

Introduction

Early rebleeding after coil embolization of a ruptured cerebral aneurysm is rare but may cause severe disability or death. We present a case series of early rebleeding after coil embolization of ruptured cerebral aneurysms and investigate the incidence, clinical outcome and possible mechanism through retrospective analysis of angiographic and surgical findings.

Methods

This study included 347 consecutive patients who had undergone successful coil embolization of 347 ruptured cerebral saccular aneurysms. Clinical and angiographic data, and findings from emergent surgery were analyzed retrospectively.

Results

Early rebleeding occurred in eight aneurysms (2.3%) and was especially frequent among anterior communicating artery lesions (6 out of 122, 4.9%). The maximum diameter of the aneurysms that developed early rebleeding was 4.89 ± 0.65 mm, ranging from 3.9 to 5.7 mm. In seven out of eight patients, the immediate radiologically determined occlusion status was a residual neck, and the remaining patient had a residual sac. The calculated coil packing density was between 21% and 34%. Six cases of rebleeding were detected within 48 hours, 1 case on the 5th day, and 1 case on the 10th day. Coil compaction was not detected after early rebleeding. We performed surgical clipping as a rescue procedure in 5 cases and additional coil embolization in 1 case. During follow-up angiography and rescue clipping, inflow of blood to the aneurysm was detected in 6 cases. Three patients died, and the other 3 patients were severely disabled.

Conclusions

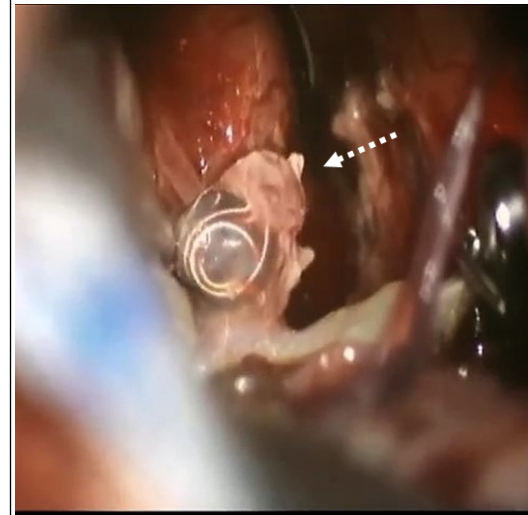
The early rebleeding rate after coil embolization of ruptured cerebral aneurysms in our study was 2.3%. The ruptured aneurysms were small in size (< 6 mm) and frequently occurred in the anterior communicating artery. In most cases, inflow of blood to the aneurysm was detected by follow-up angiography or during rescue surgery.

Learning Objectives

By the conclusion of this session, participants should be able to consider early risk of coil embolization of ruptured cerebral aneurysm.

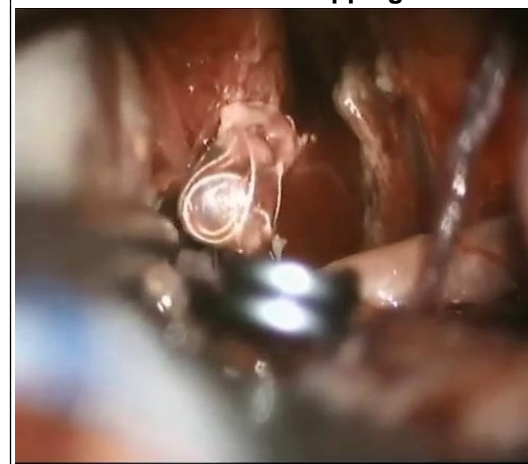
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Case 2. A-com aneurysm clipping



Intraoperative view of the anterior communicating artery aneurysm via the right pterional approach. We observed an inflow of blood to the dome of the aneurysm

Case2. After clipping



After being clipped, the aneurysm shrank, and the inflow of blood disappeared.