

THE THYROIDEA IMA ARTERY. By G. WYATT PRATT, B.A.,  
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INTRODUCTION.

THIS artery, which is described in all the anatomical text-books, may arise from the arch of the aorta (*arcus aortæ*), from the innominate artery (*a. anonyma*), from the right common carotid (*a. car. com. dext.*), from the right or left subclavian, and in rare cases from one of the branches of the subclavians. It varies in diameter from .5 mm. to 3 mm., and it may consist only of a single trunk or of multiple bifurcations and terminal arborisations. In short, there does not seem to be any cogent reason for cataloguing, or even for naming, this aberrant thyroid artery. Unfortunately, an element of associative importance appears—the artery is of importance surgically in the operation of tracheotomy.

RECOGNITION OF THE THYROIDEA IMA ARTERY.

Neubauer (1) recognised the thyroidea ima, and after him it was called *the thyroid artery of Neubauer*. Sappey (2) notes that the thyroidea ima is a supernumerary inferior thyroid, that it springs from the innominate arch, and adds that it has been very rarely observed. Beaumanoir (3) states that he has seen cases in which, with all the thyroid arteries of a normal size, the thyroidea ima was of a large calibre and divided into three branches, the upper two ascending and taking up their positions, the one lateral to the trachea, the other lying in the middle line and terminating in ramifications and anastomoses with the other thyroid arteries in the thyroid gland. The descending branch divided into two twigs, the ascending one passing upwards to terminate in the thyroid gland, while the other descending limb passed downwards to the region of the aortic arch and terminated in the surrounding tissue.

He noticed also in another case (4) the origin of the thyroidea ima from the innominate artery, in the form of a branch of 2 mm. in diameter which terminated in the sterno-thyroid muscles and subjacent tissue, and had no connexion whatever with the thyroid gland.

Taylor and Grell (5) described a case in which, associated with the origin of an inferior thyroid artery of normal calibre, a small thyroidea

ima was evolved from the innominate artery. Testut (6) states that the thyroidea ima may spring either from the arch of the aorta or from the innominate artery. He goes on to state that its presence is solely connected with the lack of a sufficient blood-supply for the thyroid gland from its normal sources.

Theile (7) remarked that the thyroidea ima was either a displacement or a reduplication of the inferior thyroid artery. Macalister (8) states that a *middle thyroid artery* is sometimes seen to rise from the innominate artery and ascend on the trachea to supply the thyroid gland.

Deaver (9), Morris (10), and Young and Robinson (11) all state that the thyroidea ima is given off by the innominate artery, and that its sole object is the arterial supply of the thyroid body. M'Murrich (12) lays down the definite precept that the presence of the thyroidea ima is "associated with a more or less extensive reduction of the size of one or other of the thyroid arteries."

In my own experience I have found the thyroidea in two subjects only during three years. In the first case the artery came off from the right common carotid at a distance of one inch below the bifurcation and passed first inwards, and then directly upwards for a short space, when it divided into four trunks, all of which terminated, after supplying the thyroid gland, in anastomoses with the arteries proper of the thyroid body. The artery was of substantial calibre, and there was no diminution either in diameter or in number of the normal thyroid arteries. The thyroid body also was of the usual dimensions. In the second case the thyroidea ima came off as a short twig from the right common carotid artery inferior to the bifurcation. Its course was practically coincident with that of the inferior thyroid artery, and terminated in the thyroid body.

#### DISCUSSION AND CONCLUSIONS.

In the face of such a conflicting mass of evidence, it would at first sight appear difficult to formulate any definite explanation of the appearance and significance of the thyroidea ima.

It is impossible to agree with M'Murrich in the assumption that the thyroidea ima is only developed when there is insufficiency of blood supply — either by congenital or acquired conditions — to the thyroid body. Unfortunately for this view, there are many cases on record where the thyroidea ima has been observed to have no connexion with the thyroid body at all. It is noticeable, however, that whenever these descending branches are present they are slender and invariably pass downwards towards the locality of the thymus gland. This would account for the

usual extreme slenderness of the thyroidea ima when it arises from the arch of the aorta or the lower part of the innominate. In all recorded cases it is noticeable that the thyroidea ima when present—either as a single branch not proceeding to the thyroid body, or as a twig passing to the thyroid gland and evolving another offshoot coursing away in the direction of the thymus—is universally of diminutive calibre. When the thyroidea ima is devoted solely to the thyroid body, it is either a single or multiple artery of large calibre. It may be associated with diminutive development of the thyroid arteries, or, on the other hand, they may be normal. There does not seem to be any hard-and-fast rule. In the higher Primates, Keith (13) found on dissecting one gorilla, four gibbons, three semnopithecues, and two macaques that in some of the last two genera the thyroidea ima arose from the carotid artery in the neck, while in the other cases it arose from the aortic arch. From these facts it would seem that the thyroidea ima is just as variable in the higher Primates as it is in man, and that it has no definite position which can be made a precept.

In reviewing the facts at my disposal, I find the following singular agreement. When the thyroidea ima is given off from any artery in the region of the neck, it is usually of a noticeable diameter; when it is given off from an artery which is not in the neck, it is invariably of slender calibre. Against this must be set the fact that when a "neck" thyroidea ima artery gives off a branch which descends towards the thymus, it is always of slender dimensions. The reason for this is not far to seek. The thyroidea ima when passing to the thymus is of very small size simply and solely because the body to which it had formerly directed its supply has more or less completely atrophied as a gland. It may be questioned from this why the thyroidea ima has not altogether atrophied, considering that its purpose in life has gone. This is easily answered. Waldeyer has shown that total degeneration of the thymus never occurs, and that throughout life it retains something of its old form. In this thymic connexion it would be better not to call the artery thyroidea ima, but *thymica accessoria*, thus giving the artery its proper significance. When the thyroidea ima is of large size, and passing to the thyroid body, its presence may be due to one of two causes: (a) the absence or malformation of one or more of the superior or inferior thyroid arteries due to defective development of the thyroid arteries proper, or (b) the necessity of a large blood-supply to the thyroid gland from physiological or pathological causes.

It will be seen that this artery (whether in the position which justifies the name of *thymica accessoria*, or in the position in which it should be

called thyroidea ima) is purely an anomalous and abnormal condition, and does not justify its presence in anatomical nomenclature at all. M'Murrich (12) and Thane (14) state that the thyroidea ima is present in 10 per cent. of bodies, but this figure would appear to be much exaggerated.

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