The tenth thoracic ventral nerve roots contain efferent somatic nerve fibers corresponding to the tenth thoracic segment, as well as preganglionic sympathetic fibers from the lateral horn of the tenth thoracic segment. They 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 to their exit through the intervertebral foramina between the pedicles of T10 and T11. They are slightly smaller in diameter than their corresponding dorsal roots but larger in obliquity and length than the ventral roots above; in the lower thoracic region the distance between the spinal cord attachments and vertebral exit of the ventral roots is at least the height of two vertebrae. The roots pass over the superior surfaces of the transverse processes of T11 to join with the tenth thoracic dorsal roots to form the tenth thoracic 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.