The superior cervical ganglion is the largest of the cervical ganglia and consists of the fused ganglia of C1 to C4. It is situated at the level of the second and third cervical vertebrae, anterior to the longus capitis muscle and posterior to the internal carotid artery and its carotid sheath. It is connected to the middle cervical ganglion inferiorly by the sympathetic trunk. It gives rise to lateral, medial and anterior branches.

The lateral branches of the superior cervical ganglion consist of grey rami communicantes, which pass to the four upper cervical spinal nerves, the inferior vagal ganglion and hypoglossal nerve (XII cranial nerve). The jugular nerve ascends to the base of the skull and divides to join the inferior glossopharyngeal and superior vagal ganglia; other fibers reach the superior jugular bulb and meninges of the posterior cranial fossa.