DIAGNOSIS AND MANAGEMENT OF THYROTOXICOSIS

ESSAY

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BY

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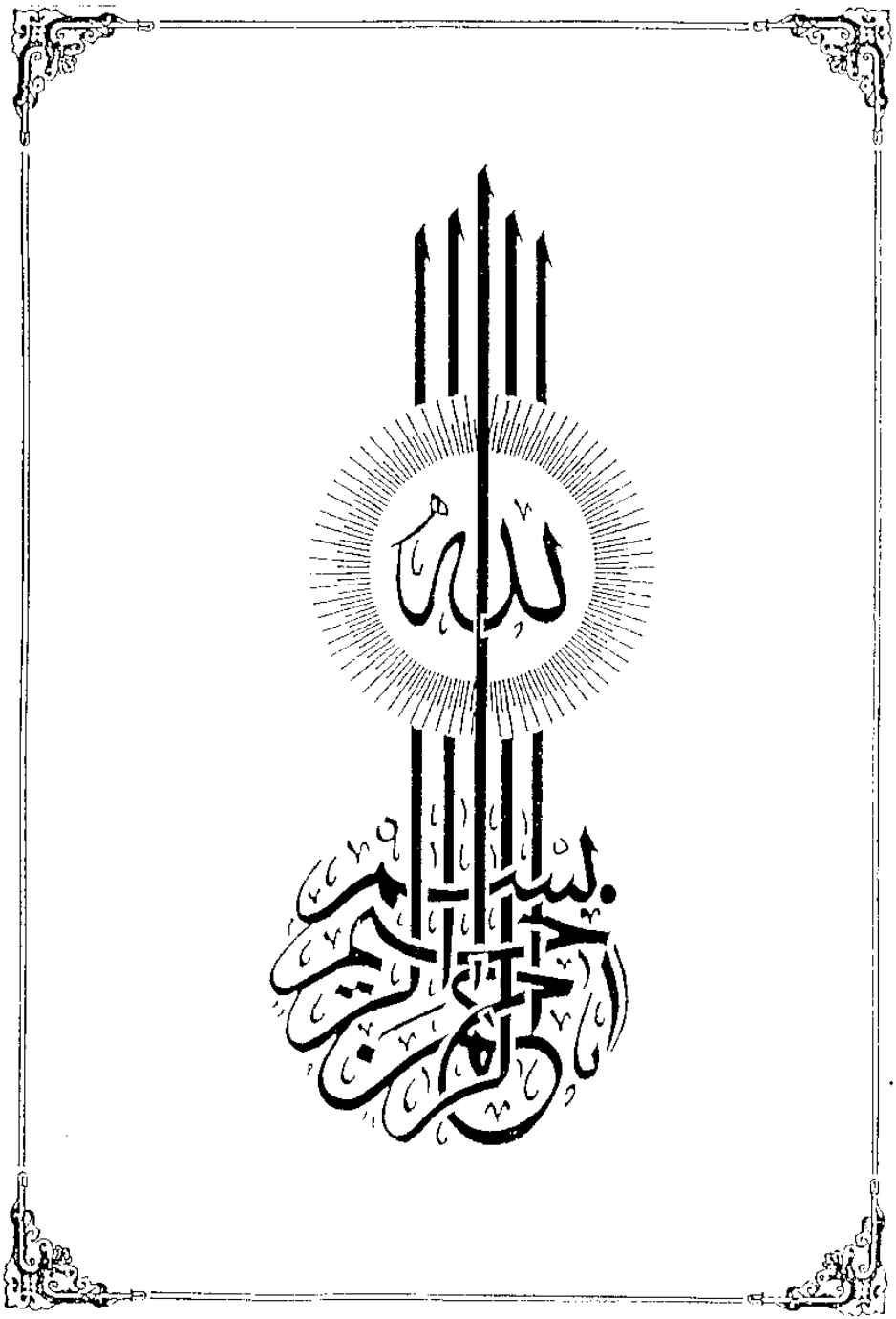
بسم الله الرحمن الرحيم

« وكان فضل الله عليك عظيما »

(صدق الله العظيم)



TO MY PARENTS

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INTRODUCTION

INTRODUCTION

The true function of the thyroid and its normal anatomy did not become apparent untill the nineteenth century when thyroidectomy was practised fairly regularly, Beaugie (1975).

Since one thousand years ago operation was desc - ribed by an Arabian physician Abul Casem Khalaf Ebn Abbas (Albucasis) who is said to have stopped haemorrhage by century and ligatures.

Kocher (1878) is regarded as the father of thyroid surgery, he was the first to successfully excise the thyroid for goitre.

Plummer in 1923 at the Mayo Clinic introduced "Iodine" as the first specific antithyroid substance, and he also used it after operation to reduce post-operative death.

In the past 30 years, improvement in surgical treatment of thyroid disease has stemmed from advances in diagnosis and preoperative control of thyrotoxicosis.

There are three forms of treatment of thyrotoxicosis; medical, surgical and iodine 131 .The guide lines for choosing are arbitrary, but strictly measurable criteria for selection are not yet available.

ANATOMY OF THE THYROID GLAND

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Figure 1, 2, 3 :

The thyroid gland in man lies in the lower part of the front of the neck where it clasps the upper part of the trachea. Its weight is about 1.5 gm in a newborn baby, (Beaugie, 1975), and in adult, it weights about 25 gm.

It consists of a pair of lobes which extend upwards to the thyroid cartilage and downwards for a variable distance towards the retrosternal space, depending on whether the neck is in flexion or extension. The lateral lobes are joined together by an isthmus which transverses the second to fourth tracheal rings, just below the cricoid cartilage. Arising from this isthmus there may be a pyramidal lobe which usually lies towards the left of the midline and is attached to the thyroid bone by a fibrous band called levator glandulae thyroidae.

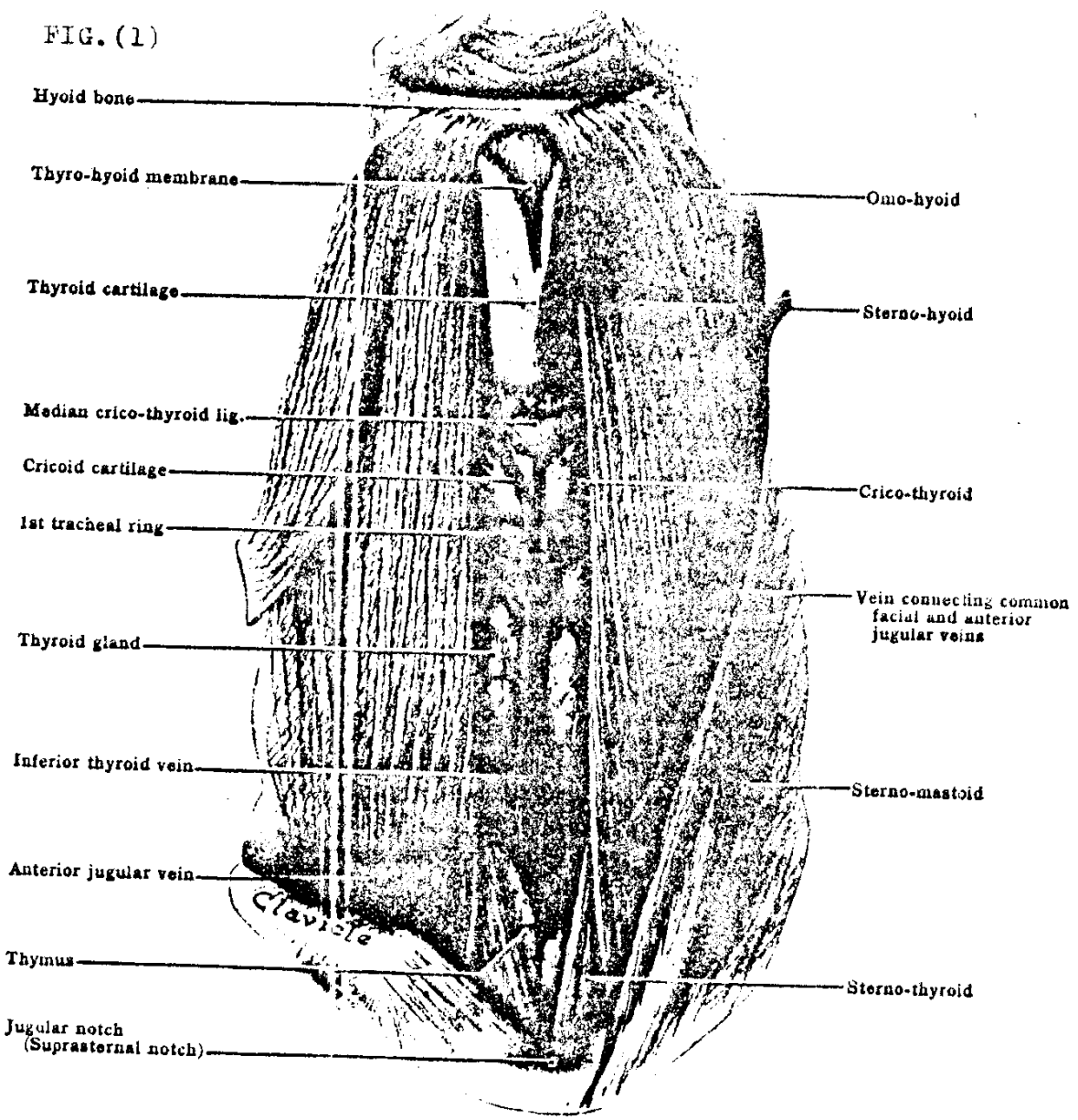
Each lateral lobes is conical in shape. Its base, or lower end is at the level of the fifth or the sixth tracheal ring, its apex is directed upwards and laterally reaching as high as the oblique line of the thyroid cartilage. Each lobe has three surfaces, the lateral or superficial surface is covered by the sterno-thyroid, sternohyoid and omo-hyoid muscles, and is overlaped by

the anterior border of the sterno-mastoid. The medial surface is moulded over the larynx and trachea. The external laryngeal nerve passes deep to the medial part of the thyroid lobe on its way to the cricothyroid muscle, also the lower part of the medial surface is related to the trachea in front and oesophagus behind with the recurrent laryngeal nerve in between. The posterior surface is related to the longus cervicis muscle, and it overlaps the common carotid artery.

Thyroid fascia and Capsule :

The thyroid is enveloped by a thin, fibrous, non-stripping capsule which sends septa into the gland substance to produce an irregular, incomplete lobulation. No true lobulation or lobation exists. The gland is, in fact throughout a uniform agglomeration of follicles. It has not true subdivisions. The lateral lobes lie in a bed between the trachea and the larynx medially and between the carotid sheath and the sterno mastoid muscle laterally. The deep cervical fascia, dividing into an anterior and posterior plane, lines this bed and makes a loosely applied false or surgical capsule for the lateral portions of the gland. In front are the thin, ribbon-like, infrahyoid muscles. The thyroid is molded perfectly to fit the spade available

FIG. (1)



FROM GRANT'S ATLAS OF ANATOMY (1980)

between the neighbouring structures, and is superficially placed.

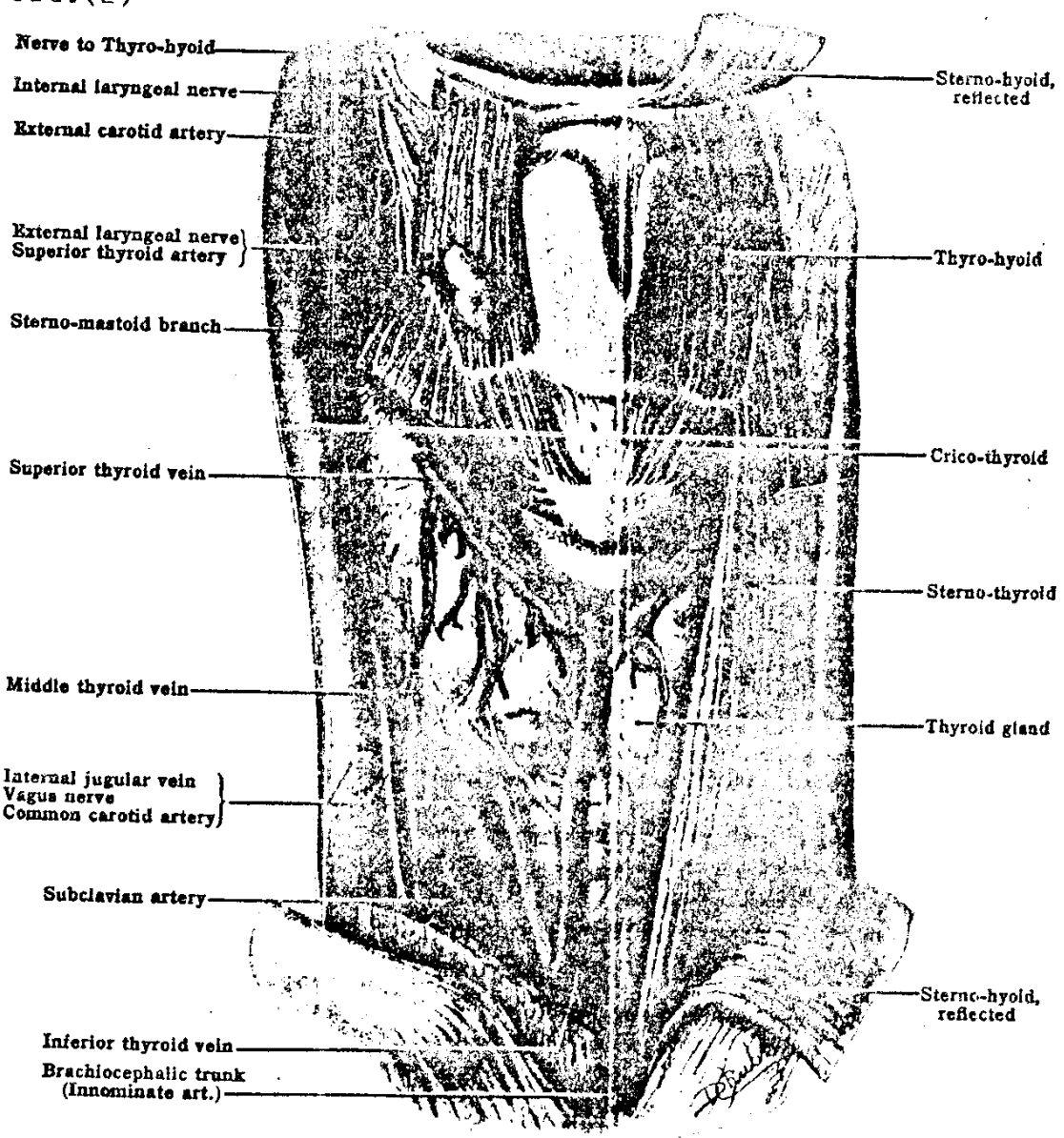
Vascular supply of thyroid :

The major arteries to the thyroid are the pairs of superior and inferior thyroid arteries, and occasionally a thyroid ima artery is present. This blood supply is supplemented by un-named tracheal and oesophageal vessels particularly prominent in thyrotoxicosis. The pattern of the venous drainage system is variable, but superior, middle and inferior thyroid veins are recognized.

Superior thyroid artery :

It arises in each side of the neck from the external carotid artery just above the bifurcation, from the bifurcation or from the common carotid artery. It passes downwards and anteriorly to reach the superior pole of the thyroid gland. It passes close to the superior laryngeal nerve, which it supplies by a branch named the superior laryngeal artery, before reaching the upper pole of the gland. At the thyroid gland, the superior thyroid artery divides into its two terminal anterior and posterior branches which supply the thyroid.

FIG.(2)



FROM GRANT'S ATLAS OF ANATOMY (1960)

The course of the recurrent laryngeal nerve and its relationship to the inferior thyroid artery is variable The nerve may lie above or beneath the artery, or pass between its branches. The lower branch of the inferior thyroid artery passes towards the inferior pole of the thyroid, usually gives a small artery to the inferior parathyroid gland. The superior branch ascends on the posterior surface of the gland and usually forms anastomosis with a descending branch of the superior thyroid artery. The inferior thyroid artery may be double (Faller and Sharer, 1947) or incidence. If the artery is absent branches from the ipsilateral superior thyroid artery, or the contralateral inferior thyroid artery take its place.

Thyroidea ima artery :

It may arise from the innominate artery, the right common carotic artery, aortic arch or internal mammary artery. It ascends in front of the trachea to reach the isthmus.

Veins of the thyroid : venous blood drains from a plexus within the thyroid into the systemic venous system through three groups of veins :

1- Superior thyroid vein : It emerges at the superior pole of the thyroid and passes superiorly and later-