

Computed tomographic evaluation of the odontoid process for two-screw fixation in type-II fracture: a Malaysian perspective

Abstract:

PURPOSES: To measure the diameter of the odontoid process in a Malaysian population using computed tomographic (CT) scan and determine the feasibility of treating type-II odontoid fractures using 2 cortical screws. **METHODS:** CT images of the odontoid process of 85 patients aged 18 to 80 years were analysed; 69 (81%) were male (mean age, 44 years) and 16 (19%) were female (mean age, 48 years). Both anteroposterior (AP) and transverse diameters of the odontoid process were measured via axial CT images at 3 different levels: the base of the odontoid process and 1.2 mm and 2.4 mm above the base. **RESULTS:** The mean AP and transverse diameters of the odontoid process in men were 11.3 (range, 10.0-12.6; standard deviation [SD], 0.7) mm and 10.2 (range, 8.5-12.3; SD, 0.8) mm respectively, whereas in women were 10.9 (range, 9.4-13.2; SD, 0.8) mm and 10.1 (range, 7.9-11.6; SD, 0.9) mm respectively. The difference in corresponding mean dimensions between men and women was not statistically significant. The mean AP diameter was significantly larger than the mean transverse diameter. At the base and 1.2 mm and 2.4 mm above the base, the respective transverse diameters of 4 (5%), 13 (15%), and 24 (28%) of the patients were <9.0 mm. None had an odontoid AP diameter of <9.0 mm at any level. **CONCLUSION:** Two 3.5-mm cortical screws appear too big for fixation in one third of our sample presenting with type-II odontoid fracture. Fixation by two 2.7-mm screws is recommended for Malaysians and other Asian populations.