This 14-year-old boy presented with a sudden onset of a severe headache. Computerized tomography scanning revealed a subarachnoid hemorrhage (SAH), which appeared pronounced in the basal cisterns and the left sylvian fissure. Angiography demonstrated an aneurysm at the left carotid artery bifurcation associated with a fenestration of the middle cerebral artery (MCA) at its origin (Fig.1). Surgery was performed on Day 1 post-SAH. The left neck of the aneurysm was medial to the origin of the MCA and the right neck could be dissected from the left A1 segment. Figure 2 shows the fenestration of the MCA close to its origin, as well as the clipped aneurysm. The postoperative course was uneventful and the boy remains neurologically normal.

Discussion

Fenestrations of the MCA are rare1,5 and are most commonly located near the origin of the vessel.2,5 There have been reports of associated aneurysms but none was located at the carotid artery bifurcation.2,5 The most common site of aneurysms in patients younger than 20 years of age is the bifurcation of the carotid artery, with 30 to 39% of aneurysms found at this location.2 The theory that aneurysms may form during the embryonic stage in regions where vessels branch is a possible explanation for the combination encountered in this case.3

References


Fig. 1. Digital subtraction angiogram, sagittal view, of the left internal carotid artery showing a carotid artery bifurcation aneurysm and the fenestration of the MCA.

Fig. 2. Intraoperative photograph showing the fenestration of the MCA after clipping of the carotid artery bifurcation aneurysm.