Pial synangiosis

Pial synangiosis is a method of indirect surgical revascularization developed at the Department of Neurosurgery, Boston Children's Hospital, Harvard Medical School, Massachusetts. for the treatment of moyamoya disease in pediatric patients. Similar surgical principles are employed in adult cases, often performed because of lack of an adequate donor vessel. Standardized protocols, including preadmission for preoperative intravenous hydration and aspirin administration, as well as intraoperative electroencephalography, are routinely employed to minimize operative risk. Perioperative heparinization is not required. The patient is positioned supine, without skull fixation, and the parietal branch of the superficial temporal artery is mapped with Doppler ultrasonography. The artery is microscopically dissected from distal to proximal, leaving a cuff of tissue around the vessel and elevated from the temporalis. The microscope is then removed, the temporalis is opened in a cruciate fashion, and a generous craniotomy is performed, with care to drill away from the exposed artery. The dura is then opened widely (preserving dural collateral vessels), followed by microscopic opening of the arachnoid in as many areas as possible. The donor vessel is then sutured to the pia with 10-0 nylons. The dural leaflets are laid on the brain (without suturing). Closure is completed with saline-soaked gelfoam, with fixation of the bone flap, and muscle reapproximation in the horizontal plane. The galea is closed, followed by the use of resorbable skin suture in pediatric patients. If indicated, the second hemisphere may be performed under the same anesthetic, reducing anesthetic risks and avoiding delayed revascularization. Postoperatively, the patient is awakened and transferred to the intensive care unit ¹⁾.

Ellis et al. present the case of a young child with a large thalamic vascular malformation who presented with clinical and radiological features of vascular steal and ischemia. In an effort to augment flow to the hypoperfused brain and protect against future ischemia, the authors treated the child with unilateral pial synangiosis. At 12 months, postoperative angiography demonstrated robust neovascularization, and the child has not sustained any further ischemic events. The authors discuss concept of vascular malformation-related hypoperfusion and the utility of indirect revascularization for inoperable vascular malformations presenting with ischemic symptoms²⁾.

1)

Penn DL, Wu KC, Presswood KR, Riordan CP, Scott RM, Smith ER. General Principles for Pial Synangiosis in Pediatric Moyamoya Patients: 2-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2018 May 18. doi: 10.1093/ons/opy125. [Epub ahead of print] PubMed PMID: 29788460.

Ellis MJ, Armstrong D, Dirks PB. Large vascular malformation in a child presenting with vascular steal phenomenon managed with pial synangiosis. J Neurosurg Pediatr. 2011 Jan;7(1):15-21. doi: 10.3171/2010.10.PEDS10388. PubMed PMID: 21194281.

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