Transtemporal transchoroidal fissure approach

In the transtemporal transchoroidal fissure approach, neurosurgeons can confirm the important neurovascular structures from the subtemporal route and from the transtemporal horn route by a combined subtemporal and transventricular/transchoroidal fissure approach. This approach is especially effective for avoiding ischemic complications by allowing direct confirmation of the anterior choroidal artery and thalamoperforating arteries [1)].

Surgical approach to the tumors of deep localization depends on the predominant direction of tumor growth. The main task of the surgeon in such cases is to choose less traumatic approach with a sufficient angle of operational action to achieve greater surgical radicality.

The approach to the tumors of the midbrain, thalamus, and optic tract in selected cases allows to remove deep-seated tumors with less damage compared with pterional approach and subtemporal approach [2)].

For approaching the mesial temporal region, the approach offers an adequate surgical angle and shorter or similar distances proximal to P2-P3 and requires less temporal lobe and hippocampal retraction than the lateral transtemporal approach (LTT).

Provides a corridor to the ambient cistern and P2-P3 junction while minimizing temporal lobe retraction and avoiding interruption of temporal lobe venous drainage. Because of widely variable vascular anatomy, access to posterior cerebral artery lesions using this approach requires preoperative imaging to identify the specific location of the P2-P3 junction [3)].

Such information can help surgeons select the optimal approach to the mesial temporal lobe and its surrounding structures.

The TSTC approach should be considered for lesions located in the medial temporal region [4)].

Simultaneous posterior communicating artery aneurysm clipping and selective amygdalohippocampectomy via direct lateral access through the mesial temporal lobe to the basal cisterns [5)].

Case of clipping of a ruptured aneurysm of the posterior cerebral artery (P2) via the transchoroidal-fissure approach [6)].

The procedure is described for five surgically treated patients with such lesions that includes three retrochiasmatic craniopharyngiomas, one hypothalamic hamartoma, and one pilocytic astrocytoma in the left crus cerebri [7)].

1)
Miyamoto S, Kataoka H, Ikeda A, Takahashi J, Usui K, Takayama M, Satow T, Hashimoto N. A combined subtemporal and transventricular/transchoroidal fissure approach to medial temporal lesions. Neurosurgery. 2004 May;54(5):1162-7; discussion 1167-9. PubMed PMID: 15113472.
2)
Konovalov AN, Kadyrov ShU. [Temporal transchoroidal approach for tumors of the midbrain and thalamus]. Zh Vopr Neirokhir Im N N Burdenko. 2013;77(4):16-24; discussion 24-5. Russian. PubMed PMID: 24364242.
3)
Siwanuwatn R, Deshmukh P, Zabramski JM, Preul MC, Spetzler RF. Microsurgical anatomy and quantitative analysis of the transtemporal-transchoroidal fissure approach to the ambient cistern.

Neurosurgery. 2005 Oct;57(4 Suppl):228-35; discussion 228-35. PubMed PMID: 16234669.
4)

Wu A, Chang SW, Deshmukh P, Spetzler RF, Preul MC. Through the choroidal fissure: a quantitative anatomic comparison of 2 incisions and trajectories (transsylvian transchoroidal and lateral transtemporal). Neurosurgery. 2010 Jun;66(6 Suppl Operative):221-8; discussion 228-9. doi: 10.1227/01.NEU.0000369920.68166.6C. PubMed PMID: 20489509.
5)

Abla AA, Smith KA, Nakaji P. Simultaneous posterior communicating artery aneurysm clipping and selective amygdalohippocampectomy via direct lateral access through the mesial temporal lobe to the basal cisterns. J Clin Neurosci. 2011 May;18(5):699-701. doi: 10.1016/j.jocn.2010.09.022. Epub 2011 Mar 23. PubMed PMID: 21435881.
6)

Inoue A, Kohno K, Takeda T, Takechi A, Kohno K, Yamaguchi Y, Ishii D, Sasaki U. [Case of clipping of a ruptured aneurysm of the posterior cerebral artery (P2) via the transchoroidal-fissure approach]. No Shinkei Geka. 2006 Apr;34(4):421-6. Japanese. PubMed PMID: 16613225.
7)

Hamlat A, Morandi X, Riffaud L, Carsin-Nicol B, Haegelen C, Helal H, Brassier G. Transtemporal-transchoroidal approach and its transamygdala extension to the posterior chiasmatic cistern and diencephalo-mesencephalic lesions. Acta Neurochir (Wien). 2008 Apr;150(4):317-27; discussion 327-8. doi: 10.1007/s00701-007-1460-2. Epub 2008 Mar 3. PubMed PMID: 18311527.