

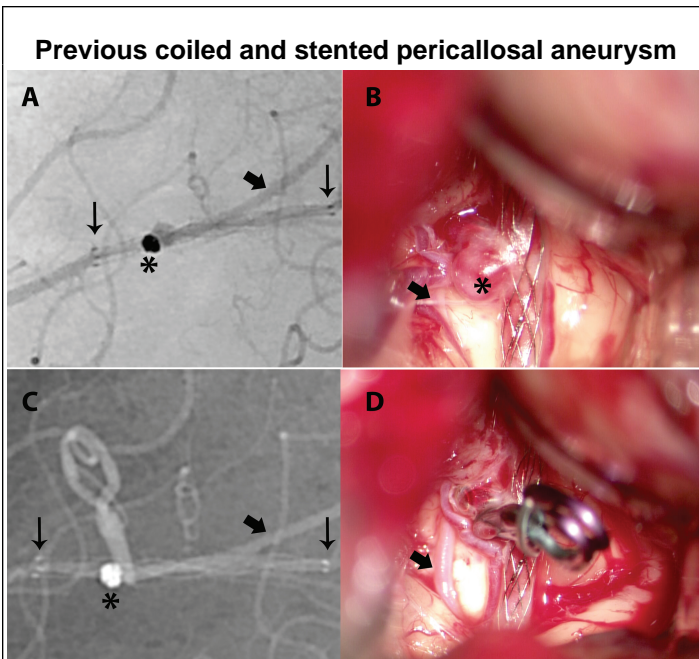
Surgical Clipping of Recurrent Previously Coiled and/or Stented Intracerebral Aneurysms: A Single-Center Experience in a Series of 75 Patients.

Troels Halfeld Nielsen MD, PhD; Jonathan J Liu MD; Kumar Abhinav MBBS, FRCS (SN); Summer Han PhD; Justin Lee MD; Michael P. Marks MD; Huy M. Do MD; Robert L. Dodd MD; Gary K. Steinberg MD PhD
Department of Neurosurgery, Stanford University, Stanford, CA 94305



Introduction

Endovascular treated cerebral aneurysms has a greater recurrence rate compared to microsurgical clip ligation. Although repeat endovascular treatment is an option, microsurgical clip ligation might still be the treatment of choice for some previously endovascular treated recurrent aneurysms. We report on our single-center experience with 76 previously coiled and or stented aneurysms.



Previous coiled and stented pericallosal aneurysm
45-year-old female with a previous stent-coiled ruptured pericallosal aneurysm. A: Digital subtraction angiogram (DSA) of left internal carotid artery, lateral view demonstrating residual aneurysm. Aneurysm residual with coils are marked by asterix. Extension of the stent is marked by small arrows. The callosomarginal artery is marked by bold arrows. Note the visible coils in the aneurysm and the clearly visible stent in the parent vessel.

Methods

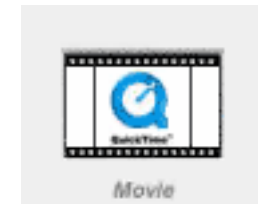
Patients were retrospectively identified from our institution's database. Demographic data, aneurysm size, location, perioperative coil extraction, occlusion rate and complication rate was recorded. Patients were divided into a previously coiled-only group and a previously stent-assisted coiled group.

Results

Seventy-five patients with seventy-six aneurysms were included. Sixty-nine patients were included in the coil-only group, seven patients in the stent-assisted coil group. 65 (87%) patients presented initially with subarachnoid haemorrhage. Angiographic follow-up was available for 51 and 7 patients in each group. Complete or near-complete occlusion with acceptable small residual neck after clipping was obtained in 95% of patients in the coil-only group as opposed to 57% in the stent-assisted coiling group. In the coil-only group the postoperative mortality was 2.9%. Two patients (2.9%) died from a major stroke. Further, one patient died from re-hemorrhage 6 days after wrapping of a fragile basilar apex aneurysm. Minor complications (1 minor stroke that resolved, 1 wound infection, 1 hemorrhage not requiring evacuation and 1 cranial nerve palsy) occurred in 8.7%. In the stent-assisted coiling group the mortality was 0%. One major stroke (14.2%), 1 (14.2%) minor stroke that resolved and 1 (14.2%) cranial nerve palsy occurred in this group. Intraoperative coil extraction and previous stent-assisted coiling were significant predictors of complication rate in multivariate analysis ($p=0.025$ and $p=0.0036$ respectively). Previous stent-assisted coiling was a significant predictor of incomplete occlusion ($p=0.036$).

Conclusions

Microsurgical clipping of previously endovascular treated recurrent aneurysms is an effective treatment with high obliterations rates. However, previously stent-assisted coiling and intraoperative coil extraction are predictors of worse outcome and incomplete occlusion.



Learning Objectives

Microsurgery for previous endovascular treated aneurysms is overall safe but previous stent-assisted coiling and intraoperative coil extraction are predictors of worse outcome and incomplete occlusion

Acknowledgements

We thank Jeanne Gu for assistance with database maintenance and data extraction