AANS/CNS Joint	
Cerebrovascular	
Annual Meeting	
Los Angeles, California	
February 15-16, 2016	

Flow-diverting Stent Treatment of Partially Thrombosed Aneurysms is Associated with Higher Risk of Complications and Treatment Failure

Lynn McGrath Jr. MD; John D. Nerva MD; Jason Barber MS; Michael Levitt; Basavaraj Ghodke MD; Danial K. Hallam MD, MSc; Laligam N. Sekhar MD, FACS; Louis J. Kim MD

University of Washington Department of Neurosurgery



Introduction

Partially thrombosed aneurysms (PTAs) can cause neurological deficits even when unruptured.

Diverse treatment modalities have been attempted, none of which have proven to be superior.

Flow-diversion (FD) has revolutionized the treatment of complex aneurysms, and here we explore the efficacy of FD in treating PTAs.

Methods

We retrospectively reviewed all aneurysms treated with FD at our institution since 2011. We compared clinical characteristics and outcomes of patients treated for PTAs with those treated for non-PTAs.

Stent View - PED placement in PTA

Phillips Allura Xper CT

Sixty-seven patients underwent FD, of which seven had PTAs. Patients were similar in age and aneurysm location. Mean angiographic follow up was 11.5 months.

There was a nonsignificant reduction in technical complications in the PTA group (14% vs 29%, p=.669).

The PTA group had significantly higher rates of late complications at 12 months (71% vs 13%, p=0.002) and treatment failure (defined as aneurysmal persistence) at last follow-up (83% vs 12%, p=0.001).

There were fewer patients with modified Rankin scores (mRS) 0-1 in the PTA group immediately post-operatively (57% vs 92%, p=0.032) as well as at 12 month clinical follow-up (60% vs 94%, p=0.049).

Conclusions

Results

The association of PTA and increased risk of FD treatment failure is not well described in the literature.

In PTA patients, FD was not associated with increased rates of intraoperative technical complications. However, it was associated with a higher rate of late complications and eventual treatment failure compared to aneurysms without thrombosis.

Most concerning is the group of patients who experienced post-treatment enlargement of the thrombotic portion of the aneurysm without significant change in the angiographic imaging.

This is the first report in the literature to describe higher rates of treatment failures specifically with this rare subtype of intracranial aneurysm. Based on our experience, we advise selective and cautious use of FD for PTA.

Learning Objectives

1) Review the difficulty in treating partially thrombosed intracranial aneurysms

2) Determine the utility of using flow diverters in treating PTAs

References

Anil G, G. A., Ross SM, Deniz K, Patankar T (2015). "WEB in Partially Thrombosed Intracranial Aneurysms: A Word of Caution." American Journal of Neuroradiology.

Ferns SP, v. R. W., Sluzewski M, van den Berg R, Majoie CBLM (2010). "Partially Thrombosed Intracranial Aneurysms Presenting with Mass Effect: Long-Term Clinical and Imaging Follow-Up after Endovascular Treatment." American Journal of Neuroradiology 31: 1197-1205.

Lanterna L, L. A., Brembilla C, Gritti P, Bernucci C (2015). "Extracranial Bypass as a Rescue Therapy for Symptomatic Flow Diverter Thrombosis." Case Reports in Neurological Medicine 2015: 1-5.

Roccatagliata L, G. P., Condette-Auliac S, Gaillard S, Colas F, Boulin A, Wang A, Guieu S, Rodesch G (2010). "Partially thrombosed intracranial aneurysms: symptoms, evolution, and therapeutic management." Acta Neurochir 152: 2133-2142.

Szikora I, M. M., Salomvary B, Berentei Z, Gubucz I "Resolution of Mass Effect and Compression Symptoms following Endoluminal Flow Diversion for the Treatment of Intracranial Aneurysms." American Journal of Neuroradiology 34: 935-939.

Zanaty M, J. P., Sader R, Chalouhi N, Stavrapoula T, Rosenwasser R, Gonzalez LF (2015). "Intra-aneurysmal thrombus modification after flow-diversion." Journal of Clinical Neuroscience 22: 105-110.