

Complication Incidence and Management of Adult and Pediatric Moyamoya Disease after Bypass Surgeries

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ABSTRACT

Background: Multiple literatures have shown that extra-intracranial vascular direct bypass provides good outcome for patients diagnosed as moyamoya disease (MMD), but complications occurred frequently after surgeries. This study aims to discuss the postoperative complications, occurrence rate and postoperative management of MMD patients who underwent surgeries. **Materials and Methods:** We retrospectively collected data of consecutive patients diagnosed with MMD and then underwent combination surgery of direct bypass and EDMS in our department between Jan 2013 to Dec 2015. Postoperative complications include acute brain infarction, intracranial bleeding and CHS. All patients were strictly monitored to avoid hypovolemia, low blood pressure and anemia after surgeries. Edaravone was the main medicine used for postoperative treatment. **Results:** Totally 368 consecutive patients (408 hemispheres) are included. The most frequent complication was CHS-related neurological deficits which were observed in 73 patients (19.8%). The most frequently occurred deficits was aphasia (88.5%). There were more left sided surgeries in the CHS plus brain infarction group (76.9% vs. 49.7%, $p < 0.05$). **Discussion:** Incidence of CHS is higher in left lateralization surgeries than right lateralization, and aphasia is the most frequent CHS symptom. Adult patients seem at higher risk for postoperative hyper-perfusion than pediatric patients, but not statistically significant in our study. It is

important to observe CHS correctly and timely for neurosurgical nurses, in order to manage it properly.

Introduction Moyamoya disease (MMD) is a type of cerebrovascular disease due to progressive stenosis with compensatory hyperplasia of the basilar vascular network. It is more common in eastern Asia with high incidence of disability. Surgical revascularization like bypass surgery is the main treatment, which can effectively improve cerebral blood perfusion. Multiple literatures have shown that extra-intracranial vascular direct bypass provides good outcome for patients diagnosed as moyamoya disease (MMD). In our center, we usually prefer a combination surgery of direct bypass and Encephalo-Duro-Arterio-Myo-Synangiosis (EDMS) to treat MMD. If a bypass fails during surgery, we usually choose EDMS, i.e., indirect bypass. Although bypass surgeries have been improved significantly since the first report, in clinical practice, postoperative complications are commonly seen, within which cerebral hyper-perfusion syndrome (CHS) most frequently occurred, presenting with a variety of symptoms. It is important to understand these complications and know how to deal with them for neurosurgical nurses. This study aims to discuss the postoperative complications, occurrence rate and postoperative management of MMD patients who underwent surgeries. **Materials and Methods** In this study we retrospectively collected data of consecutive patients diagnosed with moyamoya

disease and then underwent combination surgery of direct bypass and EDMS in department of neurosurgery, Huashan hospital, between Jan 2013 to Dec 2015. We reviewed paper and electronic chart documentations from both nurses and doctors to collect patient's demographic data and other information. Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Single-Photon Emission Computed Tomography (SPECT), digital subtraction angiography (DSA) reports from radiological and neurosurgical department are also included in the charts. Neurosurgeons in our department usually used intraoperative indocyanine green (ICG) to confirm the patency of the anastomosis. Postoperative observation by neurosurgical nurses includes patients' vital signs, consciousness scoring, and signs of neurological deficits. *Journal of Gerontology & Geriatric Research* ISSN: 2167-7182 *Journal of Gerontology & Geriatric Research* Zhang et al., *J GerontolGeriatr Res* 2019, 8:2 DOI: 10.4172/2167-7182.1000502 Research Article Open Access *J GerontolGeriatr Res*, an open access journal ISSN:2167-7182 Volume 8 • Issue 2 • 1000

Keywords:

Moyamoya disease; STA-MCA bypass; Encephalo-DuroArterio-Myo-Synangiosis (EDMS); Post-operative complications; Postoperative management