Encephaloduroarteriosynangiosis

EDAS (encephaloduroarteriosynangiosis) uses a branch of the superficial temporal artery which is laid directly on the surface of the brain without doing a direct anastomosis. The expectation is that it will eventually grow new arteries into the brain and therefore provide more blood flow. This surgery is done only when a direct bypass graft is not feasible. Children tend to have better results with this procedure than adults. Once used for an indirect bypass, the STA branch cannot be used again for direct bypass, even if the indirect bypass is not successful. It usually requires at least 6-8 weeks for new blood supply to develop from this procedure.

Indications

see also Encephaloduroarteriosynangiosis for atherosclerotic middle cerebral artery occlusion.

Encephaloduroarteriosynangiosis (EDAS) as a form of indirect revascularization has been proposed as a potentially promising alternative for patients with intracranial atherosclerotic disease (ICAD).

EDAS/encephalomyoarteriosynangiosis (EMAS) provides a stroke-prevention benefit with an acceptably low morbidity rate. Given the combined experience with EDAS and EMAS for this indication at this and other institutions, a prospective clinical trial to assess their efficacy compared with that of chronic transfusion therapy alone is warranted.

Patients with Type 2 Diabetes mellitus (T2DM) had a higher postoperative Suzuki staging (p < 0.01) and more frequent development of collateral angiogenesis germinating from the external carotid after indirect revascularization procedures in the surgical cerebral hemisphere (82.7% vs 72.2%; p < 0.05). The extent of postoperative collateral formation in patients with diabetes mellitus was significantly higher (p < 0.01). Postoperative clinical improvement in the diabetes group was more common after revascularization procedures (p < 0.05), and the diabetes group had lower modified Rankin Scale scores (p < 0.05) in comparison with the nondiabetes group. Late postoperative stroke and posterior cerebral artery involvement were identified as predictors of unfavorable clinical outcome in both groups, while T2DM was associated with a favorable clinical outcome.

Encephaloduroarteriosynangiosis is an efficacious treatment for adult patients with MMD. Patients with T2DM could achieve better collateral circulation and clinical improvement following surgery.

Case series

Six children underwent 8 EDAS procedures and were followed from 6 months to 9 years after surgery. No patient experienced further deterioration in neurologic status. Postoperative angiography demonstrated cerebral revascularization from the donor scalp artery on 3 of the 6 EDASs that were studied. The 2 patients who did not revascularize after EDAS demonstrated angiographic regression of their disease. The data suggest that EDAS is a safe procedure for the treatment of childhood moyamoya disease. Given the potential severity of the sequelae, early operative intervention is recommended in all children with this disease.
