Initial Local Experience with the Contour Neurovascular System for MCA Bifurcation Aneurysms

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01 INTRODUCTION

Intrasaccular flow-disrupting devices treat saccular bifurcation aneurysms, commonly at the middle cerebral artery (MCA) bifurcation, internal carotid artery (ICA) terminus, anterior communicating artery complex, and basilar apex. Contour is a dual-layered nitinol DFT mesh with platinum markers, forming a bowl-shaped hemisphere that conforms specifically to the aneurysm neck covering the neck rather than filling the sac, preserving parent and branch vessels. We report our initial institution's initial experience in using Contour for MCA bifurcation aneurysms of different neck configurations.

02 METHOD

Retrospective search in the database of a local tertiary hospital (Kwong Wah Hospital) from 2026. Embolization cases using Contour Neurovascular System were selected for this educational exhibit. Total of two cases were selected.

03 RESULTS

CASE 01 Unruptured left MCA bifurcation aneurysm — standalone Contour 5mm

BACKGROUND

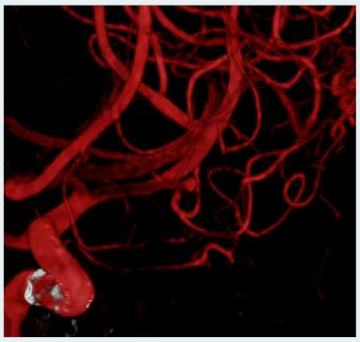
A 41-year-old female smoker and non-drinker with incidental finding of intracranial aneurysms on workup for diffuse neck pain in 2020. The larger aneurysm at ophthalmic segment of left ICA was treated with flow diverter with complete occlusion in 2021, while the small aneurysm at left MCA bifurcation was initially managed conservatively.

CLINICAL INFORMATION

- Follow up imaging showed enlargement of the left MCA bifurcation aneurysm and alteration in its shape and contour.
- From smooth rounded contour with a 2mm dome → lobulated contour with a 4.7mm dome
- Patient was asymptomatic. However in view of increasing size and altered morphology of the aneurysm, decision was made to proceed with endovascular treatment.

RATIONALE FOR CONTOUR

- Both coiling or intra-saccular device are feasible
- Perfect first case for Contour deployment due to its relatively straight-forward anatomy (no acute angulation, geometry also suitable for Contour device deployment)



DSA (3D reconstruction) in 2022

Size: 1.60mm (neck) x 3.25mm (dome) x 2.88mm (height)



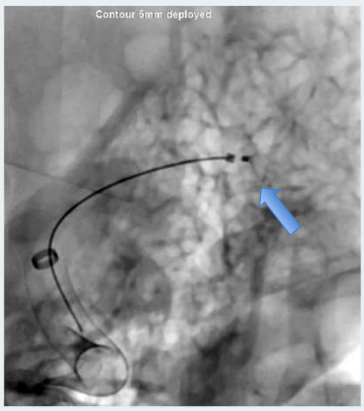
DSA (3D reconstruction) in 2026

Size: 1.99mm (neck) x 4.68mm (dome) x 3.25mm (height)

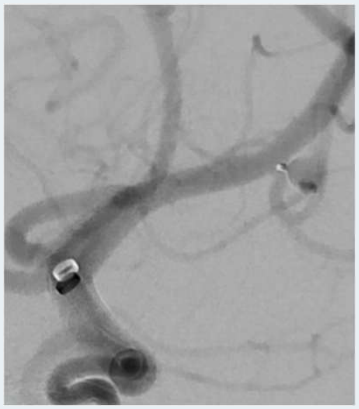
INTRAOPERATIVE DSA



Pre-deployment DSA

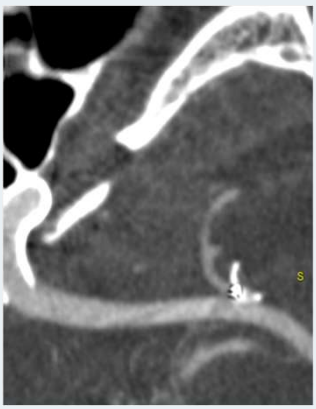


Deployment of Contour 5mm



Post-deployment DSA

FOLLOW UP CTA



Complete occlusion of the aneurysm sac and preserved branch patency

TECHNICAL DETAILS

- Intra-operative measurement: N 2.17 mm, D 4.57 mm, H 2.91 mm
- Envoke 21 microcatheter and Synchro select microguidewire were used to cannulate into aneurysm sac
- Contour device 5mm deployed
- Control angiogram showed satisfactory occlusion of aneurysm sac with contrast stasis within. M2 divisions remained patent.

Case 1 Learning Point

Contour Neurovascular System is an alternative to simple coiling in treatment of MCA bifurcation aneurysms with narrow neck, with technical success achieved in this case. Follow-up CTA in 2 months showed complete occlusion of the aneurysm sac and preserved branch patency.

CASE 02 Wide-neck right MCA bifurcation aneurysm — Contour 9mm + Neuroform Atlas parallel stenting

BACKGROUND

A 64-year-old female non-smoker and non-drinker with hypertension on medication presented with right sided weakness. CT revealed left fronto-temporal lobar hemorrhage due to ruptured left MCA bifurcation aneurysm, for which surgical clipping was performed. There was incidental finding of an un-ruptured right MCA bifurcation aneurysm, which was managed conservatively in the initial episode.

CLINICAL INFORMATION

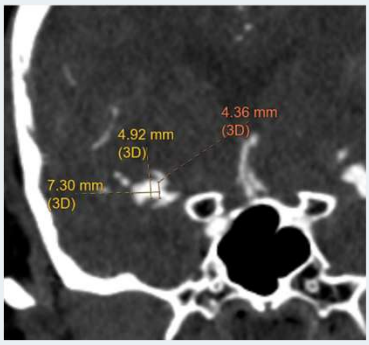
- Follow up imaging showed enlargement of the right MCA bifurcation aneurysm
- Aneurysm morphology: wide-neck, lateral-pointing, and incorporates the origin of the superior M2 division

RATIONALE FOR CONTOUR

- Wide neck aneurysm: Dome-to-neck ratio ≈ 5.0 / 4.9 ≈ 1
- Avoiding long term DAPT / Single antiplatelet therapy

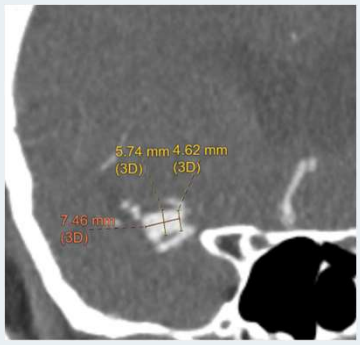
POTENTIAL PROBLEM FOR CONTOUR

- Incorporation of superior M2 division into the aneurysm neck increases the risk of device protrusion into the superior M2 branch and poses difficulty for accurate apposition of the intrasaccular device.



CT Angiogram (MIP Cor) in 2026

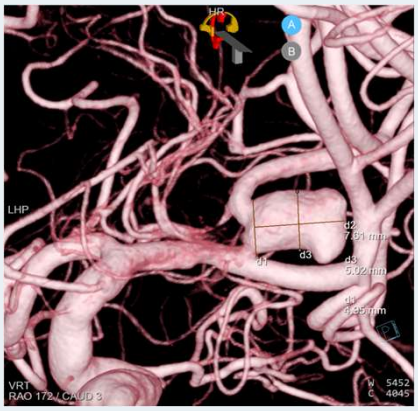
Size: 4.36mm (neck) x 4.92mm (dome) x 7.30mm (height)



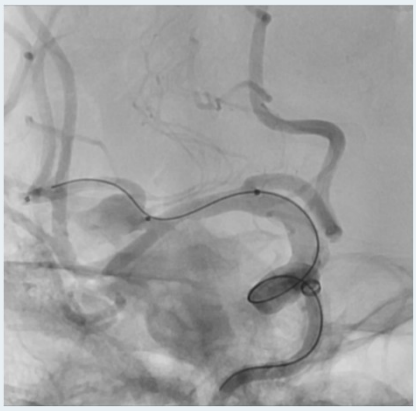
CT Angiogram (MIP Cor) in 2026

Size: 4.62mm (neck) x 5.74m (dome) x 7.46mm (height)

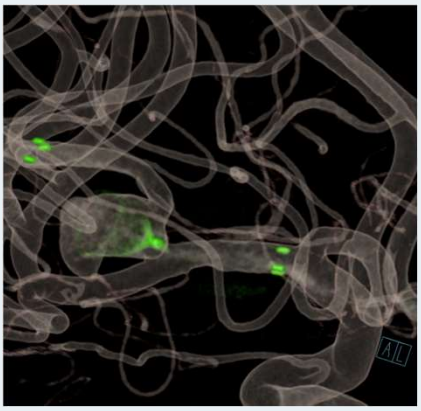
INTRAOPERATIVE DSA



Pre-deployment DSA (3D reconstruction)



Deployment of Contour 9mm; with SL-10 microcatheter in the superior M2 division



Post-deployment DSA (3D reconstruction) – Note that the proximal part of the Contour is sitting within the origin of the superior M2

TECHNICAL DETAILS

- Perioperative measurement: N 4.95mm, D 5.02mm, H 7.61mm
- Neuroslider-21 microcatheter and Willow-18 microguidewire were used to cannulate into aneurysm sac
- Contour device 9mm deployed
- Control angiogram showed mild device protrusion into the parent vessel
- Excelsior SL-10 microcatheter and Synchro Select microguidewire were used to cannulate into the superior M2 division
- Contour device was detached, with subsequent deployment of Neuroform Atlas 4.0 × 21 mm stent from the proximal superior M2 into the proximal M1
- Completion angiograms and 3D rotational angiography showed satisfactory device position and patency of both M2 divisions

Case 2 Learning Point

This case highlights the value of thorough pre-procedural planning when the aneurysm neck incorporates a branch origin, as device conformity across that segment cannot be assumed from sizing alone. Where anatomy raises this risk, pre-emptively positioning a backup microcatheter at the incorporated branch before Contour deployment allows immediate adjuvant stenting if protrusion occurs. Anticipating this possibility preserves branch patency with minimal delay, though it does commit the patient to antiplatelet therapy if the backup device is ultimately used. Recognizing branch-incorporating anatomy early, and preparing for adjuvant treatment, is central to safe Contour deployment.

04 DISCUSSION & CONCLUSION

Contour Neurovascular System can achieve stable standalone neck coverage in MCA bifurcation aneurysms with favorable configurations. Where the neck incorporates an M2 origin, planning should extend beyond sizing to include detailed 3D assessment and pre-emptive backup microcatheter placement for possible adjuvant stenting.

SELECTED REFERENCES

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