

Model guided placement of cerebral ventricular catheters**Ingerid Reinertsen - sintef.no****Asgeir Jakola - stolav.no****Ole Solheim - stolav.no****Frank Lindseth - sintef.no****Geirmund Unsgård - stolav.no**

Purpose: Freehand placement of external ventricular drainage is not sufficiently accurate and precise. In the absence of high quality pre-operative 3D images, we propose the use of an average model for guidance of ventricular catheters. Methods: The model was segmented to extract the ventricles and registered to five normal volunteers using a combination of landmark based and surface based registration. The proposed method was validated by comparing the use of the average model to the use of volunteer-specific images. Results: The position and orientation of the ventricles were compared and the distances between the target points at the left and right foramen of Monroe were computed (Mean±std: 5.65±1.60mm and 6.05±1.34mm for the left and right side respectively). Conclusions: Although an average model for guidance of a surgical procedure has a number of limitations, our initial experiments show that the use of a model might provide sufficient guidance for determination of the angle of insertion. Future work will include further clinical testing and possible refinement of the model.

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