Ghajar Guide technique

The Ghajar Guide technique is used to direct a ventricular catheter at a 90° angle to the skull surface at Kocher's point. However, the human calvaria is not completely spherical. Lateral to the sagittal midline, the calvaria slopes downward with individual variation and thereby affects the accuracy of ventricular catheter placement. Accordingly, Park et al investigated the accuracy of the orthogonal catheter trajectory using radiographic simulation and examined the effect of the calvarial slope on this accuracy.

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A catheter trajectory orthogonal to the skull surface at Kocher's point and the ideal catheter trajectory to the foramen of Monro were drawn bilaterally on coronal head images of 52 patients with hydrocephalus. The correction angle, the difference between the 2 catheter trajectories, was then measured. Meanwhile, the calvarial slope was measured around Kocher's point by using a coronal head image. The correlation between the correction angle and factors such as the calvarial slope and bicaudate index was then assessed using a Pearson correlation analysis.

The ventricular catheter trajectory orthogonal to the skull at Kocher's point in the patients with hydrocephalus led to a catheter trajectory into the ipsilateral (70.2%) or contralateral (29.8%) lateral ventricles. The correction angles ranged from -3.3° to 16.4° (mean \pm SD 5.7° \pm 3.7°). In 87 (83.7%) head sides, lateral deviation from the orthogonal trajectory was required to approximate the ideal trajectory, and the correction angle ranged from 2.0° to 16.4° (mean 6.7° \pm 2.9°). The calvarial slope in the 104 head sides ranged from 15.6° to 32.5° (mean 24.2° \pm 3.1°). Pearson correlation analysis revealed a strong positive correlation (r = 0.733) between the calvarial slope and the correction angle.

The accuracy of ventricular catheter placement using the Ghajar Guide technique is affected primarily by the calvarial slope around Kocher's point. A radiographic analysis of a preoperative coronal head image can be used to estimate the accuracy of ventricular catheter placement and enable adjustment to approximate the ideal catheter trajectory ¹⁾.

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Park J, Son W, Park KS, Kim MY, Lee J. Calvarial slope affecting accuracy of Ghajar Guide technique for ventricular catheter placement. J Neurosurg. 2015 Nov 6:1-5. [Epub ahead of print] PubMed PMID: 26544778.

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