

The Dorsal Scapular Artery — A Proposed Term for the Artery to the Rhomboid Muscles

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The terminology of the arterial supply to the rhomboid and trapezius muscles is quite confusing in that each artery has been given two different names; names which are related to the variations in the origin of these vessels. According to the recent Paris Revision of the terminology ('55) one of these is the transverse cervical artery, of the thyrocervical trunk, which gives rise to a superficial and a deep branch to the trapezius and rhomboid muscles respectively. When these branches arise separately, the trapezial branch is called the "superficial cervical artery" and that to the rhomboids, the "descending scapular artery." Thus, each vessel has two different names. Generally, an artery is named by the area of supply, irrespective of its origin or variations.

Within the last 4 years, two articles have been presented in the American Literature (Daseler and Anson, '59; Huelke, '58) which indicate that the artery to the rhomboid muscles arises more frequently as an independent branch of the subclavian artery than as a branch of the transverse cervical artery of the thyrocervical trunk. In most American and British texts such a separate origin is considered the variation, whereas it is described as typical in the German literature. French authors usually refer to the latter vessel as the posterior scapular artery.

Based on the fact that the two arteries more often have separate origins, and following two of the principles adopted by the International Anatomical Nomenclature Committee (Paris, '55), a modification of the terminology was suggested (Huelke, '58, '59). The modification is as follows: (1) The term transverse cervical artery be applied to that vessel which supplies the trapezius muscle (it has an origin

from the thyrocervical trunk in 77.5% of sides). (2) That the artery which supplies the rhomboid muscles take the name of the nerve along with which it passes, and be designated the dorsal scapular artery. This artery arises from the second or third part of the subclavian artery, separate from the transverse cervical artery, in approximately 70% of the sides. Thus, only one term is used for each artery.

If this modification in terminology is to be accepted internationally, there must be an agreement among anatomists as to its "usual" site of origin. Only by comparing data on the origins of these arteries from various countries can this end be achieved. Therefore, it is the purpose of this report to compare the data on these vessels of cadavers in the United States with studies from other countries.

DATA AND DISCUSSION

The major sites of origin of the dorsal scapular artery are illustrated in figure 1. In this illustration it will be noted that when the dorsal scapular artery arises behind or lateral to the anterior scalene muscle, it is an independent branch of the subclavian artery. However, when it arises medial to the muscle it is one of the terminals of the transverse cervical artery.

A list of the various types of origins found in the two most recent studies is presented in table 1. Both studies found an origin of the dorsal scapular artery from some source other than the transverse cervical artery, of the thyrocervical trunk, in approximately 7 out of 10 cases (Daseler and Anson, 68.4% ; Huelke, 69.1%). The differences between the two studies are minor; in the latter study an origin from the second part of the subclavian

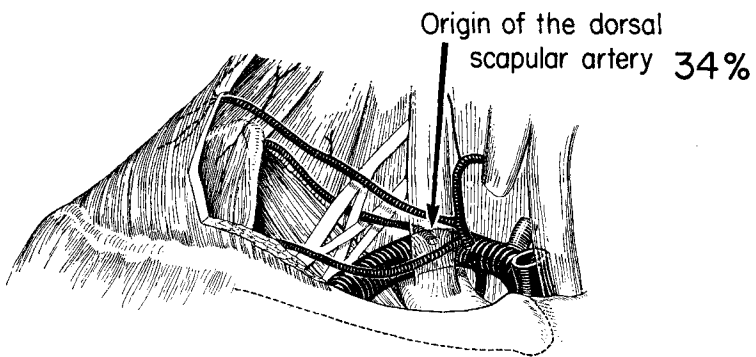
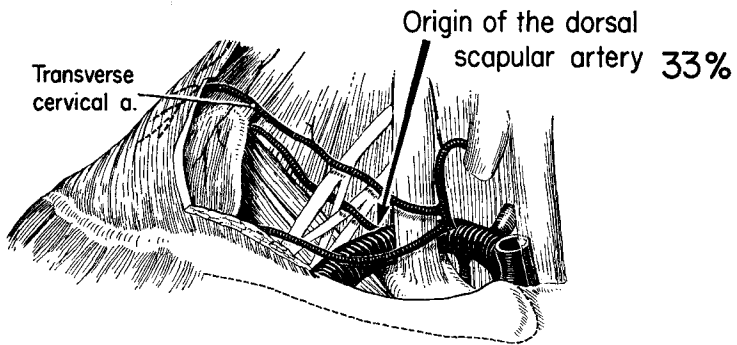
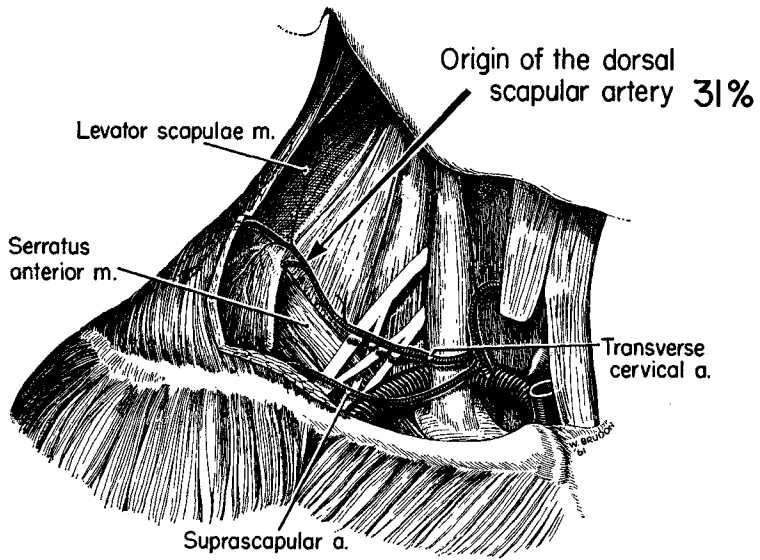


Fig. 1 Above — The origin of the dorsal scapular artery from the transverse cervical artery; this type of origin has been considered "typical" in American and British texts.
 Middle — From the distal or third portion of the subclavian artery.
 Below — The origin of the dorsal scapular artery from the second or scalene portion of the subclavian.

was found in 33.6% of cases, whereas Daseler and Anson noted such an origin in 19.4%. They reported an origin from the third part of the subclavian in 45.1% of cases, and I found this origin in 33.2%. Rarely origins are found from other subclavian branches or directly from the axillary artery (table 1).

The various origins of the dorsal scapular artery, as found in the literature, are presented in table 2. With but few exceptions, all authors agree that the artery supplying the rhomboids arises more often from some source other than the transverse cervical artery, mainly by a vessel from the second or third part of the subclavian artery. Those in agreement on this point, however, show marked individuality in their exact site of origin. Some have a greater percentage of origin from the second part, whereas others indicate that the third part of the subclavian is the more frequent site of origin.

There are several reasons for these differences. First, there may be true differences in the origin of this vessel between the various studies. Secondly, an origin from the second or third part of the subclavian artery frequently is on, or is very near the lateral edge of the anterior scalene muscle. Therefore, what one author

may call an origin from the second part of the subclavian, another investigator would record as being from the terminal part of the subclavian artery. Thirdly, viewing this origin, which is near the edge of the anterior scalene, from different angles can, at times, give different results. Finally, when the origin is directly in line with the lateral edge of the muscle it is the choice of the investigator as to whether the origin is to be recorded as lateral or behind the anterior scalene muscle.

A few studies — Deaver (1890), Thompson (1891), and Adachi ('28) — indicate that the dorsal scapular artery arises more frequently as a branch of the transverse cervical artery. Two of these studies — Thompson's, and Adachi's — indicate that origins from the transverse cervical artery, approximates the 50% level (49.3% and 46.2% respectively). Thus, both of these reports indicate only that an origin from the transverse cervical artery or from the subclavian artery directly occurs with equal frequency.

In a brief note, Deaver (1890) reported that this vessel arose almost always from the transverse cervical artery (98.2%). His results are so atypical when compared with the entire group that his results are questionable.

TABLE 1

The origin of the dorsal scapular artery as found in the two most recent studies

Origin	Daseler and Anson	Huelke
	765 sides	178 sides
(A) From transverse cervical artery (of thyrocervical trunk)	31.6	30.9
(B) From Subclavian II		
Directly	18.2	30.3
With costocervical trunk	1.0	1.1
With suprascapular artery	0.2	2.2
(C) From Subclavian III		
Directly	42.3	30.9
With costocervical trunk	0.2	0.6
With suprascapular artery	2.6	1.7
(D) Other origins:		
Subclavian I	3.1	0.6
Axillary I	1.2	1.2
Axillary II	—	0.6
Internal thoracic art.	0.8	—
Thyroid ima art. (of aorta)	0.1	—
With suprascapular art. of subclavian I.	1.6	—
With costocervical trunk of subclavian I.	0.8	—
Origin other than the transverse cervical artery	68.4	69.1

TABLE 2
The origin of the dorsal scapular artery as found in the literature

Author (year)	Number of cases	Transverse cervical artery of thyrocervical trunk	Second part of subclavian artery	Third part of subclavian artery	Other origins ¹	Origin other than transverse cervical artery	Country
		%	%	%	%	%	
Daseler and Anson ('59)	765	31.6	19.4	45.1	7.4	68.4	U.S.A.
Huelke ('58)	178	30.3	33.6	33.2	3.0	69.1	U.S.A.
DeGaris ('24)	278	45.7	2.2	52.1	—	54.3	U.S.A.
Bean ('05)	129	36.0	39.0	25.0	—	64.0	U.S.A.
Deaver (1890)	1090	98.2	0.5	1.2	0.1	1.8	U.S.A.
Thompson (1891)	544	50.7	2.6	46.7	—	49.3	England-Ireland
Quain (1844)	282	42.6	19.1	38.0	0.4	57.4	England
Carel ('35)	90	42.4	54.3	—	3.3	57.6	France
Coulouma and Van Varseveld ('34)	100	5.0	94.0	—	1.0	95.0	France
Fruchaud ('35)	?	abnormal	usually	—	—	usually	France
Pellegrini ('04) ²	104	26.0	64.4	—	9.6	74.0	Italy
Röhlich ('34) ³	200	28.0	25.5	45.0	1.5	72.0	Hungary
Faller ('52)	134	22.4	20.9	53.0	3.7	77.6	Switzerland
Reichert ('53) ⁴	150	20.6	75.4	—	3.9	79.4	Switzerland
Theille (1852)	?	12.0	29.0	52.0	6.0	87.0	Germany
Adachi ('28)	186	53.8	23.1	22.1	1.0	46.2	Japan
Marques and Nuñez ('41)	100	18.0	72.0	—	10.0	72.0	Spain

¹ Other origins are from the: axillary artery, first part of the subclavian artery, internal thoracic, thyroid ima, etc.

² Pellegrini, Faller, Marques and Nuñez, Reichert claim that the artery was absent in a small percentage. I feel that the rhomboids were not avascular in these cases and that some vessel supplied it. These percentages are listed under "other origins."

³ Röhlich considers the transverse cervical artery as existing only when the vessel arises from the subclavian artery, behind or lateral to the anterior scalene muscle, and passing through the brachial plexus. Using this definition it is absent in 35.5% of his cases. However, he indicates that this percentage (35.5%) consists of vessels arising from the: superficial cervical, terminal part of the subclavian or axillary artery, or from the costocervical trunk. This percentage is broken down and placed in the appropriate columns above.

⁴ Reichert used the same cadavers as did Faller, to which he added 15 additional sides.

The dorsal scapular artery passes through the brachial plexus either above or below the middle trunk to reach the levator scapulae muscle near the superior angle of the scapula where it joins the dorsal scapular nerve. All authors agree that this is the region of passage in the majority of cases. When this vessel is a branch of the transverse cervical artery however, it always passes over the brachial plexus. Together the artery and nerve pass downward near the scapular attachment of the rhomboid muscles; throughout this course the artery supplies the rhomboid muscles by multiple small branches and by a larger branch, the lower part of the trapezius muscle.

SUMMARY

Confusing terminology exists with regard to the vasculature of the trapezius and rhomboid muscles, for the names of the arteries supplying these muscles vary according to the variation in origin of these vessels. To alleviate this confusion, the term "dorsal scapular" has been proposed for that artery which supplies the rhomboid muscles. The transverse cervical artery then, is the supply of the trapezius muscle. These arteries are so named irrespective of their site of origin.

The studies of investigators in the U.S.A., France, Germany, Italy, Hungary, Switzerland, and Spain agree that the arterial supply to the rhomboid muscles — the dorsal scapular artery — originates preponderantly from some source other than the transverse cervical artery. Two studies indicate that the vessel arises either directly from the subclavian artery or as a branch of the transverse cervical artery with equal frequency. Only one report has presented data which showed that the transverse cervical artery is more frequently the site of origin of the artery to the rhomboid muscles.

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