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ABSTRACT TITLE:

“Jumping” Flow Diverter – an unusual case of acute Device Prolapse.

INTRODUCTION: Giant intracranial aneurysms are regarded as some of the most intricate cerebrovascular abnormalities to address.¹ Considering that surgical intervention frequently entails elevated morbidity rates and coil embolization exhibits notable instances of incomplete aneurysm closure, often necessitating further treatment, the employment of flow diversion has recently emerged as an appealing choice for addressing giant aneurysms. One of the most demanding challenges associated with deploying flow diversion devices is the occurrence of acute migration due to device foreshortening, which results in the device prolapsing into the aneurysm.² Despite various bailout strategies, it is still a nightmare for neurointerventionists and carries high risk of aneurysm rupture due to misdirection of flow into the aneurysm.

CONSENT: Informed consent was taken from the patient.

CASE SUMMARY: We describe a case of giant right internal carotid artery (ICA) aneurysm treated with endovascular flow diverter placement and, had an intra-procedural prolapse of the proximal end of the device, requiring urgent retrieval during which there was complete prolapse of the flow diverter into the aneurysm. Finally, it was rescued with coiling and another flow diverter.

Case: A 63-years-old female presented history of progressive blurring of vision from right eye since 3 months. On examination, there was mild restriction of right eye adduction. Rest clinical examination was normal. On brain imaging and thus Digital subtraction angiography, there was evidence of large aneurysm in right ICA involving supraclinoid segment.

We planned placing a flow diverter with partial coiling of the aneurysm sac. We used the standard endovascular procedure, utilizing triaxial system that included a long sheath, an intermediate distal access catheter and two microcatheters. While deploying the flow diverter, the device's proximal end became twisted and failed to unfold, despite various manoeuvres. During massaging with the microcatheter and microwire, the proximal end of the device prolapsed into the aneurysm. With further manipulation and retrieval, the entire flow diverter device ended up and prolapsed within the aneurysm. Ultimately as a final solution, after densely packing with coils, a longer flow diverter was placed across the aneurysm's neck.

DISCUSSION: A systematic review in giant aneurysms concluded that the use of flowdiverting devices had a low mortality rate (2.8%) and neurologic morbidity rate (4.5%), with an overall complication rate of 17%.³ Among the technical complications documented were the instance of poor stent opening (8.6%) and wire perforation (3.8%).⁴ Stent migration or suboptimal positioning was observed in 5.8%.³ One of the most technically challenging complications is FD migration and prolapse into the aneurysm, an event reported in as much as 9.3% of cases involving large and giant aneurysms.⁵ Adjunctive coiling has been previously

used as a method to presumably improve clinical outcomes in PED-treated patients.⁶ The perceived benefits of coiling are immediate dome protection for a ruptured aneurysm and scaffolding during FD deployment.

CONCLUSION: Giant IAs remain one of the most daunting clinical problems to treat. FD displacement is a rare and possibly a fatal complication. Adjunctive coiling may be a possible rescue strategy for stabilizing and providing scaffolding to FD that can otherwise prolapse into the aneurysmal sac.

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