The fifth sacral ventral spinal rami, which are smaller than the ventral rami above, exit the sacral canal through the sacral hiatus between the fifth sacral and first coccygeal vertebrae. Here they are connected to adjacent sympathetic ganglia by grey rami communicantes.

The rami curve around the lateral sacral margins below the cornua and pierce the coccygeus muscles to reach their pelvic surfaces. Here the ventral rami of S5 join with coccygeal ventral rami and small branches of the ventral rami of S4, to form the coccygeal plexus, which lies anterior to the coccyx. At this point anococcygeal nerves arise piercing the sacrotuberous ligaments to supply adjacent areas of skin.