

Documents

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How to reduce the complication rate of multiple burr holes surgery in moyamoya angiopathy
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Abstract

Purpose: This study is aimed at analyzing clinical outcome, absence of stroke recurrence, revascularization, and complications and long-term follow-up in the surgical treatment of moyamoya angiopathy (MMA) using the multiple burr holes (MBH) technique with dura opening and arachnoid preservation as a single procedure. To the best of our knowledge, this is the first to describe an MBH technique with arachnoid preservation. **Method:** We retrospectively reviewed all patients operated from June 2001 to March 2021, for a symptomatic and progressive MMA operated with opening of the dura but arachnoid preservation. Clinical examinations were obtained in all patients, and radiological monitoring was performed by cerebral 3D-magnetic resonance angiography (MRA) with perfusion or single-photon emission computed tomography (SPECT) with acetazolamide. **Results:** In total, 21 consecutive patients (6 children and 15 adults) were included with a mean age of 7.4 years in the pediatric group and 36.9 years in the adult group. Initial presentation was permanent ischemic stroke in 15 cases, transient ischemic attack (TIA) in 5 cases, and cerebral hemorrhage in one case. The MBH with dura opening and arachnoid preservation was performed bilaterally in 9 cases (43%) and unilaterally in 12 cases (57%). One patient died due to intraoperative bilateral ischemic stroke. Of the 20 other patients, 30% demonstrated clinical stability and 70% showed partial or complete recovery. Although one patient experienced a perioperative stroke, we did not observe any pseudomeningocele or postoperative ischemic stroke (IS) recurrence in all surviving cases during the average follow-up period of 55.5 months (range: 1–195). These outcomes emphasize the importance of preoperative monitoring to ensure the effectiveness and safety of the intervention. Postoperative angiography studies showed revascularization in 96.3% of treated hemispheres (100% in the adult group vs 80% in the pediatric group). **Conclusions:** Our results on this small cohort suggest that the MBH technique with opening of the dura and arachnoids preservation can prevent recurrent strokes and reduce the risk of pseudomeningocele. © 2023, The Author(s), under exclusive licence to Springer-Verlag GmbH Austria, part of Springer Nature.

Author Keywords

Indirect cerebral revascularization; Moyamoya angiopathy; Multiple burr hole surgery

Index Keywords

acetazolamide, anesthetic agent, antibiotic agent; adolescent, adult, antibiotic therapy, apathy, aphasia, arterial spin labeling, Article, ataxia, balance disorder, brain angiography, brain arachnoid, brain hemorrhage, brain perfusion, cerebral revascularization, cerebrovascular accident, child, clinical article, clinical effectiveness, clinical examination, clinical outcome, confusion, digital subtraction angiography, dizziness, dura mater, dysarthria, dysphagia, epilepsy, facial nerve paralysis, female, follow up, general anesthesia, headache, hemianopia, hemiparesis, hemiplegia, hemisphere, hemodynamic monitoring, human, hypesthesia, hypocapnia, ischemic stroke, lower limb paralysis, magnetic resonance angiography, male, middle aged, middle cerebral artery, moyamoya disease, National Institutes of Health Stroke Scale, neuroimaging, paresthesia, patient safety, photophobia, posterior cerebral artery, postoperative complication, preschool child, Rankin scale, recurrent disease, retrospective study, school child, single photon emission computed tomography, surgical infection, surgical technique, T1 weighted imaging, T2 weighted imaging, three-dimensional imaging, transient ischemic attack, trephination, upper limb paralysis, young adult, complication, diagnostic imaging, ischemic stroke, procedures, treatment outcome; Adult, Cerebral Angiography, Cerebral Revascularization, Child, Humans, Ischemic Stroke, Moyamoya Disease, Retrospective Studies, Stroke, Treatment Outcome

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