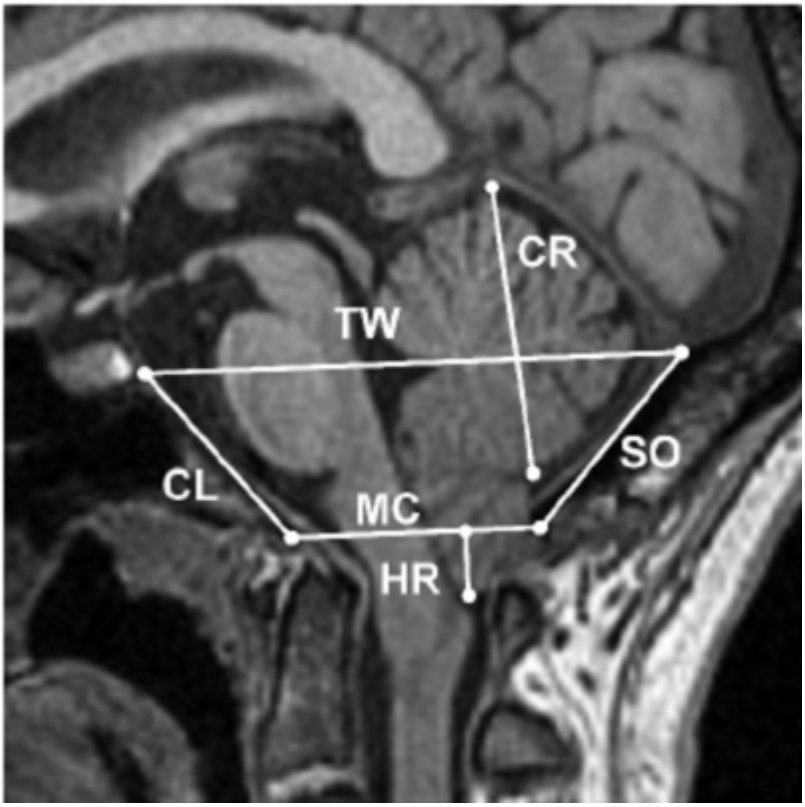
Twining line



Studies have used the Twining line (from the tuberculum sellae to the torcula), or the floor of the fourth ventricle as reference lines and defined different cutoff values of “steepness”. The other important factors to be considered in Pineal region approach are anatomic features of the quadrigeminal cistern and superior cerebellar cistern, as both host important neurovascular structures and serve as anatomic corridors [1) 2) 3) 4) 5)].

The current trend to use the Twining line to define this angle has significant pitfalls.

The goal of a study of Syed et al., was to provide a new and accurate way to measure the tentorial angle and demonstrate its impact on surgeries of the pineal region.

n-angle to measure the tentorial angle was introduced using the floor of the fourth ventricle and the torcula. Comparisons with older techniques were made to illustrate reliability. Midline sagittal MR images were used to measure the tentorial angle in 240 individuals to obtain population-based data. A cohort of 8 patients who underwent either the infratentorial or the transtentorial approach to the pineal or upper vermian region were examined in search of correlations between tentorial angle and surgical approach.

The data in this study showed that the Twining line technique understates the tentorial angle in people with low-lying torcula. The n-angle is more reliable in reflecting the true steepness of the tentorium regardless of torcula position. On average, men have slightly steeper tentoriums. In the clinical cohort, all patients who underwent infratentorial surgery had tentorial angles <55°, whereas the majority of patients who underwent transtentorial surgeries had angles >67°.

The n-angle provides a reliable and accurate way to describe the slope of the tentorium. The population-based average of 60° may be a useful measurement to influence the choice of surgical

approach, either under or through the tentorium, to the pineal region [6].

The recognition of anterior or posterior displacement of the fourth ventricle on axial computed tomography (CT) has proven to be difficult because the apparent position of this structure is variable and dependent on scanning angle. In most cases direct visualization of a lesion and its relationship to normal anatomic structures allows for the correct assessment. However, in some instances it would be advantageous for lesion localization to be able to identify relatively subtle displacements of the fourth ventricle. This is possible on CT by determining the position of this structure relative to Twining's line (the line between the tuberculum sellae and torcula). The position of the fourth ventricle, tuberculum sellae, and torcula relative to an arbitrary fixed point can be established in virtually all cases, and thus the position of the fourth ventricle relative to Twining's line can be determined. In a control group of 100 patients with normal CT examinations, the ratio of the distance from the tuberculum sellae to the center of the fourth ventricle and the distance from the tuberculum sellae to torcula (Twining's line) was between 0.47 and 0.53. In 66% of the cases the ratio was 0.49-0.51. THere were 54 posterior fossa masses evaluated by this technique. Determination of fourth ventricular position by this method proved to be of particular value in recognizing brainstem glioma, and in determining the site of origin of laterally placed posterior fossa masses [7].

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