Vertebral artery diameter

The aim of a study of Lee et al. from the Department of Neurosurgery, Incheon St. Mary's Hospital, The Catholic University of Korea, College of Medicine South Korea, Department of Neurosurgery, Seoul Medical Center, South Korea and Department of Neurosurgery, St. Vincent Hospital, The Catholic University of Korea, College of Medicine, Suwon, South Korea was to quantitatively evaluate the surgical anatomy of the vertebral artery and the sub-axial spine to assess their influence on cervical spine surgery.

Retrospective data was evaluated from a total of 275 three-dimensional head and neck CT-angiograms. Vertebral artery diameter (VAD) and the distance between the uncinate process superior ridge and vertebral artery (UPVD) were measured. The minimum pedicle transverse angles (miPTAs), maximum PTA (MxPTAs), pedicle width (PW) and range of PTA (rPTA) were also measured.

The mean value of the right UPVD was larger than that on the left: 4.5 vs. 3.6 mm (C3), 3.4 vs. 2.8 mm (C4), 3.0 vs. 2.5 mm (C5) and 3.1 vs. 2.4 mm (C6), respectively. The mean value of miPTA (32.2 vs. 31.7°: C3, 36.9 vs. 35.2°: C4, 35.3 vs. 33.9°: C5 and 29.9 vs. 29.2°: C6) and MxPTA (56 vs. 55.6°: C3, 61.7 vs. 60°: C4, 60.3 vs. 58.5°: C5 and 54.9 vs. 55°: C6) showed no statistical significance of laterality. The mean value of PW and rPTA ranged between 5.0-5.8 mm and 23.8-25.8° on both sides.

Generally, right and mid- cervical segment decompression was found to be more secure than that on the left and in the lower cervical segment during an anterior cervical approach, considering the values of VAD and UPVD. Results of this study indicate that more attention should be paid to the mid-cervical pedicle screw fixation regarding the miPTA value, and rPTA (23.9-25.8°) should be maintained constantly regardless of cervical segment [1].

1)
Lee HJ, Kim JH, Kim IS, Hong JT. Anatomical evaluation of the vertebral artery (V2) and its influence in cervical spine surgery. Clin Neurol Neurosurg. 2018 Sep 8;174:80-85. doi: 10.1016/j.clineuro.2018.09.002. [Epub ahead of print] PubMed PMID: 30218880.