The arch of the aorta is the convex continuation of the ascending aorta and lies entirely within the superior mediastinum. It begins at the level of the right second sternocostal joint and passes supero-posteriorly over the trachea, crossing to its left side. It then descends to the left of the fourth thoracic vertebra, where it continues as the descending thoracic aorta.

From its upper aspect it gives rise to the brachiocephalic trunk, left common carotid and left subclavian artery. The arch maintains its vessel diameter throughout its course, decreasing only slightly as it gives off its three branches.

Anteriorly, the arch is separated from the thoracic wall by the left lung and manubrium of the sternum; on the left, it is crossed by the left phrenic and vagus nerves (X cranial nerve). Posteriorly, on the right, are the trachea, deep cardiac plexus, left recurrent laryngeal nerve, esophagus, thoracic duct and vertebral column. Superiorly lie the aortic branches, which are traversed anteriorly by the left brachiocephalic vein. Inferiorly lie the pulmonary bifurcation and the left principal bronchus.