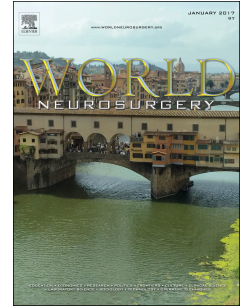


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Internal Maxillary Artery to Middle Cerebral Artery Cranial Bypass; The new “Work Horse” for Cerebral Flow Replacement

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## **Internal Maxillary Artery to Middle Cerebral Artery Cranial Bypass; The new “Work Horse” for Cerebral Flow Replacement.**

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The indications for extracranial to intracranial (EC-IC) bypass continue to diminish in the era of flow diverters (FD) and COSS, the carotid occlusion surgery study<sup>1</sup>. Today, Moyamoya disease has become the most common indication for cranial bypass surgery. Treatment of ischemic hypoperfusion state when best medical treatment has failed remains a real but infrequent indication as well. These two indications are treated with flow “augmentation”, where the superficial temporal artery (STA) is utilized to augment hemispheric blood flow in the setting of cerebral ischemia. These grafts while capable of providing flows in excess of 100cc/min<sup>2</sup> are predominantly lower flow grafts, with the STA-MCA bypass continuing to serve as the “work horse” of lower flow cranial bypass.

The indications for high-flow bypass have become scarce in the setting of new technology such as flow diverters with the number of cases requiring high flow vessel “replacement” bypass negatively impacted. The vast majority of giant internal carotid aneurysms that were previously considered for flow replacement bypass are now nearly uniformly treated with FD technology<sup>3</sup>. When performing anterior circulation flow replacement EC-IC bypass, the cervical carotid is mainly used as a donor and the M2 or M3 segments of the middle cerebral artery represent the most common recipient. The length of these grafts are approximately 18-20 cm, require two separate incisions and the graft is usually tunneled subcutaneously. Improving technology for high flow EC-IC bypass such as the ELANA technique was developed for the treatment of giant carotid or posterior circulation aneurysms<sup>4</sup>. This non-occlusive bypass technique allowed the

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