Publication Brief

Changes in Bypass Flow during Temporary Occlusion of Unused Branch of Superficial Temporal Artery

Dept. of Neurosurgery, Bucheon St. Mary’s Hospital, The Catholic University of Korea College of Medicine, Bucheon, Korea

OBJECTIVE
To investigate changes in bypass flow during temporary occlusion of superficial temporal artery (STA) branches that are sometimes ligated so are not used in standard superficial temporal artery (STA) to middle cerebral artery (MCA) bypass.

METHODS
Bypass blood flow was measured by a Transonic® micro-perivascular ultrasonic flow probe before and after temporary occlusion of STA branches not used for a STA-MCA bypass.
• Measurements were performed on 12 patients: 7 cases of atheroscherotic steno-occlusive disease; 5 cases of Moyamoya;
• Changes in blood flow were statistically assessed;
• Digital subtraction angiography was used to observe any post-operative changes in STA diameter;
• Distal MCA (to the anastomosis) and proximal (to the anastomosis) flow was measured.

RESULTS
• Initial STA flow ranged from 15 mL/min to 85 mL/min.
• Flow did not change significantly during occlusion as compared with pre-occlusion flow.
• Occlusion time was extended by 30 minutes in all cases, but this did not contribute to any significant flow change.

STUDY’S CONCLUSIONS
• The amount of STA bypass flow seems to be influenced not by donor vessel status but by recipient vessel demand.
• Ligation of the unused STA branch after completion of anastomosis does not contribute to improvement in bypass flow immediately after surgery, and furthermore, carries some risk of skin necrosis.
• The authors suggest that unused branches of the STA be left intact for potential use in secondary operation and to prevent donor vessel occlusion.

TRANSONIC COMMENT
This paper investigates the recommendation furthered by others including Dr. Charbel and Amin-Hanjani to ligate unused branch of the STA to augment bypass flow. They found in their 12-patient study that this, in fact, didn’t increase STA flow and could instead be used, if necessary, as a new donor vessel. It also avoids the possibility of skin necrosis that might occur with ligation.

REFERENCES