



**Abstract O-034 Figure 1** Frequency of complete, partial, or no angiographic improvement and frequency of postoperative infarction following intraoperative abciximab administration

angiographic resolution (Figure 1). Only 8% (4/48) cases failed to improve angiographically. Angiographic outcomes were similar in patients who received IA, IV, or combined IA and IV administration of abciximab intraoperatively ( $p = 0.58$ ), or patients who did or did not receive continuous IV infusion of abciximab postoperatively ( $p = 0.11$ ). Postoperative infarction was seen in 20% (5/25), 44% (4/9), and 67% (4/6) following IA, IV, and combined IA and IV abciximab, respectively ( $p = 0.06$ ) (Figure 1). The rate of postoperative infarction was 33% (2/6) in patients who received continuous IV infusion of abciximab postoperatively and 32% (11/34) in those who did not ( $p = 1.00$ ). Postoperative infarction developed in 8% (2/24) patients with complete angiographic improvement, compared to 69% (11/16) in patients with partial or no improvement ( $p < 0.0001$ ).

**Conclusion** Abciximab administration is an effective method of treating thromboembolic complications of neuroendovascular procedures. Angiographic outcomes were not appreciably different between different routes of abciximab administration. Infarction was least common in patients treated with IA abciximab; the addition of postoperative abciximab infusion did not affect the rate of infarction. No or partial angiographic improvement was associated with significantly higher rates of postoperative infarction than complete angiographic improvement.

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# **O-035 SAFE (SAFETY AND EFFICACY ANALYSIS OF FRED EMBOLIC DEVICE IN ANEURYSM TREATMENT): STUDY DESIGN AND PRELIMINARY RESULTS**

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**Purpose** Flow diversion is now a well-established endovascular technique for the treatment of intracranial aneurysms. FRED and FRED Jr are dual-layer, self-expanding nickel titanium flow-diverters. SAFE is a prospective, multicenter study conducted in 14 French and Belgian centers to evaluate the safety and efficacy of these devices.

**Materials and methods** Only aneurysms located in the anterior circulation were included. The primary efficacy endpoint is

the rate of complete aneurysm occlusion at 6 months without associated stenosis of the parent vessel. The primary safety endpoint is the rate of morbidity (mRS  $> 2$ ) and mortality at 6 months. Adverse events as well as anatomical results will be independently evaluated. According to the endpoints, the target population is 85 patients, now extended to 95/100.

**Results** Inclusions started in July 2014. End of February 2016, 92 patients with 92 aneurysms were included. The expectation is to have inclusions completed end of April 2016. Most patients were females (80/92, 87.0%). All but one patient were mRS 0 or 1 before the treatment.

Among the 92 aneurysms, 22 (23.9%) were aneurysm remnant after a previous treatment and the 70 others (76.1%) were unruptured. Aneurysm locations were internal carotid artery ( $n = 83$ , 90.2%), anterior communicating artery ( $n = 6$ , 6.5%), and middle cerebral artery ( $n = 3$ , 3.3%). Aneurysm size was  $<10$  mm in 57 aneurysms (62.0%), 10 to 24 mm in 31 aneurysms (33.7%), and  $>24$  mm in 3 aneurysms (3.3%).

Neck size was  $<4$  mm in 24/91 aneurysms (26.4%) and  $\geq 4$  mm in 67/91 aneurysms (73.6%).

Placement of the flow diverter was achieved in all cases. Intra-operative events were reported in 7/92 patients (7.6%), including technical problems ( $n = 3$ ), thromboembolic events ( $n = 3$ ), and others ( $n = 1$ ). Postoperative events, morbidity, and mortality are also analyzed. Preliminary anatomical results (at 6 months) are presented.

**Conclusion** SAFE is an ongoing GCP (Good Clinical Practice) study aiming to evaluate safety and efficacy of FRED flow diverter in aneurysm treatment. Inclusions are close from completion. As of now, the safety of the FRED as evaluated by the CEC seems to be in line with published results for Flow Diversion technique.

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# **O-036 RUPTURED ANEURYSMS OF COLLATERAL VESSELS IN ADULT-ONSET MOYAMOYA DISEASE WITH HEMORRHAGIC PRESENTATION**

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**Purpose** Strategies for treating intracranial aneurysms of collateral vessels in adult-onset moyamoya disease (MMD) remain unclear, because overall case numbers are limited and data on long-term outcomes are lacking. The aim of this study was to assess clinical and anatomic outcomes of such aneurysms in adult MMD sufferers who present with hemorrhage.

**Methods** Of the 77 adult patients consecutively enrolled between January, 2003 and December, 2014 in the MMD registry at a single institution, those presenting with hemorrhage and followed for  $>12$  months were studied. Aneurysms involving collateral vessels at sites of hemorrhage were considered culprit lesions.

**Results** Aneurysms of collateral vessels in 19 patients (19/77, 24.7%) were confirmed as ruptured by conventional angiography. In five of these patients, oblitative endovascular embolization was successfully performed. The other 14 patients were managed conservatively due to lesion inaccessibility. Follow-up imaging studies (13 available) confirmed later disappearance of