

THYROID GLAND → has 2 lobes connected by the isthmus

↳ 18-25 gm.



* The thyroid present in the very bottom of the neck...

* far from adam apple 3-4 cm down...

← قعر العنق

→ behind the isthmus there is [1st - 2nd] tracheal ring...

* The BS of the thyroid:-

- superior thyroid A from ext. carotid A...
- inferior " " " thyrocervical trunk.

[1st part of subclavian A].

- middle thyroid A from ext. carotid A...

* The nerve related to thyroid gland:-

- sup. laryngeal N.
- recurrent " N.

↳ From the vagal nerve

↳ pass through groove between the trachea and esophagus...

→ if it unilateral injured lead to hoarseness of voice
→ " " bilateral " " " Aphonia...



upper part of thyroid

* sup. laryngeal A → internal branch.

external branch. reach the upper border of thyroid gland.

→ more common to injured this lead to loss of high pitch voice...

Symptoms of thyroid disease → important

→ common surgical and medical problem [مغف / مآف]

Symptoms related to the lump in the neck

↓
Pressure symptoms
من شال عنه..

shortness of breath ← Dyspnea ✓

Dysphagia ✓

Hoarseness of voice ✓

Dilated veins in neck and face ✓

↓
signs...

... nerve invasion ← [malignant thyroid mass] mean recurrent nerve injury

→ we confirm the nerve invasion → vocal cord

direct laryngoscope or indirect laryngoscopy
not moving → there is nerve invasion
Baseline J thyroidectomy

Baseline J thyroidectomy

Pain related to thyroid gland

في العادة **Painless except**

Rapid increase in size ✓
[أيضا] تكثر بشكل سريع وبفترة قصيرة تصيب **painfull** هذا يعني انه قد يكون **Bleeding** عن **Cancer** ...
أما لو كانت خلال أسابيع قد يكون بسبب **tumors** ...
↳ mean there is **Bleeding**.

Acute and subacute, hashimoto's thyroiditis ✓

Anaplastic carcinoma ✓
[half life:- 9 month.] **thyroid** في الـ **very aggressive cancer** نفع عن الـ

Symptoms of Endocrine Dysfunction

medical more than surgical...

most common in 1ry thyrotoxicosis in 2% of female [Gravis D → ^{ne}Insomnia] ← **Nervous** symptoms ✓

male + thyroid problem + >40 year → cancer...

HF or AF or palpitation or tachycardia ← common in 2ry toxic nodular goiter or thyrotoxicosis... ← **Cardiovascular** symptoms ✓
(in hyper dynamic circulation...)

Metabolic symptoms ✓

↑ basal metabolic rate ←

GIT symptoms ✓

hyperthyroid lead to diarrhoea... ←

hypothyroid lead to constipation... ←

...TSH ← (في الغدة) ←

follow up ← (لا نطلب حنا على) ← TSH ← (بالأخص في الغدة) poor
↳ normal ≈ 5 ...

- * TSH > 5 → hypothyroidism [more common as surgical [post thyroidectomy (مغالباً يكونا]
- * TSH < 5 → hyperthyroidism

Symptoms of metastasis

* elderly male thyroid pt → سعال مزمن
...metastasis symptom ال Lung

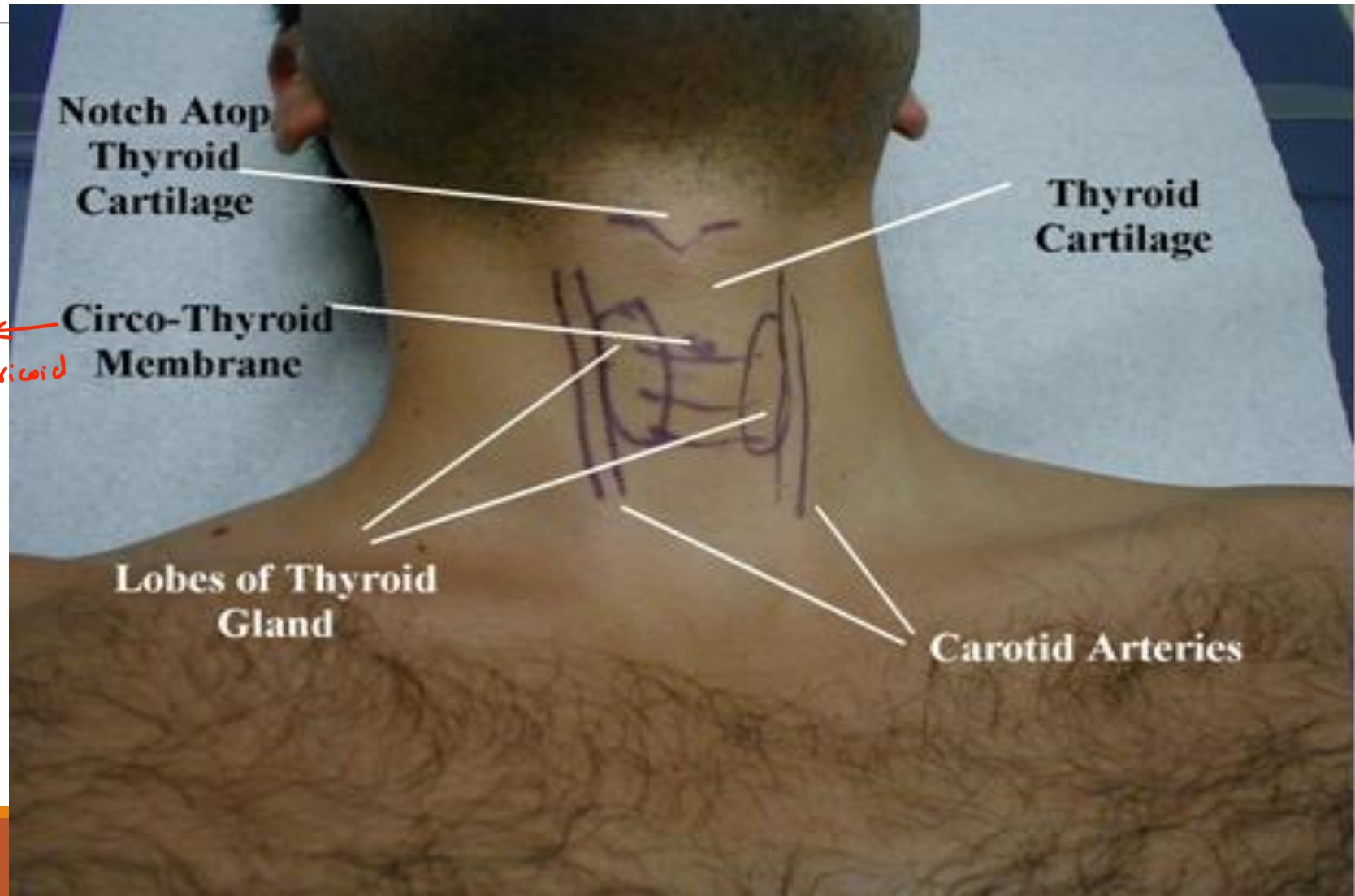
... Bone pain ← ناله عظام Bone

... ↑ liver enzymes - Jaundice ← Liver

Surface Anatomy

← فومہ ال ال supra sternal notch ال ال thyroid ...

between the
thyroid and cricoid
cartilage...



* cold + sweating → VC - sympathetic → ↑ sensitivity of the thyroxine R. - red conjunctiva + dilated vein + edema → ophthalmomyopathy...
 * Hot + sweating → VD...
 ...ecchymosis ...

mainly inspection and palpation...

Thyroid examination

← أفضل نتوءه وهو جاهز من مناعة نفعه...
 له بيجن good impression على باله...

for color - clothes ←
 هل متناهي مع اجوارها
 pitting edema LL

General examination:

- 1- Apperance..
- 2- Body built..
- 3- Hands..
- 4- face...
- 5- eyes...

nervous - hyperactive thyroidosis ← pt behavior... **Demeanor**

Face

Eyes

Hands

[lid lag...] exophthalmus / thyroidosis ← lid retraction
 [H shape exam] ophthalmomyopathy [أيضا نفعه ال] ... we see the sclera above the upper lid
 rythem - tachy cardia - Pulmer erythema - pulse - Sweaty ال [نبش ال] thyroid ...
 - Big pulse volume in hyperthyroidism. ↳ bilateral measuring [1-2 min]
 - water hammer pulse we feel it in
 ↳ the thyrotoxicosis ...
 ↳ due to ↑ systole P.
 ↳ ↓ diastole P.
 ↳ wide pulse pressure [systole - diastole]
 - Hyperthyroidism:- sweat - pulmer erythema - rapid HR ...
 - Hypothyroidism:- dry..
 * in the AF there is irregular irregularity in the heart pulse...
 ← بخاول نتوء اذا في fine tremor على الحنجرة بواسطة الرقعة بقلل الايديه بوجع والاصابع بباد حسبه
 ونظف فوقهم الرقعة لنفعه هل في tremor اير لا...
 ↳ we can elicit it from hands... eye lid...

* soft tissue swelling - new bone formation - ↑ Periosteum → not clubbing it's Autoimmune disease [MG] but for thyrotoxicosis..

Thyroid examination

- dermoma → under the skin...
- sebaceous skin → attached to the skin... } not move with swelling...
- The thyroid mass move up and down with swelling...
... active inspection as it's enlarged

accepted ← بلع فيه يبلع
↳ 2 times لا ينتفخ / ينفخ

general ← active ← يبلع أو يشرب فيه...
passive ← neck لا كلل أو

Sitting on a chair exposed patient to mid sternum
↳ full neck above the nipple at least...

Inspection for any swelling:- [683]
Normal gland is not visible, Isthmus might be apparent during swallowing.

1 Swelling:- number - site - size - shape...

2 Skin:- scar - pigmentation - superficial dilated veins in the retrosternal goiter...
Site, Size, Shape, Surface, Skin over it, Scar, sinus, special character.
thyroidectomy في عنق قبة عاتق غدة
↳ called collar scar.

3 special signs:- ask the pt to swallow + protrude the tongue...

swallowing + tongue protrusion في البلع وال protrusion
due to attachment with pre tracheal fascia [part of the neck fascia]...
thyro-glossal cyst غدة في البلع وال protrusion

* The thyroid site:- in the midline, lower part of the front of the neck...

* normal thyroid size:- < 4 cm [palpation] [بقيع]...
→ shape:- oval - rounded - butterfly shape → thyroid [شكل]
↳ if there is nodules...

* ask the pt to swallow [active inspection]
↳ the thyroid enlargement move with swallowing...

Thyroid swelling moves with deglutition.

* لا انتفخ في البلع وال protrusion level of the pt slightly extension of the neck
... examination في البلع وال protrusion level of the pt slightly extension of the neck
+ بلع في البلع وال protrusion level of the pt slightly extension of the neck

* we see if there is fistula or not...

↳ due to thyroglossal cyst... [remnant of thyro glossal tract]
Protrude the tongue في البلع وال protrusion

excision to the سistrunk operation في البلع وال protrusion
part of the thyroid...

* cervical/neck fasciae:-

- 1- the investing layer of deep cervical fascia [obvious + clear]
- 2- deep vertebral..
- 3- pretracheal layer..

[Thyroglossal cyst - Pretracheal lymph node - cricoid
+ Para thyroid tumors
glossitis
moves with tongue protrusion..]



Continue

Thyroid lobe if felt should be smooth, small, and free of nodules.

Rise freely with swallowing.

Not more than 4cm long.

Firm consistency but pliable.

Rt lobe is 25% larger.

NB: No examination of thyroid is complete without examining the cervical LNs..

Inspect for size, shape, contour, skin retraction

Thyro glossal cyst - Pretracheal lymph node - cricoid glossitis ← If swelling moves up with protruding of tongue
+ Para thyroid tumors...

Pemberton's sign

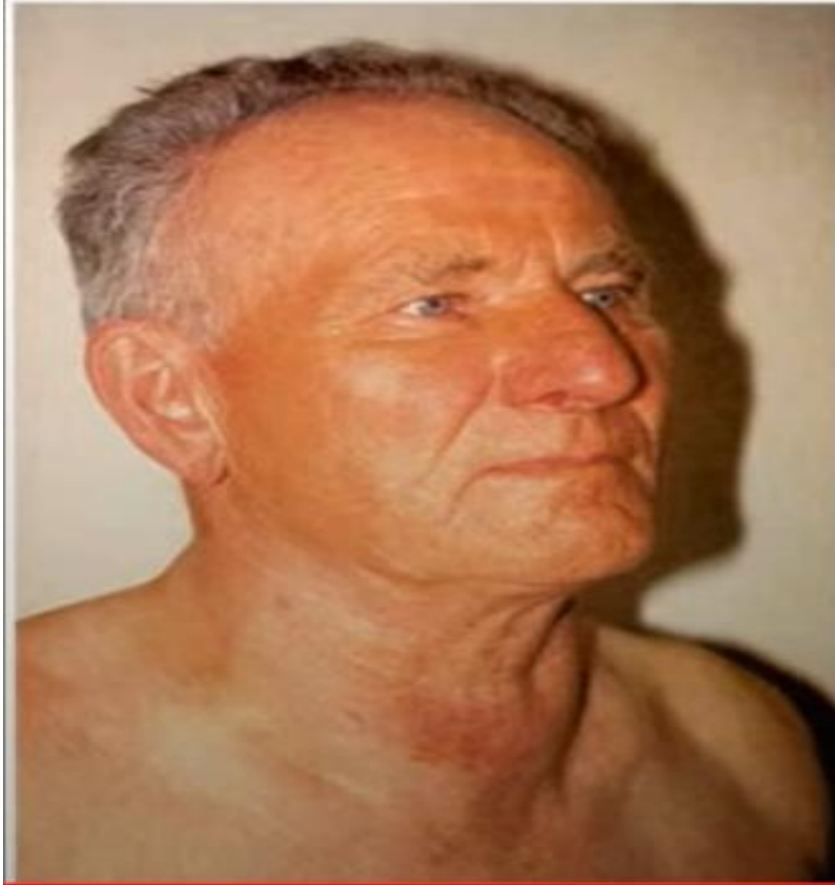
Deviation of thyroid cartilage.

Gentle touch is needed for thyroid examination

← المريض المتوجع يكون عيونه مفتوحة...

← المريض يبغى تفحصه من الامام ولكنه امنا افضل اننا من الخلف...

Pemberton Sign → indication for percussion [resonance] ملا رفق الحريضا ايه راى رصير .. congestion





Palpation → in 2 fingers with rotation movements...

* relax the Sternocleidomastoid M by moving the head to the same side / contraction to other sign...

ST

Front of patient

① [1 finger method or 3 finger] Position of trachea.

② Temperature, tenderness.

[thyrotoxicosis / inflamed thyroiditis ← غير لينة hot] (لو كانت)

with dorsum of hand
...neck + تقارب جان افرج ال

Move skin medially over sternomastoid muscle, and reach under its anterior border below cricoids.

The surface may be:- Smooth - nodular → irregular [in the Anaplastic tumors]...

The consistency:- firm [goiter] - hard [malignant]...

The skin over the thyroid:- if the mass under the skin
...bench test ← or in the skin...

The muscle attachment:- mobile [not attached to the Sternocleidomastoid Muscle]...
limited mobility [attached to the M.]

↳ contraction to the M. جان
mobility ← lump ← mobility

* thyroid deep to sternocleidomastoid M...

* in the Anaplastic or advanced tumor → fixed lump...

...facial expression ← (فعل) (فعل) From behind the patient

Best method, site, size, shape, surface, consistency,

lower edge + tenderness, nodules.

felt

not felt

retro sternal goiter ← غير

↳ retro sternal goiter...

percussion - auscultation ← غير

* NEVER do examination of the 2 lobes at the same time...

→ The pressure symptoms more in the retrosternal goiter → expansion ^{زيادة} in space ^{في المساحة}
مقلعه بشكل أكبر...

* we make the thyroid more obvious → we do push against resistance + slight flexion
منك ال thumb على القبة من راس من تثبت القبة.

→ resonance.
Percussion for retrosternal extension.

↳ when the lower edge of the thyroid not felt..

Auscultation for bruit .
← ال thyroid وضع اصابع في ال upper border عند ال [Sup. thyroid A. ...]

← قد نسمع ال thrill وضع ال bruit.

← عند مرضى ال MG ...

[horizontal group] at level 1
Sub mental
Sub mandibular
Pre aricular
Post aricular
occipital

at level 2-3-4 ← deep cervical / Jugular LN
Upper - middle - lower

at level 5 ← in the Post. triangle

at level 6 [pre trachea - para tracheal] in the mid line
[pre laryngeal - para laryngeal]

.. mediastinum L.M.

* هم يعرفون ال level of cervical lymph node

مرتبطة مع ال metastasis of thyroid cancer
in the cervical LN.. Especially the papillary
hematogenous thyroid cancer 80%
- follicular thyroid cancer 10% ...

* Berry sign → Carotid pulsation - axillary lymph node ...tumors

* Berry sign → Carotid pulsation

may be due to:-

- Benign tumor huge or goiter displaced the carotid A... [we can feel the terminal branch of ext. carotid A. superficial temporal in front the ear]
- malignant tumor... [infiltrative]

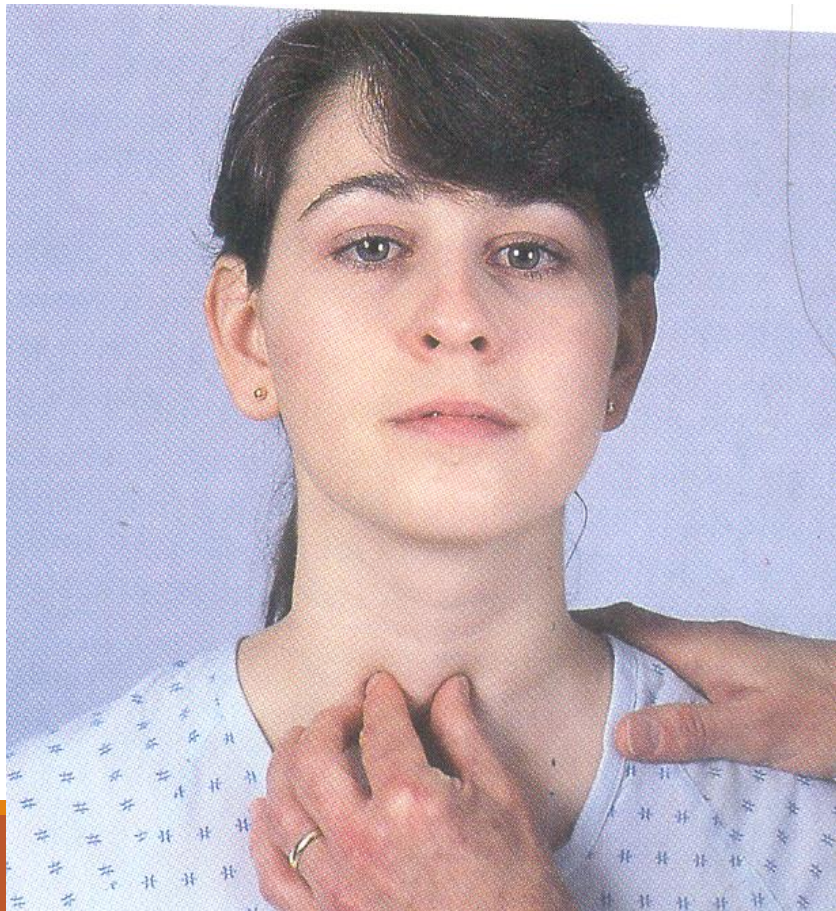
↳ we can't feel the superficial temporal A..

maxillary ← other terminal branch

↳ we can take Biopsy from it in the temporal arthritis...

	Typical Clinical Status (pre-treatment)		
	Hypothyroid	Euthyroid	Hyperthyroid
Iodine deficiency	X		
Multinodular goiter		X	X
Hashimoto's thyroiditis	X		
Graves' disease			X
Subacute thyroiditis	X*	X	X*
Infiltrative disease	X	X	

Palpation of trachea



YouTube - trachea & thyroid examination.flv



YouTube - ThyroidExamination_3.flv

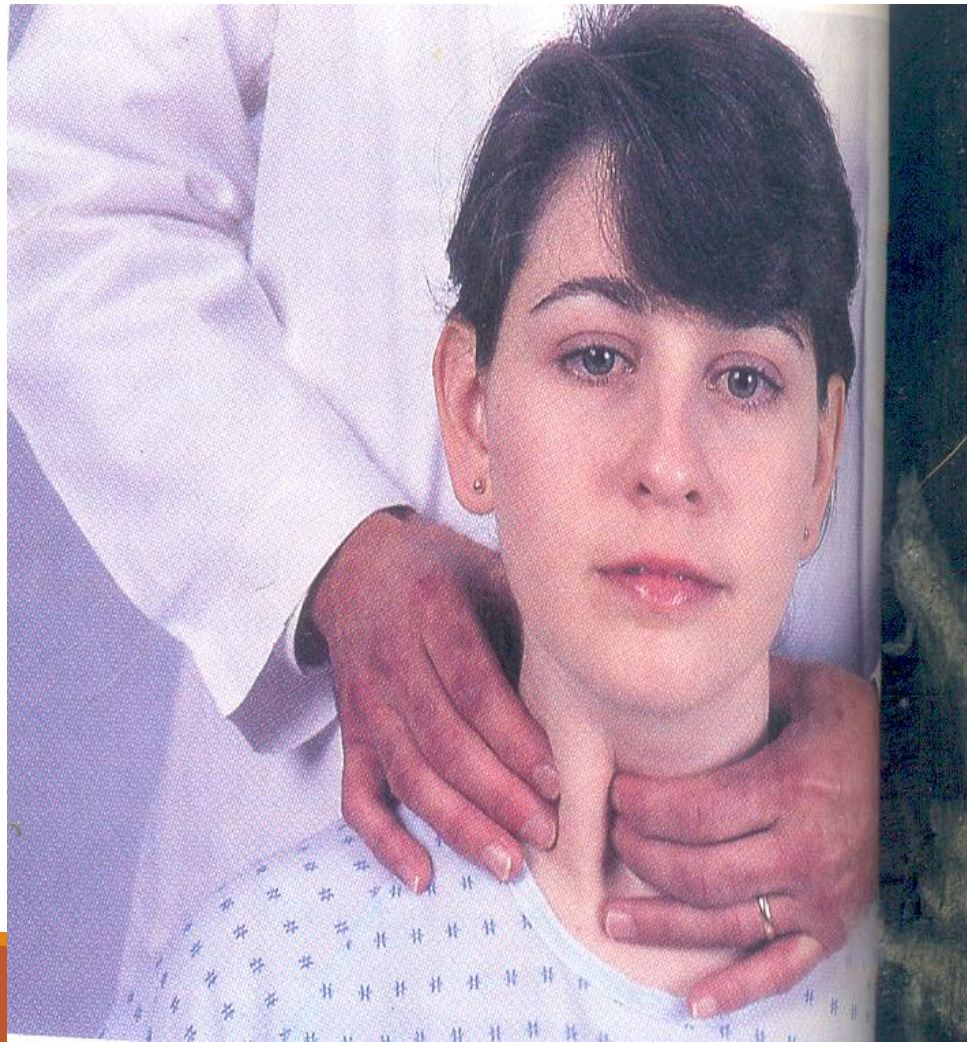


YouTube - Examination of the Thyroid Gland.flv



YouTube - ThyroidExamination_2.flv

Palpation of thyroid



Continue

Can normal thyroid be felt on palpation?

In slim patient, smooth firm structure that moves with deglutition

Lobes are better examined from behind, Relax sternomastoid by moving head to same side

Thyroid swelling is not attached to muscles except in

... movement limited ال حركة بيقتل

→ Malignancy

→ Thyroiditis

→ Previous thyroid surgery

Continue

Is thyroid swelling obstructing trachea?▪

Kocher's sign: pressure on the lobe cause stridor

Is there signs of thyrotoxicosis ?▪

Is the goitre malignant ?▪

Is there retrosternal extension ?▪

Is goitre malignant?

- Rapid increase in size
- Lymph node enlargement
- Hard part or all of thyroid
- Hoarseness of voice
- Recent enlargement of old standing goitre
- Loss of movement with deglutition
- Tracheal obstruction
- Referred ear pain
- Weak carotid pulse
- Horner's syndrome

Hyperthyroidism

	Primary thyrotoxicosis	Secondary thyrotoxicosis
Age	Young female	Middle age
Gland	Symmetrical enlargement	Not symmetrical
Eye signs	Usually present	Absent
Tremors Hands Cardiac signs	Present Moist and hot Less common	Not usually Not usually Usually present

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Grave's disease

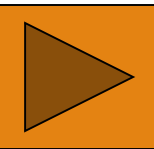
Autoimmune (AI) origin

Excess secretion of Thyroid Hormone by entire gland

Majority occurs between 25 and 45 year old

Female: Male = 8:1

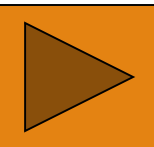
Affect 2% of females in UK,



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In patients with Grave's disease, eye signs may precede, coincide with or follow the hyperthyroidism

Sometimes similar eye signs are seen without a detectable thyroid abnormality



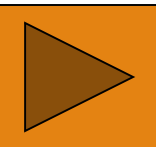
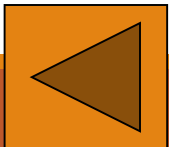
Pathology of eye symptoms

**Activated T cells infiltrate orbital contents
and stimulate fibroblasts, leading to:**

Enlargement of extraocular muscles

Cellular infiltration of interstitial tissue

Proliferation of orbital fat and CT



THYROID EYE DISEASE



LID RETRACTION1. sympathetic overactivity infiltration of levator / SR complex. (staring appearance)



Exophthalmos



THYROID EYE DISEASE

INFILTRATION

1. soft tissue involvement :-
chemosis, conjunctival
injection over the recti
insertions, puffy lids

Conjunctival edema



Proptosis

Proptosis is axial

TED is the most common cause of both bilateral and unilateral proptosis in adults

Proptosis is uninfluenced by R_x of hyperthyroidism and is permanent in 70% of cases

Severe proptosis prevents adequate lid closure, and may lead to severe exposure keratopathy and corneal ulceration



Ophthalmoplegia

- Diplopia on looking upward and outward
- Squint
- SR, LR, IO muscles most common involved



Symptoms and signs of thyrotoxicosis 1

Symptoms	incidence %
1. Nervousness	99
2. Increased sweating	91
3. Heat intolerance	89
4. Palpitation	89
5. Fatigue	88
6. Wt loss	82

Symptoms and sign 2

Symptoms	Incidence %
1. Dyspnea	75
2. Weakness	70
3. Increased appetite	65
4. Eye sign	54
5. diarrhea	23

Symptoms and sign 3

Sign	Incidence %
1. Tachycardia	100
2. Goiter	100
3. Skin changes	97
4. Tremor	97
5. Bruit	77

Symptoms and sign 4

Sign	Incidence %
6. Eye sign	71
7. Splenomegaly	10
8. A.F	10
9. Gynecomastia	10
10 .Palmar erythema	8



