Contralateral Transfalcine Transprecuneus Approach

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Contralateral Interhemispheric Transfalcine Approach

Zhu et al. previously used the contralateral transfalcine transprecuneus approach in 2 trigone meningiomas [1] and found that the approach could provide a wider surgical angle and reduce the incidence of complications compared with conventional approaches.

10 patients were treated at the Zhongshan Hospital, Fudan University, from March 2011 to May 2014. 7 were female and 3 were male. They were 43 to 73 years of age with an average age of 52 years. In all of the patients, headache was their dominant clinical symptom. In addition, 3 patients had hemiparesis, and 6 patients had hypopsia and hemianopsia. Three dimensional magnetization prepared rapid gradient echo magnetic resonance imaging (3-D MPRAGE MRI) and time of flight magnetic resonance venography (MRV) MRI were performed preoperatively.

These imaging data were used for registration of the neuronavigation system (Excelim-04 Image-guide System, Fudan Digital Medical Company, Shanghai, China).

This approach is a safe and effective procedure for the removal of recurrent trigonal meningiomas (RTM) [2].

Technique

General anesthesia

Prone position.

Body and head elevated 30º.

3-pin fixation

Turn approximately 15º to the side contralateral to the lesion to allow gravity to retract the contralateral parieto-occipital lobe.

8-cm straight-line skin incision inferior to the lambda and perpendicular to the sagittal sutures.

Contralateral parasagittal parieto-occipital craniotomy extending across the sagittal sinus

Dura opening in a semicircular fashion with the base reflected toward the superior sagittal sinus.

The medicisterna is opened to release the cerebrospinal fluid.

The splenium of the corpus callosum identified.

Falx is cut parallel to the line that was 1 cm inferior to the superior sagittal sinus, and the opened in an arc fashion extending from the superior sagittal sinus toward the straight sinus posteroinferiorly and the inferior sagittal sinus anteroinferiorly.

Three-dimensional MRV neuronavigation and mini-Doppler imaging to ascertain these sinuses.

The precuneus gyrus on the target side is then identified with neuronavigation using the parieto-occipital sulcus as a landmark.

A longitudinal corticotomy is made in the precuneus gyrus to expose the medial side of the tumor.

After debulking of the tumor, the blood supply is eliminated.

Finally, the capsule is dissected, and the tumor completely removed.

The neuroendoscope provid a wider viewing angle for revealing the inferior sagittal sinus and straight sinus, removing the intraventricular clot, as well as inspecting for residual tumor and bleeding.

The flap of the falx is closed with continuous sutures, and then the dura mater, bone flap, galea, and skin were closed layer by layer [3)]

1)
Zhu W, Xie T, Zhang X, et al. A solution to meningiomas at the trigone of the lateral ventricle using a contralateral transfalcine approach. World Neurosurg. 2013; 80(1-2):167-172
2)
Sun C, Xie T, Zhang X, Zhu W, Gu Y, Wang H. To repeat or to recreate: a contralateral posterior interhemispheric transfalcine transprecuneus approach for recurrent meningiomas at the trigone of the lateral ventricle. J Clin Neurosci. 2014 Nov;21(11):1968-72. doi: 10.1016/j.jocn.2014.03.030. Epub 2014 Jul 16. PubMed PMID: 25037312.
3)
Xie T, Sun C, Zhang X, Zhu W, Zhang J, Gu Y, Li W. The contralateral transfalcine transprecuneus approach to the atrium of the lateral ventricle: operative technique and surgical results. Neurosurgery. 2015 Mar;11 Suppl 2:110-8. doi: 10.1227/NEU.0000000000000643. PubMed PMID: 25599208.