

Can Double-Barrel STA-MCA Bypass Provide “High-Flow”?

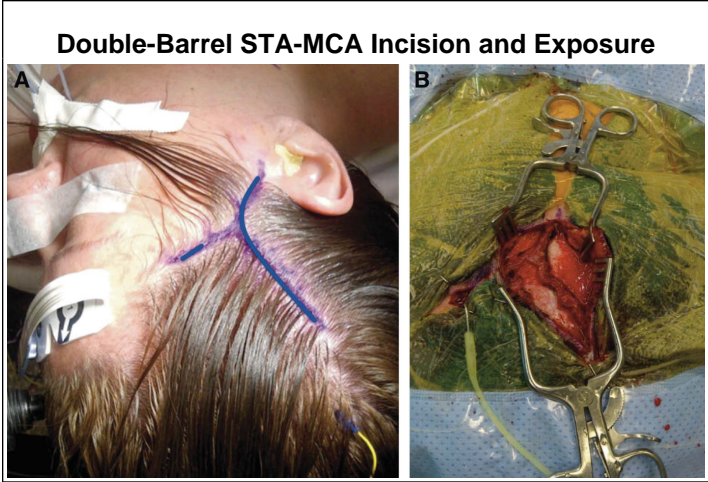
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Introduction

Traditionally, superficial temporal artery-middle cerebral artery (STA-MCA) bypass uses one STA branch. Its augmentation of flow has typically been described as “low flow.” We have adopted a double -barrel technique in which both branches of the STA are utilized. Here we investigate the impact of this method on total flow augmentation as compared to the traditional technique.

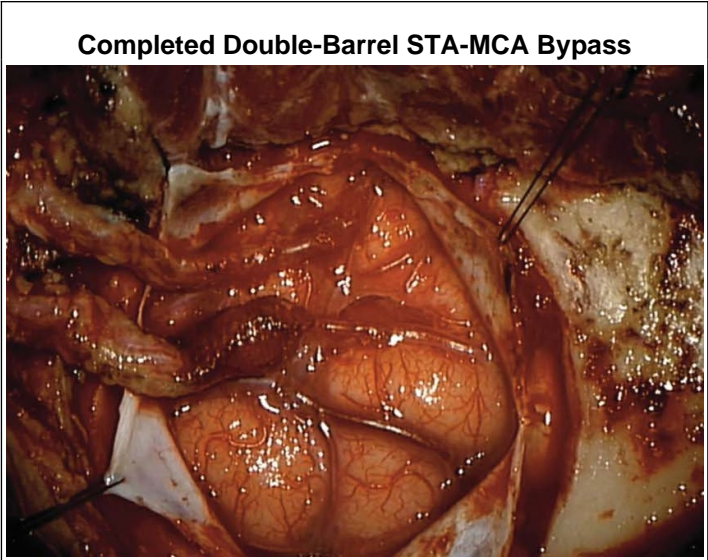
Methods

Intraoperative ultrasonic flow probe (Transonic Systems, Ithaca, New York) measurements from cases of STA-MCA bypass were retrospectively tabulated and compared. Prior to anastomosis to the recipient territory, cut flow was measured in the main STA trunk with downstream branches open. After the anastomoses were completed, flow was again measured in the main STA trunk. The higher of these two values was categorized as best flow.



Results

21 cases of STA-MCA bypass were performed by the senior surgeon with available intraoperative flow probe measurements. 17 of these bypasses utilized double-barrel technique. In four cases, only one STA branch was available. Use of two STA branches provided significantly more flow to the recipient hemisphere (69 versus 39 cc/min, p-value <0.001). 53% (9/17) of double-barrel bypasses provided at least 65 cc/min of flow with a maximum of 120 cc/min. The maximum flow seen with single branch bypass was 40 cc/min. No cases of bypass in this series provided more than 200 cc/min.



Conclusions

Use of double-barrel technique significantly enhances STA-MCA flow augmentation. The method compares favorably to other descriptions of “high-flow” bypass without the morbidity of graft harvest and additional cervical incisions.

References

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