

Abstract:

STUDY DESIGN: The cervical pedicle diameter size differs between Asians and non-Asians. The authors studied the transverse pedicle diameter of the C2-C7 of the cervical spine in a Malaysian population using computerized tomography (CT) measurements. The transverse diameter of the pedicle is the determinant of the feasibility of this technique because the sagittal diameter of the pedicle has been wider than the transverse pedicle diameter. **OBJECTIVES:** To study the average transverse pedicle diameter of the cervical spine in a Malaysian population, and evaluate the feasibility and safety of pedicle screw fixation in these patients. **SUMMARY OF BACKGROUND DATA:** Cervical transpedicular screw fixation has been safe and is most probably going to be the gold standard for cervical spine fixation. However, its use in the Asian population should be considered cautiously because our cervical pedicle diameter may not be adequate to accommodate the standard pedicle screw size, which can be dangerous because there are vital structures located adjacent to the pedicles. **METHODS:** The measurements of the cervical pedicles were performed on CT images using its measurement tools. CT cutting was made at 2.5-mm intervals. The pedicle transverse diameters were defined as the most outer diameter of the pedicle, taken perpendicular to the axis of the pedicle and measured in millimeters up to 0.1 mm. **RESULTS:** The mean transverse diameters of the cervical pedicle of C2, C3, C4, C5, C6, and C7 in males were 5.4, 5.2, 5.1, 5.2, 5.5, and 6.5 mm, respectively, and ranged between 5.1 and 6.5 mm. In females, the mean transverse diameter of the cervical pedicle of C2, C3, C4, C5, C6, and C7 were 5.0, 4.6, 4.7, 4.9, 5.2, and 5.6 mm, respectively, and ranged between 4.6 and 5.6 mm. If the minimum transverse diameter required is 5.0 mm for 3.5-mm screw insertion, about 4.2% to 54.2% (male) of pedicles at different levels and 6.7% to 73.3% (females) of patients cannot have fixation with a 3.5-mm screw using this technique. **CONCLUSION:** Transpedicular screw fixation for the cervical spine must not be attempted in the Malaysian population before the exact pedicle diameters are known. Therefore, preoperative CT evaluation is a must before transpedicular fixation is performed, especially in female patients. Because the margin for mistake is very narrow, it is best avoided in upper cervical spines.