The second cervical ventral nerve roots contain efferent somatic nerve fibers corresponding to the second cervical spinal cord segment. They are small and short 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 almost horizontally to travel over the superior surface of the transverse processes of C2 (axis), posterior to the foramen transversarium, to join with the second cervical dorsal roots to form the second 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.