

Flow Diverters et nouveaux dispositifs pour les anévrismes de moins de 10mm

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Flow Diverters et nouveaux dispositifs pour les anévrismes de moins de 10mm

- ◆ **Flow Diverter Stents: 40 aneurysms <10mm**
 - ◆ PED (Covidien): 28 aneurysms
 - ◆ Surpass™ (Stryker): 9 aneurysms
 - ◆ Silk (Balt): 3 aneurysms
- ◆ **LUNA™ Aneurysm Embolization System (Covidien): 12 aneurysms. (Web : no cases)**
- ◆ **pCONus (Phenox): 7 aneurysms**

Flow Diverter Stents in < 10mm aneurysms

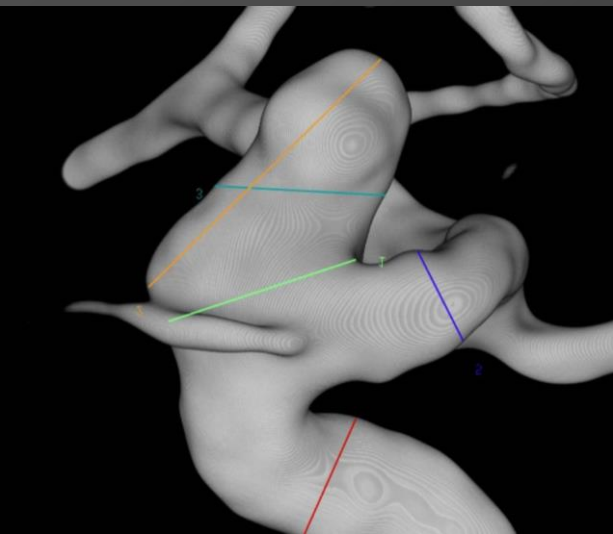
40 Aneurysms in 32 Patients

- ◆ Age : 16 - 79 yo, mean : 52 years
- ◆ 40 Aneurysms
 - 37 « de novo » unruptured or residual / recurrent
 - 3 ruptured (2 weeks- 1 month after SAH)

Flow Diverters in < 10mm aneurysms

Indication

- ◆ Difficult/no-possible « standard » treatment
- ◆ Previous SAH
- ◆ Multiple Aneurysms
- ◆ Familiar aneurysmal history
- ◆ Age
- ◆ Morphology, branch from the sac /Location
- ◆ Dissecting aneurysms
- ◆ Blood Blister Like aneurysms

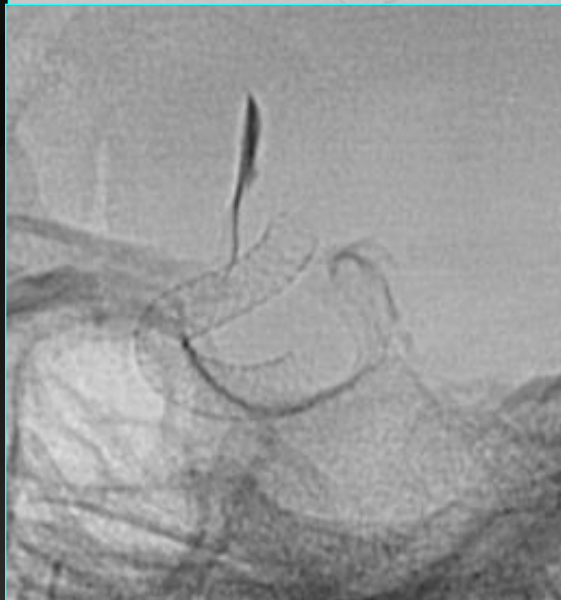
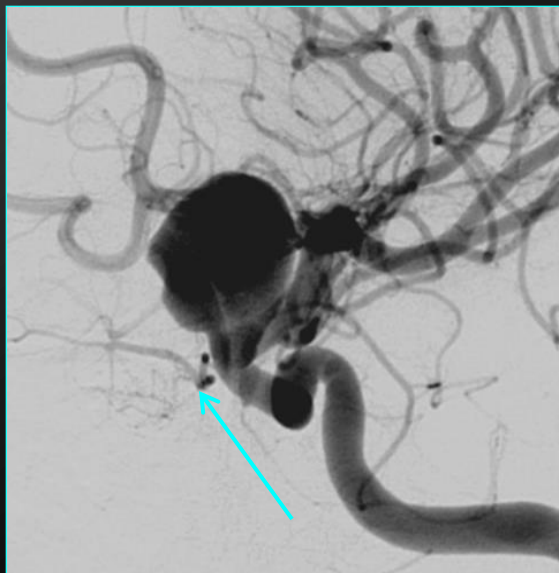
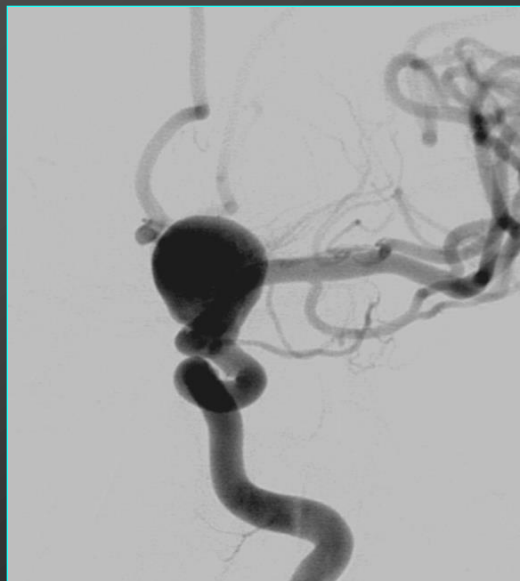


12 mo FU

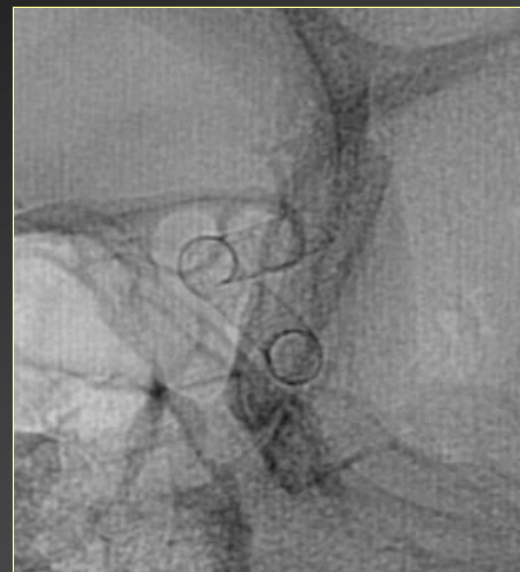
PED - 2 r&l Intra-dural Aneurysms

F, 40 yo, visual deficit

PED 3.5mm x 20 mm



Clinical Cure

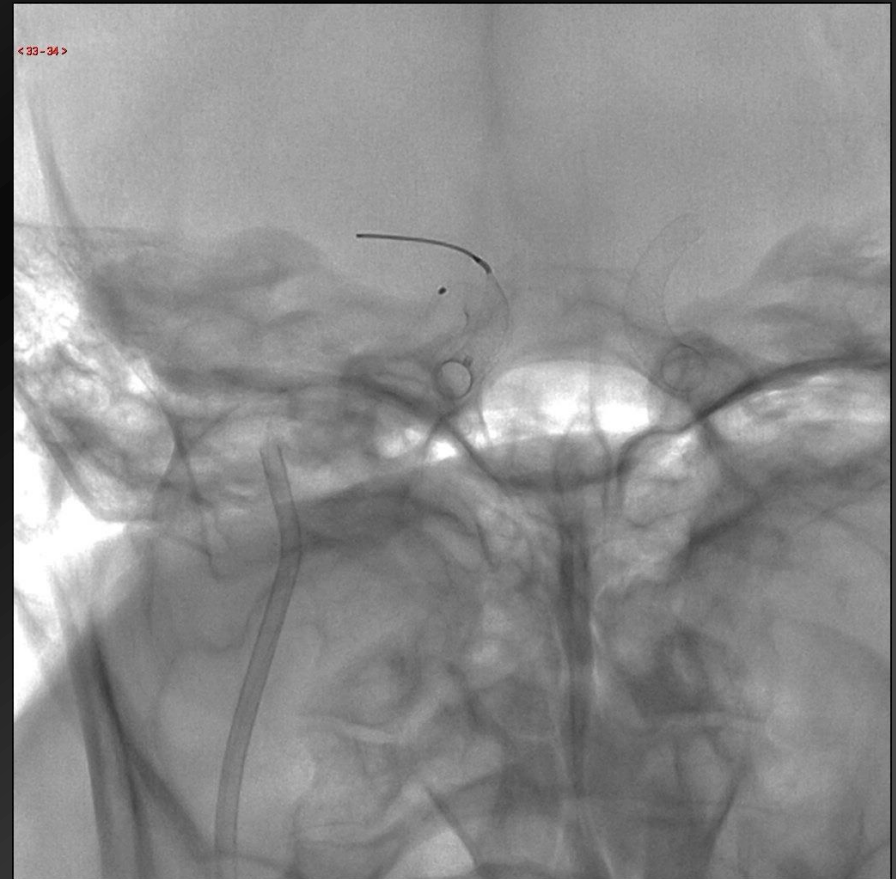


Right smaller aneurysm
1st PED removed 2nd deployed



3rd PED deployment

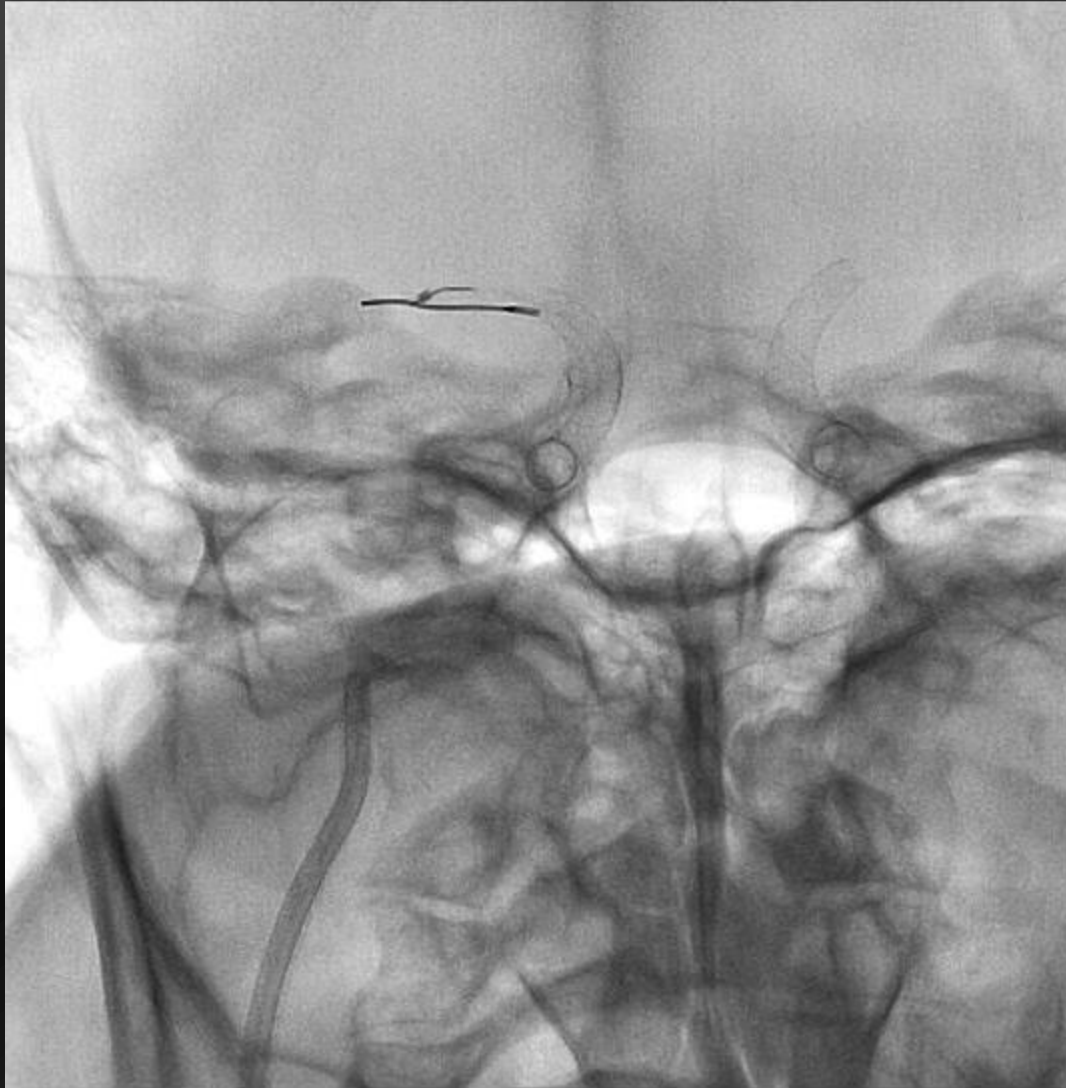
Not possible to release the distal end from the capture coil
Rupture of the pusher during rotating manoeuvres



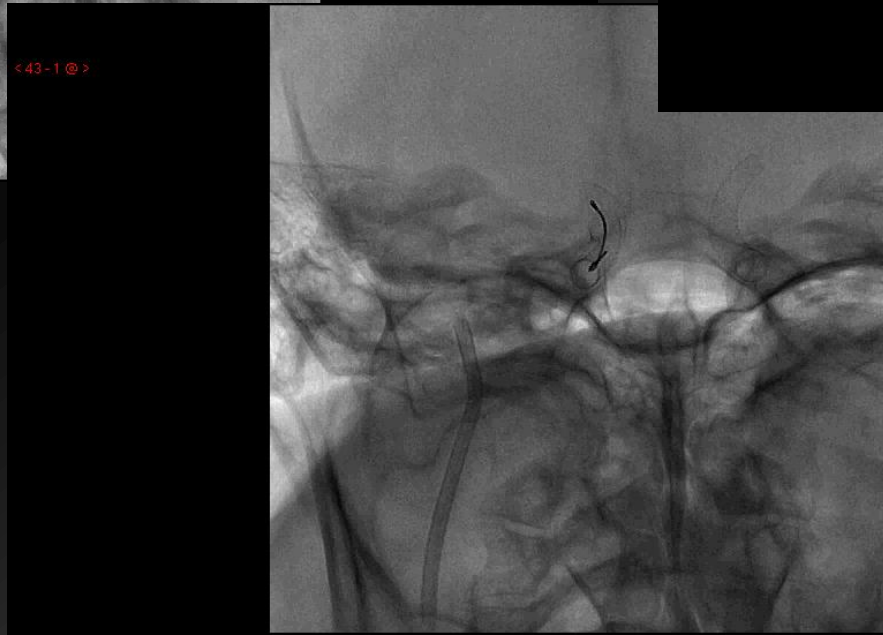
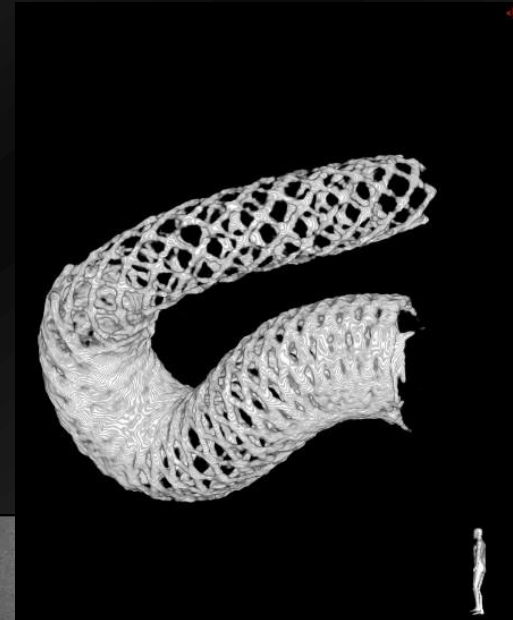
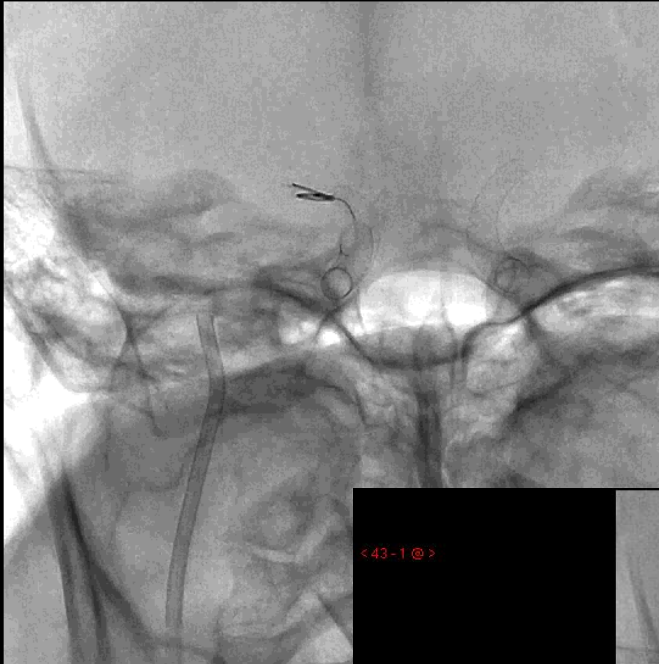
Attempt to release the distal PED with the micro-guide
(Terumo 12, 90°)



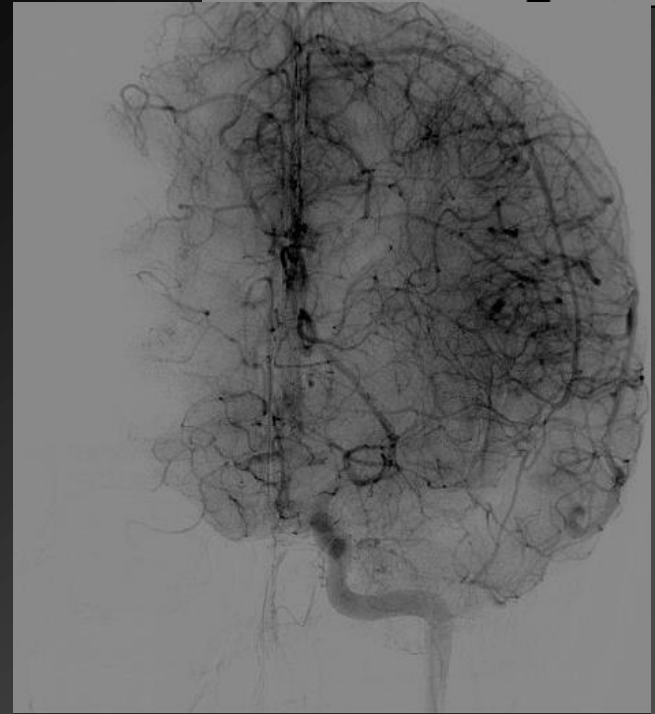
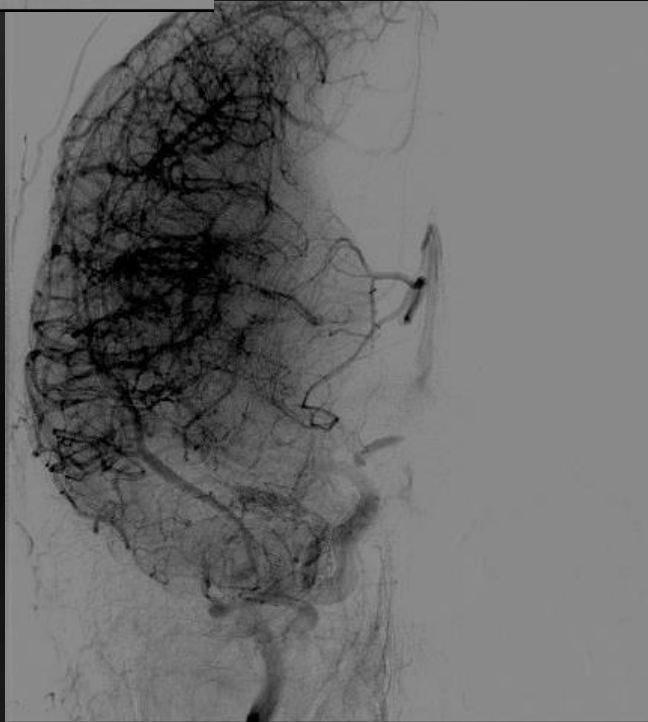
« Capture » of the capture-coil with a Goose-neck 2mm



The capture coil is removed with the goose-neck
Additional manuevres bc the stent is still attached...

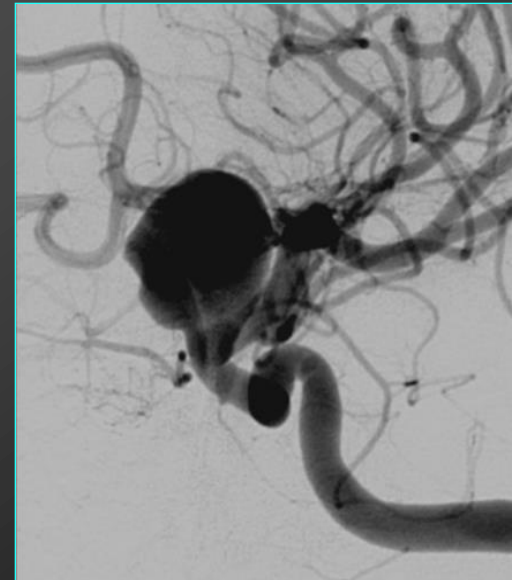


At the end

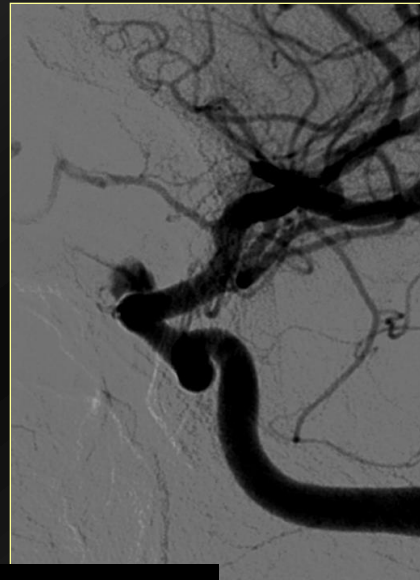


On the table...



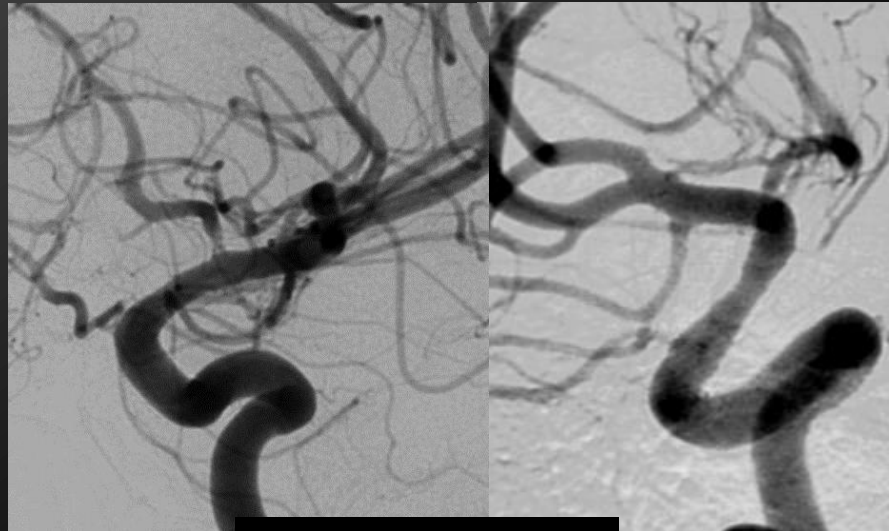


3 mo FU

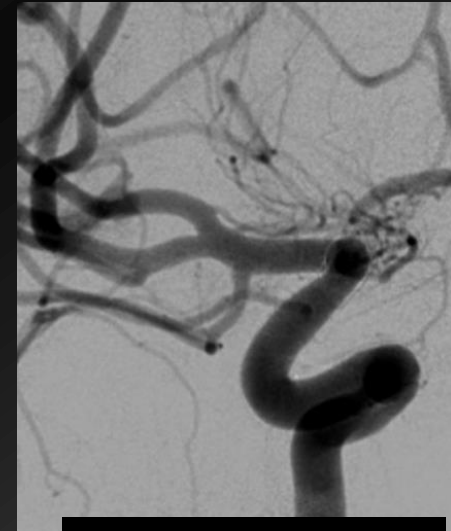


12 mo FU

Left aneurysm



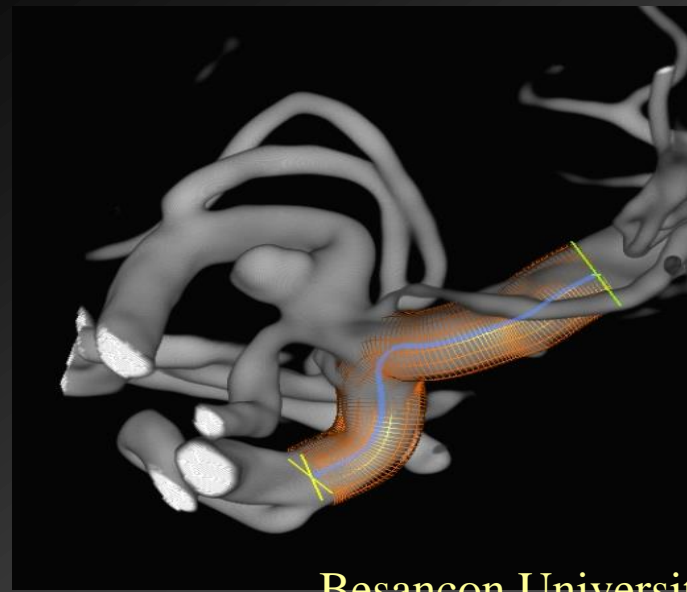
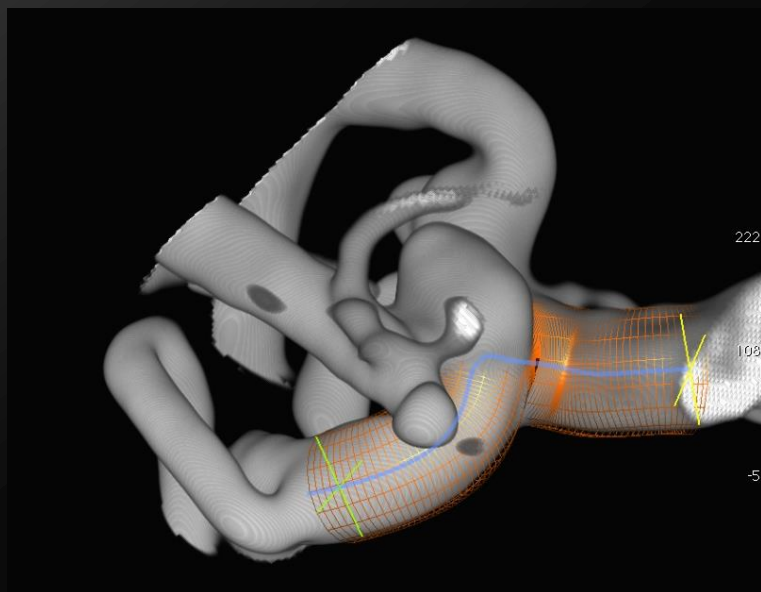
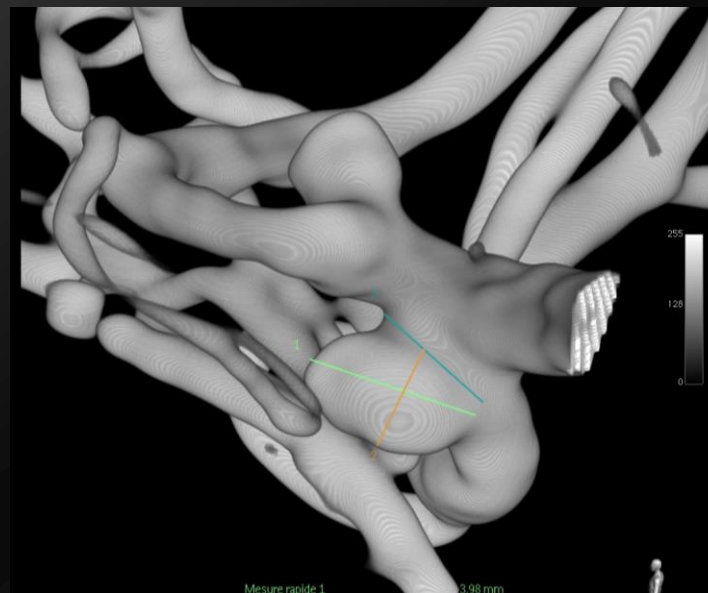
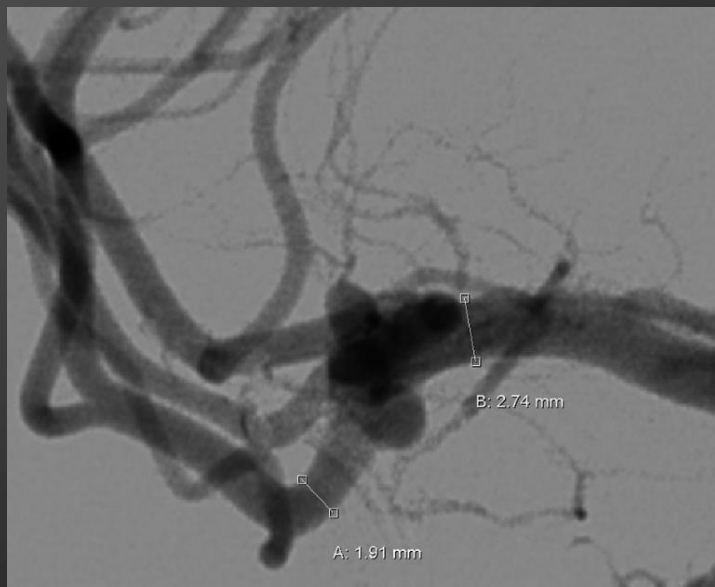
3 mo FU

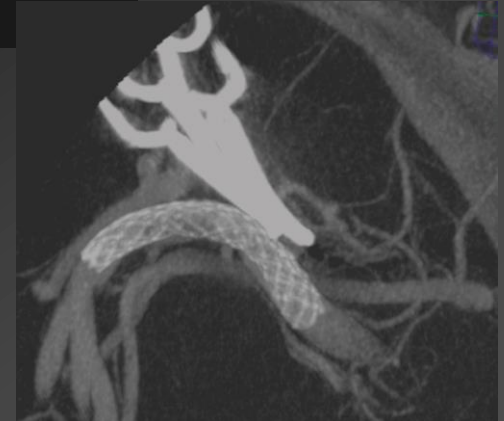
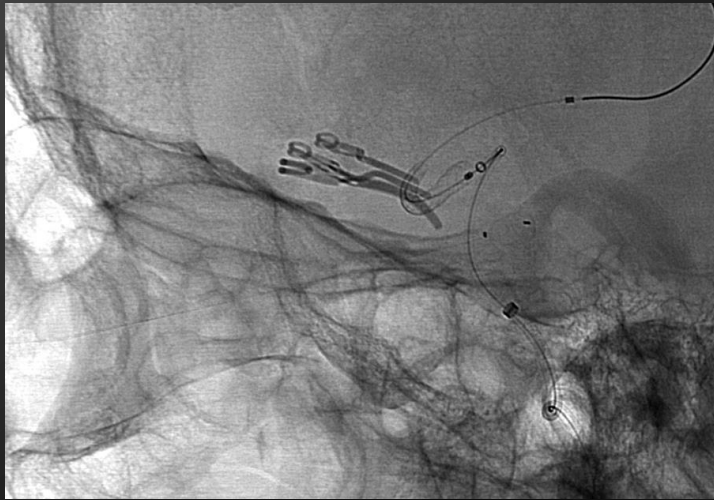
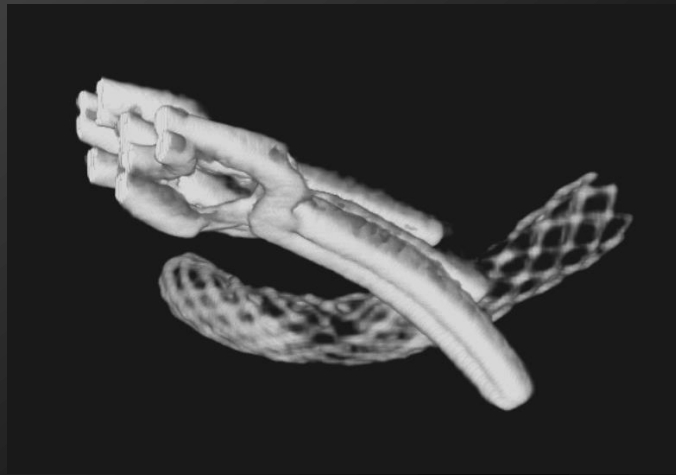
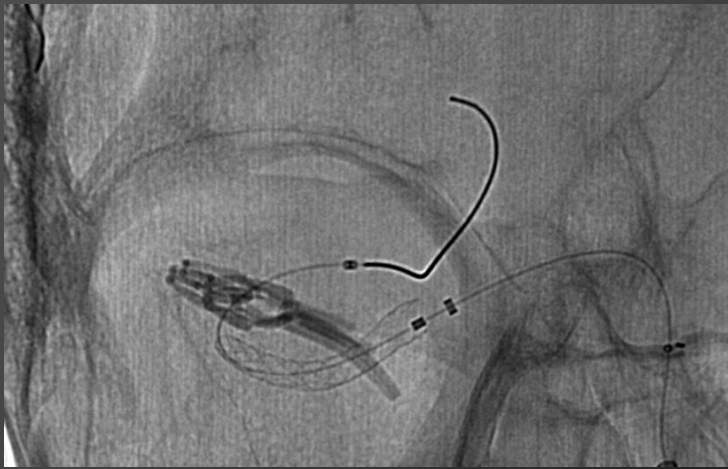


12 mo FU

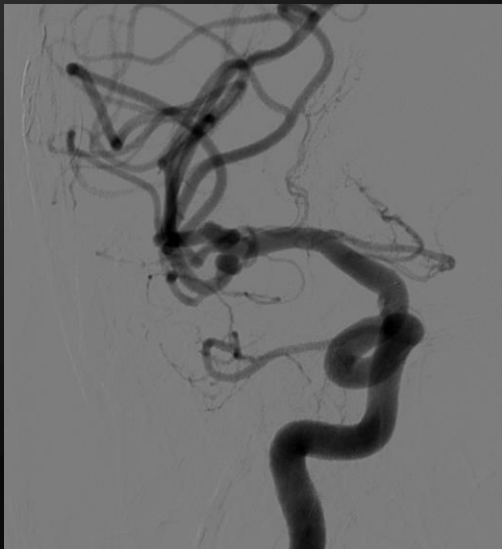
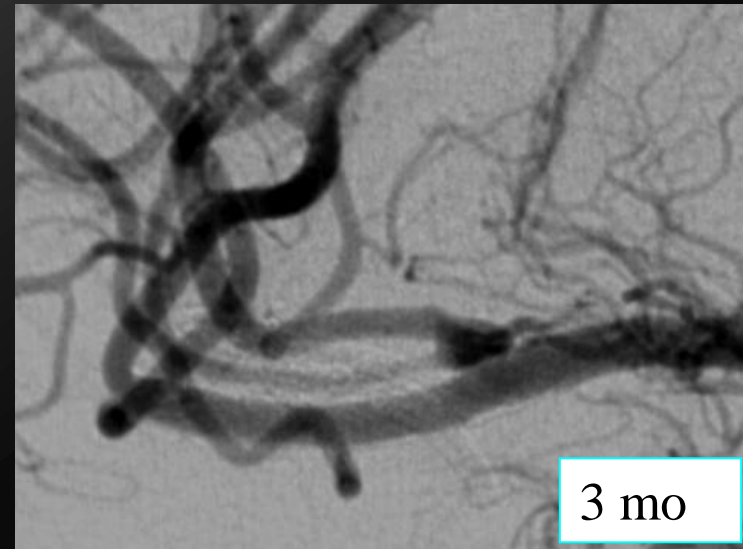
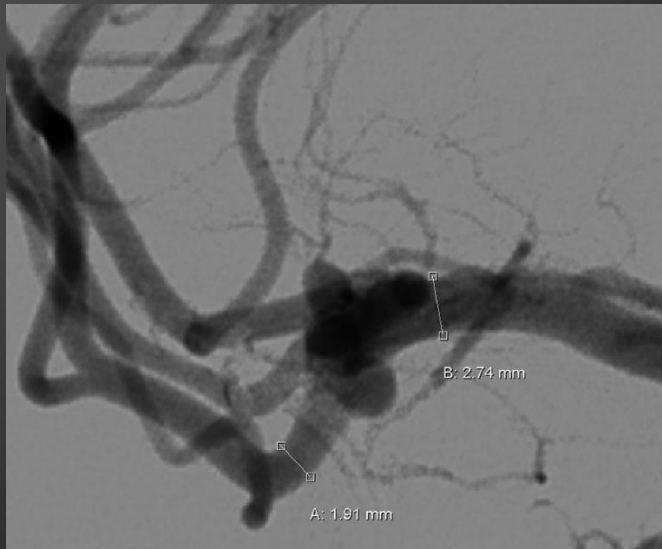
Right aneurysm

Surpass FD - F, 53 yo - 2 right MCA Aneurysms (1 rupt. MCA treated by clip, 2 MCA untreated & 1 unrup ICA by LUNA)



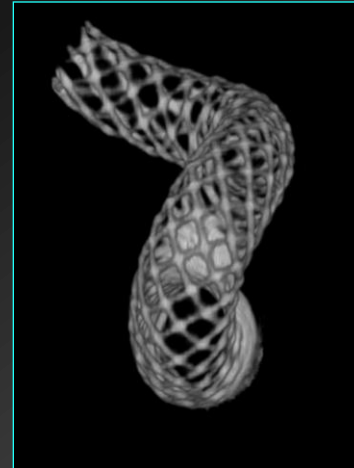
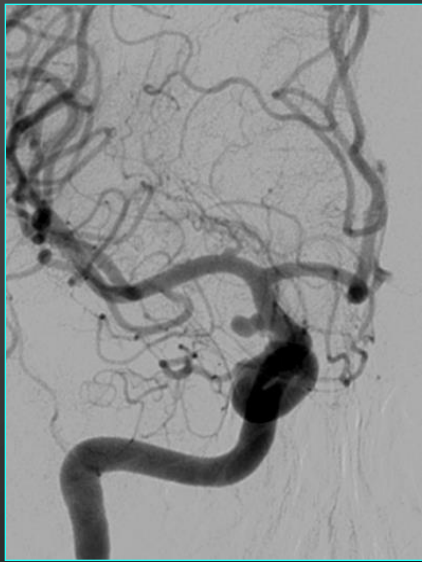


F, 53 yo - 2 MCA Aneurysms @ 3 mo FU



FD stents in Small Aneurysms

F, 45 yo familial aneurysms, controlateral ruptured aneurysm



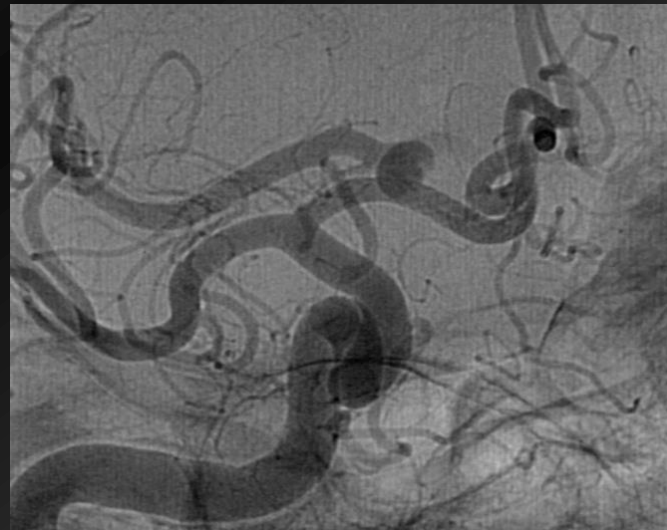
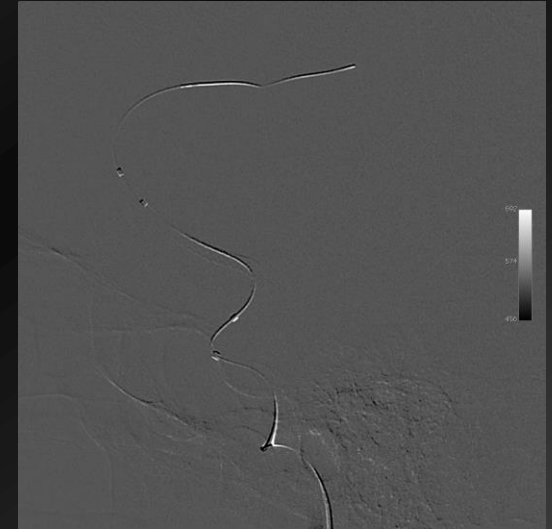
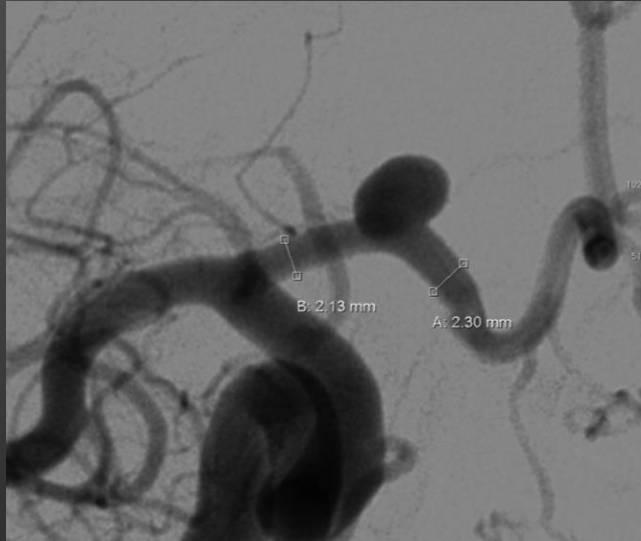
Small bilateral Aneurysms- L and R PEDs

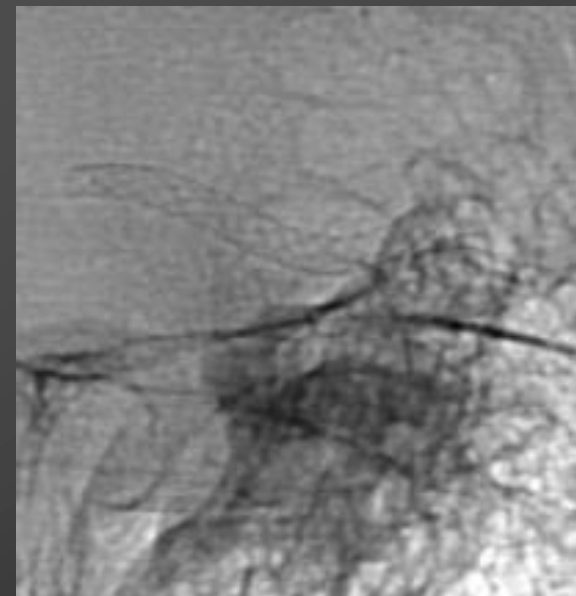


12 mo FU



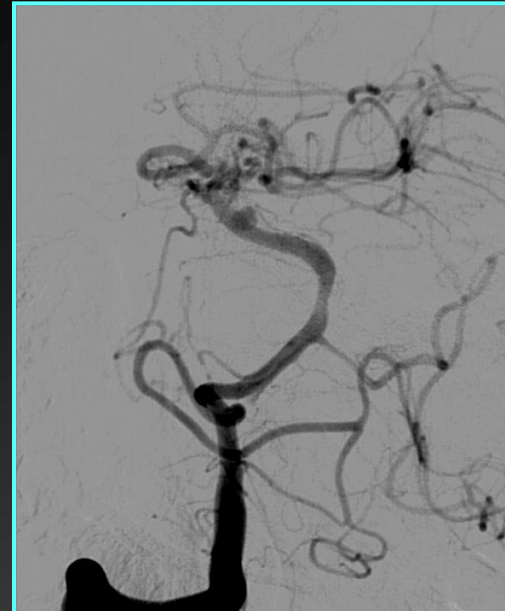
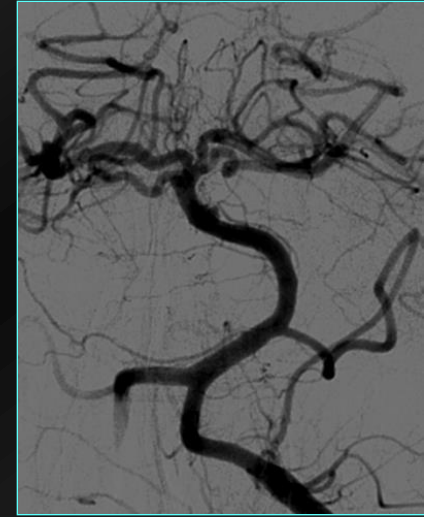
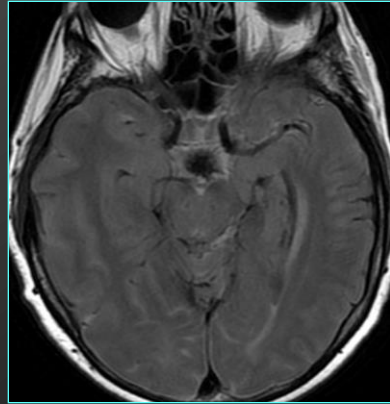
FD Stents in Dissecting Aneurysms Surpass Flow Diverter



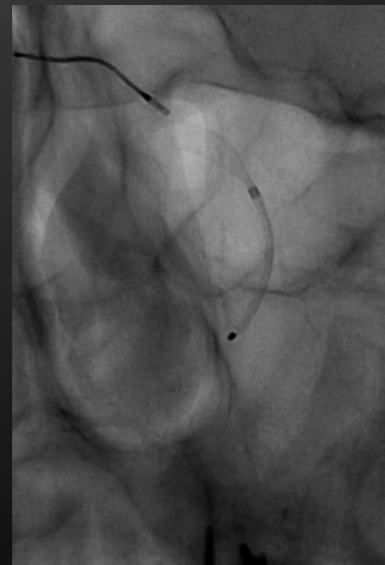
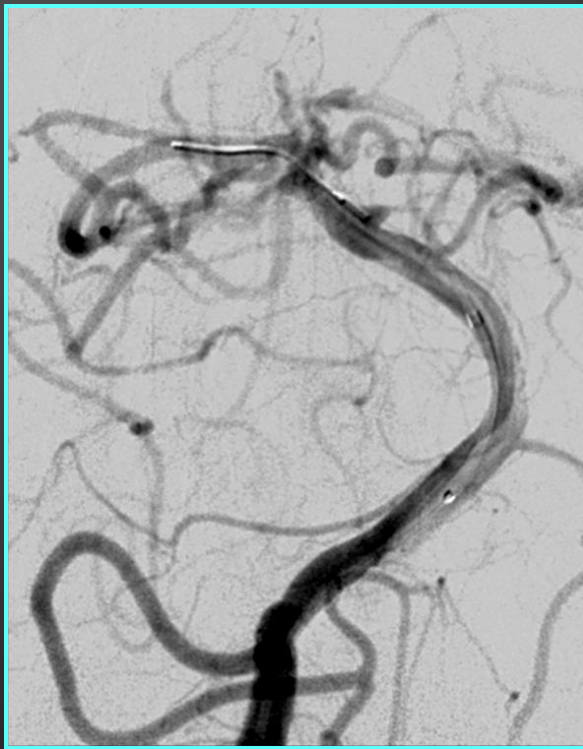


3 & 12 mo FU

FD Stents in Blood Blister-Like Aneurysms



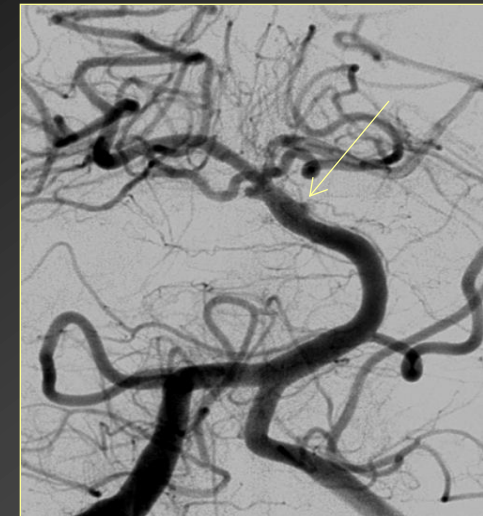
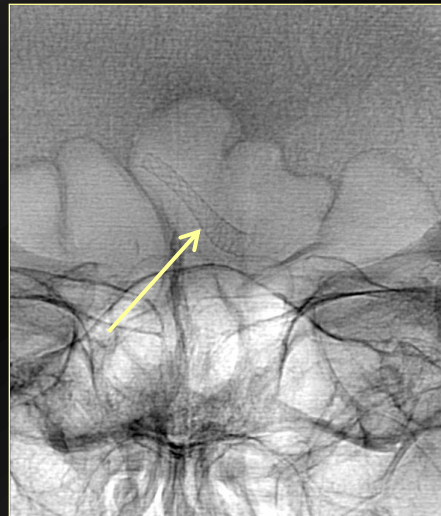
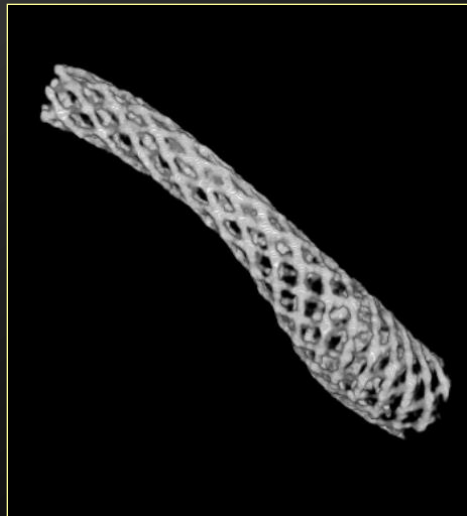
10 days later



1st stent removed

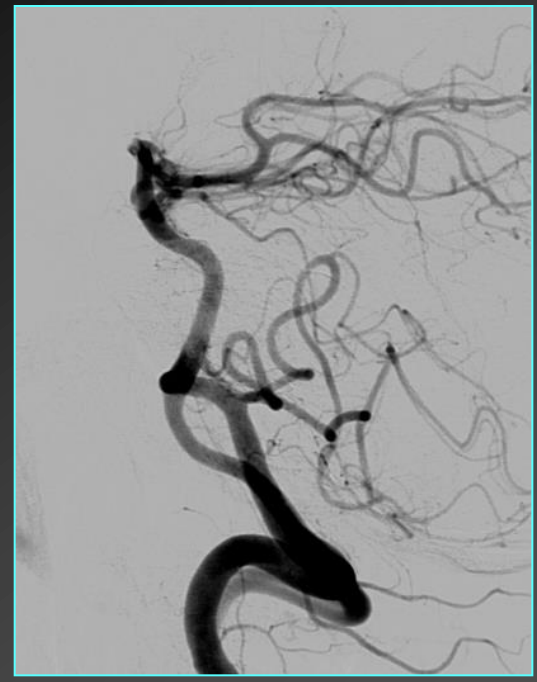
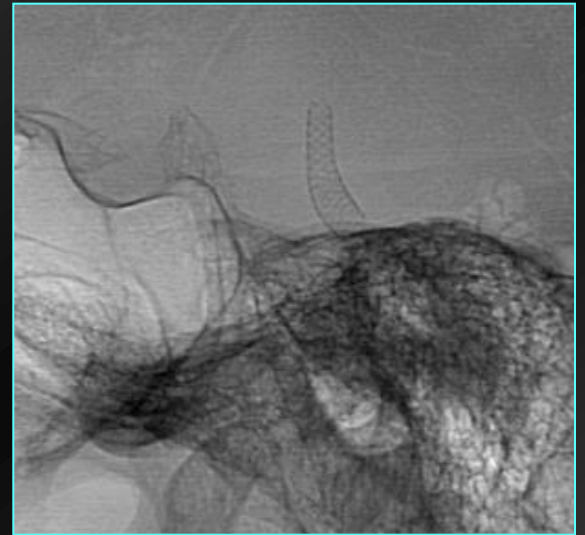


2nd stent deployed



24 H later

1 y FU



FD Stents : technical details & complications

- ◆ 2 cases : un-correct level - additional stent needed
- ◆ 1 case: removed (mis-positionning)
- ◆ 2 cases : un-correct deployment allowing asymptomatic stent kinking (already treated with regular stent) needed balloon
- ◆ 1 PED: rupture of the capture/coil (removed)
- ◆ In most of patients :
 - 6F Envoy Cordis guiding catheter
 - Nevertheless 3 axial system is recommended
 - Manual compression of the femoral artery next day (no Angioseal)
 - All patients : 3T MR study within 48 H

In the literature

- ◆ Morbidity
 - ◆ from 0% to 9.4%
- ◆ Mortality
 - ◆ from 0% to 5.5%
- ◆ In large series Morb. & Mort. rate:
 - ◆ Yu SC et al (143 pts), 2012 - 3.5 % & 3.5 %
 - ◆ Saatci I et al (191 pts), 2012 - 1 % & 0.5 %
 - ◆ Fischer et al (88 pts), 2012 - 4.5 % & 2.3 %
 - ◆ Briganti et al (273 pts), 2012 - 3.7 % & 5.9 %

Occlusion rate

- ◆ Complete Occlusion Rate in the literature (all sizes)
 - ◆ At 6 mo : from 56% to 92%
 - ◆ After 6 mo : from 84% to 100%
- ◆ Complete Occlusion Rate in our series
 - ◆ At 3 mo : 70 %
 - ◆ At 1 year: 92%

LUNA™ Aneurysm Embolization System

- ◆ Besançon experience (center # 005)
 - ◆ From March 2012 to January 2013
 - ◆ 12/48 Aneurysms treated by LUNA™
 - ◆ All unruptured

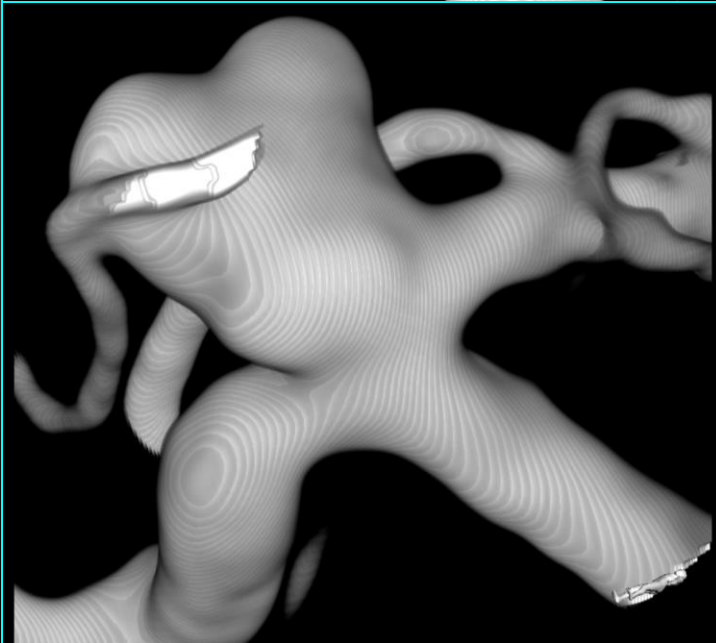
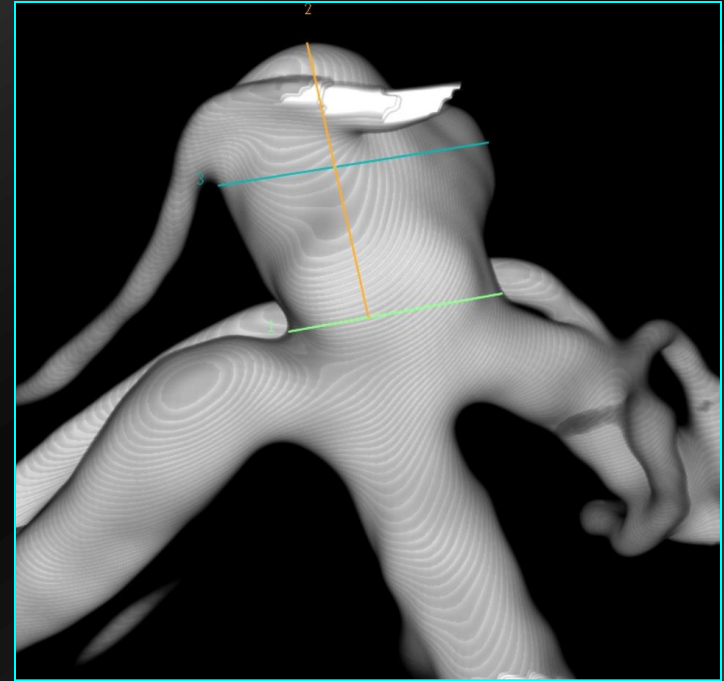
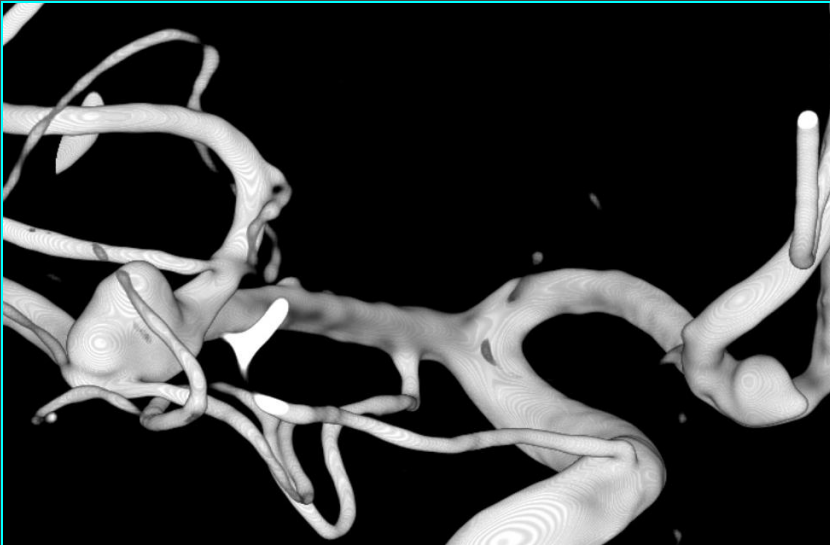


LUNA™ Aneurysm Embolization System

12 aneurysms

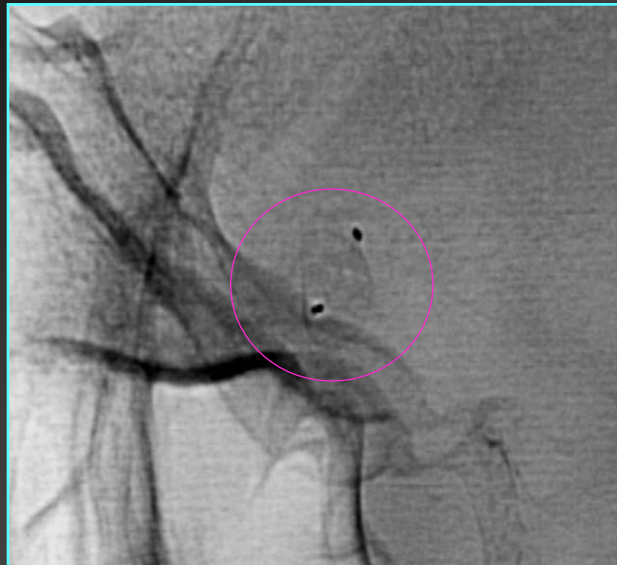
- ◆ 10 Anterior circulation
 - ◆ 3 ICA
 - ◆ 1 Pcom
 - ◆ 2 termino-carotid
 - ◆ 3 MCA
 - ◆ 1 Acom
- ◆ 2 Posterior circulation
 - ◆ 1 Basilar artery
 - ◆ 1 PICA

Case # 5 - F, 52 yo - R MCA & multiple aneurysms (familial an. history) left-face hypoesthesia

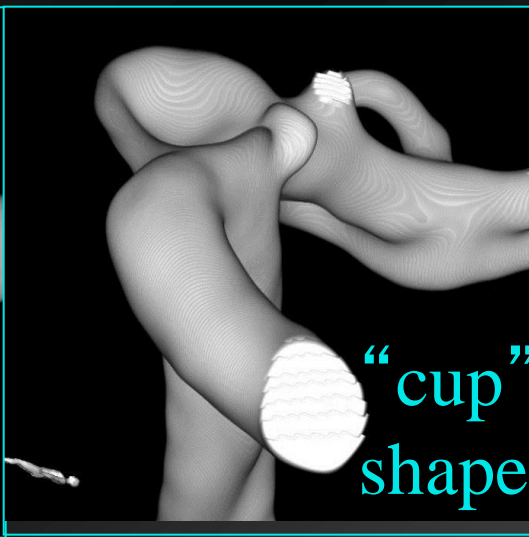
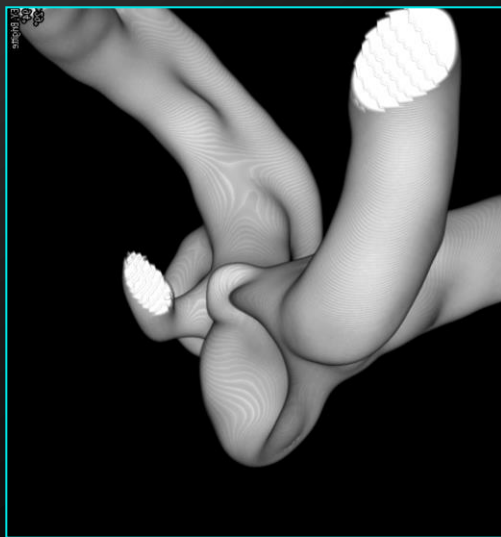
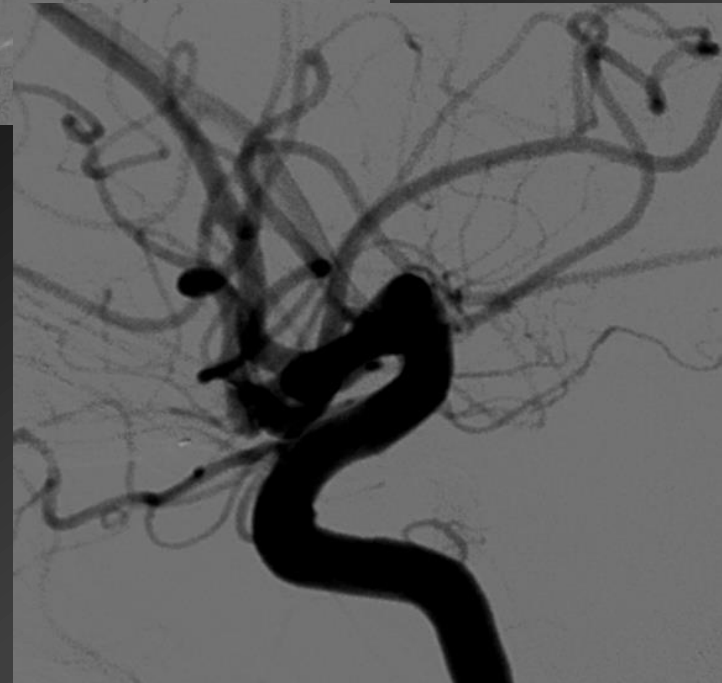
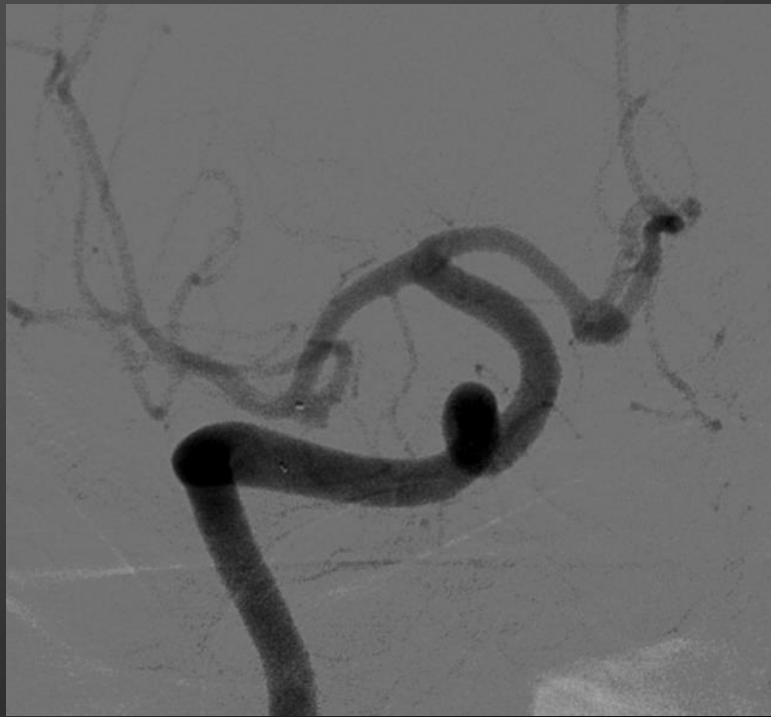


- Guiding catheter Envoy 6F Cordis
- Microcatheter Marksman
- Microguidewire Terumo 16 90°

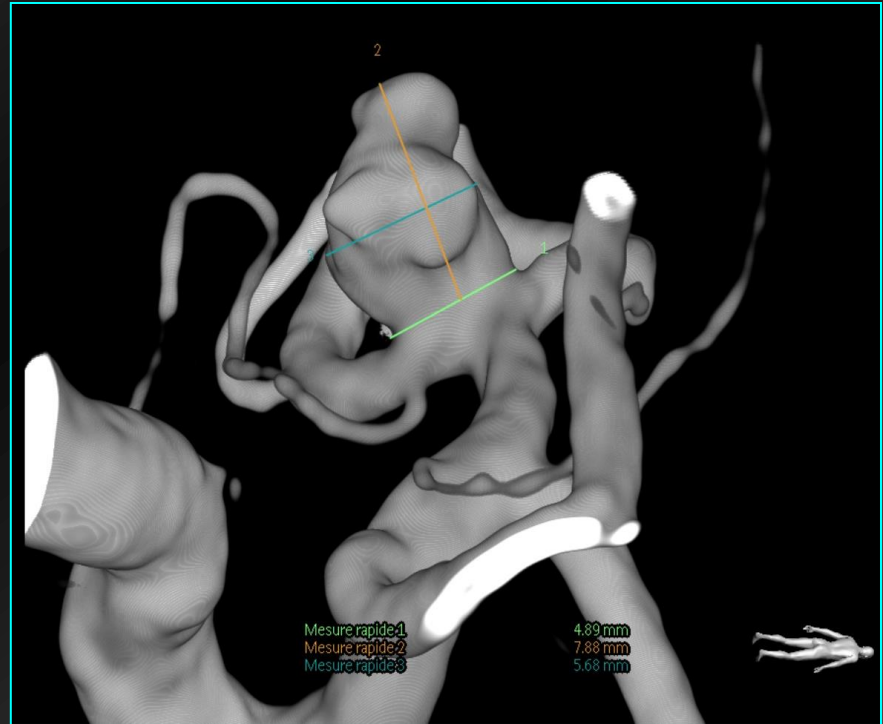
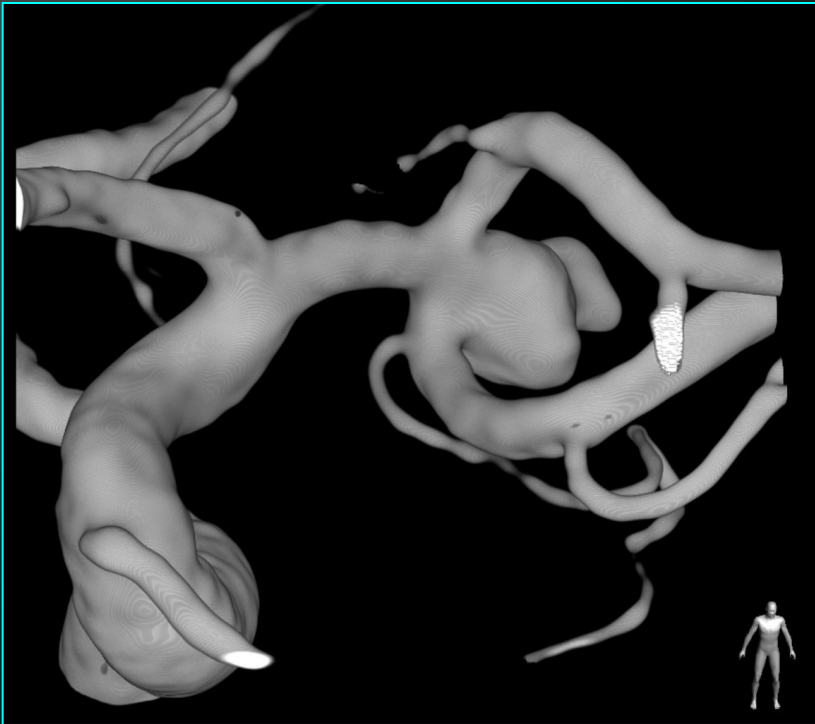
Right MCA Aneurysm - LUNA™ D 6.5 mm



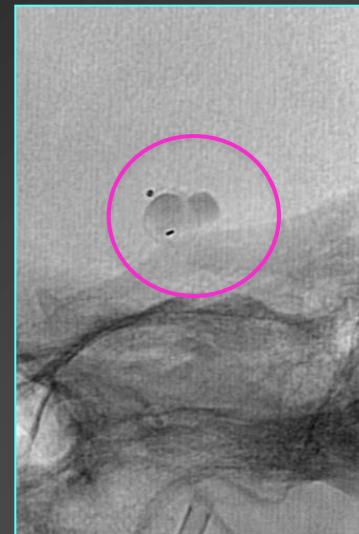
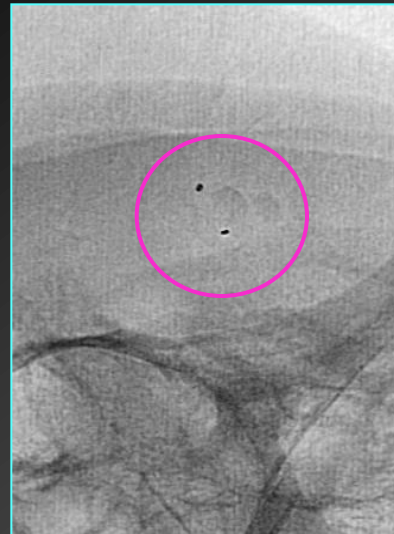
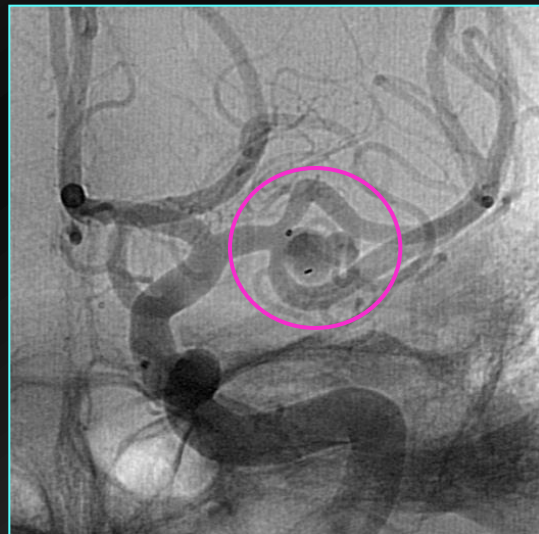
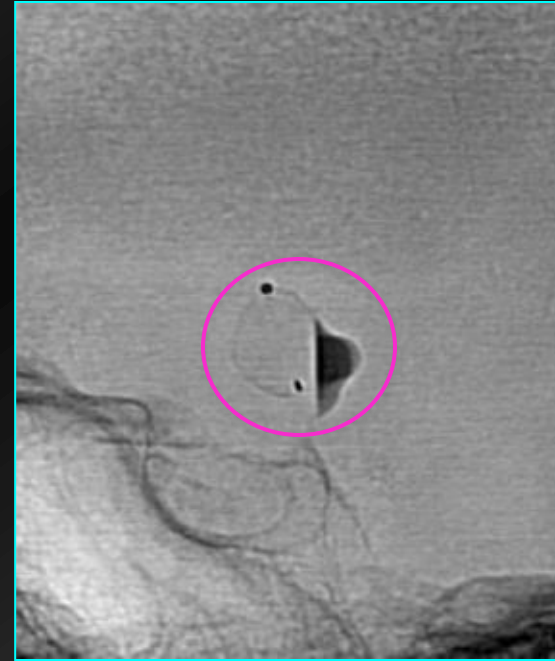
Case # 5 - 6 mo FU

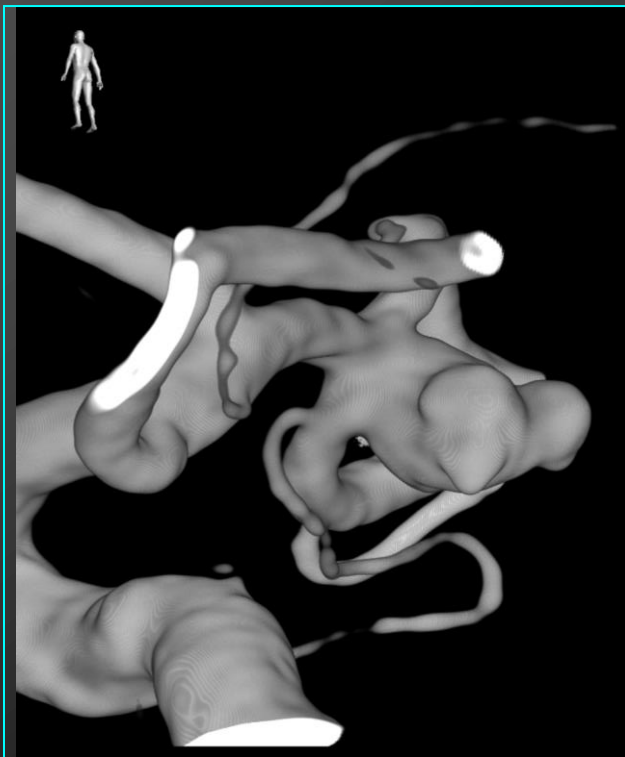


Case # 6 - LUNA device in a left MCA Aneurysm with a relatively large neck



L MCA un-ruptured aneurysm LUNA F (8.5 mm) removed then LUNA E (7.5 mm)

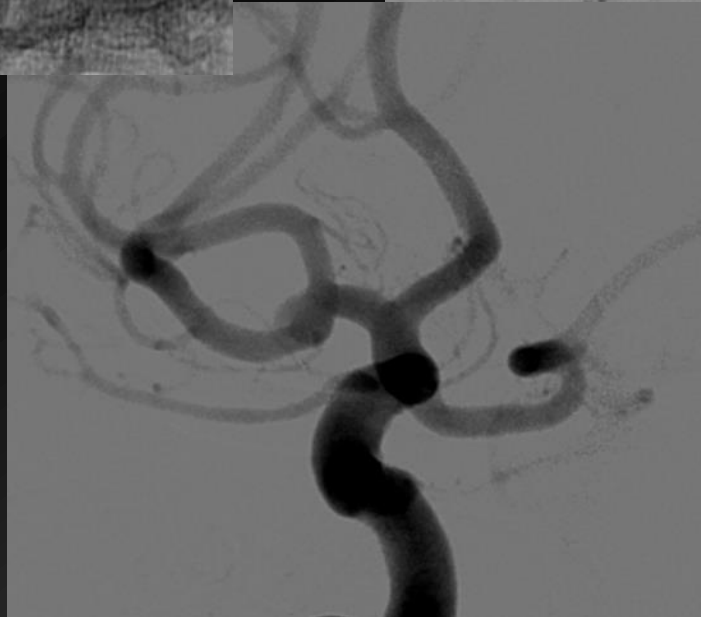
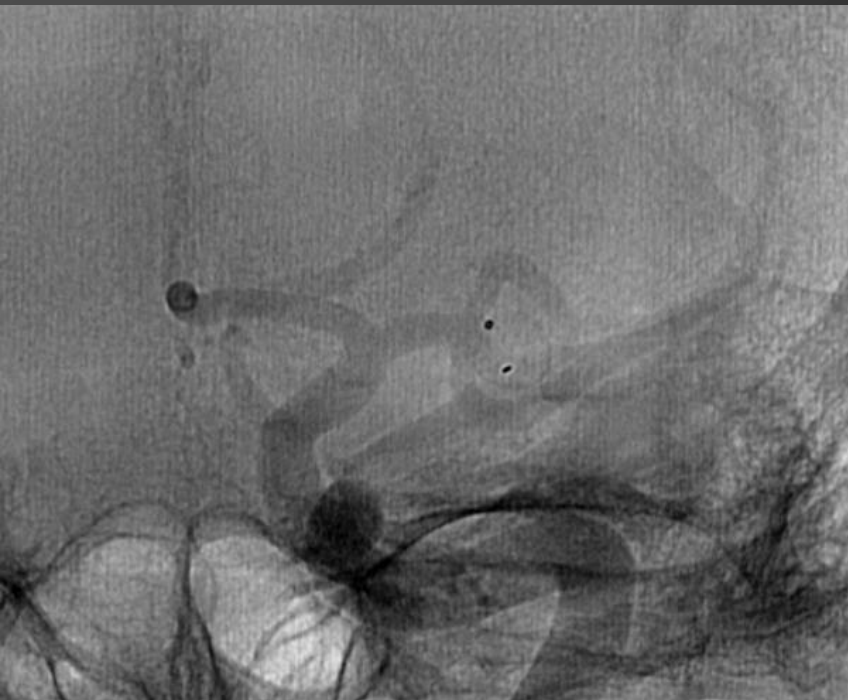




24 H FU



Case # 6 - 6 mo FU



Angiographic Results

12 Aneurysms treated by LUNA™ Embolization System

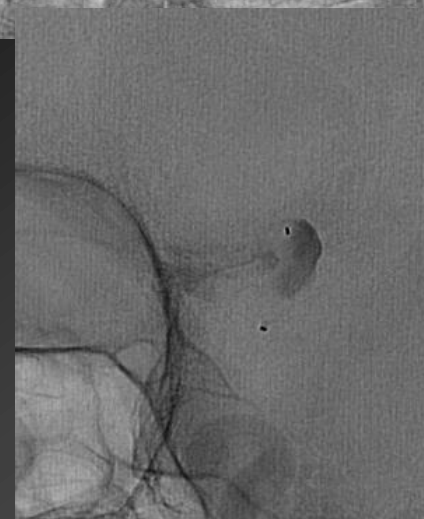
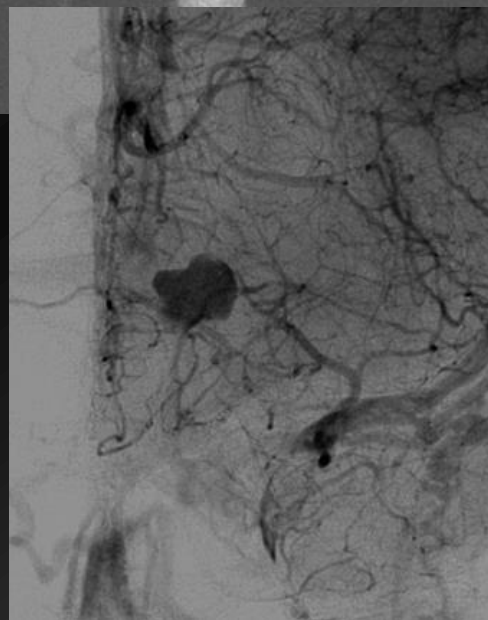
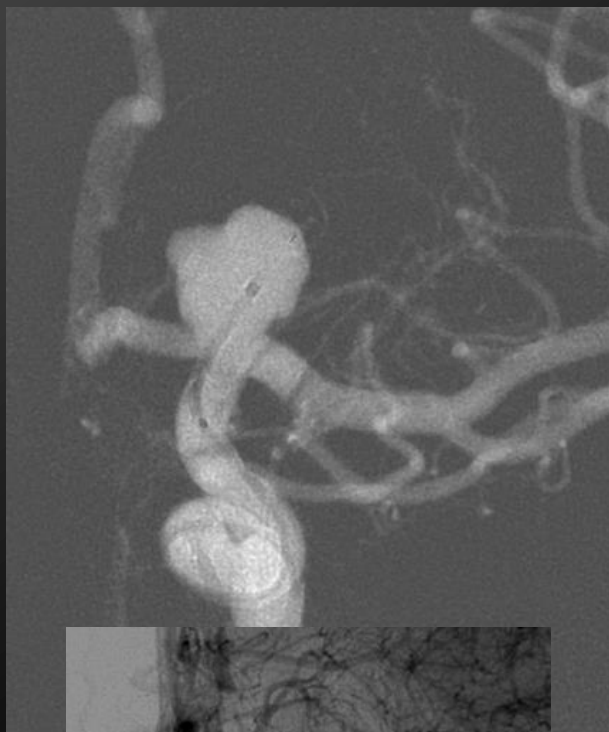
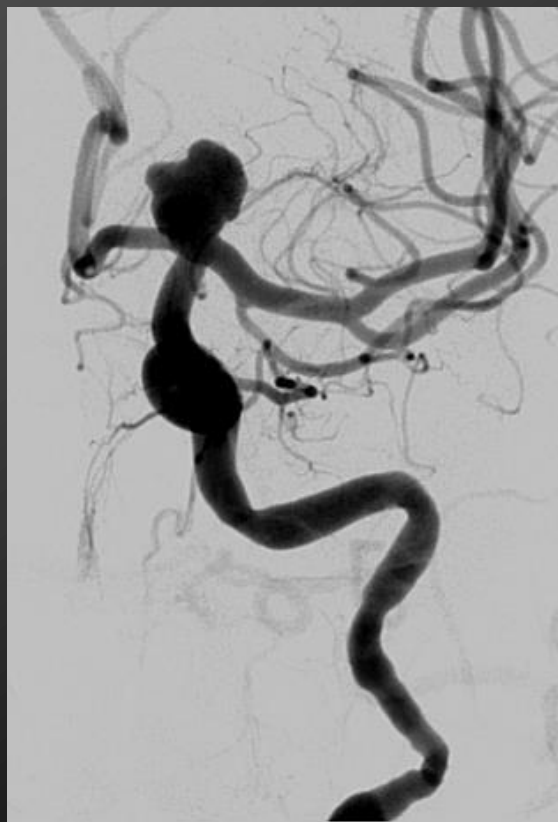
◆ Immediate results (12 aneurysms)

- 3 Complete occlusion
- 3 Near complete
- 6 Incomplete

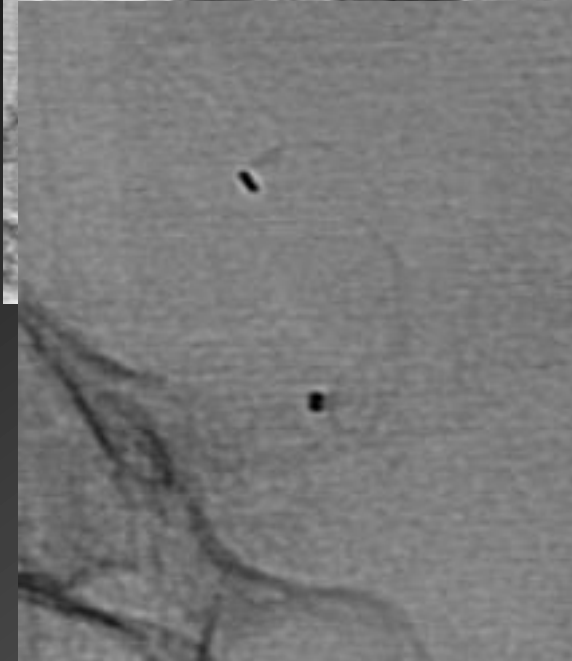
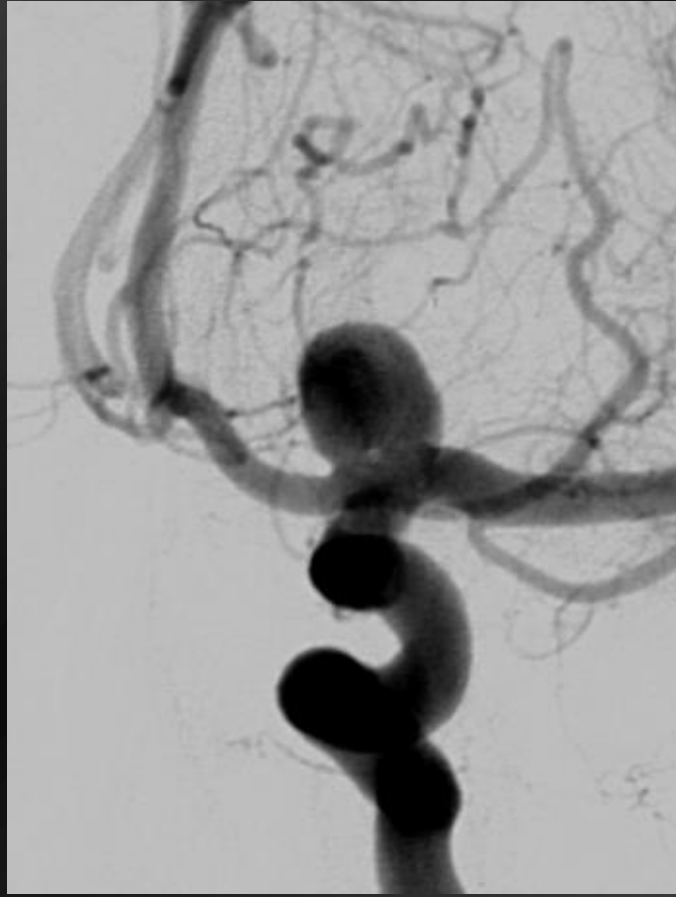
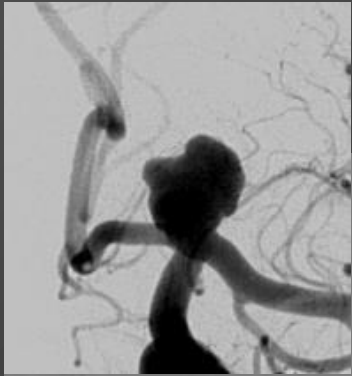
◆ @ 6 months Follow Up (11 aneurysms)

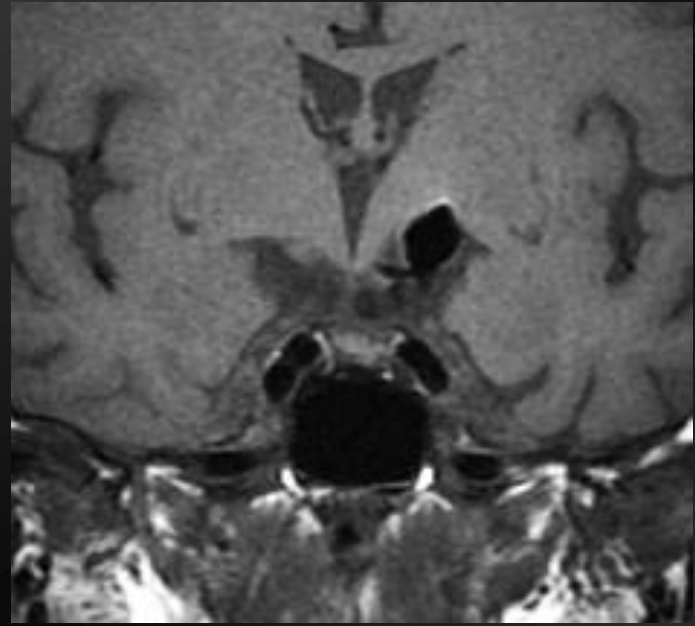
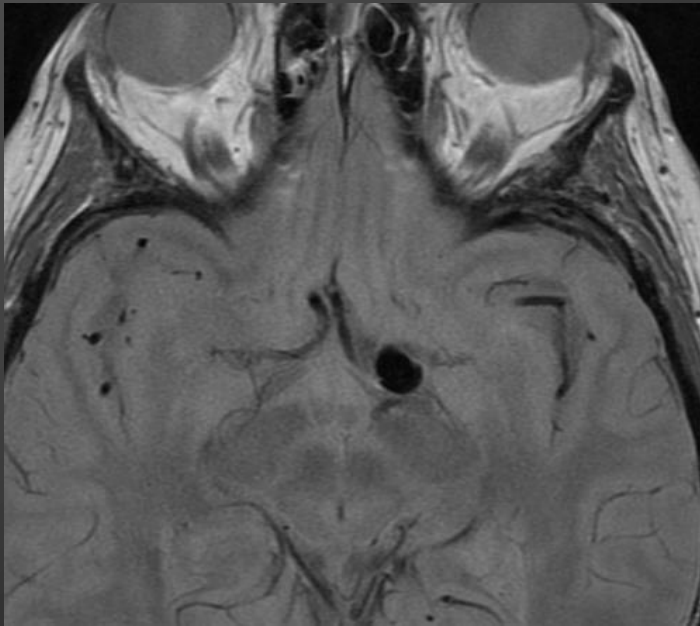
- 7 Complete occlusion (2 persistent complete occlusion)
- 3 Near complete
- 1 « Recanalization »

Case # 8 - LUNA device - Ter ICA Aneurysm



Case # 8 - recanalization @ 6 mo FU



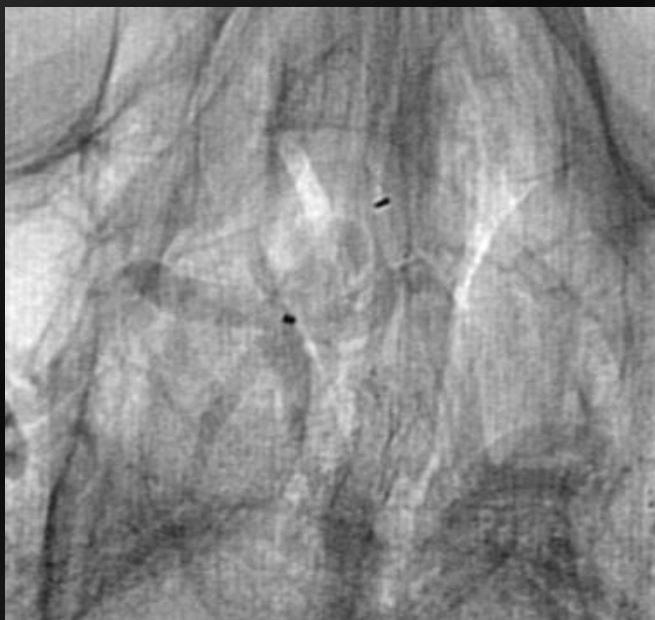
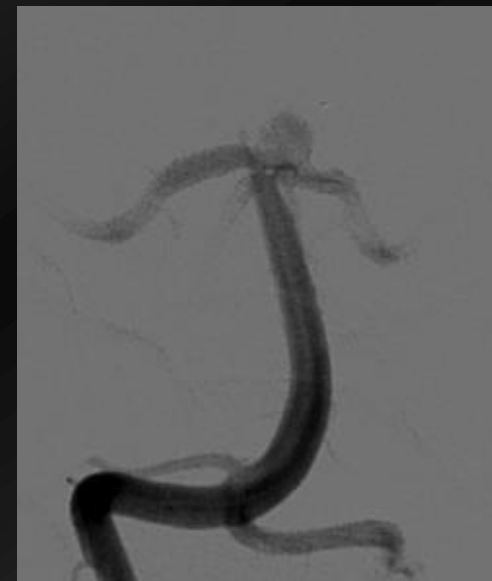
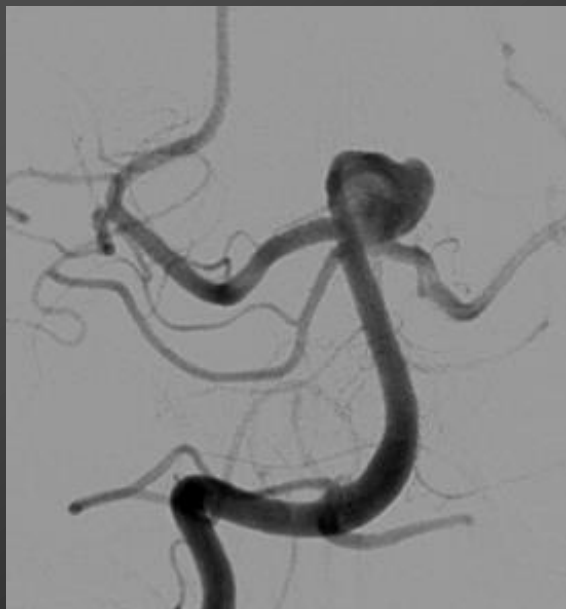


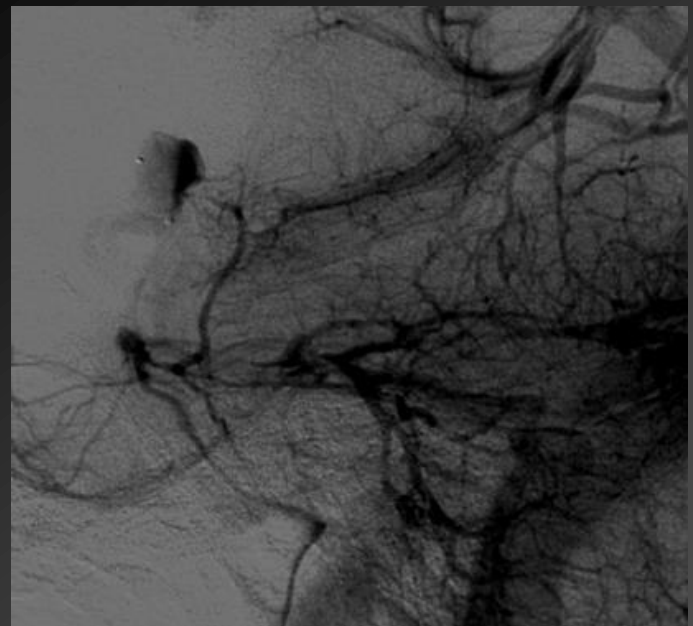
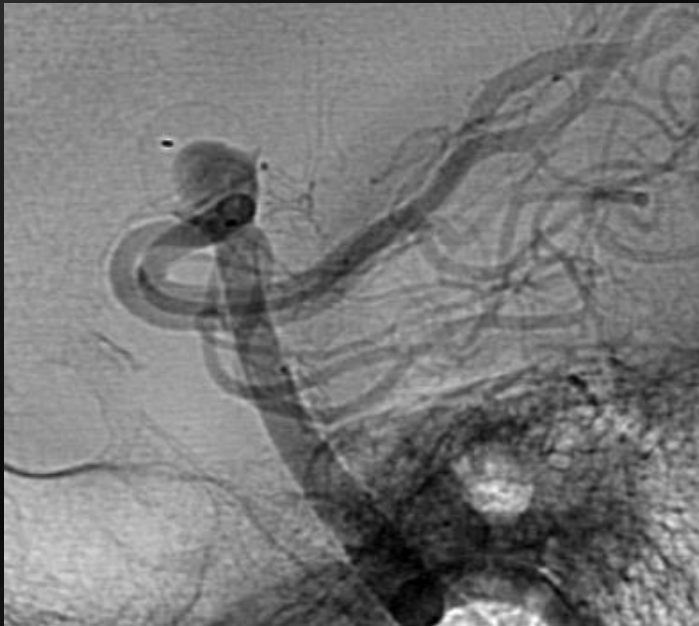
3 mo MR FU

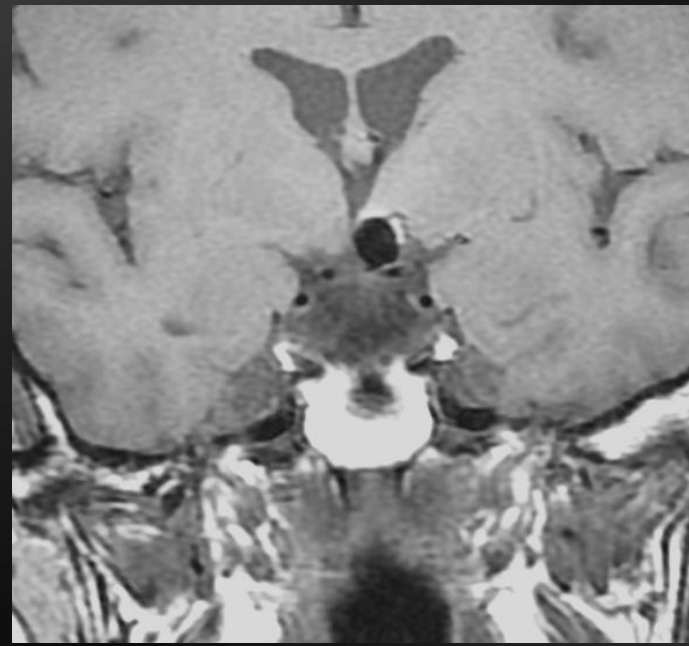
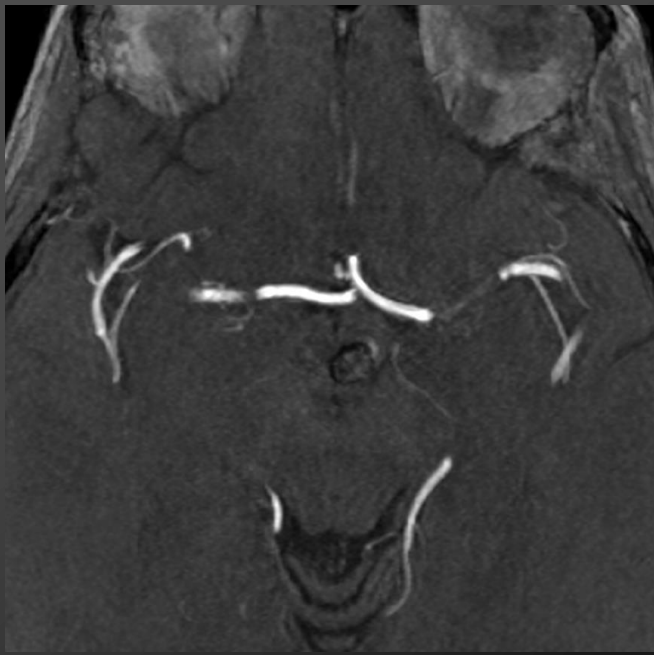
LUNA™ Aneurysm Embolization System

- ◆ Posterior circulation Aneurysms

Case # 11 - LUNA™ J -Basilar Aneurysm



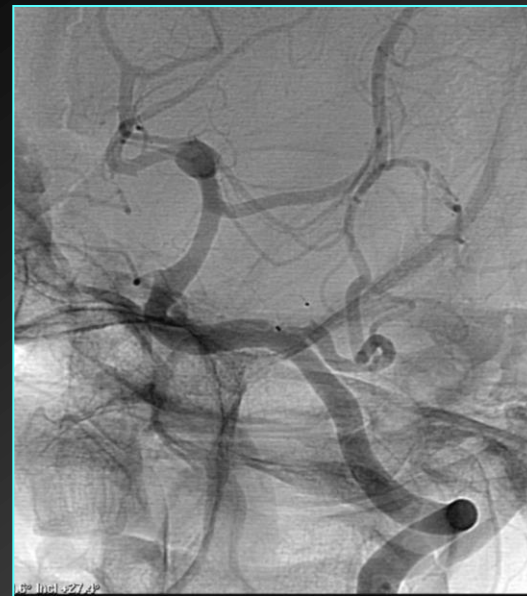
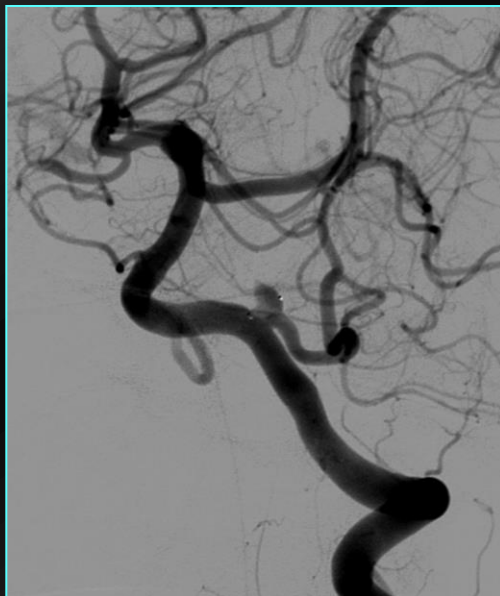
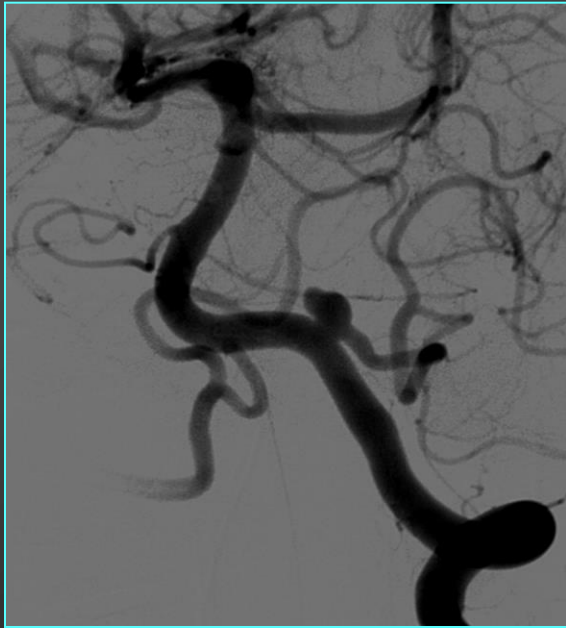


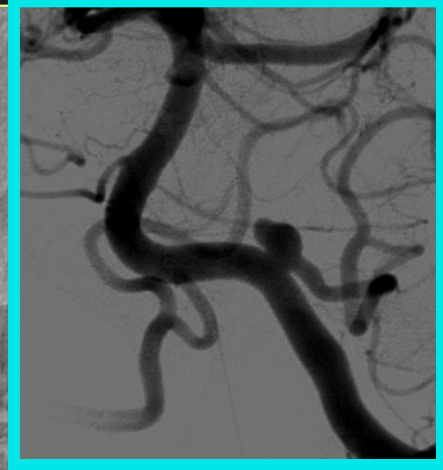
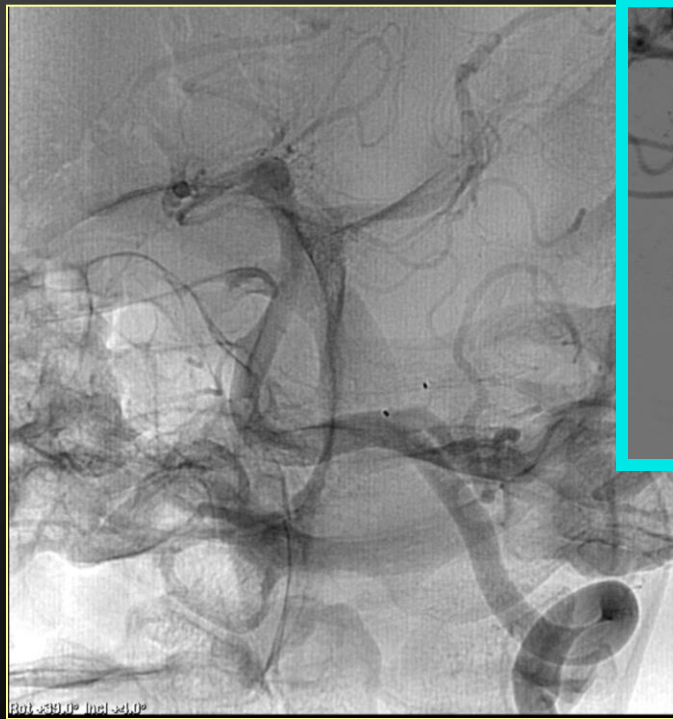
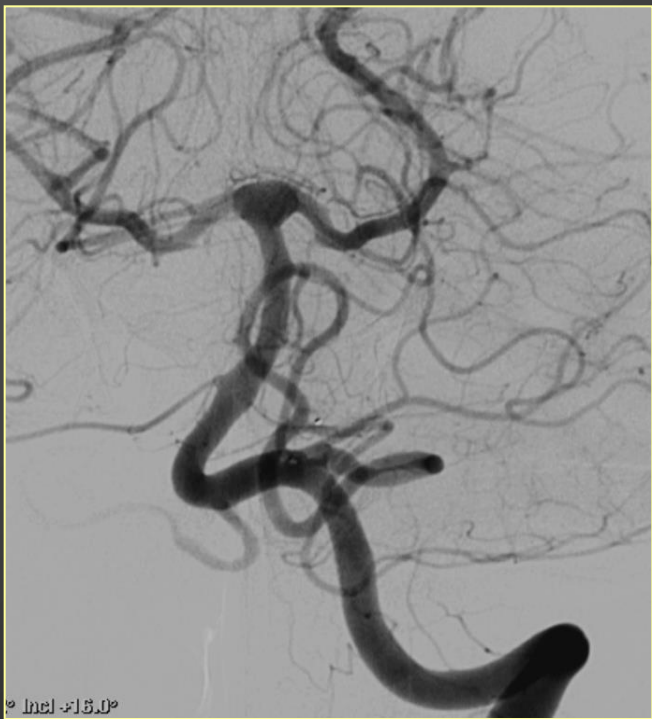


“cup” shape

3 mo MR FU

Case # 4- LUNA device - PICA aneurysm

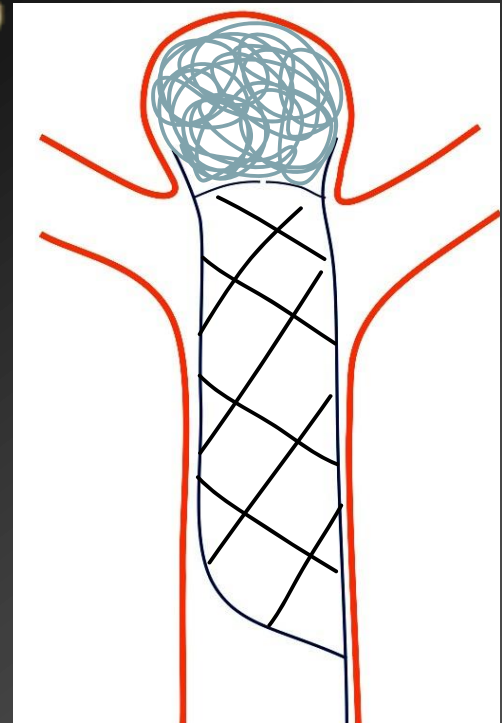
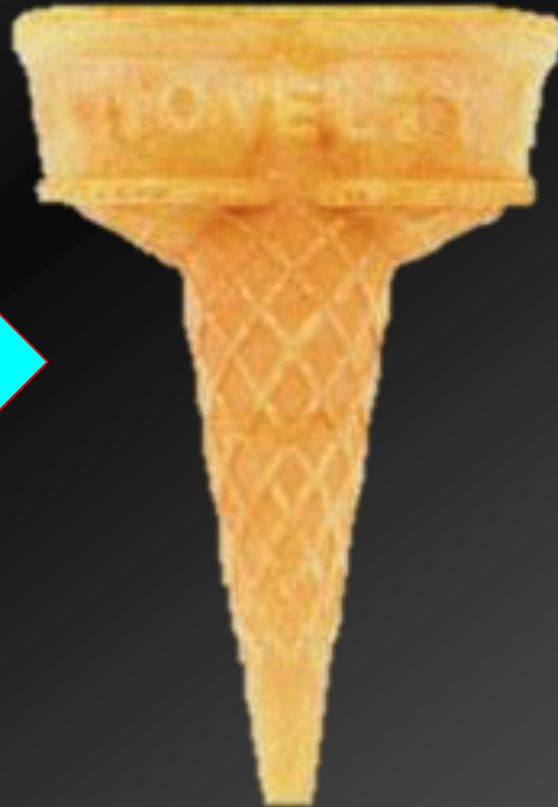
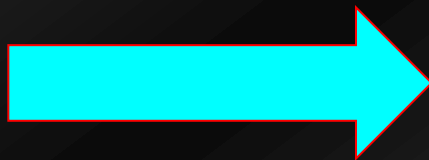




6 mo FU

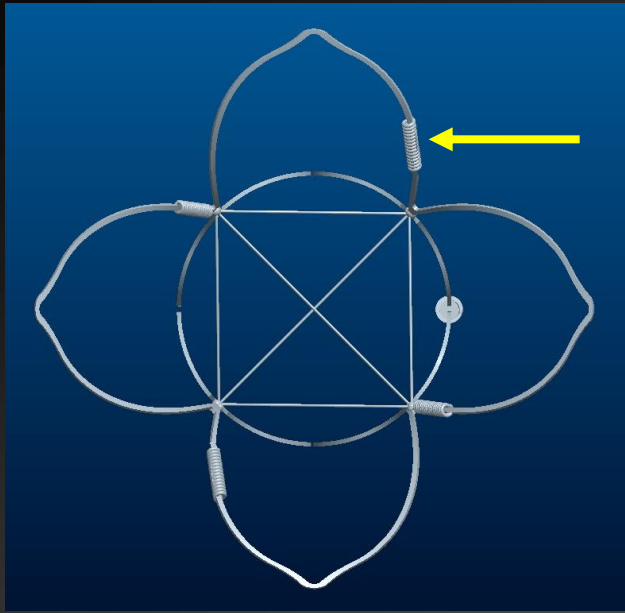
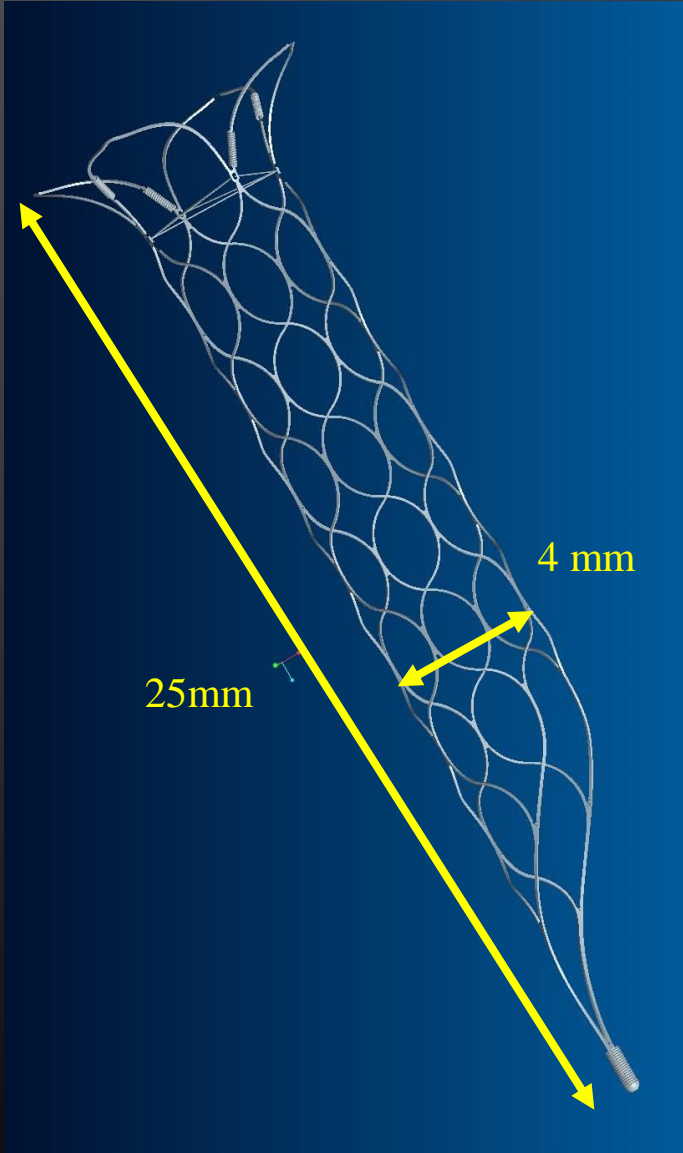
pCONus

a new approach for the endovascular treatment of intracranial wide-neck bifurcation aneurysms





- self-expanding (nitinol / laser cut)
- .021 inch ID microcatheter
- fully retrievable
- electrolytically detachable



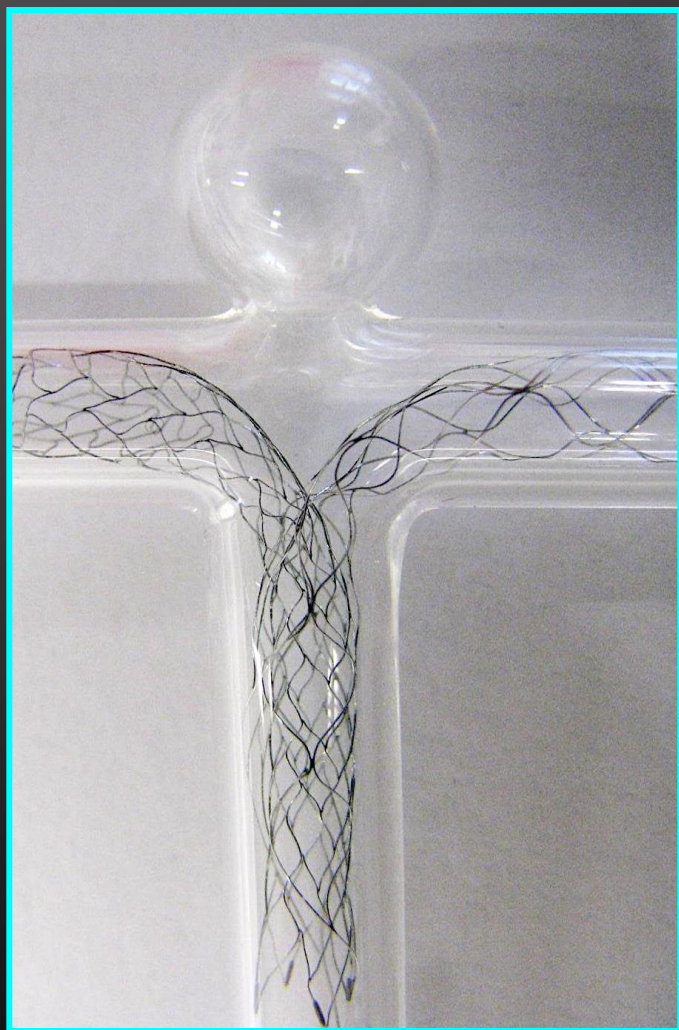
- plate 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm
- 4 distal petals with 1 radiopaque marker per loop
- separating fibers from polymer (nylon)

pCONus

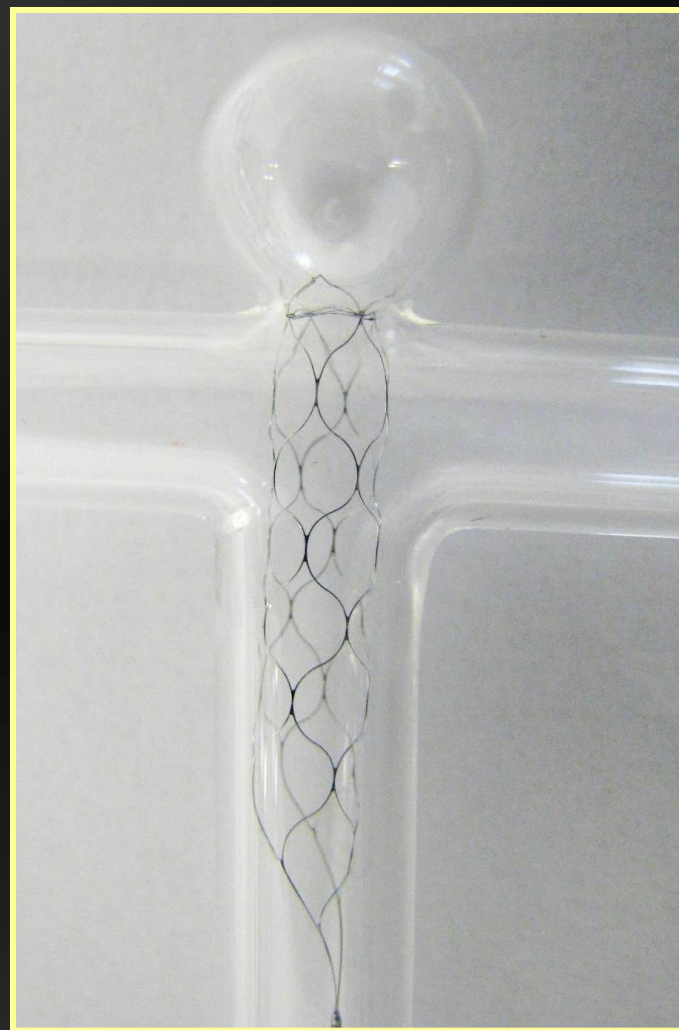
Embolization System

- ◆ Waffle-cone technique alternative to
 - Kissing Stenting
 - H-Stenting
 - X-Stenting
 - Y-Stenting



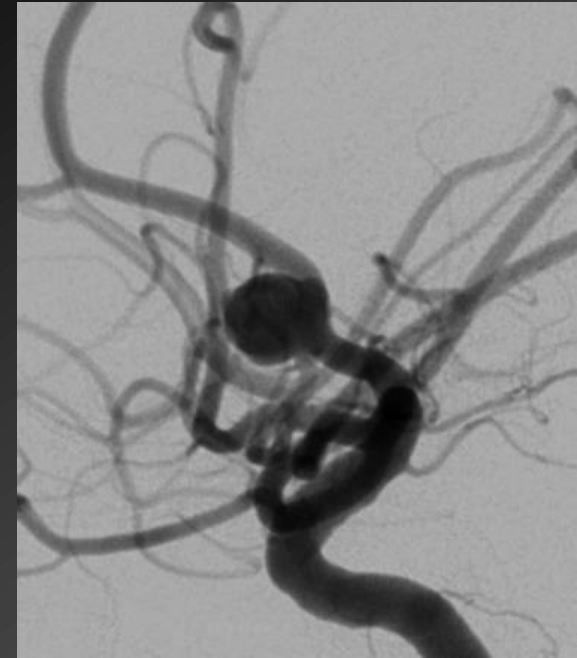
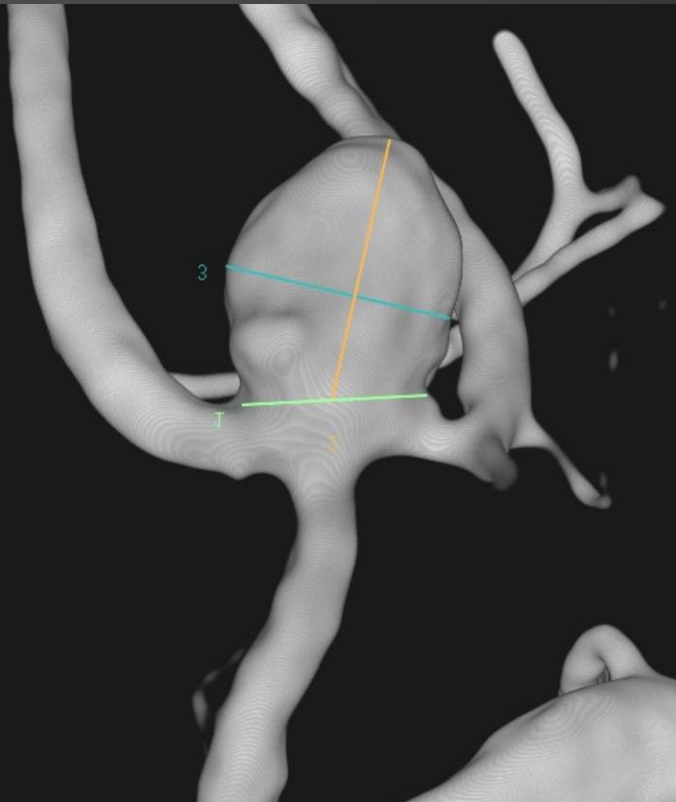


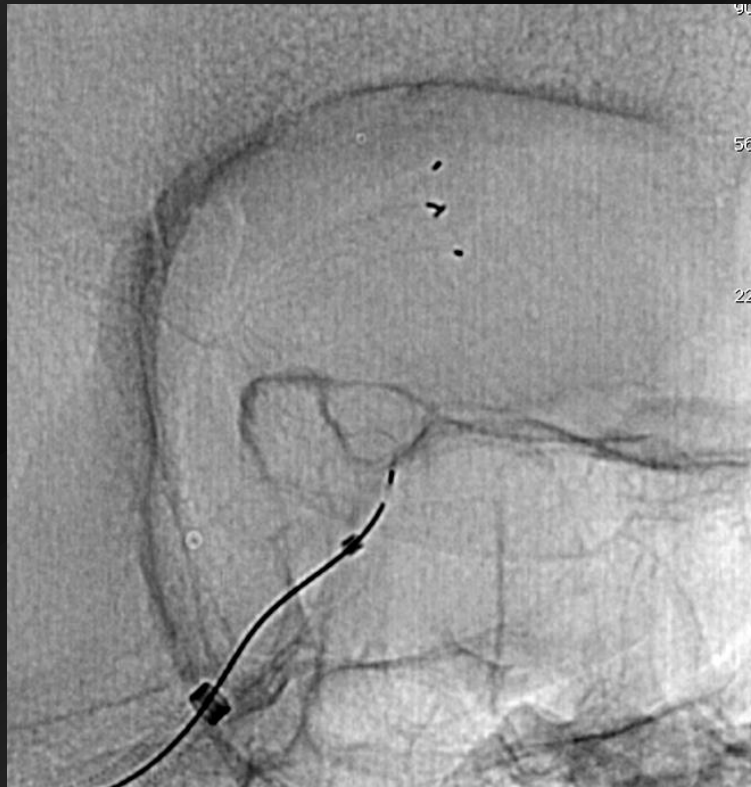
Solitaire AB 6-30
Enterprise 4.5 x 37

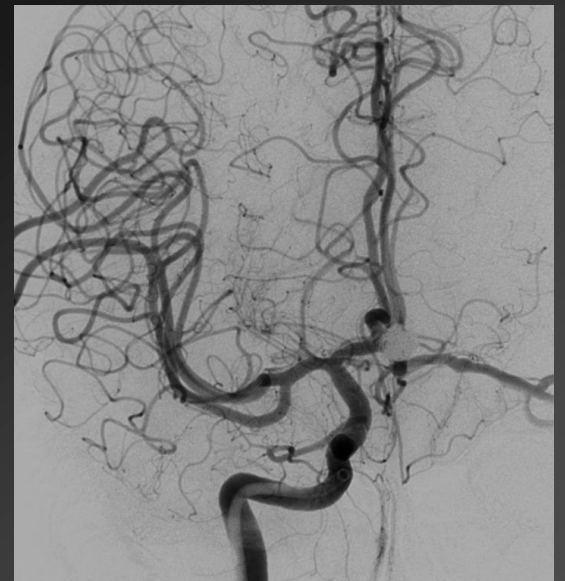
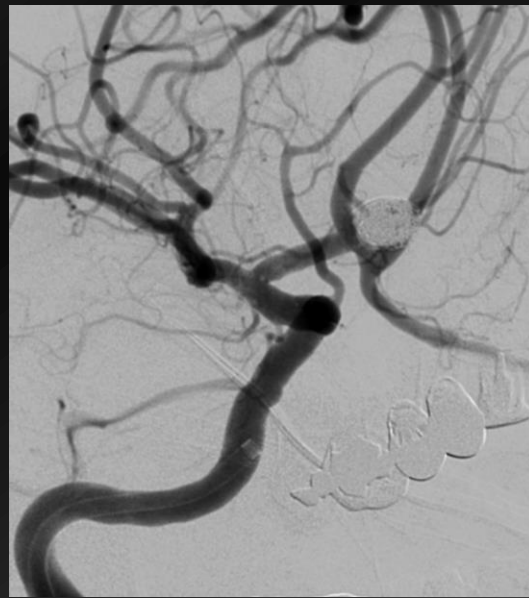
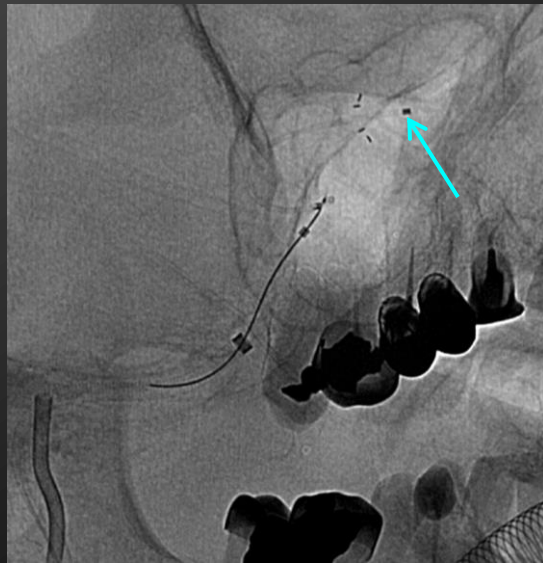
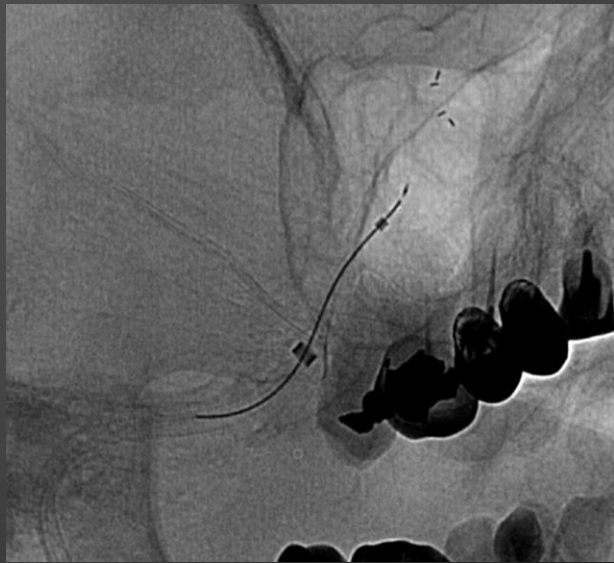


pCONus PCON-4-25-5

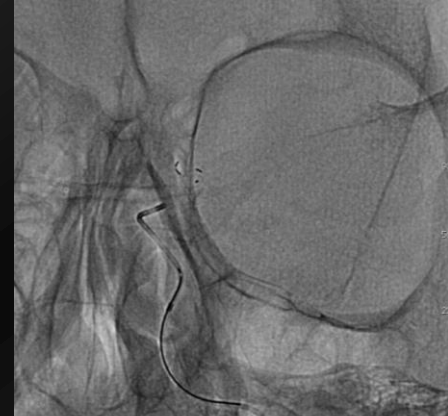
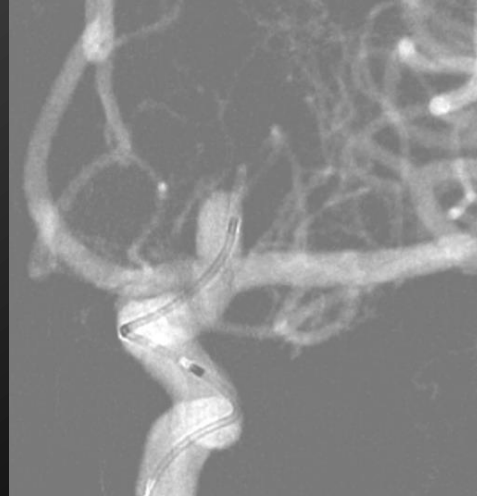
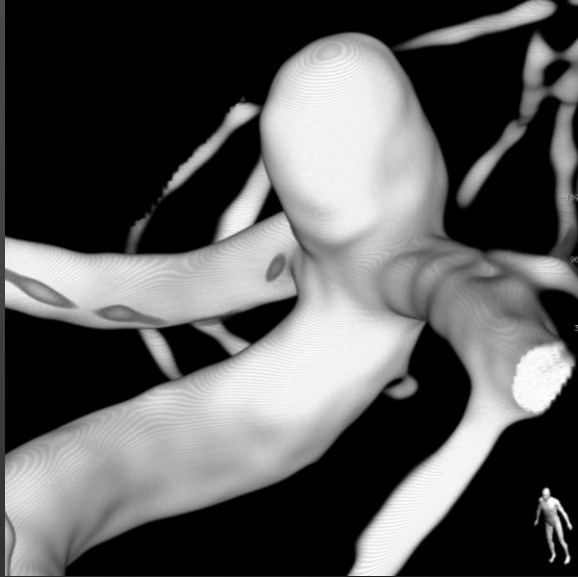
pCONus 4-25-5 - Besançon # 1



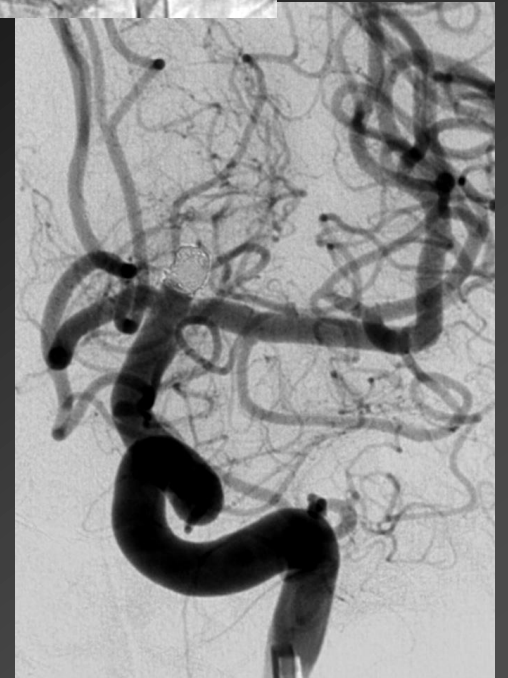




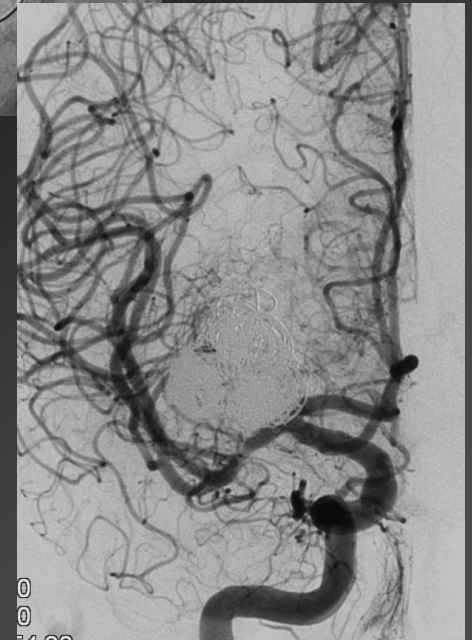
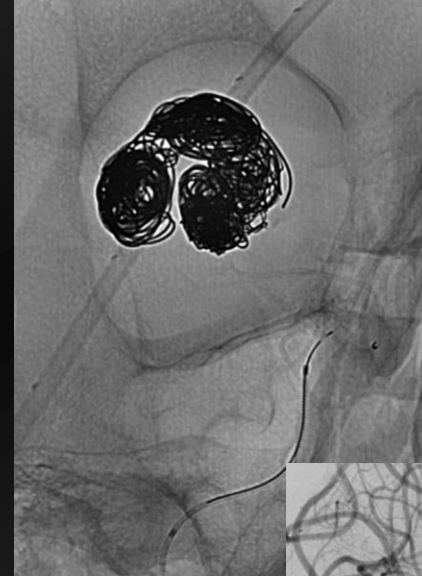
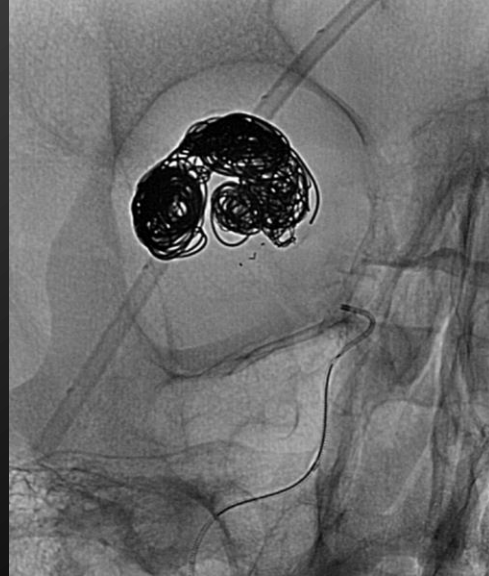
pCONus 4-25-6 - Besançon #2



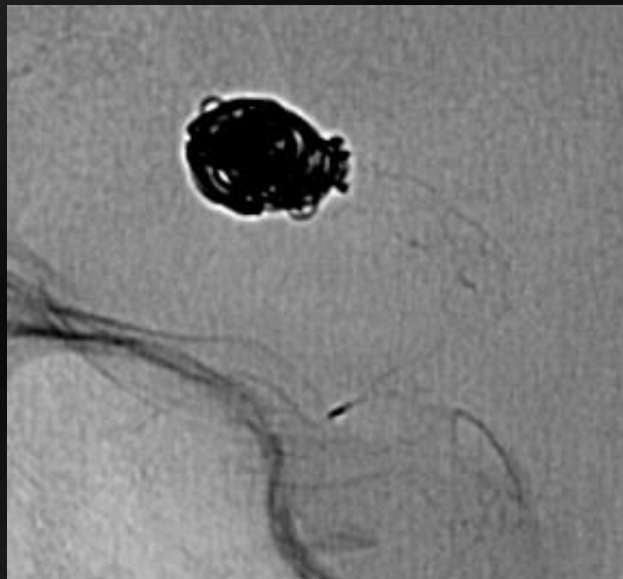
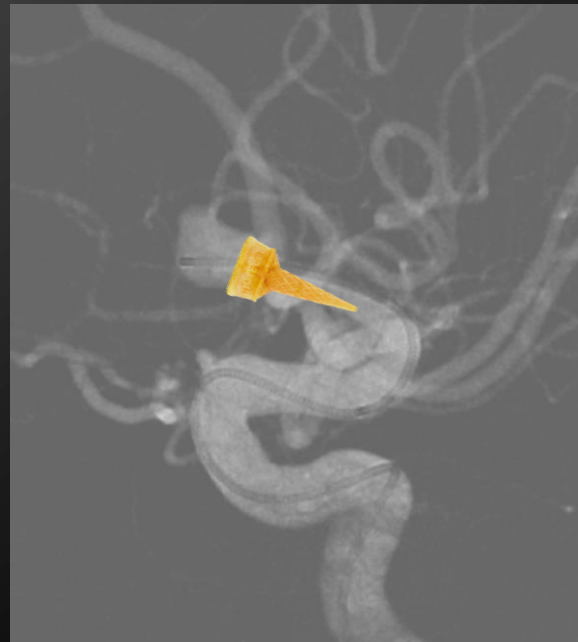
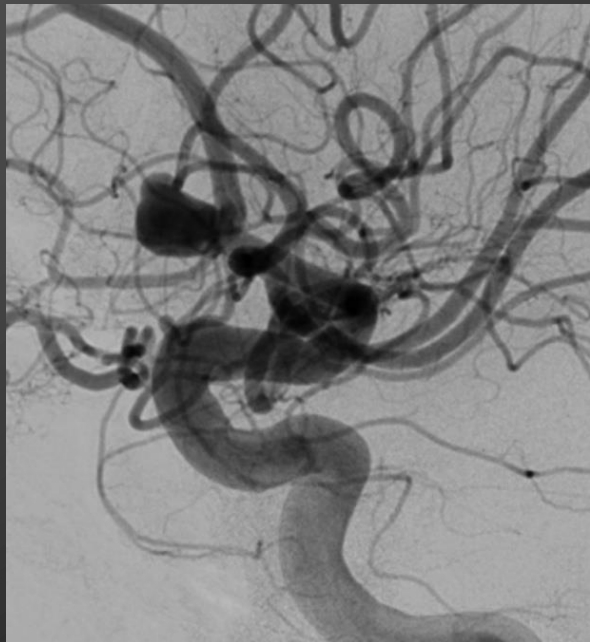




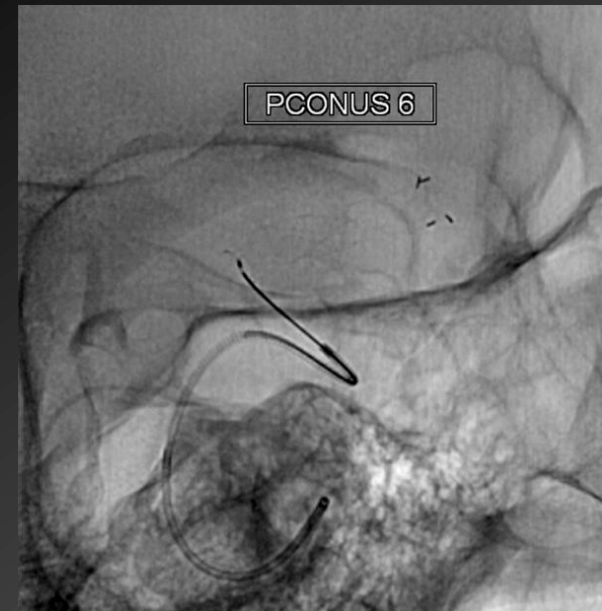
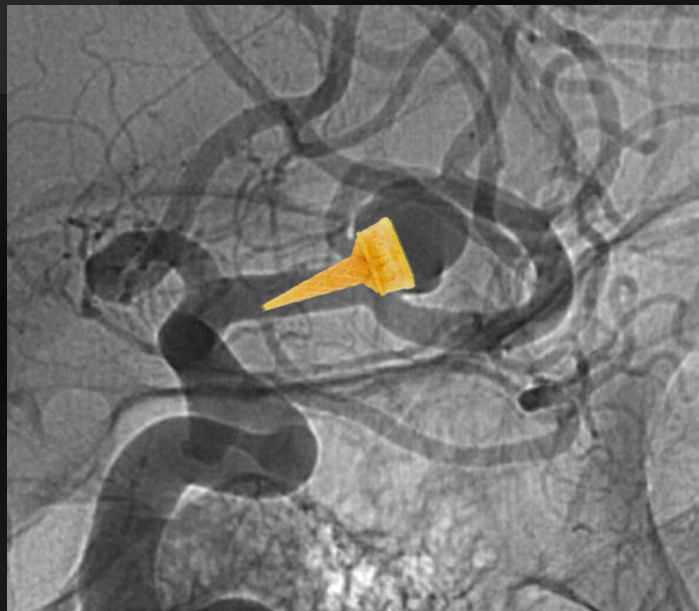
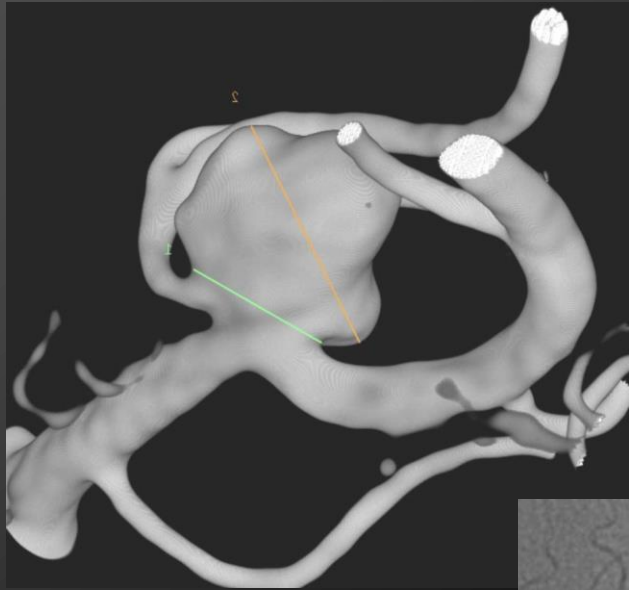
pCONus 4-25-5 - Besançon #3



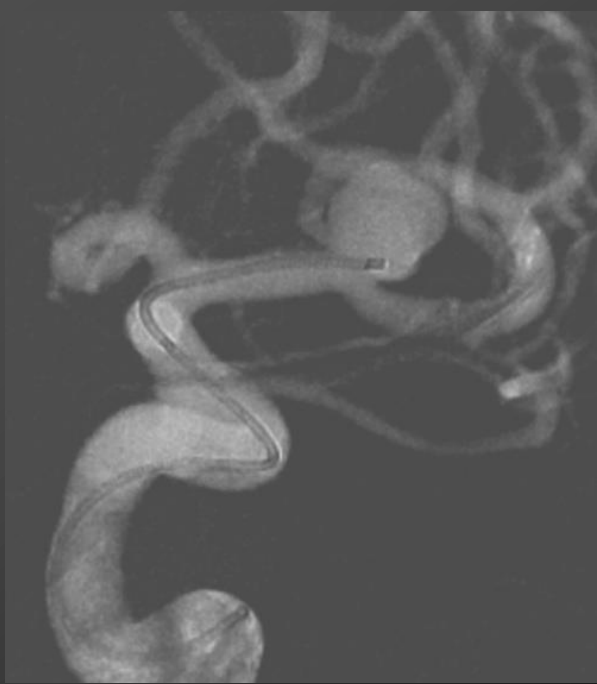
pCONus 4-25-5 - Besançon #4

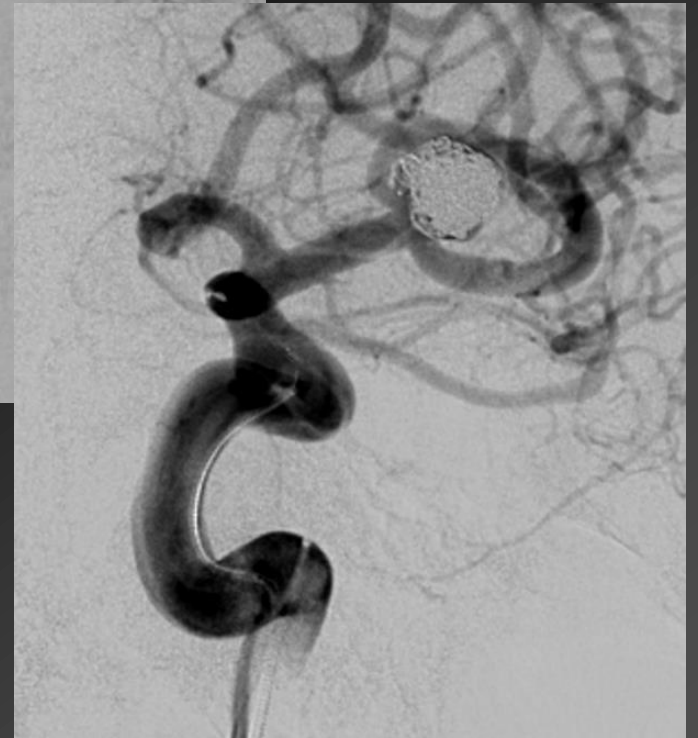
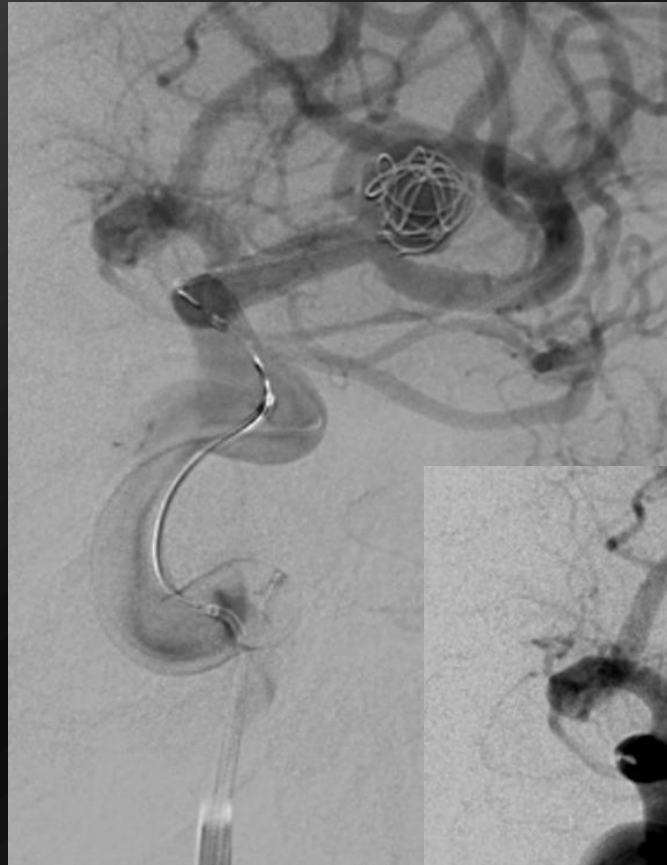
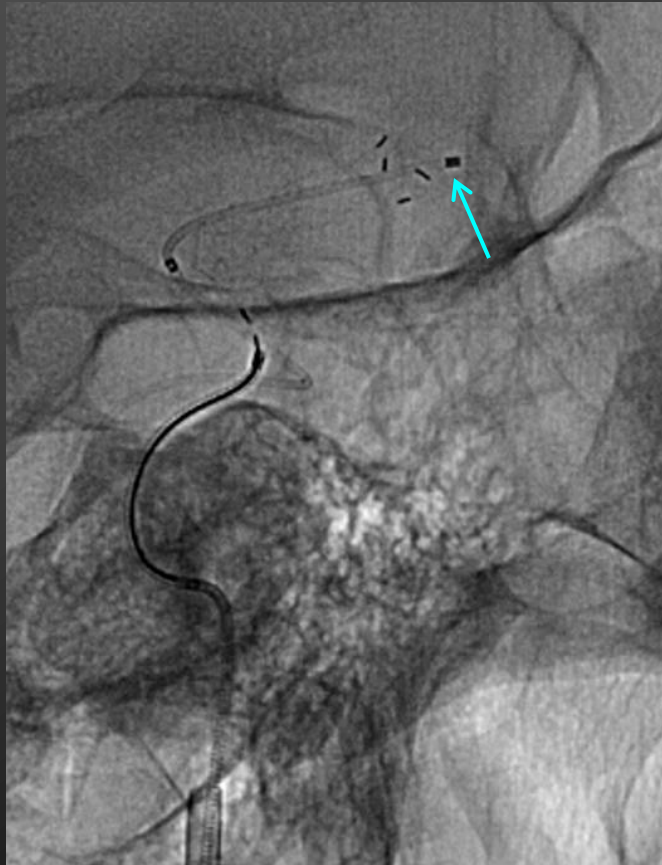


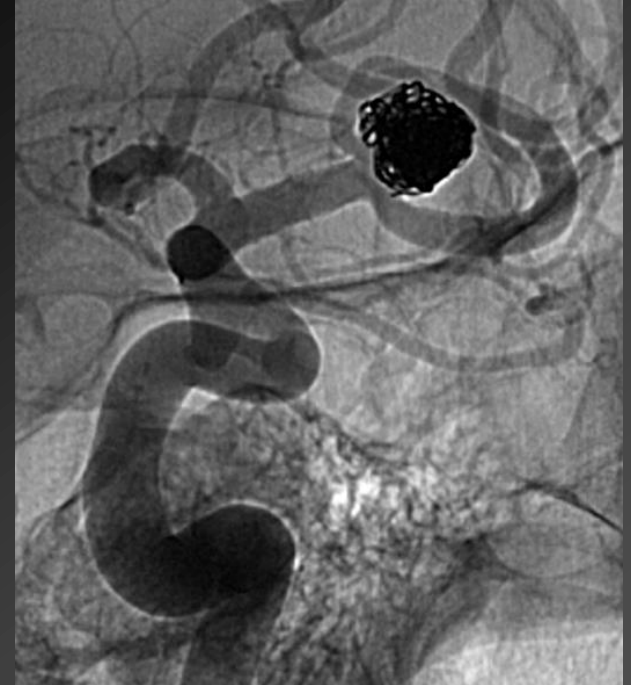
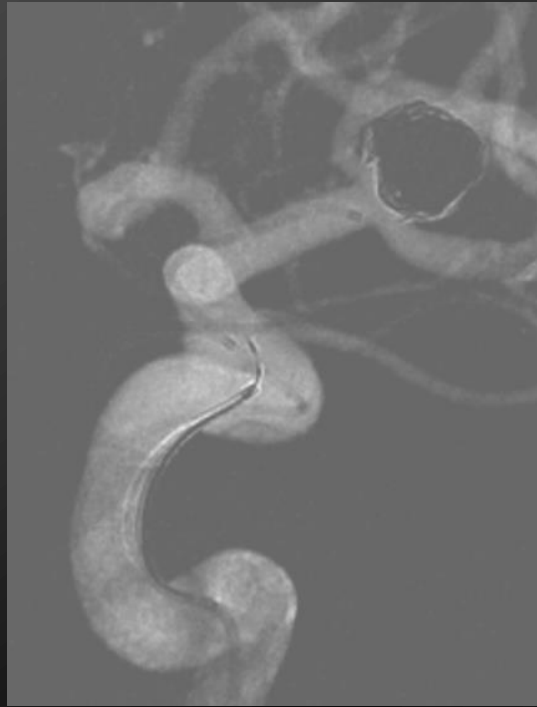
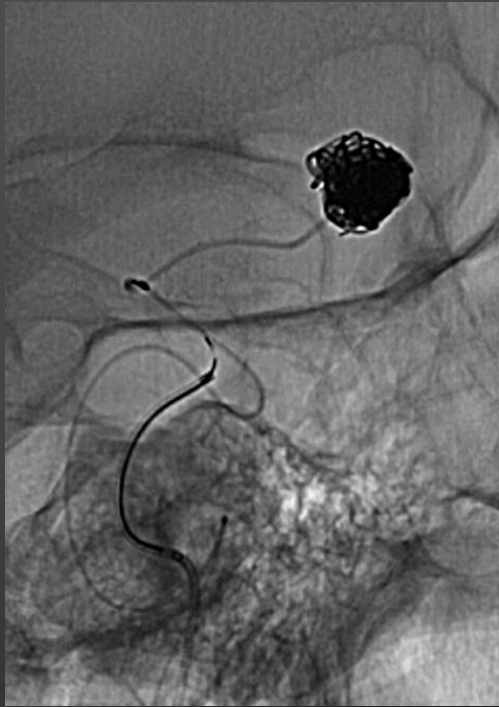
pCONus 4-25-8 - Besançon #5



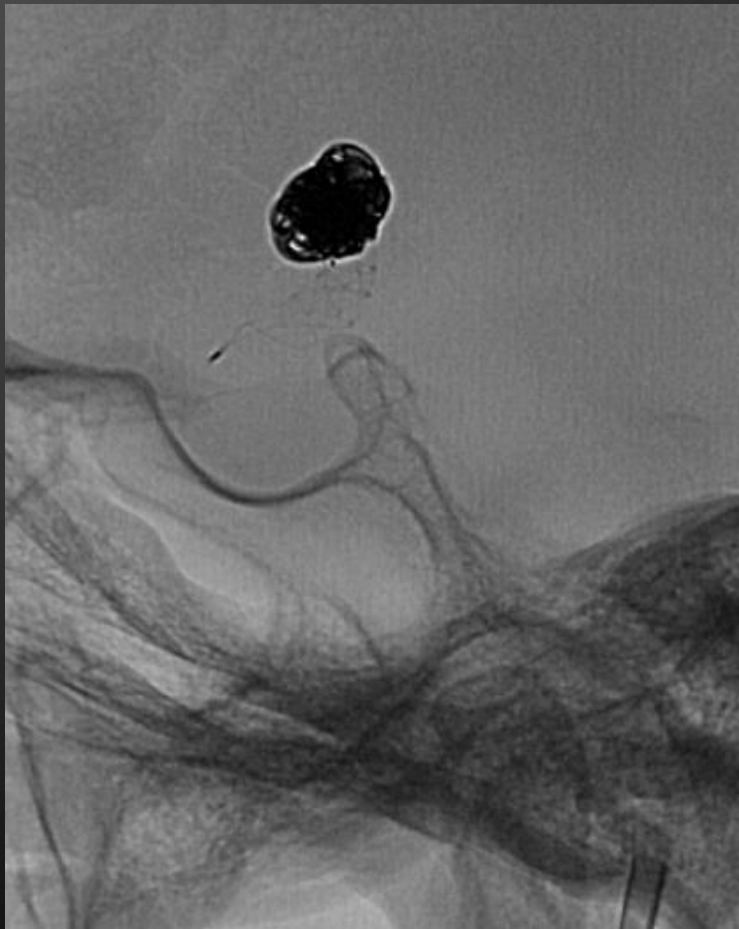
pCONus 4-25-8



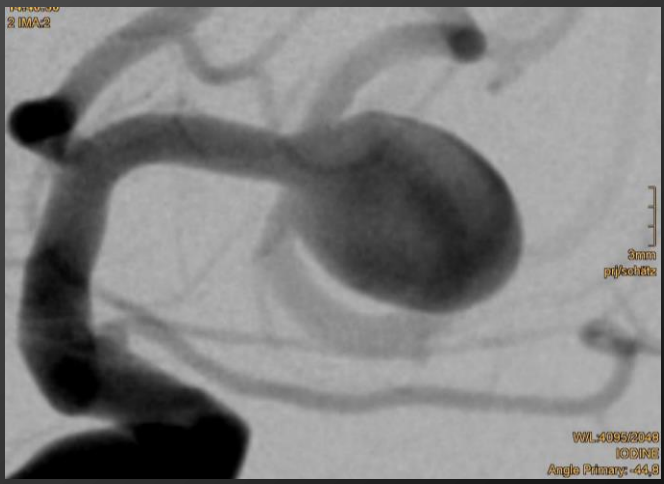




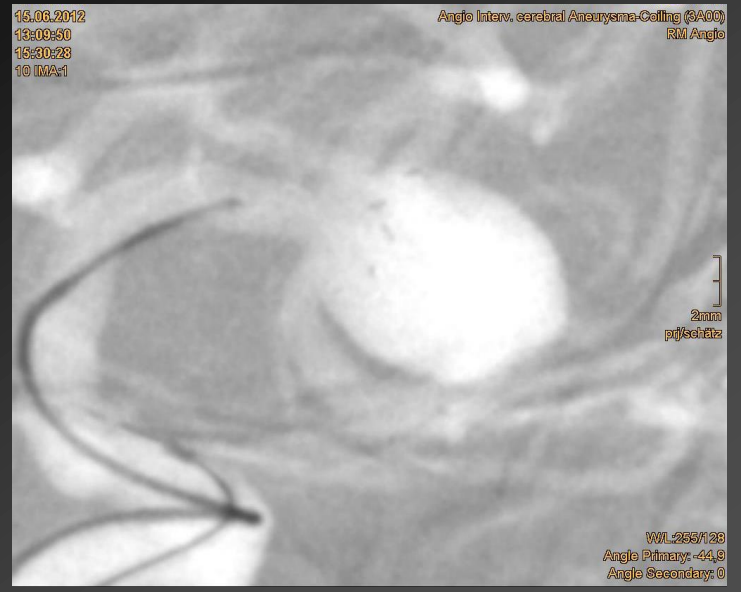
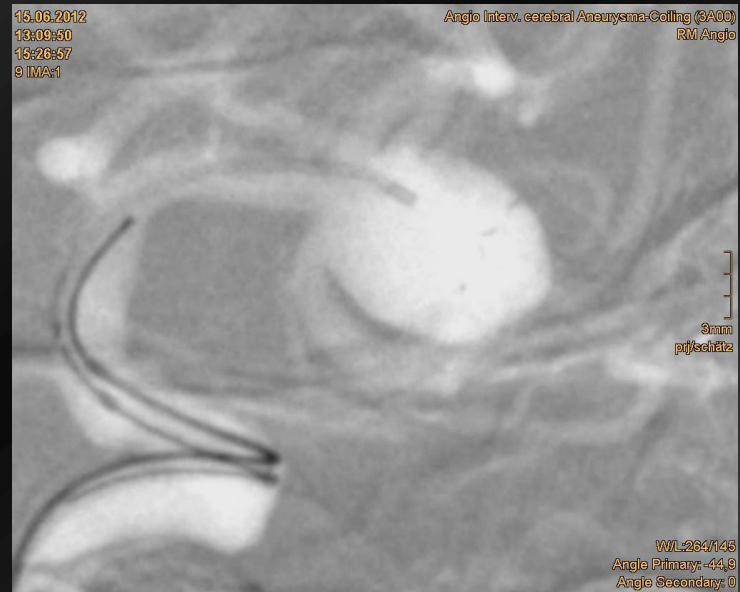
Changes of microcatheter positioning



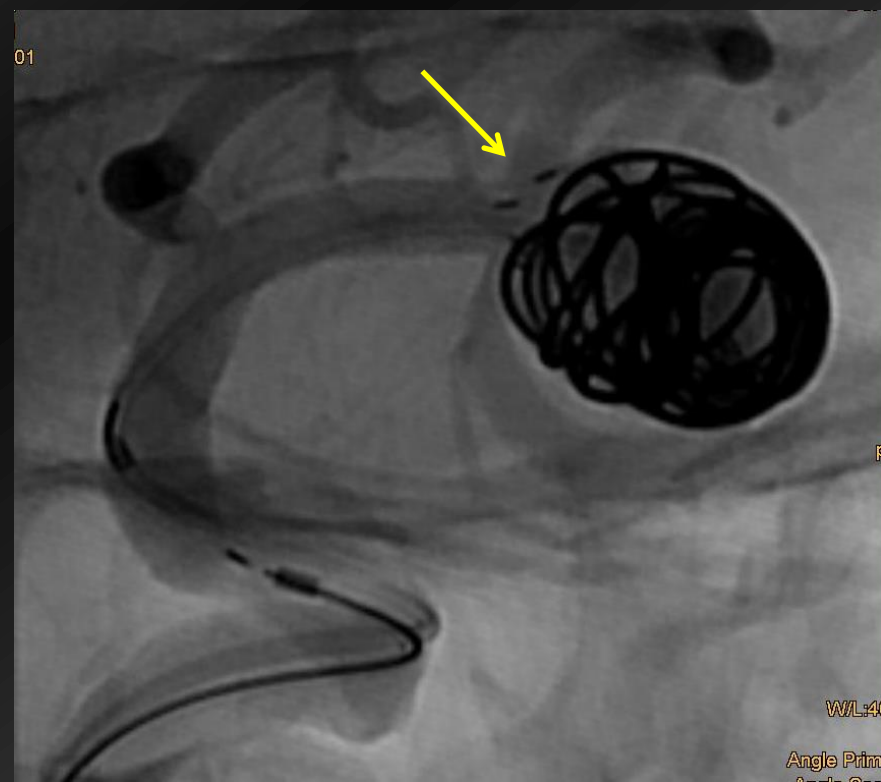
Deployment of a 6 mm pCONus inside the aneurysm fundus. The 6 mm pCONus is pulled back to the aneurysm neck.



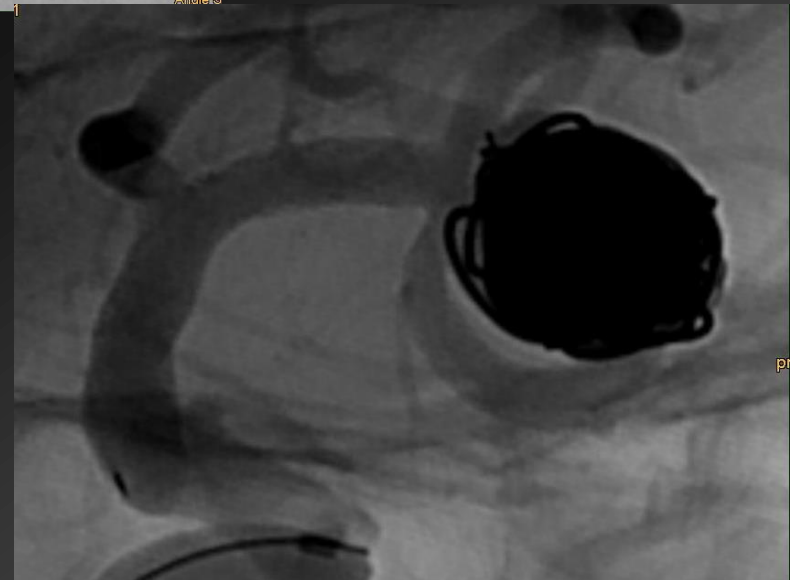
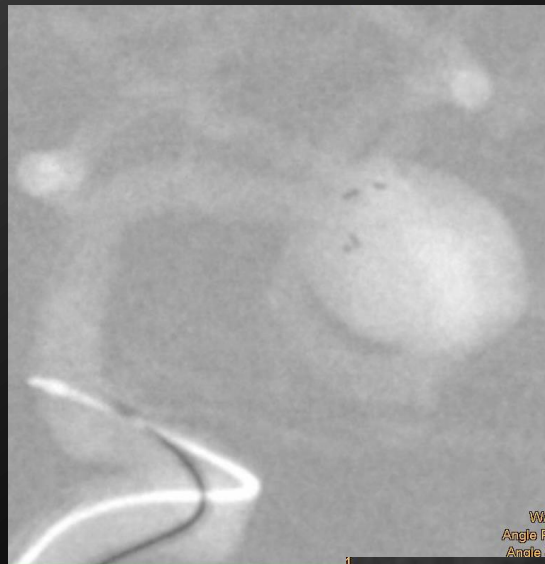
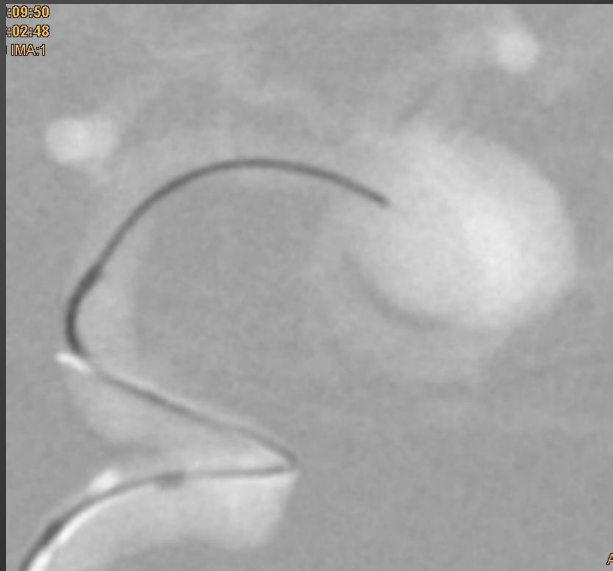
Courtesy, H. Henkes, M.D.
Stuttgart, Germany



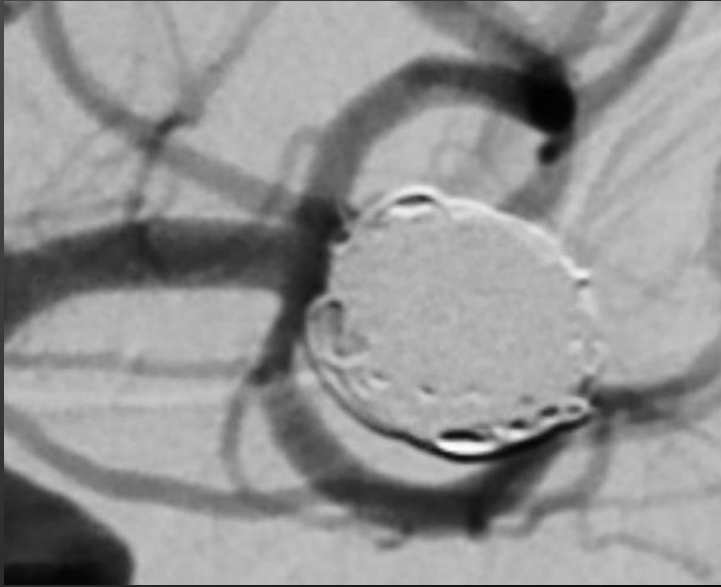
... but the 6 mm pCONus is too small and petals are displaced into the superior trunk of the left MCA (arrows).



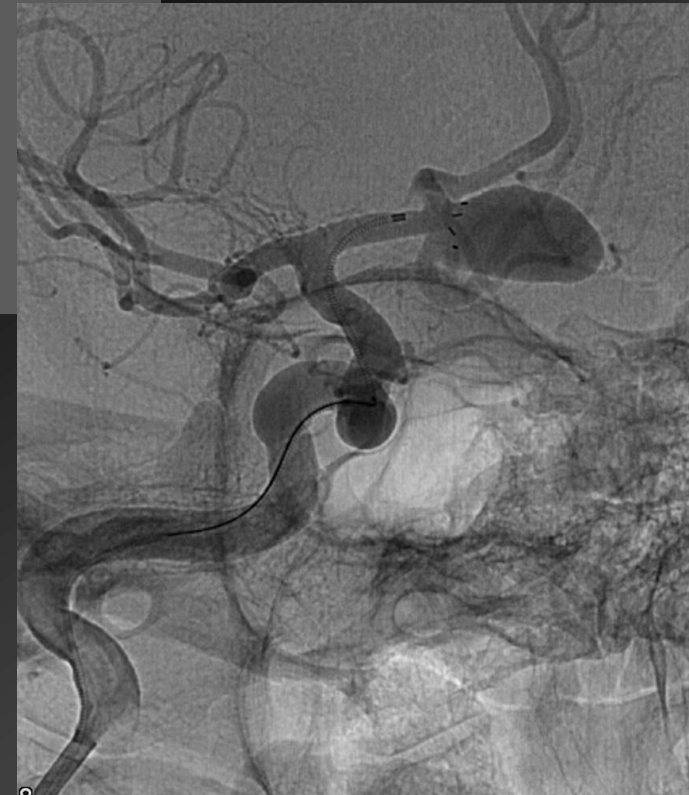
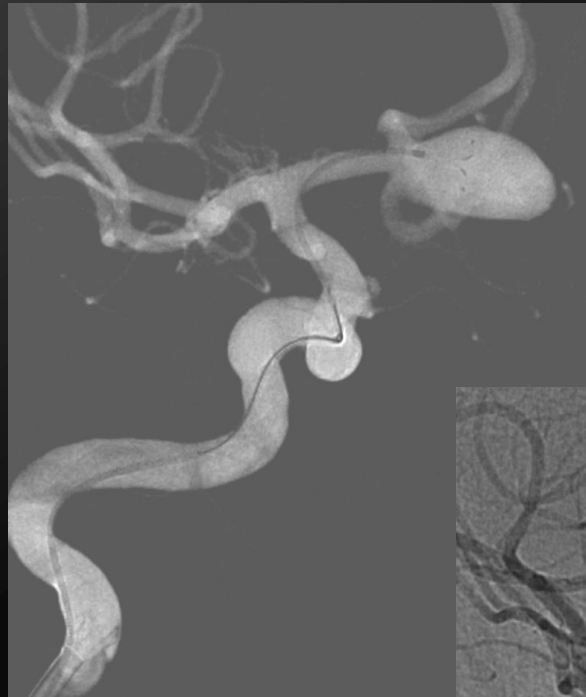
Both the 6 mm pCONus and the 1st coil are withdrawn without complications. A 8 mm pCONus is now deployed

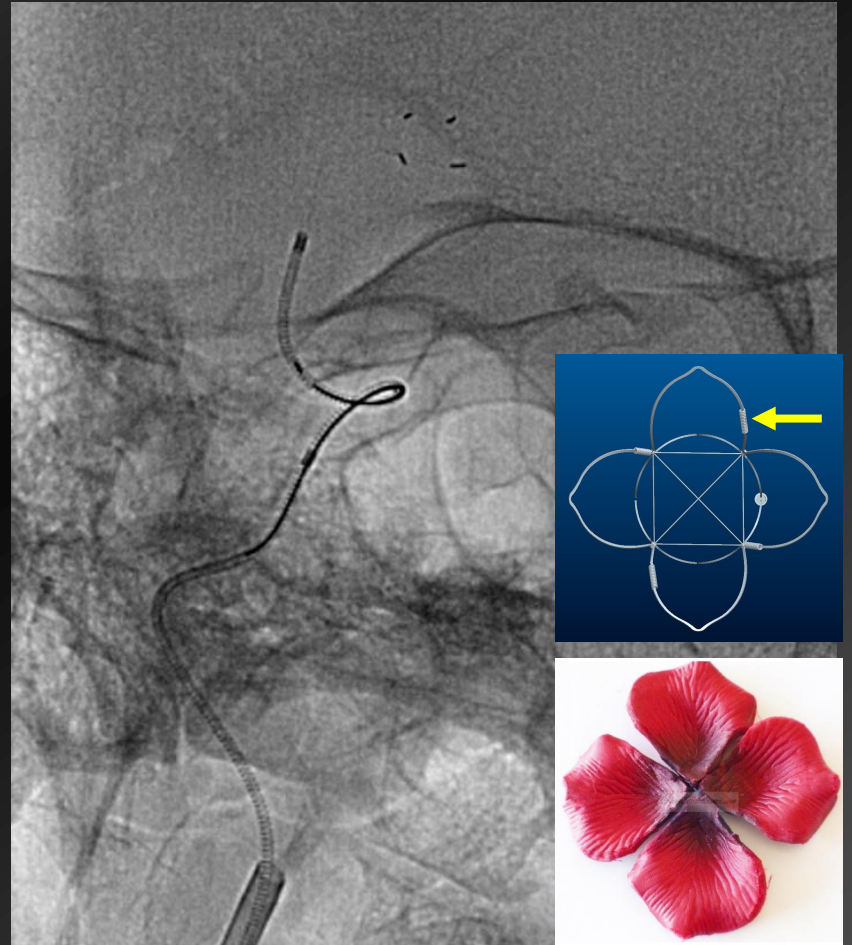
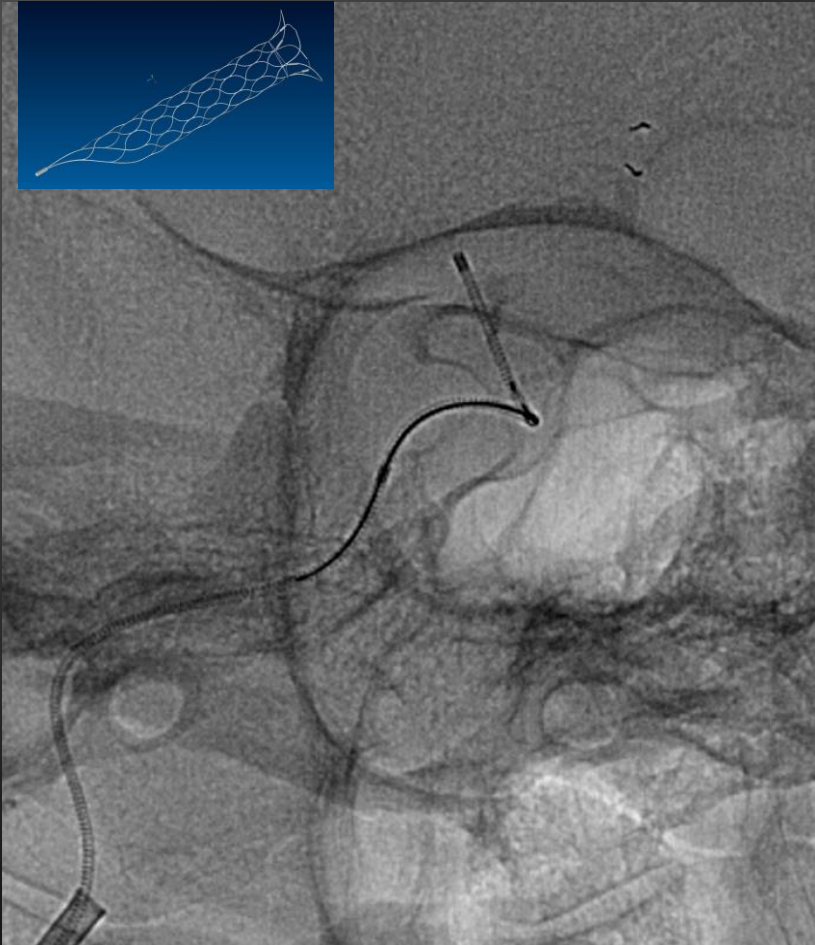


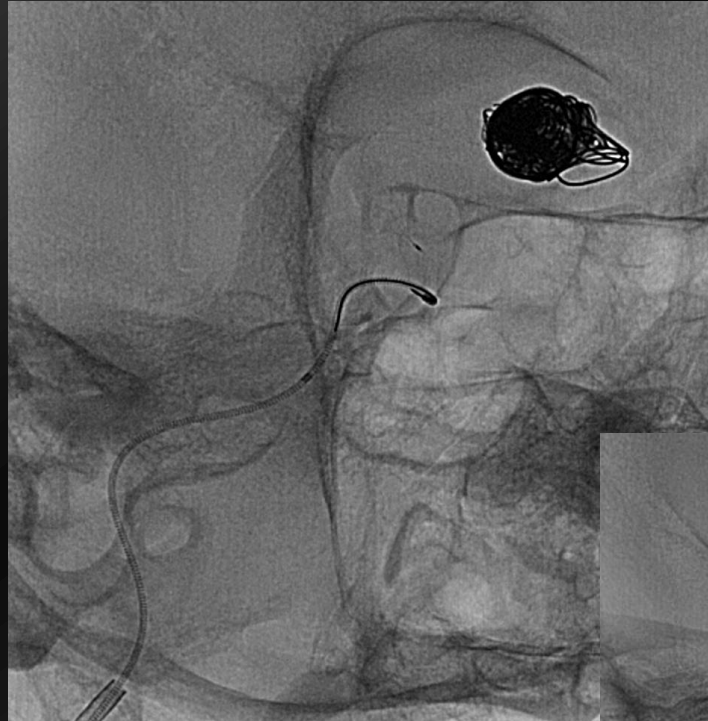
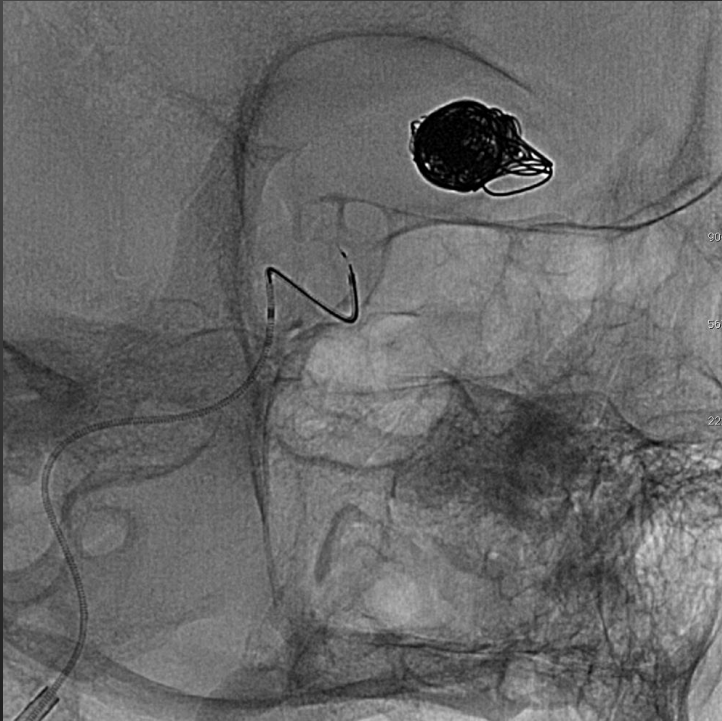
Angiographic follow-up two months later confirms the stable and complete occlusion of the aneurysm.



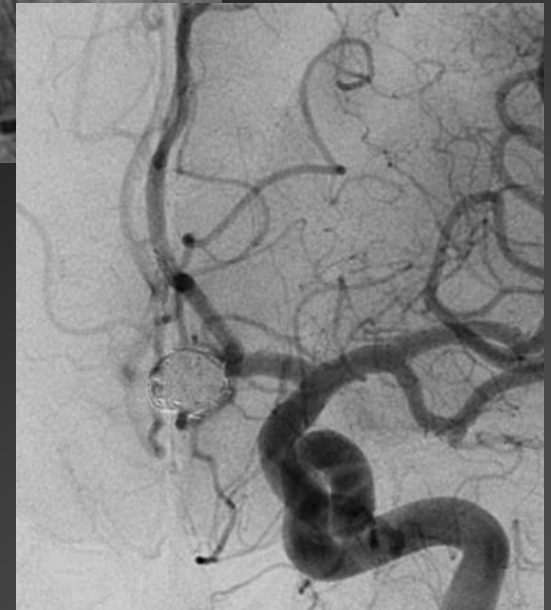
pCONus 4-25-8 - Besançon #6







pCONus 4-25-6 - Besançon #7



Merci !



biondi.alessandra@gmail.com