Flash Fluorescence with ICG Videoangiography to Identify the Recipient Artery for Bypass with Distal MCA Aneurysms:Operative Technique

Ana Rodríguez-Hernández MD; Michael T. Lawton MD

CONGRESS OF NEUROLOGICAL SURGEONS
2011 ANNUAL MEETING
WASHINGTON, DC
OCTOBER 1-6, 2011

Introduction

Distal middle cerebral artery (MCA) aneurysms frequently have non-saccular morphology that necessitates trapping and bypass. Bypasses can be difficult because efferent arteries lie deep in the opercular cleft and may not be easily identifiable. We introduce the "flash fluorescence" technique which uses videoangiography with indocyanine green (ICG) dye to identify an appropriate recipient artery on the cortical surface for the bypass, enabling a more superficial and easier anastomosis.

Methods

Flash fluorescence requires three steps: (1) temporary clip occlusion of the involved afferent artery; (2) videoangiography demonstrating fluorescence in uninvolved arteries on the cortical surface; and (3) removal of the temporary clip with flash fluorescence in the involved efferent arteries on the cortical surface, thereby identifying a recipient. Alternatively, temporary clips can occlude uninvolved arteries, and videoangiography will demonstrate fluorescence in efferent arteries during temporary occlusion and flash fluorescence in uninvolved arteries during reperfusion.

Results

From a consecutive series of 604 MCA aneurysms treated microsurgically, 22 (3.6%) were distal aneurysms and 11 required a bypass. The flash fluorescence technique was used in 3 patients to select the recipient artery for 2 superficial temporal artery-to-MCA bypasses and 1 MCA-MCA bypass. The correct recipient was selected in all cases.

Conclusions

The flash fluorescence technique provides quick, reliable localization of an appropriate recipient artery for bypass when revascularization is needed for a distal MCA aneurysm. This technique eliminates the need for extensive dissection of the efferent artery and enables a superficial recipient site that makes the anastomosis safer, faster, and less demanding.

Learning Objectives

By the end of the session participants should be able to:

1)Describe the characteristics of distal middle cerebral artery aneurysms

2)Describe the three steps of the flash fluorescence technique with ICG videoangiography

3)Discuss the utility of this technique for those middle cerebral artery aneurysms that require a bypass

[DEFAULT POSTER]