

## Abstract

**Background** Aneurysms of the anterior cerebral and anterior communicating arteries are common and their microvascular surgical management requires sound knowledge of the normal and variant vascular anatomy. **Objective** The purpose of this study was to evaluate variations of the anterior cerebral and anterior communicating arteries. **Methods:** Thirty six cadaveric brains (72 hemispheres) were studied by gross dissection for the pattern of arterial blood supply. **Results** The anterior cerebral artery (ACA) was observed to originate from the ipsilateral internal carotid artery (ICA) in all the cases studied. The most common type of termination of the ACA was bifurcation into pericallosal (PerA) and callosomarginal (CMA) arteries with the PerA-CMA junction being supracallosal (60%), infracallosal (27%) or precallosal (5%). Unique variations observed include an accessory ACA from the ACoA, 'bihemispheric pericallosal arteries', intertwining course of the A2 segments of the ACAs and crossing branches from 1 hemisphere to another. Variations of the ACoA were also observed including fenestration (26%) and duplication (13%). **Conclusions** The majority of ACA bifurcations, in the current study, were supracallosal suggesting the need for exploration of the interhemispheric fissure during surgical corrections of distal ACA aneurysms. Further, the incidence of the callosomarginal artery in this series appears to be at variance with other studies highlighting the need to standardize the definition of the artery. Anterior communicating artery fenestration was the most common variation raising concern as this has been shown to compromise collateral flow and predispose to aneurysm formation