

OP50

Multiple tailor-made cerebral revascularizations in pediatric moyamoya patients performed at the Moyamoya Center University Children's Hospital Zurich

Nadia Khan¹, Dubravka Deanovic², Martin Hoelzle², Martina Hug³, Annette Hackenberg⁴, Alfred Buck⁵, Gerasimos Baltasvias⁶

¹ *Moyamoya Center, University Children's Hospital Zurich, Switzerland*

² *Department of Anesthesiology, University Children's Hospital Zurich, Switzerland*

³ *Center for Child Development, University Children's Hospital Zurich, Switzerland*

⁴ *Department of Pediatric Neurology, University Children's Hospital Zurich, Switzerland*

⁵ *Department of Nuclear Medicine, University Hospital Zurich, Switzerland*

⁶ *Department of Neuroradiology, University Hospital Zurich, Switzerland*

Introduction: Childhood moyamoya is unique and different to adult moyamoya. It is rapidly progressive especially in children < 5 years of age with frequent involvement of anterior and posterior cerebral circulation resulting in repetitive cerebral ischemia. Prevention of stroke is achieved by multiple cerebral revascularization procedures in cerebral areas affected.

Method / Patient Selection: Multiple cerebral revascularizations performed in newly diagnosed moyamoya children referred internationally to our moyamoya Center, University Children's Hospital Zurich, are presented. Twenty-four children underwent cerebral revascularization (2011 and 2013). Mean age at initial presentation was 7 years (range 1-17). Ten children were < 5 years old. Twenty children with bilateral angiopathy and four with unilateral disease presented with transient ischemic attacks. Territorial cerebral perfusion reserve deficits on Diamox-H215O-PET was seen in all patients.

Results: A total of 74 revascularization procedures were performed (one or 2 staged) with 28 revascularizations in ACA (13 bilateral), 39 in MCA (18 bilateral) and 7 in PCA territories (all unilateral). Combined STA-MCA (superficial temporal artery to middle cerebral artery) bypass or STA-ACA (anterior cerebral artery) bypass was performed along with indirect encephalo-duro-myo or encephalo-duro-galea-periost-synangiosis (EDMS, EDGPS). In cases where a direct bypass could not be performed, only indirect revascularization was undertaken. For the posterior circulation only indirect encephalo-duro-arterio-synangiosis (EDAS) was performed. In cases requiring bilateral MCA revascularization, surgery was performed on both sides in one stage. Aspirin and adequate hydration were continued perioperatively. There were no peri- or postoperative complications.

Conclusions: Multiple tailormade direct bypass procedures in combination with indirect techniques for revascularizations of the MCA, ACA and PCA territories are decisive and effective in the prevention of stroke in moyamoya children.