

The first rib is short, broad, flattened and markedly curved and it slopes obliquely downwards from posterior to anterior. It has superior and inferior surfaces and medial and lateral borders. The small **round head** has a circular facet for articulation with the first thoracic body. The round neck is directed postero-laterally. The prominent posteriorly projecting tubercle has an oval facet medially for articulation with the transverse process of T1. As the rib bends, the tubercle and angle of the rib coincide. The superior surface is crossed by two transverse grooves for the subclavian artery (posteriorly) and the subclavian vein (anteriorly), separated by a ridge ending on the medial border as the scalene tubercle, where scalenus anterior attaches. On either side of the grooves the surface is roughened.

The inferior surface is smooth and not grooved, the concave medial border is thin and has the scalene tubercle near its midpoint: the convex lateral border is thicker posteriorly. The anterior (sternal) end is larger than any other rib and is attached via costal cartilage to the manubrium of the sternum.

The superior surface of the rib gives attachment to the subclavius muscle and the costoclavicular ligaments.

Between the pleura and the front of the neck of the rib, from medial to lateral, lie the sympathetic trunk, the superior intercostal artery and the large branch of the first thoracic spinal nerve to the brachial plexus.

### **Ossification**

The first rib ossifies from primary and secondary centers. The primary ossification center for the shaft appears near the angle during the eighth week in-utero, and secondary ossification centers for the head and tubercle appear during puberty and fuse with the shaft after the age of 20 years.

### **Relations**

Important relationships in this area are described with respect to the scalenus anterior muscle. This muscle, although not important functionally, forms an anatomical landmark. It runs from the anterior tubercles of the C3 to C6 vertebrae, converging distally onto the scalene tubercle of the first rib.

#### ***Anterior:***

Phrenic nerve  
Branches of thyro-cervical trunk  
Carotid sheath  
Subclavian vein

#### ***Medial:***

First part of subclavian artery and its branches  
Sympathetic chain  
Common carotid artery

#### ***Lateral:***

Third part of subclavian artery  
Trunks of brachial plexus

#### ***Posterior:***

Second part of subclavian artery  
Lower roots of brachial plexus