



## Introduction

Microsurgical clipping is regarded as the most durable treatment for cerebral aneurysms.

Aneurysm recurrence after clipping is uncommon, and is associated with an increased risk of rupture.

Reoperation for recurrent cerebral aneurysms is particularly challenging due to adhesions and scarring, and carries a higher rate of morbidity and mortality.

Pipeline embolization as a treatment option for recurrent aneurysms has rarely been previously reported.

## Learning Objectives

To determine the safety and efficacy of pipeline use in treatment of recurrent aneurysm after surgical clipping.

## Methods

A retrospective analysis of patients who underwent Pipeline Embolization Device (PED) placement for recurrent aneurysms after clipping at two major academic institutions in the United States was performed.

## Results

A total of 7 patients were identified (All female; median age 49).

The median time between initial clipping and diagnosis of recurrence was 13 years (range 5-20 years).

In 1 case (14.3%), the patient had subarachnoid hemorrhage due to ruptured aneurysm. The median modified Rankin Scale (mRS) was 0 (range 0-2).

The aneurysm shape was saccular in 5 cases (71.4%) and fusiform in 2 cases (28.6%).

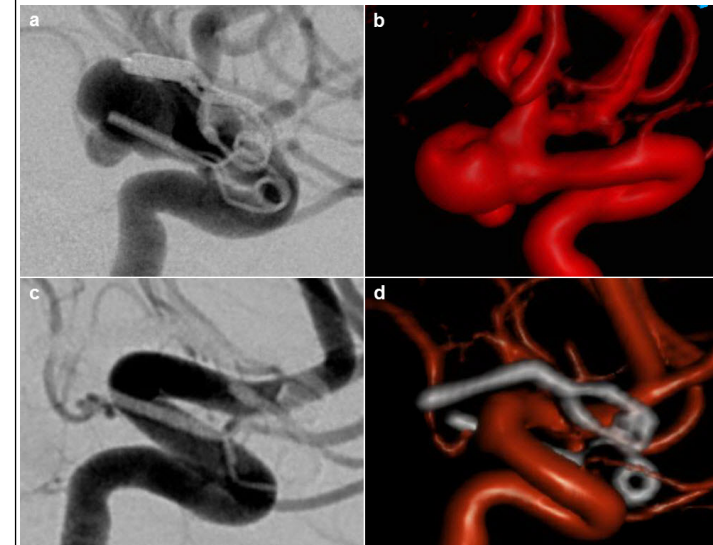
The median maximal diameter was 9 mm (range 4-18 mm), and the median neck width was 5 mm (range 1.5-10 mm).

The median time between diagnosis and treatment was 23 days (range 0-105 days).

Complete occlusion was achieved in all patients with imaging follow-up. A history of prior clipping did not affect PED placement or outcome (Figure 1).

No morbidity or mortality was associated with PED placement.

**Figure 1**



DS angiography and dual-volume three-dimensional reconstruction of the left ICA showing: (a-b) Recurrent posterior communication artery (Pcom) saccular aneurysm before PED placement; and (c-d) Complete occlusion of the aneurysm at 8-month follow-up.

## Conclusions

PED for recurrent aneurysms after clipping may be a feasible alternative to reoperation.

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