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Proximal Carotid Aneurysms in the Flow Diverter Era

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Introduction

Proximal carotid aneurysms (ICProx) are a unique subset of aneurysms.

The best method of treatment for ICProx is unknown. Surgical clip reconstruction, standard endovascular techniques including stent or balloon assisted coiling have all been established as relatively safe and effective treatments. Flow diversion is an alternative with a less well defined outcome. ICProx represent an intersection with clinical equipoise between these three principle treatment modalities to a greater extent than any other cerebrovascular location.

We sought to evaluate and compare clinical outcomes of patients with unruptured ICProx treated by any of the three different modalities at a single center.

Methods

Three Hundred unruptured, ICProx were treated in 277 patients at a single center. Patients were categorized according to one of three treatment modalities: microsurgery, standard endovascular treatment or flow diversion. Each modality was compared based on lesional and patient characteristics. We compared complication rates, re-treatment rates, and clinical outcomes between the three modalities.

Learning Objectives

By the conclusion of this session, participants should be able to:

1) Describe the three main approches to treatment of unruptured proximal carotid aneurysms.

2) Consider the pros and cons of each treatment modality with respect to patient outcomes.

3) Discuss the best treatment modality for individual patients with an enhanced understanding of the key factors that can best help guide this decision.

Results

152 patients underwent conventional endovascular treatment. 103 aneurysms were treated microsurgically. 30 aneurysms were treated with flow diversion.

Seven patients (4.1%) in the endovascular group underwent retreatment for residual or recurrent aneurysms. Four patients (3.8%) in the microsurgery and 1 patient in the flow diversion group (3.7%) required retreatment. These differences were not statistically significant .

Aneurysms treated with flow diversion tended to be more complex (p<0.05) including a larger size (p<0.01). There was a significantly better clinical outcome at discharge in patients who underwent standard endovascular treatment compared to those who underwent microsurgery (p<0.01). Outcome differences were no longer significant at 6 months.

Conclusions

The safety and efficacy of flow diversion has not been demonstrated to be superior to microsurgery or traditional endovascular treatment strategies . There was no difference in clinical outcomes between the three modalities by 6 months. Aneurysm treatment should be individualized.

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