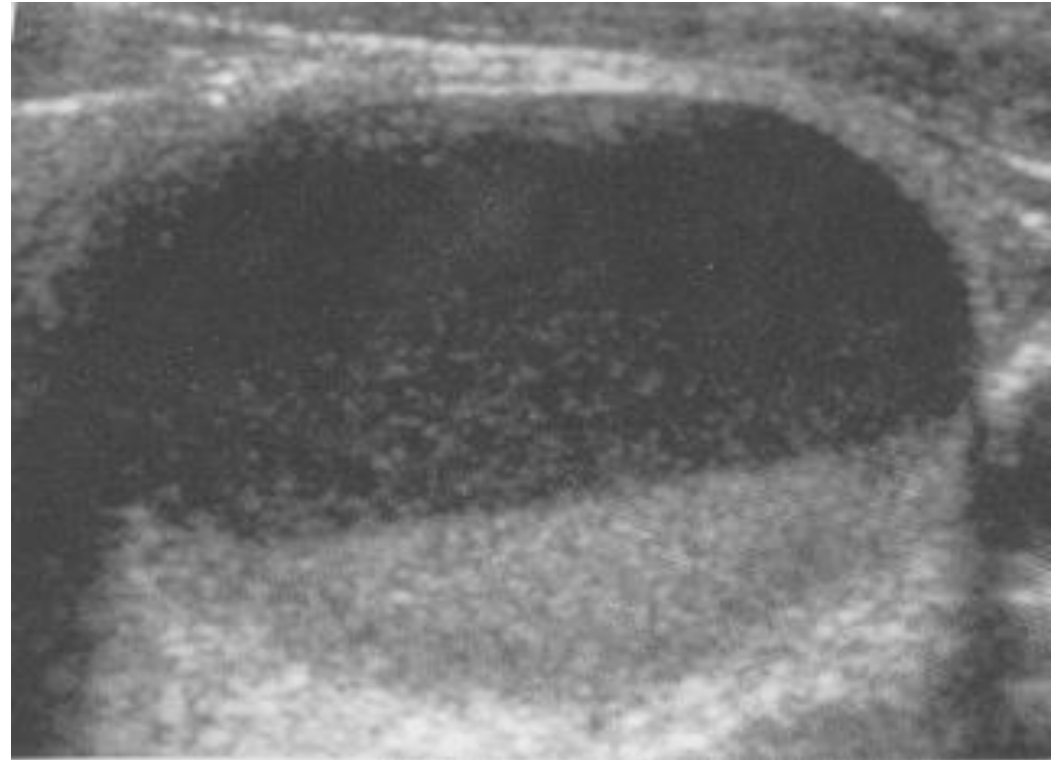
- Most likely diagnosis
 - a. Thyroid cancer
 - b. Viral thyroiditis
 - c. Bleed into nodule
 - d. Thyroid abscess

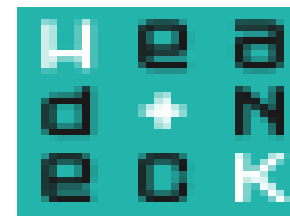


Case 3

- Most likely diagnosis
 - a. Thyroid cancer
 - b. Viral thyroiditis
 - c. Bleed into nodule
 - d. Thyroid abscess

c. bleed into nodule



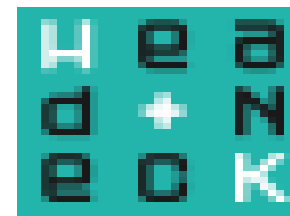


**Auckland
Head & Neck
Associates**

Case 5

Following thyroidectomy for thyroid cancer what are the usual follow-up blood tests?

- a. TSH only
- b. TSH, T3, T4
- c. TSH, Thyroglobulin only
- d. TSH, Thyroglobulin, Thyroglobulin Ab

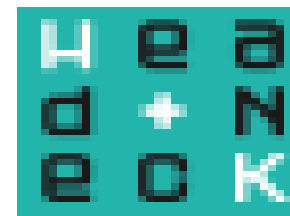


**Auckland
Head & Neck
Associates**

Case 5

Following thyroidectomy for thyroid cancer what are the usual follow-up blood tests?

- a. TSH only
- b. TSH, T3, T4
- c. TSH, Thyroglobulin only
- d. TSH, Thyroglobulin, Thyroglobulin Ab
- d. TSH, Thyroglobulin, Thyroglobulin Ab

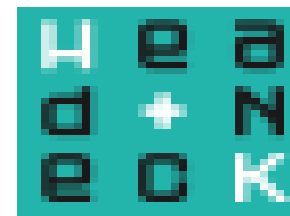


**Auckland
Head & Neck
Associates**

Case 6

Thyroglobulin in the normal range following total thyroidectomy for PTC, radioactive iodine and thyroid replacement indicates.....?

- a. No cancer, adequate thyroid replacement
- b. No cancer, inadequate thyroid replacement
- c. Persisting cancer
- d. Can't tell – need scans

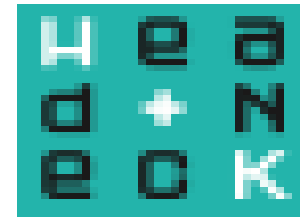


**Auckland
Head & Neck
Associates**

Case 6

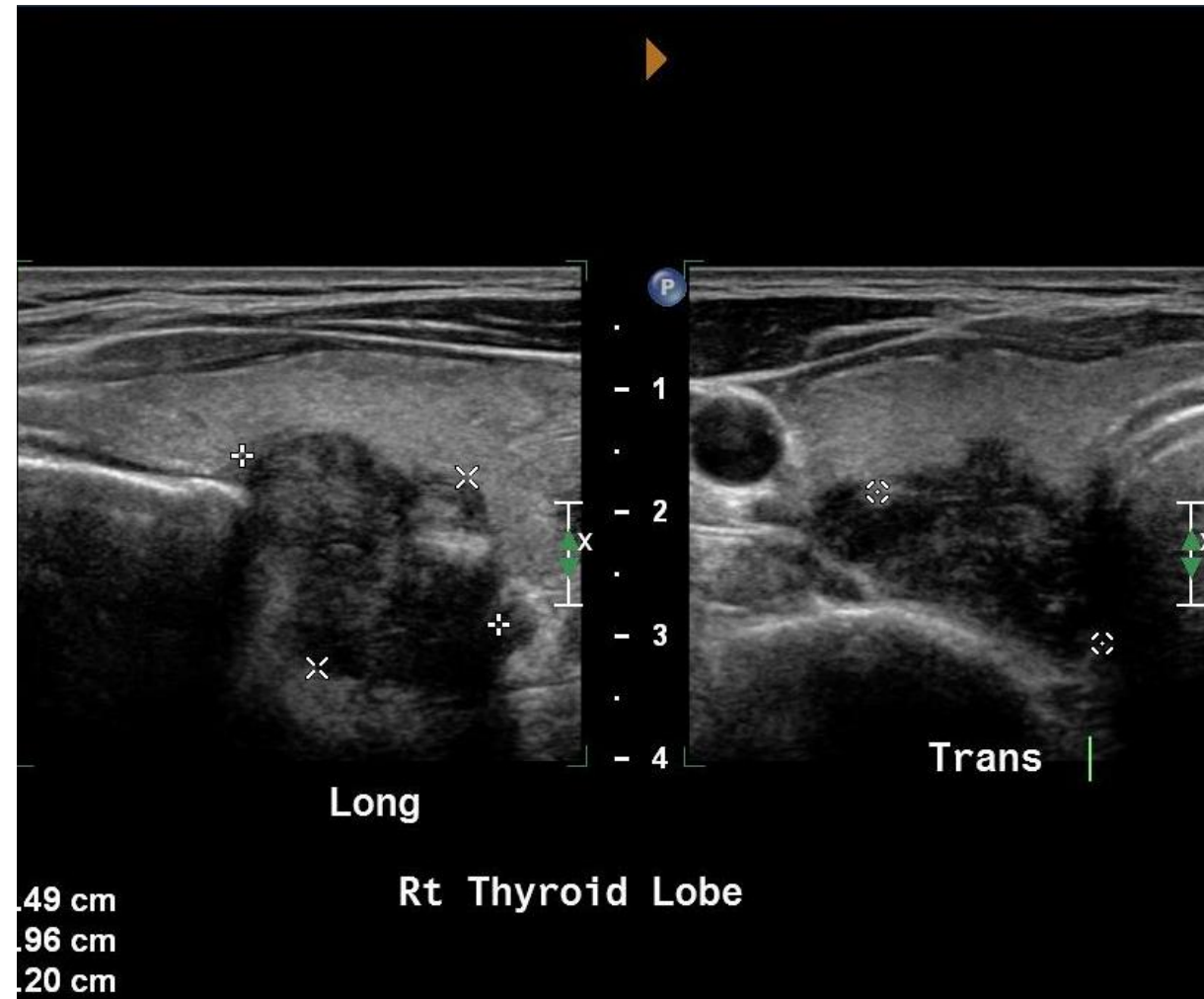
Thyroglobulin in the normal range following total thyroidectomy for PTC, radioactive iodine and thyroid replacement indicates.....?

- a. No cancer, adequate thyroid replacement
 - b. No cancer, inadequate thyroid replacement
 - c. Persisting cancer
 - d. Can't tell – need scans
- c. Persisting cancer



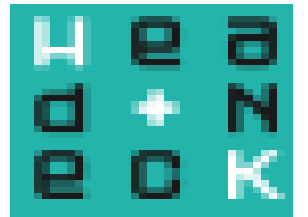
Case 7

- 27 year old woman
- 2.8cm right nodule
- No nodes
- FNA PTC- Bethesda 6
- What other tests?



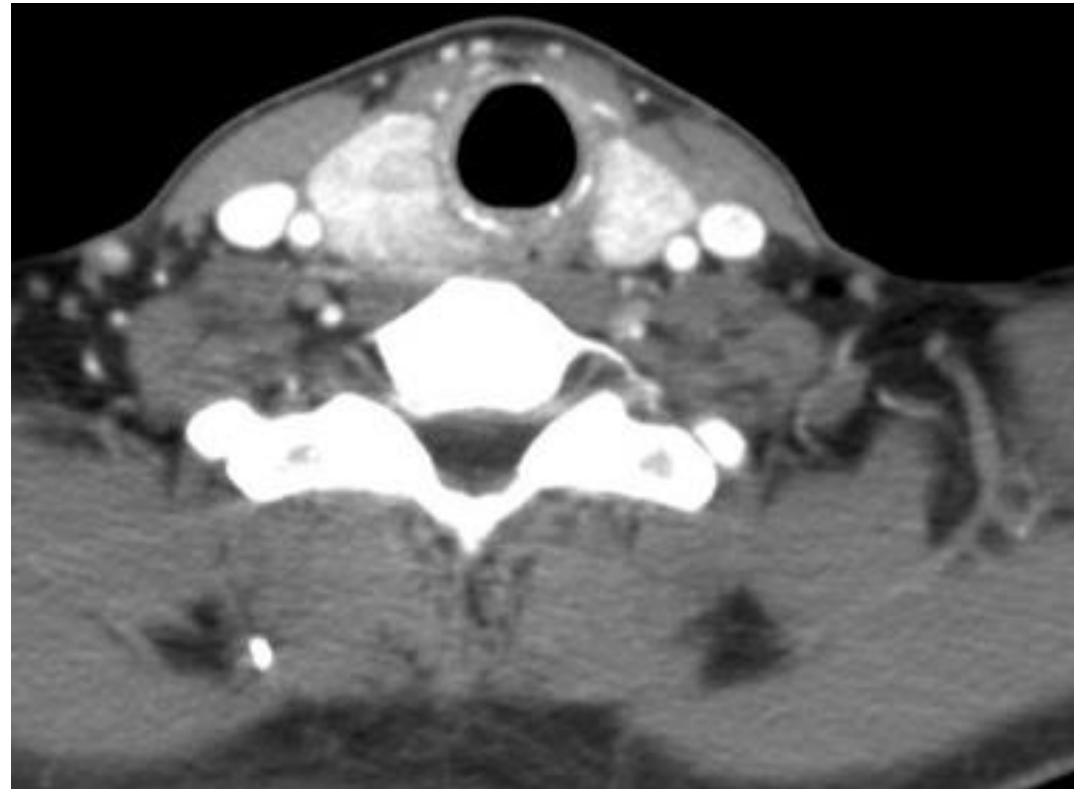
uckland
ad & Neck
sociates

Case 7



**Auckland
Head & Neck
Associates**

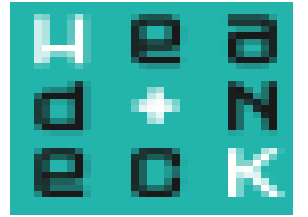
- A. CT scan?
- B. MRI scan?
- C. Laryngoscopy?
- D. all of above?



D All of the above

D. All of above

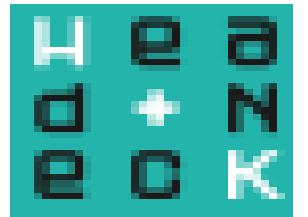
Case 7



**Auckland
Head & Neck
Associates**

- Booked for total thyroidectomy
- At surgery extension into extrathyroid tissues posteriorly adherent to RLN
- Good case for nerve monitoring?

RLN

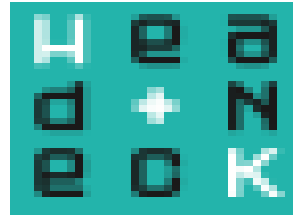


**Auckland
Head & Neck
Associates**



Auckland Head and Neck Associates

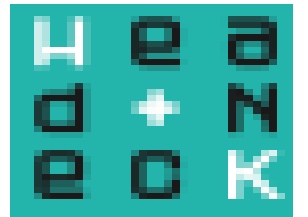
Case 8



**Auckland
Head & Neck
Associates**

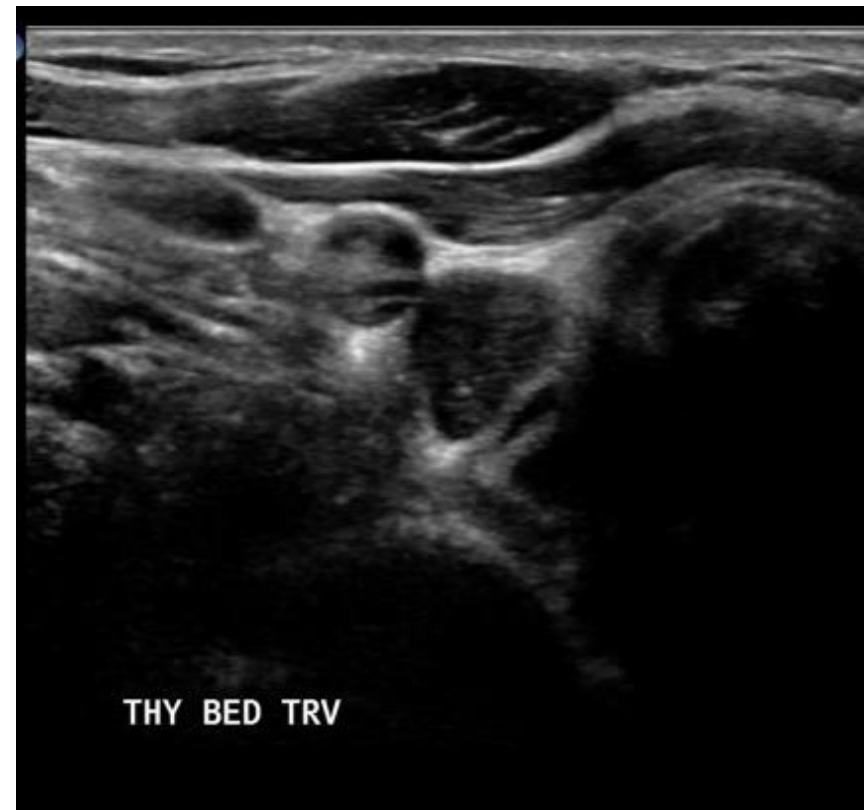
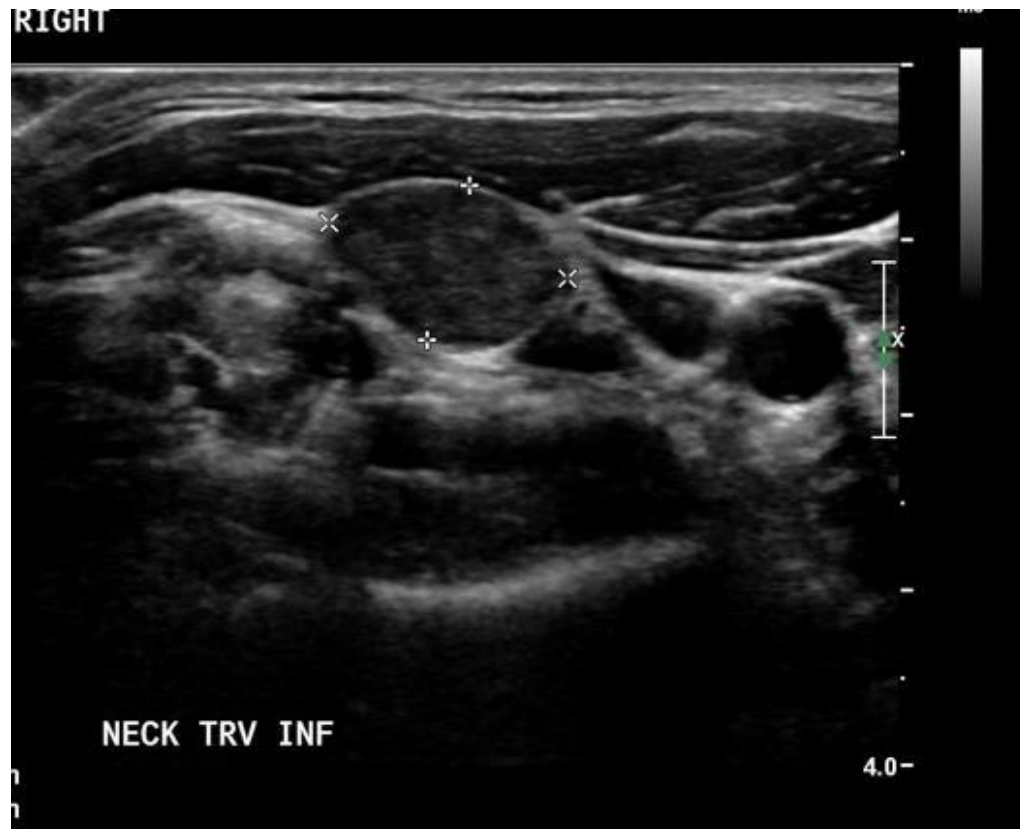
- 31 yr old woman
 - Previous total thyroid and level 6 neck dissection London UK 2 yrs prior
 - Rising Thyroglobulin
 - –ve Tg abs
 - Palpable right lateral node
- What is appropriate initial investigation
 - A. Radioiodine scan
 - B. Chest XR
 - C. Neck ultrasound
 - D. FNA

Case 8

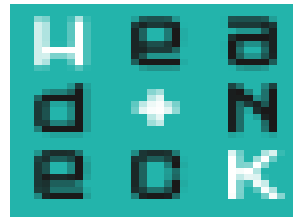


**Auckland
Head & Neck
Associates**

C. Neck ultrasound



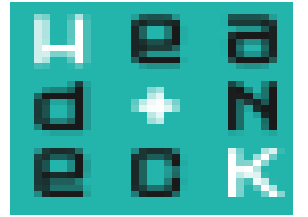
Case 8



**Auckland
Head & Neck
Associates**

- Surgery mainstay treatment of recurrence

Thyroid nodules



**Auckland
Head & Neck
Associates**

John Chaplin

Nick McIvor

Thyroid & Head and Neck Surgeons
Auckland



Auckland Head and Neck Associates