



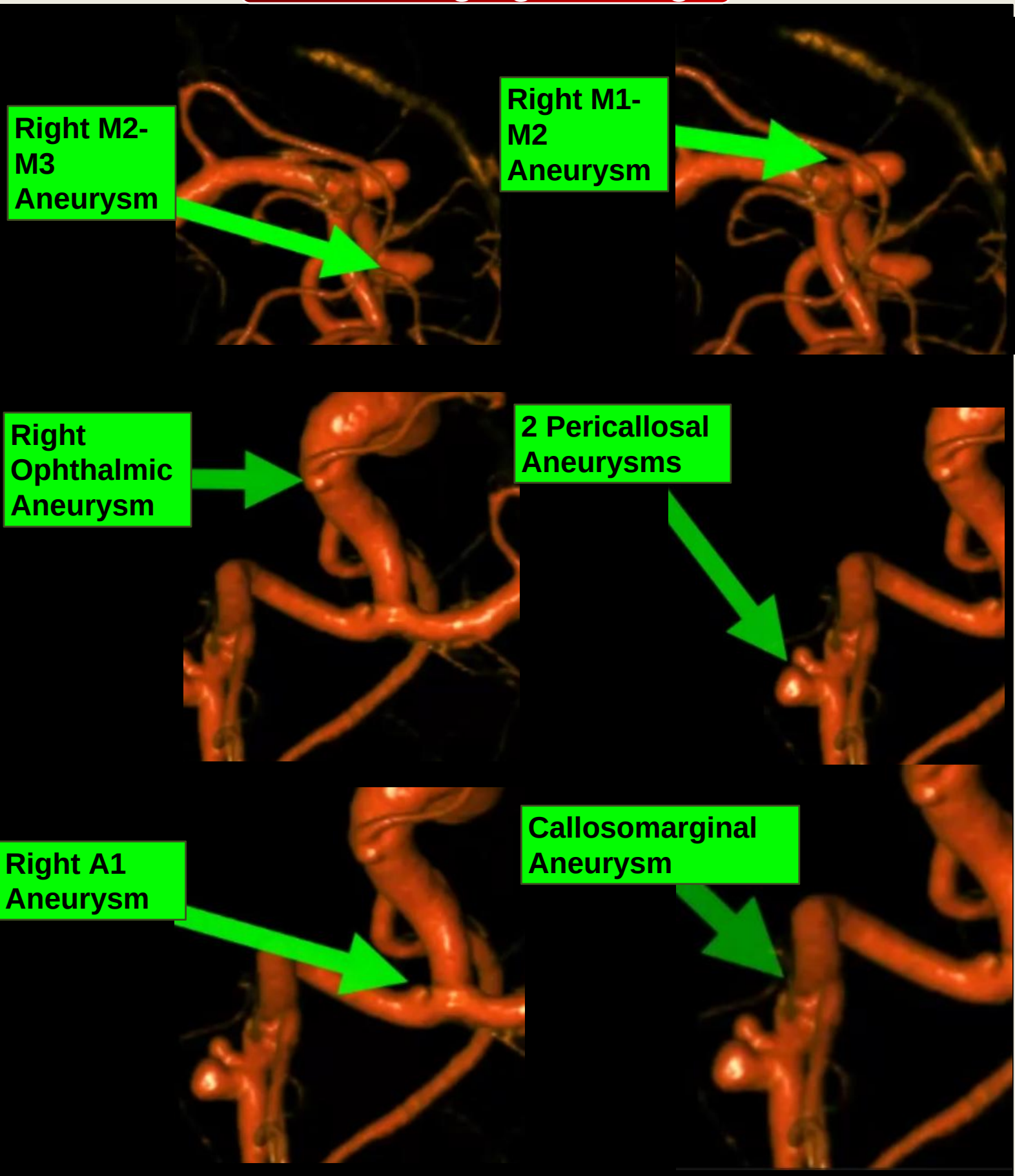
Single-stage “Squeeze Play” Strategy for the Clipping of 7 Aneurysms

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Clinical Presentation

- Female in her 40’s, African-American
- PMX of Hypertension
- Non-smoker
- No family history of aneurysms of SAH
- Several months of holocranial headaches
- Neurological Exam:** Neurologically Intact

Neuroimaging Findings



Rationale for the procedure

- The young, healthy patient has multiple aneurysms, increasing rupture risk compared to isolated aneurysms.
- Endovascular treatment was unsuitable due to broad-neck or shallow morphology of MCA, A1, callosomarginal, and pericallosal aneurysms.
- The ophthalmic aneurysm was small but addressed during craniotomy for the other six aneurysms.
- Consensus supports treating all aneurysms when technically feasible to prevent SAH.
- Untreated aneurysms risk SAH, complicating identification and worsening prognosis in a rupture scenario.
- The patient preferred a durable, low-maintenance treatment, making clipping the best option.
- Risks: Infection, seizures, hydrocephalus, stroke.
- Benefits: Minimal recurrence, single surgery, lower cost, no radiation/contrast.
- Conservative management: Unsafe due to aneurysm size and multiplicity.
- Endovascular treatment: Poor choice due to anatomy, dual antiplatelet requirement, and complex follow-up.

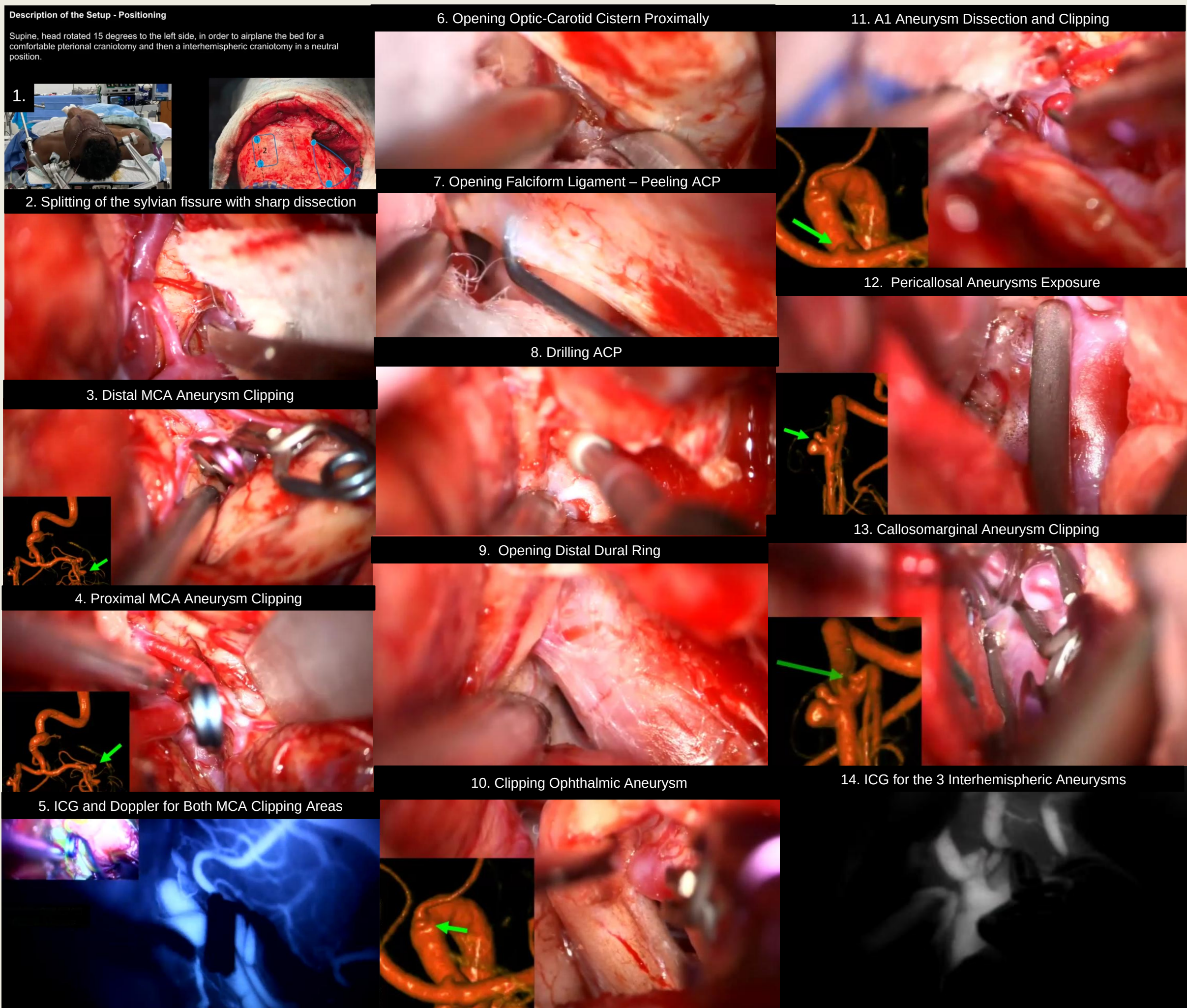
Necessary Equipment

- Surgical Microscope
- Standard craniotomy instruments.
- Indocyanine green
- Microdropper
- Regular drill with 5 mm round head for drilling of the sphenoid bone
- Rothon microsurgical set / LawtonElite microsissors for sylvian, basal cisterns, and aneurysm dissection
- Drill with long protected shaft / 2mm round diamond drill for drilling of the anterior clinoid process

Key Surgical Steps

- Coronal incision from left superior temporal line to right preauricular area
- Preservation of the superior temporal artery as a backup in case of need for a biopsy
- Standard pterional craniotomy
- Extensive drilling of the sphenoid bone
- Distal and proximal extensive sylvian dissection
- Clipping of MCA and A1 aneurysms
- Opening of optic-carotid cistern
- Release of falciform ligament, unroofing of optic nerve, drilling of clinoid, opening of distal dural ring.
- Clipping of ophthalmic aneurysm
- Standard interhemispheric approach and clipping of pericallosal and callosomarginal aneurysms.

Procedure



Clinical Imaging Outcome

- Brief review of clinical and imaging outcome
- CT and DSA postop showed no complications and no aneurysm residuals
 - The patient was discharged on postoperative day 3 without neurological deficits.

Disease Background

- The incidence of multiple aneurysms is 10.7-34% among brain aneurysm cases
- Female sex is associated with an increased incidence of multiple aneurysms
- Hypertension, female sex, and advanced age are factors associated with an increased rupture risk in multiple aneurysms
- Multiplicity was also associated with familial aneurysms and autosomal dominant polycystic kidney disease
- The risk of rebleeding from the original aneurysm is larger and occurs sooner
- MUA patients are more likely to develop de novo CA and have their existing CA increase in size further

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