

THYROID, TETANY AND TROPHIC SYNDROMES

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A RECENT trend in the surgery of the thyroid is to ligate the inferior thyroid artery as close to its source of origin as possible. New approaches for this purpose have been described. The reasons given for this ligation are (a) to avoid injury to the recurrent laryngeal nerve; (b) to obtain a relatively bloodless field during operation; (c) to prevent post-operative bleeding, etc. This is a rather surprising trend considering that such structures as the hypopharynx, the upper oesophagus, the larynx and the parathyroids depend on the inferior thyroid artery as the main source of blood supply.

The relevant anatomy to this discussion (Fig. 1) is as follows. The superior thyroid artery supplied mainly the connective tissue and capsule of the thyroid. The superior laryngeal, a branch of the superior thyroid (occasionally directly from the external carotid), accompanies the internal laryngeal nerves through the lower part of the thyrohyoid membrane and supplies the larynx, anastomosing with the artery of the opposite side and with the inferior laryngeal branch of the inferior thyroid. The cricothyroid branch of the superior thyroid is small and runs transversely across the upper part of the cricothyroid ligament communicating with the artery of the opposite side.

The branches of the inferior thyroid are: (a) the ascending cervical, supplying spinal cord, bodies of vertebrae and anastomosing with vertebral, ascending pharyngeal, occipital and deep cervical. (b) The inferior laryngeal supplies the inferior constrictor, muscles and mucous membrane of larynx and anastomoses with superior laryngeal and opposite inferior laryngeal. (c) The Oesophageal branches supply the upper oesophagus anastomosing with the pharyngeal and branches from the descending thoracic artery. (d) The glandular branches which supply the thyroid and parathyroid glands.

The middle cervical ganglion gives branches to the inferior thyroid arteries. These branches supply the larynx, the trachea, the hypopharynx, the upper oesophagus, the thyroid and parathyroid.

Discussion

From the description of the thyroid arteries it is apparent that the main blood supply and sympathetic supply to the parathyroids, the larynx and the upper oesophagus is from the inferior thyroid artery. In addition the inferior thyroid sends branches to the pharynx, spinal cord and vertebrae. Since the superior thyroid artery is always ligated and divided in thyroidectomy, ligating and/or dividing the inferior thyroid must have a profound devitalizing effect on the organs dependent on it.

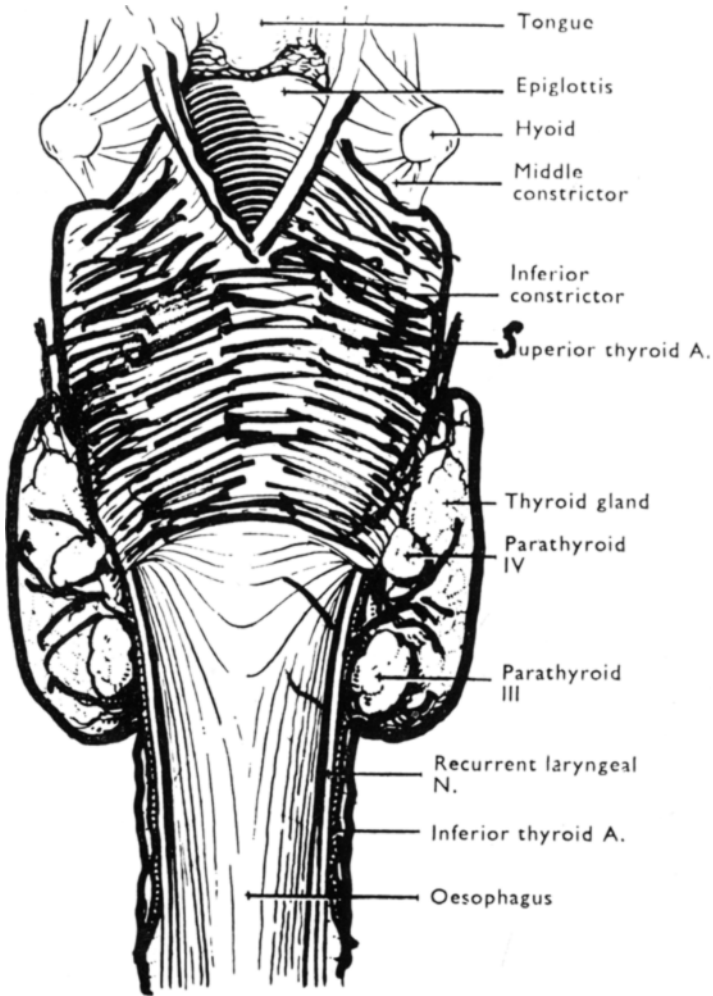


Fig. 1—Posterior view of oesophagus, and thyroid gland showing relationship of same.

It has long been established that (1) hypofunction of the parathyroids causes tetany; (2) that dysphagias, such as Plummer Vinson or Paterson-Kelly syndromes, are associated with iron deficiency anaemia; (3) that there is a definite relationship between keratosis laryngis and carcinoma of the larynx; that occlusion of the blood supply by any means predisposes to infections and malfunction.

With these complications in mind it would be instructive to have a review of these cases that had the inferior thyroid artery ligated during thyroidectomy.

Summary

The blood supply to the thyroid and related organs has been described. The possible complications following ligation and/or dividing the inferior

thyroid artery with the superior thyroid artery in thyroidectomy have been enumerated.

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