

Proposal of a Follow-Up Imaging Strategy Following Pipeline Flow Diversion Treatment of Intracranial Aneurysms

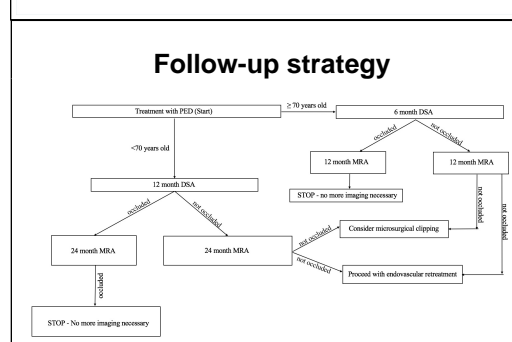
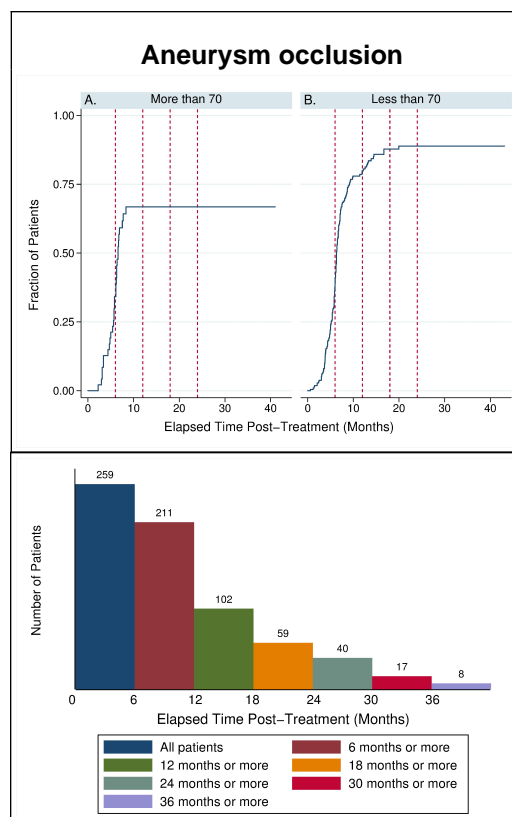
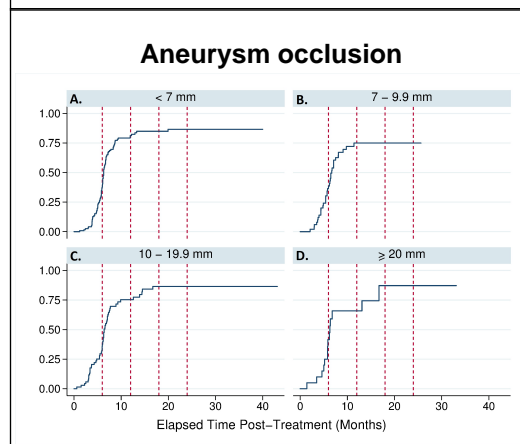
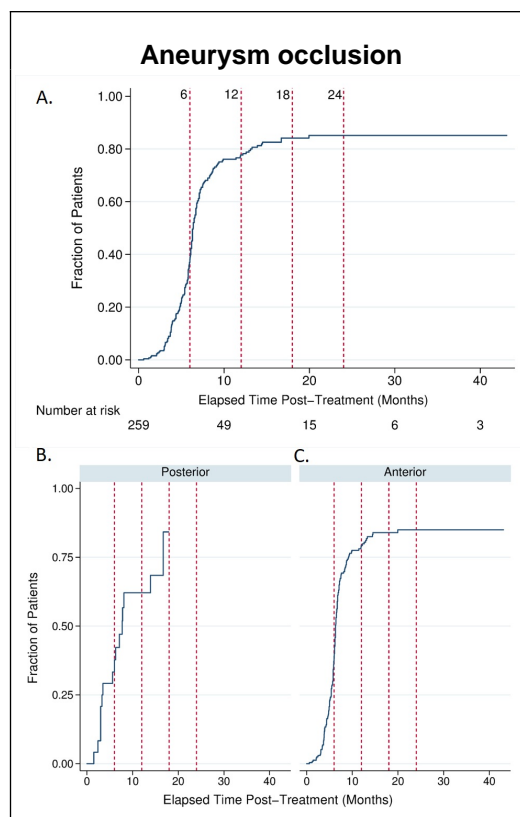
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Introduction

There is currently no standardized follow-up imaging strategy for intracranial aneurysms treated with the Pipeline embolization device (PED). Here, we use long-term follow-up imaging data on aneurysms treated with the PED to propose a standardizable follow-up imaging strategy.

Methods

A retrospective review of all patients who underwent treatment for ruptured or unruptured intracranial aneurysms with the PED, between March 2013 and March 2017, at two major academic institutions in the U.S., was performed.



Results

A total of 218 patients underwent treatment for 259 aneurysms with the PED, and had undergone =1 follow-up imaging study to assess aneurysm occlusion status. There were 235 (90.7%) anterior and 24 posterior (9.3%) circulation aneurysms. On Kaplan-Meier analysis, the cumulative incidence of aneurysm occlusion at 6, 12, 18, and 24 months was 38.2%, 77.8%, 84.2%, and 85.1%, respectively. No differences in the cumulative incidence of aneurysm occlusion according to aneurysm location or aneurysm size were observed. A trend towards a decreased cumulative incidence of aneurysm occlusion in patients over 70 years old was observed. No instances of aneurysm rupture after PED treatment or aneurysm recurrence after occlusion were noted. Sixteen (6.2%) aneurysms were retreated.

Conclusions

We propose a standardizable follow-up imaging strategy which incorporates a 12-month DSA and a 24-month MRA for patients under 70 years old, and a 6-month DSA and a 12-month MRA, for patients over 70 years old. If occluded at last follow-up, we believe no further imaging studies are necessary. For recurrent or persistent aneurysms, retreatment with the PED may be considered.