The fourth cervical ventral nerve roots contain efferent somatic nerve fibers corresponding to the fourth cervical spinal cord segment. They are small and emerge as two or three rows of rootlets from the antero-lateral sulci of the spinal cord. Between adjacent rootlets are inter-radicular spaces, which contain small blood vessels.

The roots pass obliquely infero-laterally over the superior surface of the transverse processes of C4 (posterior to the foramen transversarium), to join with the fourth cervical dorsal roots to form the fourth cervical spinal nerves. The roots are covered by a sleeve of pia mater, which is continuous with that of the spinal cord, and loosely invested by a prolongation of dura and arachnoid mater (the dural sleeve) almost as far as the spinal nerves.