

Introduction

The Microvention LVIS Jr. is a partially retrievable, nitinol braided wire micro-stent which can be deployed through a low-profile microcatheter and is well suited for distal small vessel navigation. We sought to describe our initial experience with LVIS Jr. in the treatment of intracranial cerebral aneurysms with attention to peri-procedural thromboembolic risk and short-term efficacy.

The LVIS Jr. Stent

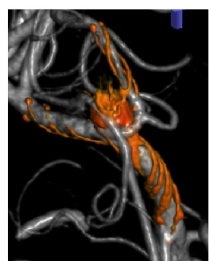


Fig 1. Y-stent coiling of an MCA bifurcation aneurysm

Methods

We prospectively analyzed clinical and radiographic records and same-day platelet function testing (PFT) using light transmission aggregometry (LTA) and VerifyNow; procedural thromboembolism was detected by diffusion-weighted imaging on MRI (MR-DWI) at 24 hours.

Patient Demographics

Sixty-one patients (46 women; age 38-84 years, mean 61.5,) underwent aneurysm treatment with the LVIS Jr. for coil support in 40 patients (37 single stent; 3 Y-stent) and for flow diversion in 21 patients. Aneurysm location included 26 ACom, 24 MCA, 6 vertebro-basilar, 2 ICA, and 3 distal ACA.

PRU and ARU Distributions

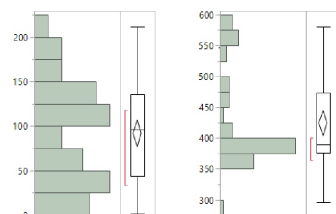


Fig 2. PRU (left) and ARU (right) distributions for the treatment population

Procedural Safety

Asymptomatic MR-DWI were detected in 10/60 cases (16.67%), with no difference in PRU between MR-DWI + and - cases (98.5 vs. 90.2 respectively; $p=0.68$). All MR-DWI + cases were seen in coil-support stenting with none in flow-diverter stenting. There were no cases of procedural hemorrhage or intraprocedural aneurysm rupture.

Intraprocedural GPIIb/IIIa Inhibitor Use

Intraprocedural GPIIb/IIIa inhibitor (eptifibatide) infusion was administered in 6 cases: 4 for intra-procedural stent-related thrombus formation, 1 for poor stent apposition and 1 for poor clopidogrel response on PFT. Patients who developed intra-procedural stent-thrombus had significantly higher PRU values (170 vs. 86.3; $p<0.005$), highlighting the critical role for pre-procedural PFT and insuring adequate dual anti-platelet therapy response.

Example Case

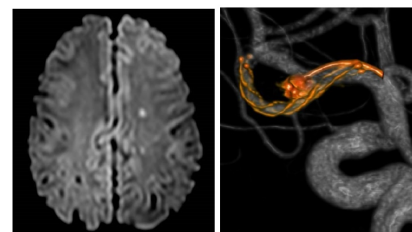


Fig 3. Post-embolization MRI (left) and Angiogram Reconstruction (right) of a left MCA bifurcation aneurysm

PRU Distribution for DWI Cases

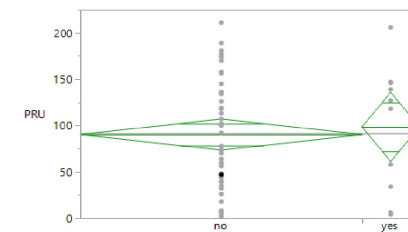


Fig 4. PRU values were not different among cases with MR-DWI lesions

High PRU Predicts Thrombus Formation

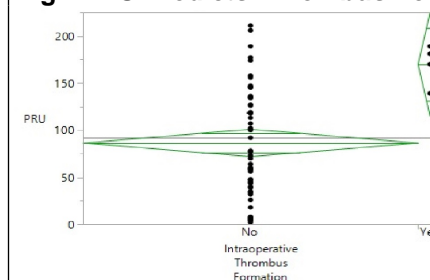


Fig 5. Cases with Intraoperative Thrombus Had Significantly Higher PRU Values

Conclusions

The LVIS Jr. is a versatile and maneuverable low-profile stent that lends itself to safe distal small vessel aneurysm treatment. Adequate platelet inhibition is recommended to minimize the risk of stent-related thrombosis in patients with poor pharmacological response to dual anti-platelet therapy for optimal outcome.