Radial artery fascial flow-through free flap

Revascularization is an important strategy when treating cerebrovascular occlusive disease and complex aneurysms. Radial artery fascial flow-through free flaps (RAFFs) are flexible grafts that provide direct and indirect revascularization. RAFFs can be especially useful for large territory revascularization and can be combined with other direct bypasses. Although common in plastic and reconstructive surgery, RAFF neurosurgical applications have rarely been described. The 3dimensional video presents a 47-year-old man with watershed infarcts on imaging who presented with right-sided weakness (Video 1). Vessel imaging was significant for bilateral internal carotid artery (ICA) terminus stenosis. The left middle cerebral artery (MCA) ended in a fusiform aneurysm of the M1 segment. The left anterior cerebral artery (ACA) also had a smaller fusiform aneurysm at the A1/2 junction. A perfusion study demonstrated an increased mean transit time in the left MCA territory. Given the patient's age, his symptomatic ischemia, and enlarging MCA aneurysm, he was recommended for a combined revascularization and left ICA occlusion. A left facial artery-to-MCA bypass using the right posterior tibial artery was performed for direct MCA revascularization. A left superficial temporal artery-to-ACA bypass with a RAFF was performed for direct ACA and indirect MCA territory revascularization. Postoperative angiography demonstrated patency of both direct grafts. The patient suffered small pericallosal infarcts because of retraction and perforator sacrifice at the revascularization site. At early follow-up, the patient was at his neurologic baseline, and at 1-year follow up, the patient had no additional infarcts on imaging and was living independently¹⁾.

1)

Ravina K, Kramer DR, Strickland BA, Wolfswinkel EM, Rennert RC, Carey JN, Russin JJ. Complex Revascularization for Idiopathic Intracranial Occlusive Disease with Unruptured, Fusiform Anterior Cerebral Artery and Middle Cerebral Artery Aneurysms: 3-Dimensional Operative Video. World Neurosurg. 2019 Jun;126:496. doi: 10.1016/j.wneu.2019.03.164. Epub 2019 Mar 25. PubMed PMID: 30922896.

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