

Frontal ventriculostomy

With the patient in a [supine position](#) and the axis of their head maintained horizontally, the guiding protractor is placed horizontally in the frontal [burrhole](#) at [Kocher's point](#).

Using the guiding angle between the head axis and the frontal horn of the lateral ventricle based on coronal head computed tomography (CT) or magnetic resonance (MR) images, the ventricular catheter is then placed in the catheter guide within the guiding protractor.

In 20 hydrocephalic patients with a [bicaudate index](#) >0.2 or bifrontal distance >25 mm, the ideal guiding angle ranged from 17 to 23° (mean ± standard deviation [SD], 19.6° ± 1.6°). In all these patients, ventricular catheterization was successfully achieved with only one pass of the catheter, and postoperative CT scans showed satisfactory placement of the catheter in the ipsilateral frontal horn of the lateral ventricles.

The proposed surgical technique using a guiding protractor facilitates accurate freehand placement of a ventricular catheter for patients with a bicaudate index >0.2 or bifrontal distance >25 mm ¹⁾.

Case series

In 43 consecutive hemorrhagic stroke patients with a history of [frontal ventriculostomy](#). Five neural tracts were reconstructed [corticospinal-tract (CST), corticoreticular-pathway (CRP), arcuate-fasciculus (AF), cingulum, and superior-longitudinal-fasciculus (SLF)].

Among five neural tracts, neural injury by EVD was observed on only two neural tracts (the CRP and the cingulum): CRP-seven (16.3%, five patients-partial tearing and two patients-complete discontinuation) of 43 patients and cingulum-eight (18.6%, eight patients-complete discontinuation of the anterior portion of the cingulum) of 43 patients.

It appears that neural injury occurred in a considerable number of patients who underwent EVD; therefore, conduct of further studies on measures to prevent or minimize neural injury by EVD should be encouraged ²⁾.

¹⁾

Kim D, Son W, Park J. Guiding protractor for accurate freehand placement of ventricular catheter in ventriculoperitoneal shunting. Acta Neurochir (Wien). 2015 Jan 27. [Epub ahead of print] PubMed PMID: 25619775.

²⁾

Kwon YM, Jang SH. Neural injury by frontal approach of external ventricular drainage in stroke patients. Int J Neurosci. 2015;125(10):742-6. doi: 10.3109/00207454.2015.1012665. Epub 2015 May 27. PubMed PMID: 26000821.

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