Simulations, Microvention, Neurogami, Qapel Medical, RAPID Medical, RAPID.AI, Stryker, Siemens, 6; C; honorarium from Qapel Medicine. D. Frei: 2; C; Penumbra, Stryker Neurovascular, Genentech, MicroVention, and Codman. B. Aagaard-Kienitz: None. O. Diaz: 6; C; proctor for Microvention/Terumo. A. Malek: 6; C; Cofounder, investor, and shareholder of CereVasc. C. Cawley: None. A. Puru: 1; C; Medtronic Neurovascular, Stryker Neurovascular, and Cereviesus. 2; C; Microvention, Agile, Merit, Corindus, QApel, Arsenal, and Imperative Care. D. Kallmes: 1; C; Medtronic, Micro-Vention, NeuroSave, Neurogami, Sequent Medical, NeuroSigma, and Insera. 6; C; President of Marblehead Medical and has patent pending in balloon catheter technologies.

**Introduction**

Although the role of inflammation in the development of aneurysms is established, less is known about the development of intracranial aneurysms in the setting of underlying autoimmune disease. The underlying systemic inflammation characteristic of disorders such as systemic lupus erythematosus, rheumatoid arthritis, and Sjogren's syndrome may influence the development of intracranial aneurysms through common inflammatory pathways. We hypothesize an association between underlying autoimmune disease and aneurysm growth and rupture.

**Materials and Methods**

Medical records of patients who underwent cerebral angiography between August 2018 and August 2021 were manually reviewed to identify autoimmune diseases, comorbid conditions, and aneurysm characteristics. Aneurysm sizes and location were recorded based on the angiography report. Autoimmune diseases as defined for this study included those known to have systemic inflammatory effects on the central nervous system or multiple other organ systems. In the case of hypothyroidism patient charts were carefully reviewed to ensure that only autoimmune hypothyroidism was included in the autoimmune disease group. Statistical analysis was performed using R v4.1.0 (R Foundation for Statistical Computing). A multiple logistic regression model was built in R to determine the effect of multiple independent variables, including autoimmune disease, on rupture status as a binary outcome. A multiple regression model was also constructed to determine the effect of multiple variables, including autoimmune disease, on size of an aneurysm at the time of rupture.

**Results**

Chart review identified 194 patients with 273 ruptured and unruptured saccular intracranial aneurysms. There were 31 patients with 44 aneurysms identified as having an autoimmune disease. There were no significant differences in age, sex, smoking status, hypertension, or diabetes between autoimmune and non-autoimmune patients. There was no significant association between autoimmune disease and aneurysmal rupture (p=0.66). Average aneurysm size among patients with autoimmune disease was 3.53 mm compared to 6.38 mm in patients without autoimmune disease (p=0.07). The average size of a ruptured aneurysm was significantly smaller among patients with autoimmune disease compared to patients without autoimmune disease (4.71 mm vs 5.95 mm, p = 0.02). Patients with autoimmune disease also had a lower mean Hunt-Hess score at presentation compared to patients without autoimmune disease (1.78 vs 2.52, p=0.04). The multivariate logistic regression model did not identify any significant association between rupture and autoimmune disease when controlling for other variables (p=0.49). In the multivariate linear regression model autoimmune disease was still significantly associated with a smaller size at rupture (p=0.04) and smoking was associated with a larger size at rupture (p=0.03) when controlling for other variables.

**Conclusion**

In conclusion, autoimmune disease is associated with a smaller aneurysm size at rupture although it is not associated with rupture itself. This association may be due to inflammatory pathways which are common to autoimmune diseases as well as aneurysm wall development. Although we were unable to identify any association between rupture status and the presence of autoimmune disease, the association between smaller size at rupture and autoimmune disease warrants further studies as autoimmune disease may influence the trajectory of aneurysm development and the decision to treat.

**Disclosures**

Introduction

There is limited literature regarding the safety and efficacy of salvage flow diversion (FD) in persistent/recanalized aneurysms after stent-assisted coiling (SAC). These aneurysms can occur in 15–20% of cases, with preliminary data suggesting lower efficacy in this particular subgroup. Therefore, we sought to study this in a large multicenter cohort.

Methods

A series of consecutive patients undergoing salvage FD for failed SAC from 16 institutions were included (2011–2021) with a primary outcome of angiographic occlusion and secondary outcomes of safety and complications.

Results

Eighty-two patients (median-age 57, 69.5% females) were included. The majority of aneurysms were located in the internal carotid artery (70.7%), saccular in morphology (81.7%), with a median maximal diameter of 9 mm (IQR 5.6–15), and 51.2% initially presenting as ruptured aneurysms. The median elapsed time between initial SAC and salvage FD was 25.1 months, with Pipeline Embolization Device (PED) being the most commonly utilized FD device (95.1%). At a median follow-up of 19 months after FD, complete angiographic occlusion was achieved in 64.7% of cases, and near-complete occlusion (90–99%) in 17.6% of the cases. Permanent thromboembolic complications were encountered in 2.4% of the patients, and one procedural mortality secondary to hemorrhagic complication (1.2%). A favorable modified Rankin Scale (mRS) of 0–2 was encountered in 94.4% of patients on the last available clinical follow-up.

Conclusions

In our data, salvage flow diversion for persistent/recanalized aneurysms after SAC was associated with reasonable safety and efficacy profiles, comparable to de novo flow-diverted aneurysms.

Disclosures


O-057 SALVAGE FLOW DIVERSION FOR PERSISTENT/RECANALIZED ANEURYSMS AFTER STENT-ASSISTED COILING: MULTICENTER EXPERIENCE


Introduction/Purpose

Salvage flow diversion (FD) is utilized as an alternative treatment for failed stent-assisted coiling (SAC). The Pipeline Embolization Device (PED), as a flow-diverting stent, has demonstrated favorable safety and efficacy profiles, comparable to de novo flow-diverted aneurysms. Herein, we present our experience with FD for persistent/recanalized aneurysms after SAC at 16 centers across the United States.

Methods

We retrospectively reviewed patient characteristics, aneurysm characteristics, treatment details, angiographic and clinical follow-up outcomes at 16 centers over a period of 10 years (2011–2021). Aneurysms were classified as persistent or recanalized if angiography demonstrated persistently increased angiographic patency (>71%) after SAC. Aneurysm characteristics, treatment details, and outcomes were compared to SAC only for sacs that failed to occlude at follow-up.

Results

Eighty-two patients (median age 57, 69.5% female) were included. The majority of aneurysms were located in the internal carotid artery (70.7%), saccular in morphology (81.7%), and had a median maximal diameter of 9 mm (IQR 5.6–15), with 51.2% initially presenting with intracranial hemorrhage. The median elapsed time between initial SAC and salvage FD was 25.1 months, with Pipeline Embolization Device (PED) being the most commonly utilized device (95.1%). At a median follow-up of 19 months after FD, complete angiographic occlusion was achieved in 64.7% of cases, and near-complete occlusion (90–99%) in 17.6% of the cases. Permanent thromboembolic complications were encountered in 2.4% of the patients, and one procedural mortality secondary to hemorrhagic complication (1.2%). A favorable modified Rankin Scale (mRS) of 0–2 was encountered in 94.4% of patients on the last available clinical follow-up.

Conclusions

In our data, salvage flow diversion for persistent/recanalized aneurysms after SAC was associated with reasonable safety and efficacy profiles, comparable to de novo flow-diverted aneurysms.

Disclosures