

Ventricular drainage placement techniques

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Autoclavable [reusable SHUNTSCOPE®](#) is designed to facilitate the endoscopic [ventricular drainage placement](#) during [shunt surgery](#).

Kim et al. described the ideal trajectory and [target](#) for accurate [Ventricular drainage placement](#). Seventeen consecutive trials of image-guided placement of the ventricular shunt catheter resulted in excellent positioning of the catheter, within the free cerebrospinal fluid space just anterior to the foramen of Monro. This positioning was accurate in each case, even if the ventricles were distorted or shifted ¹⁾.

[Image-guided ventricular catheter placement.](#)

[Ghajar Guide technique.](#)

[Freehand ventricular catheter placement.](#)

There is insufficient evidence to recommend the [occipital approach](#) versus frontal point of entry for the ventricular catheter; therefore, both entry points are options for the treatment of pediatric hydrocephalus ²⁾.

Real-time transcranial ultrasound monitoring through an enlarged bur hole is a feasible, safe, and effective technique for the placement of ventricular catheters in pediatric patients without a patent fontanelle ³⁾.

3D ultrasound with the described setup is a promising technique for accurate, fast, and user-friendly navigated placement of catheters for cerebrospinal fluid diversion ⁴⁾.

1)

Kim YB, Lee JW, Lee KS, Lee KC. Image-guided placement of ventricular shunt catheter. J Clin Neurosci. 2006 Jan;13(1):50-4. doi: 10.1016/j.jocn.2004.12.010. PMID: 16410197.

2)

Kemp J, Flannery AM, Tamber MS, Duhaime AC. Pediatric hydrocephalus: systematic literature review and evidence-based guidelines. Part 9: Effect of ventricular catheter entry point and position. J Neurosurg Pediatr. 2014 Nov;14 Suppl 1:72-6. doi: 10.3171/2014.7.PEDS14329. PubMed PMID: 25988785.

3)

Whitehead WE, Jea A, Vachhrajani S, Kulkarni AV, Drake JM. Accurate placement of cerebrospinal fluid shunt ventricular catheters with real-time ultrasound guidance in older children without patent fontanelles. J Neurosurg. 2007 Nov;107(5 Suppl):406-10. doi: 10.3171/PED-07/11/406. PubMed PMID: 18459905.

4)

Jakola AS, Reinertsen I, Selbekk T, Solheim O, Lindseth F, Gulati S, Unsgård G. Three-dimensional ultrasound-guided placement of ventricular catheters. World Neurosurg. 2014 Sep-Oct;82(3-4):536.e5-9. doi: 10.1016/j.wneu.2013.08.021. Epub 2013 Aug 23. Review. PubMed PMID: 23973451.

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