Neurovascular Chronicles

Exploring the Art & Science of Interventional Neurology

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INDEX

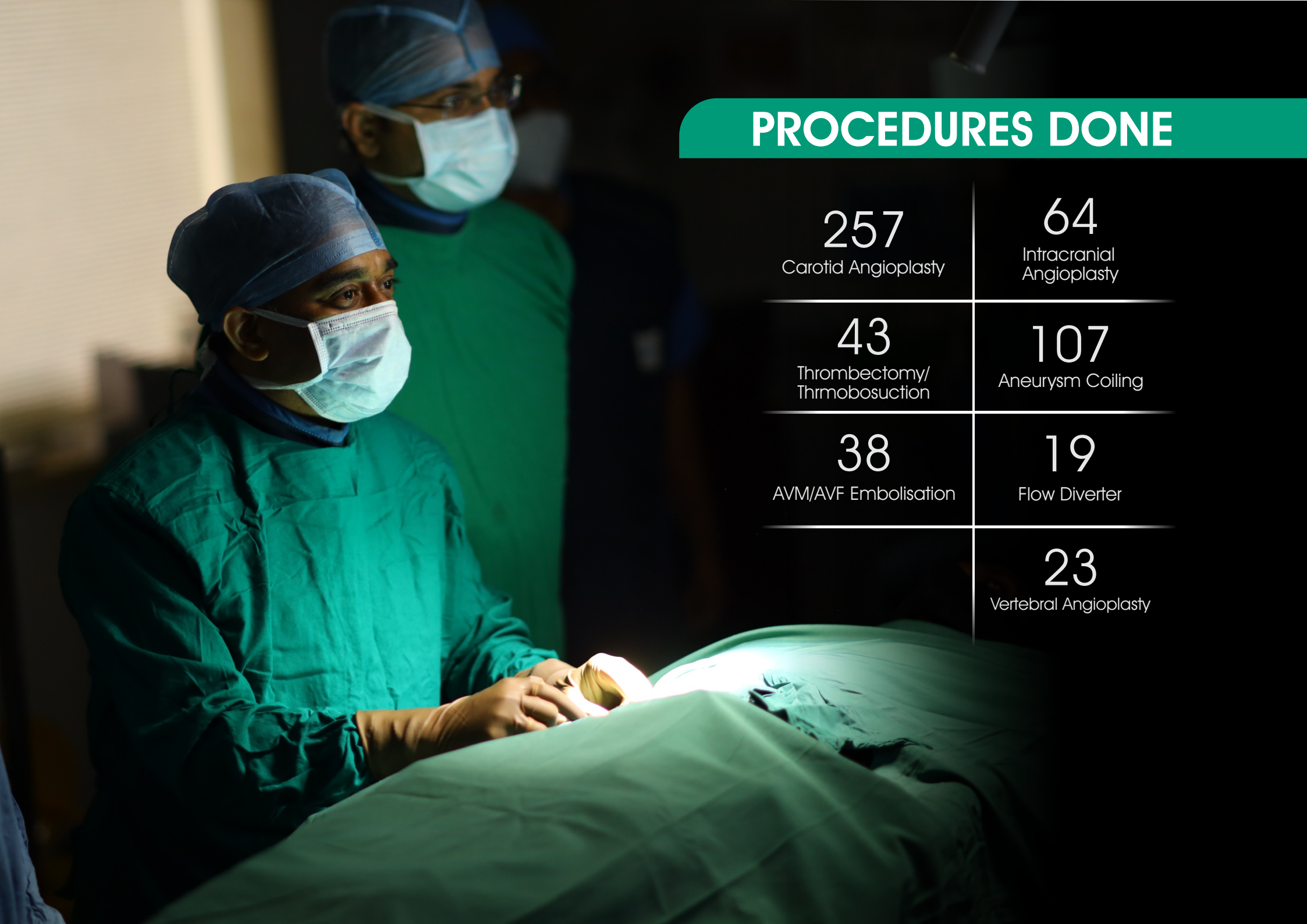

Alfried Krupp Krankenhaus
Registration
Alice 2016
7 - 8 - 9
of December 2016

Dear Reader,

Since the 1990s, advancements in treatment of cerebral aneurysm and other neurovascular diseases have revolutionised the treatment making it less invasive, After 15 years in Chh. Sambhajinagar, we've established a top-notch neurological care center, focusing not only on neurovascular disorders but also epilepsy, epilespy surgery, movement disorders, neuromuscular disorders & neurocognitive disorders making our centre the one stop solution for all the neurological disorders in the region.

This brochure shares my extensive experience in interventional neurology, aiming to empower frontline caregivers with insights and innovative approaches. It emphasizes the importance of collaboration and serves as a platform for dialogue and knowledge exchange.

Thank you for your support, let's embark on a journey of knowledge and collaboration together for the wellbeing of society at large.



PROCEDURES DONE

257 Carotid Angioplasty	64 Intracranial Angioplasty
43 Thrombectomy/ Thrmobosuction	107 Aneurysm Coiling
38 AVM/AVF Embolisation	19 Flow Diverter
	23 Vertebral Angioplasty

THROMBECTOMY

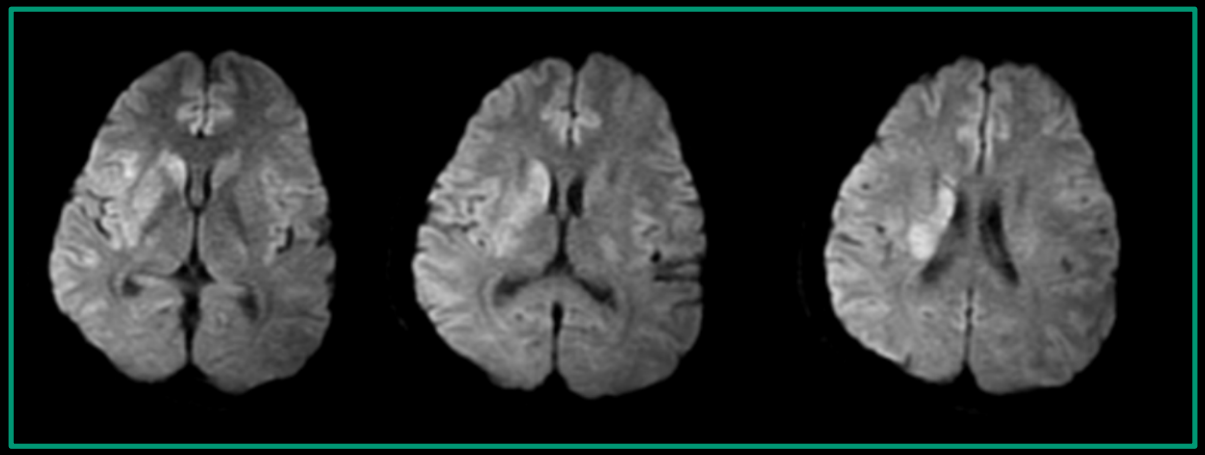
Mechanical thrombectomy / thrombosuccsion is an endovascular procedure usually offered to patents with acute ischemic stroke when there is large vessel occlusion, in which clot is extracted with help of stent retrival devices from large cerebral vessels. It can be offered upto 8 hours in anterior circulation strokes and upto 12-24 hours in posterior circulation strokes depending upon the clinical situation.

It has demonstrated improved outcomes and reduced disability when compared to traditional medical management. The decision to perform mechanical thrombectomy is made based on various factors, including the patient's clinical presentation, imaging findings, and the time since the onset of symptoms. Early recognition of stroke symptoms and prompt intervention are critical for optimizing the benefits of mechanical thrombectomy in patients with acute ischemic stroke.

Case 1:
MCA Thrombectomy

30 YEAR OLD MALE

- Presented with history of acute onset weakness in left upper and lower limb 45 min prior to reaching the hospital
- On Examination - BP 180/100, he was drowsy arousable, he obeying commands, left hemiplegia grade zero
- He immediately underwent MRI stroke protocol which showed right MCA territory infarct with right MCA total occlusion.



Diffusion weighted MRI images showed hyper acute right MCA territory infarct

MRI angiography showed right MCA (M1) total occlusion

- As patient was in window period he was immediately taken to the Cath lab & DSA was done which showed right MCA total occlusion after detail discussion with patient's relatives the patient underwent Mechanical Thrombectomy

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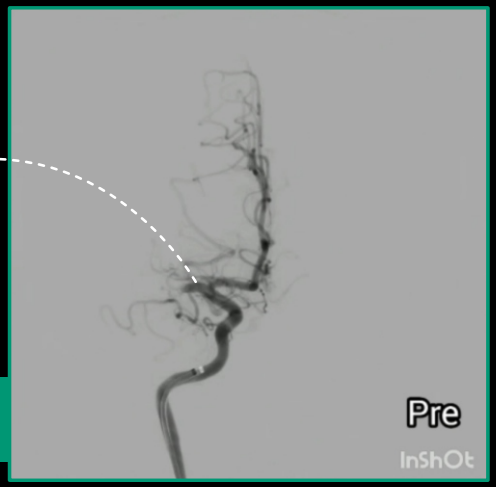
Cath Images

Scan/click to view is
Patient's clinical status

Right MCA (M1)
Occlusion

Before Thrombectomy



After Thrombectomy

Right MCA Complete
Recanalisation

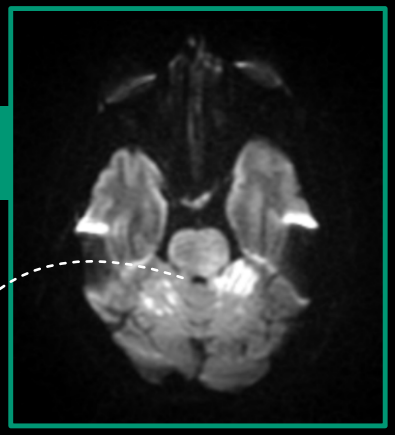
He recovered completely in 3-4 hours & discharged on 4th day without any focal neurological deficits

Case 2:
Basilar Thrombectomy

67 YEAR OLD MALE

- Presented with acute onset giddiness, vomiting followed by altered sensorium 1 hour prior to admission
- On examination
- BP was 200/130, breathing heavily
- He was unconscious, pupils - reacting to light
- Qudriplegia with decerebration on painful stimulus
- He was emergently intubated and ventilated
- MRI showed posterior circulation stroke - bilateral cerebellar and brain stem infarcts
- MR Angiogram - There was total occlusion of basilar artery

Diffusion weight images shows acute bilateral cerebellar and brainstem infarcts



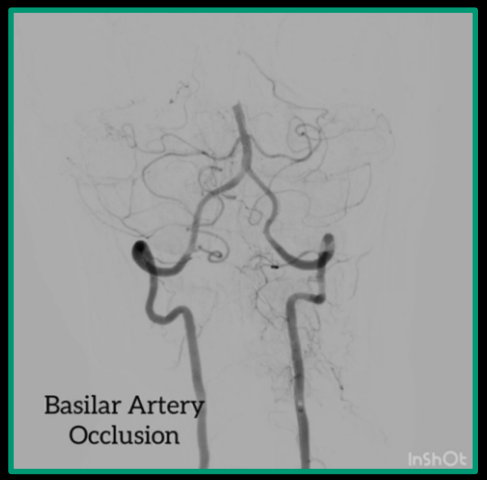
Bilateral Cerebellar & Pontine Infarcts

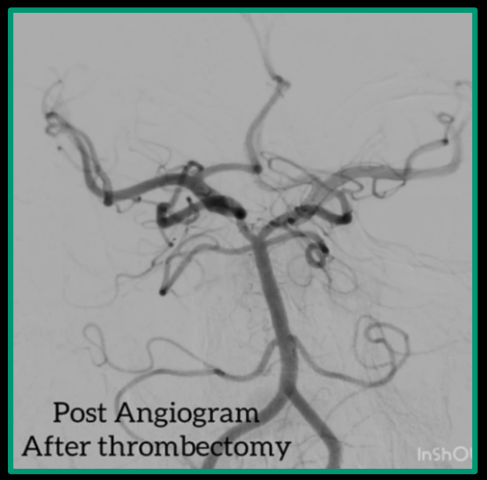
Basilar Artery Total Occlusion

Scan/click to view
Cath Images

Scan/click to view is
Patient's clinical status

- He was immediately shifted to Cath lab - his DSA showed basilar total occlusion
- He Underwent Mechanical Thrombectomy (Video)
- He improved gradually over 3-4 days
- Extubated on 3rd day
- Discharged on 6th day without any focal deficits



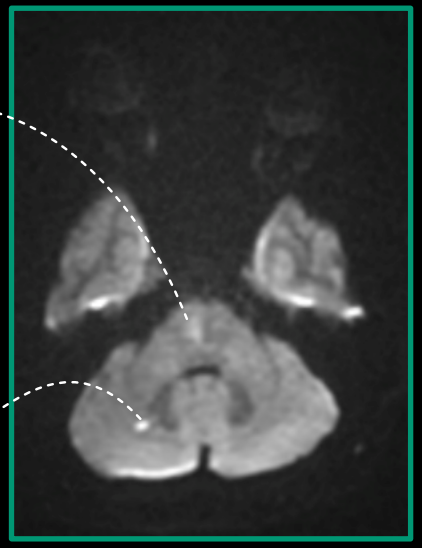


one month follow up
no deficits

Case 3:
Basilar Thrombectomy & Stenting

50 YEAR OLD MALE

- Presented with right upper & lower limb weakness grade 2 with severe slurring of speech & difficulty in swallowing 12 hours prior to admission
- MRI showed left pontine and bilateral cerebellar infarcts
- MRI angiogram showed basilar artery total occlusion
- There was significant clinical and radiological miss match suggesting penumbra hence patient was immediately taken to cath lab and underwent mechanical thrombectomy, there was complete recanalisation however there was underlying proximal basilar artery stenosis.



Basilar artery total occlusion

Complete recanalisation of basilar artery after Thrombectomy with underlying stenosis of proximal basilar artery

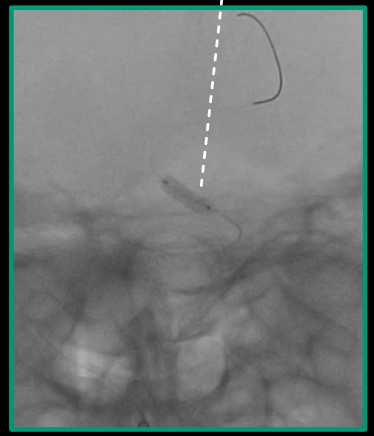
Scan/click to view
Cath Images

- Patient improved almost completely except mild dysarthria
- Next day morning patient deteriorated again, became deeply drowsy with quadriparesis grade 1-2
- Patient was intubated and again shifted to Cath lab - there was re-occlusion of the basilar artery
- He again underwent thrombectomy followed by basilar angioplasty and stenting in view of underlying stenosis

Basilar Artery
Total re-occlusion

Re-canalisation of Basilar artery with underlying Severe stenosis of proximal basilar artery

Balloon Angioplasty



Post Angioplasty

Post Stenting

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Patient's clinical status

- There was no further deterioration
- Patient was extubated after 6 days after stabilization
- On discharge patient was able to stand with support had left sided weakness, significant gait ataxia and severe dysarthria
- He improved almost completely over a period of 6 weeks

Six weeks follow up

ENDOVASCULAR TREATMENT OF ANEURYSM

Endovascular treatment for aneurysms involves using minimally invasive techniques to treat a weakened or bulging area in a blood vessel, known as an aneurysm. The most common type of aneurysm treated with endovascular techniques is a cerebral or intracranial aneurysm, which occurs in blood vessels within the brain.

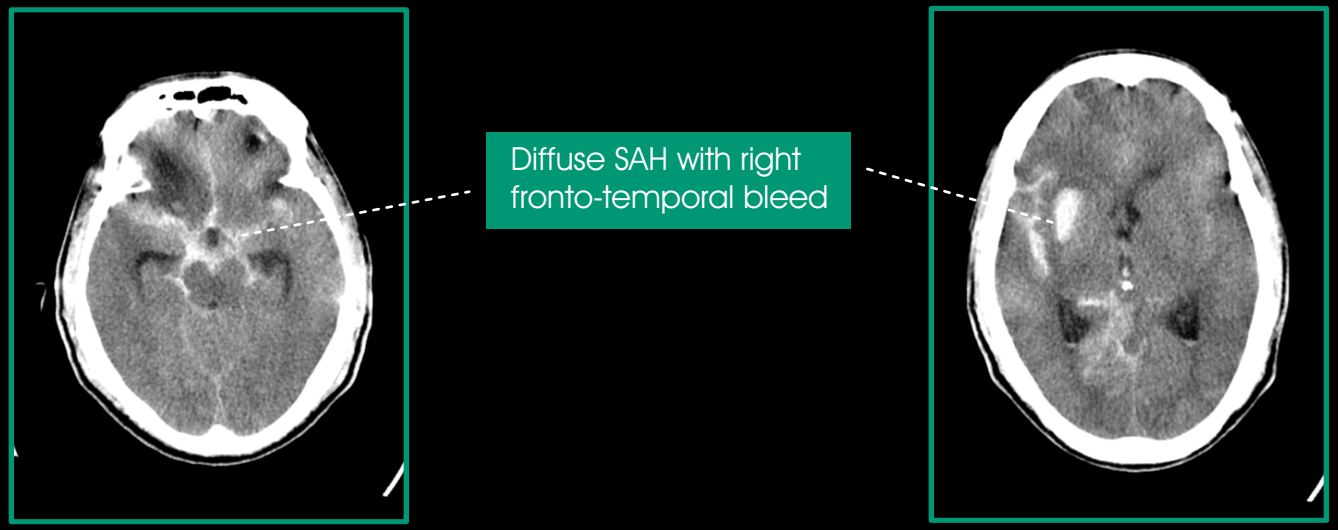
This technique for aneurysms is less invasive than traditional surgical approaches, and it often results in shorter recovery times for patients. The specific technique chosen depends on factors such as the size and location of the aneurysm, as well as the patient's overall health. The choice between endovascular treatment and open surgery is typically made by a multidisciplinary team of interventional neurologist, neurosurgeons and other specialists based on the individual characteristics of the aneurysm and the patient.

Case 4:
Single Microcatheter Coiling

Single Microcatheter Coil embolization tends to be the treatment of choice if the aneurysm has a narrow neck, defined as < 4 mm, and has a favorable dome-to-neck ratio, for example, 2:1 or greater, where chances of coil loops getting prolapsed into the parent vessel is very less. However many prefers use of balloon even in narrow necked aneurysm as protection. The initial coil deployed is usually a framing coil followed by filling, then finishing coils, depending on the operator's preference. The framing coil tends to be stiffer with greater shape memory than filling or finishing coils.

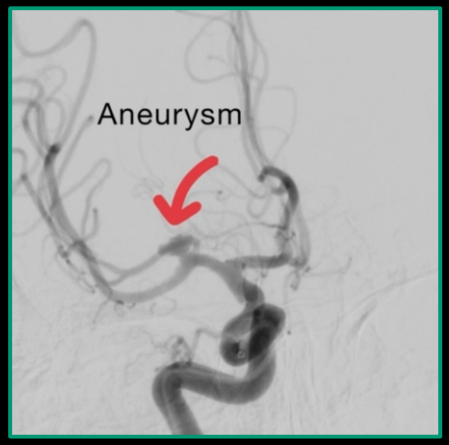
55 YEAR OLD MALE

- Presented with acute sever headache, vomiting followed by one episode of generalised tonic clonic seizure
- He was intubated and referred for further treatment
- On examination he was intubated, deeply drowsy, opening eyes on pain, left hemiplegia grade 0
- CT brain showed - Diffuse SAH with right fronto-temporal bleed



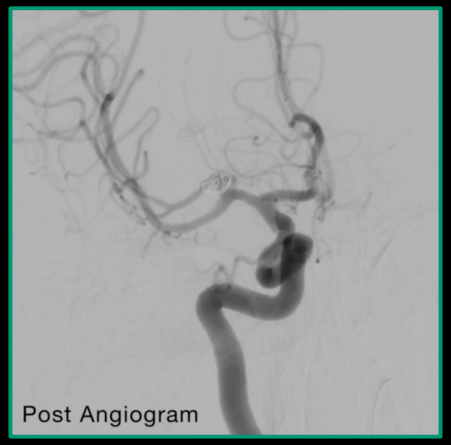
Scan/click to view
Cath Images

- He underwent DSA which showed right M1 narrow necked aneurysm
- He underwent single micro catheter coiling on next day



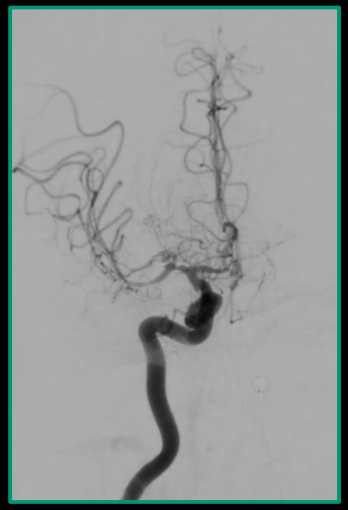
M1 Narrow Necked Aneurysm

Single Microcatheter Coiling

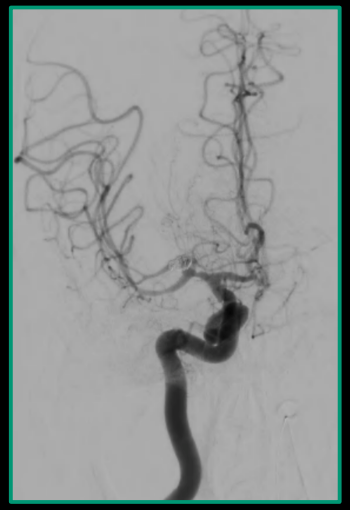


Post Coiling

Diffuse Vasospasm



Before



After Chemical Angioplasty

- Patient had severe vasospasm on 7th days and started deteriorating
- Initially managed with intravenous Nimidepine and Milrinone as there was further deterioration, he was again taken to Cath lab, repeat DSA showed severe vasospasm which was managed with intra-arterial Nimidepine & Milrinone (chemical angioplasty)

- Patient improved gradually
- Weaned off ventilator, tracheostomy tube was de-cannulated
- Discharged on 28th day with left hemiparesis
- At 3 months follow up there were minimal focal deficits & independent for all his activities of daily living

Case 5:
Balloon Assisted Coiling

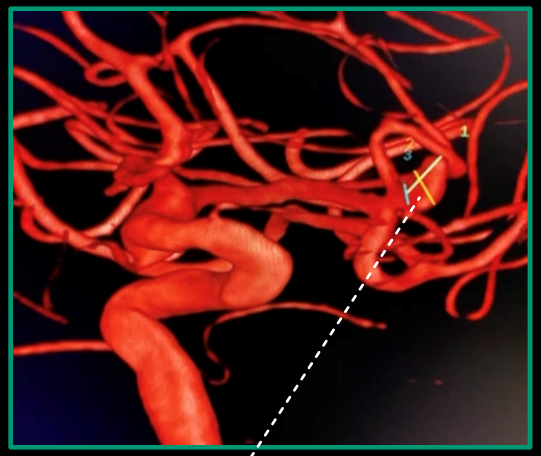
Balloon-assisted coiling (BAC) of cerebral aneurysms was first described by Moret et al. in 1997, and has since become a well-established technique for the endovascular treatment of wide-neck aneurysms. The balloon is inflated across the neck of the aneurysm until enough coils have been deployed to create a stable coil mass within the aneurysm. The balloon is then deflated and removed. The balloon can also be used to stabilize the coiling microcatheter within the aneurysm and protect the origins of branch vessels arising from the aneurysm neck. Over the decades, there have been several advances in balloon catheter technology like from single lumen catheter attached balloon to a dual-lumen catheter attached to a compliant balloon that accommodates a 0.014 inch microwire, making the procedures more safer.

67 YEAR OLD FEMALE

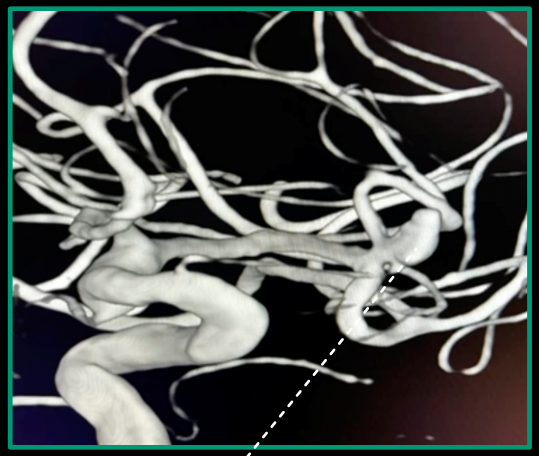
- Presented with acute onset headache vomiting followed by loss of consciousness and right sided weakness
- Intubated at near hospital and shifted for further treatment
- On examination - unconscious, right hemiplegia grade 0, spontaneous movement on left side
- CT scan showed diffuse SAH left more than right with left fronto-temporal bleed
- She underwent DSA which showed wide necked left MCA bifurcation aneurysm
- She underwent balloon assisted coiling for left MCA bifurcation wide necked aneurysm

Diffuse SAH left more than right with left fronto-temporal bleed

Scan/click to view
Cath Images

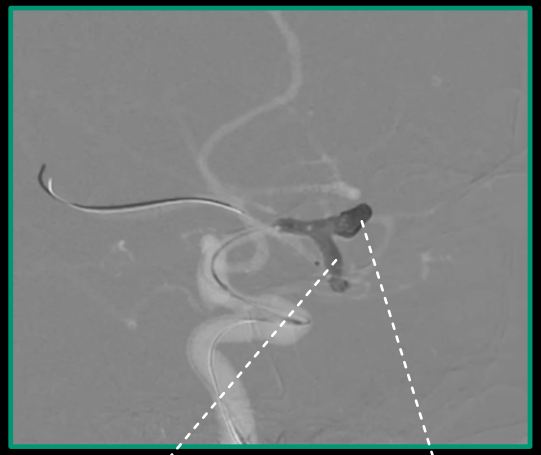


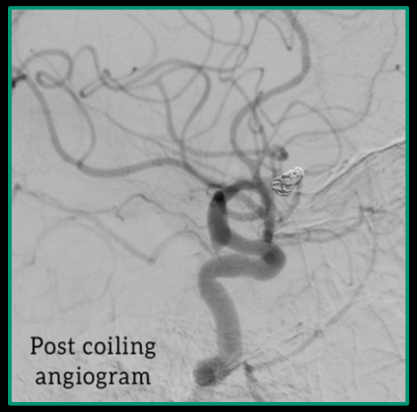
Left MCA bifurcation
wide necked aneurysm

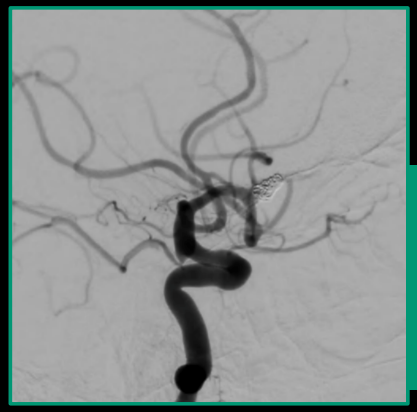


Left MCA bifurcation
wide necked aneurysm

Balloon Assisted Coiling







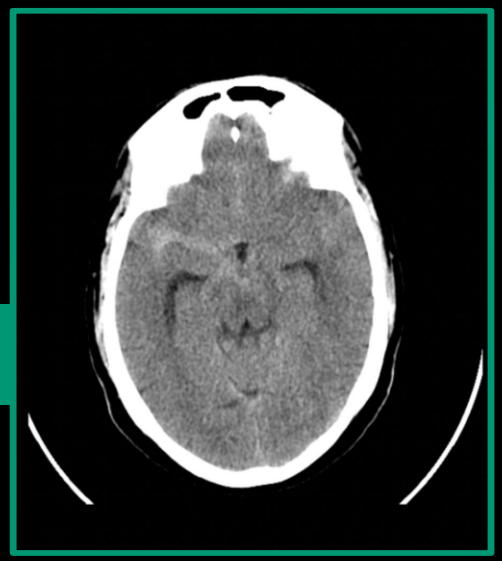
Post Coiling Angiogram complete obliteration of the aneurysm and all branches of MCA filling with good run off

- Patient stabilized and later improved gradually
- Underwent tracheostomy meanwhile
- Patient was discharged on 35th day with right hemiparesis
- 3 months follow up she has right hemiparesis with word finding difficulties and independent for most of her activities of daily living

Case 6:
Balloon Assisted Coiling

49 YEAR OLD FEMALE

- No past medical illness presented with acute severe headache with vomiting.
- No seizures or loss of consciousness.
- On examination.
  - Vitals were normal.
  - There was mild pronator drift on left side and neck stiffness.
- She underwent CT brain which showed subarachnoid haemorrhage in right Sylvian fissure



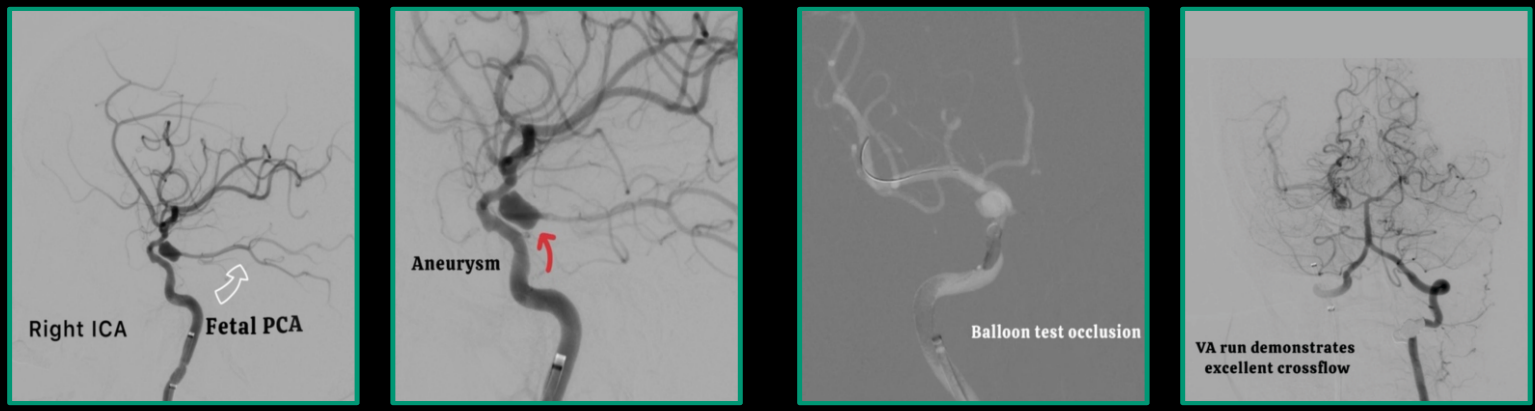
CT brain which showed subarachnoid haemorrhage

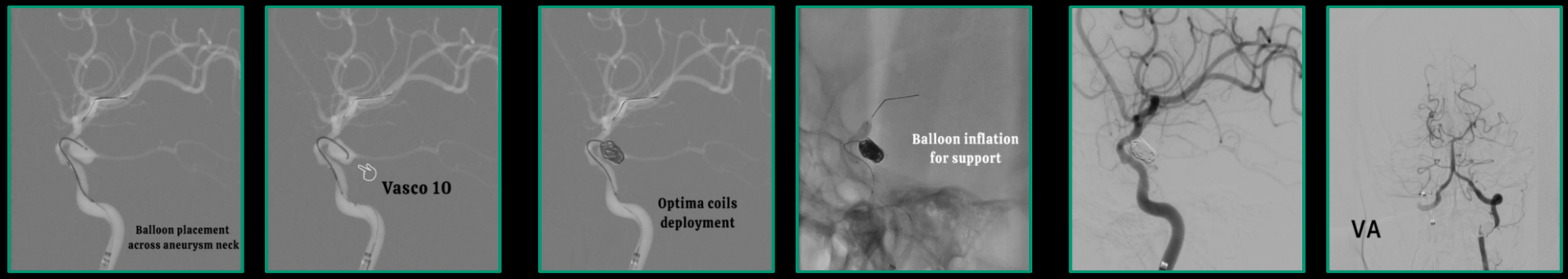
- She underwent DSA which showed narrow necked PcOM Aneurysm.
- After detailed discussion with relatives she was planned for balloon assisted coiling.
- The patient had fetal PCA arising from the neck of the aneurysm & was likely to get sacrificed during coiling hence the main concern was the deficits if PcOM is sacrificed.

Scan/click to view
Cath Images

- Hence patient underwent balloon occlusion test with VA runs which confirmed good cross flow from P1.
- She underwent balloon assisted coiling while PcOM was sacrificed.
- There were no focal deficits post procedure.
- She was discharged on 10th day after the procedure.

Narrow necked PcOM Aneurysm with fetal PCA



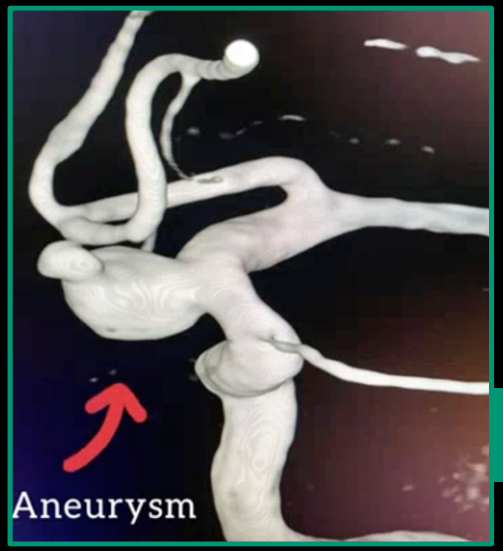


Post Procedure Right ICA & Vertebral Runs

Case 7:
Stent Assisted Coiling

Large, complex, wide-necked, & fusiform aneurysms were initially considered unamenable to endovascular coil embolization. With the advent of stents designed specifically for the intracranial circulation, such aneurysms can now be safely and efficiently managed endovascularly. Over the years, a variety of stents with different properties have been developed. These include laser-cut stents in open-cell or closed-cell design, as well as braided stents. Self-expanding stents allow denser aneurysm packing, preventing coil haerniation into the parent vessel lumen with increased neck coverage and may also improve treatment durability through a combination of flow-diversion, parent vessel straightening, and fibroelastic tissue formation along the neck of the aneurysm.However, in setting of acute SAH use of stent should be avoided because of the need of using dual antiplatelet therapy which can potentially increase the risk of hemorrhagic as well as thromboembolic complications. It should be planned once the patient is clinically stable typically 2 weeks after the rupture.

59 YEAR OLD FEMALE



- Admitted at another hospital for acute onset severe headache and vomiting
- There were no focal neurological deficits
- CT brain showed diffuse thin grade 2 SAH (Fisher scale 2)
- Patient was managed at local hospital and later referred for further treatment
- DSA showed giant wide necked left para-PcOM aneurysm with bleb

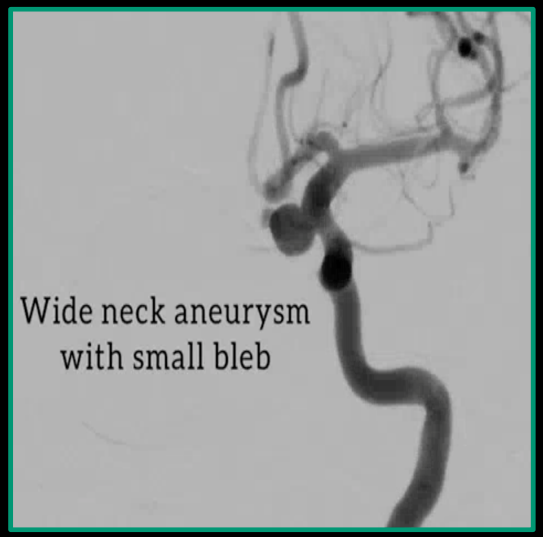
Left Para-PcOM giant wide necked aneurysm with bleb

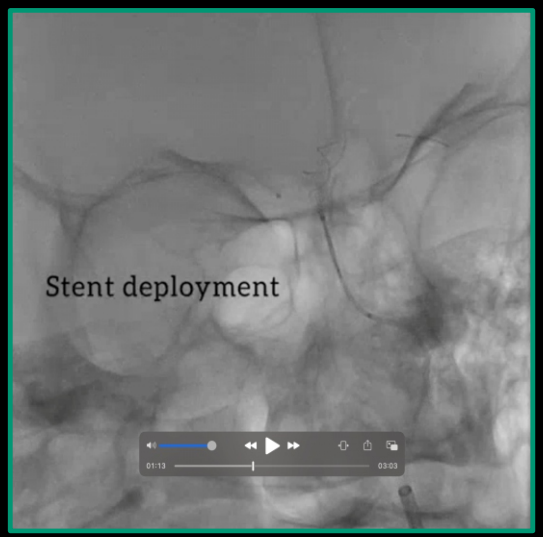
- Patient underwent stent assisted coiling uneventfully

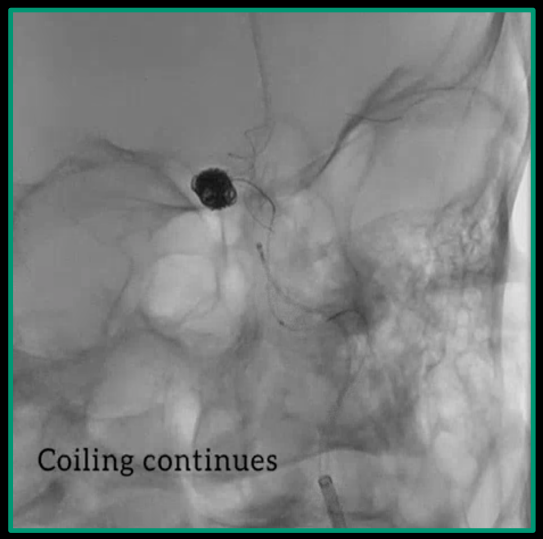
Scan/click to view Cath Images

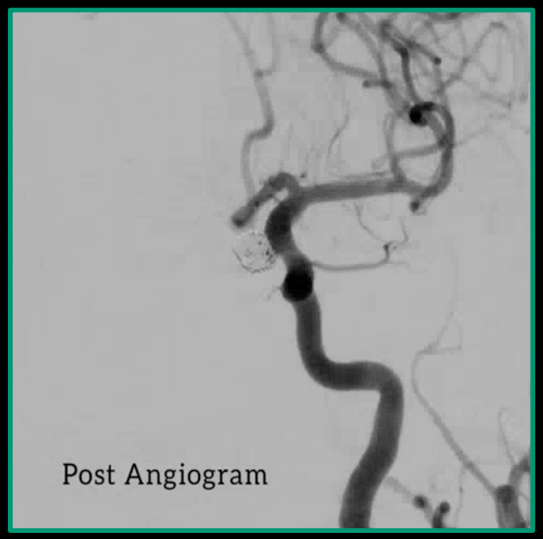
Scan/click to view is Patient's clinical status

Left Para-PcOM giant wide necked aneurysm with bleb









Discharged on day 5 without focal deficits

Case 8:
Dissecting Aneurysm

A dissecting aneurysm is an aneurysm that occurs with a tear in the artery wall that separates the 3 layers of the wall, rather than ballooning out the entire wall. Because an aneurysm may continue to increase in size, along with progressive weakening of the artery wall, emergent intervention is usually needed. Spontaneous intracranial dissecting aneurysms have been reported as a cause of subarachnoid hemorrhage (SAH) and stroke in young patients. They occur most commonly in the vertebro-basilar circulation whereas the anterior circulation is less commonly involved. Dissecting aneurysms and pseudoaneurysms are challenging to treat with conventional microsurgical and endovascular techniques. The established treatment strategies include stenting, trapping, bypass, parent vessel sacrifice and reconstruction with Flow Diverters. The FDs are the supportive enough to allow reconstruction of the parent artery but still flexible enough to conform to the tortuosity of vertebrobasilar regions.

45 YEAR OLD FEMALE

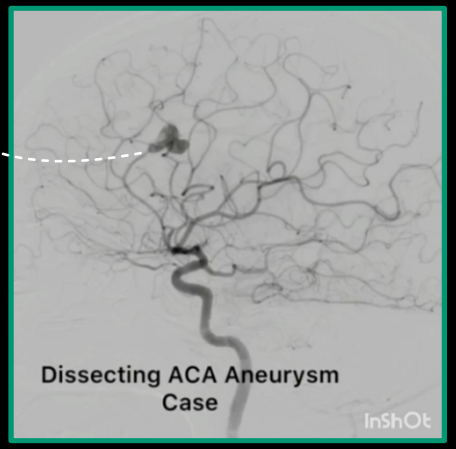
- Presented with acute severe headache with vomiting on the day of admission
- On examination - BP was normal, except for neck stiffness there were no focal neurological deficits
- CT brain showed parafalcine haemorrhage with diffuse thin SAH & cerebral edema

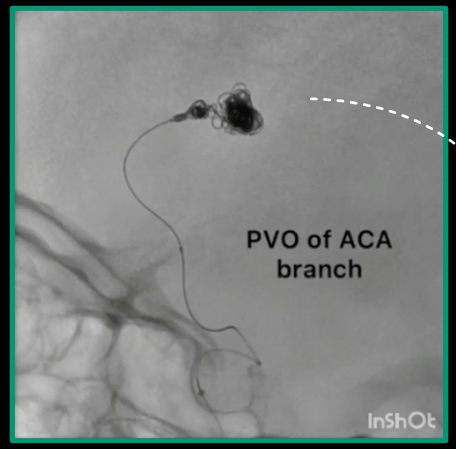
Parafalcine haemorrhage with diffuse thin SAH

Scan/click to view
Cath Images

Scan/click to view is
Patient's clinical status

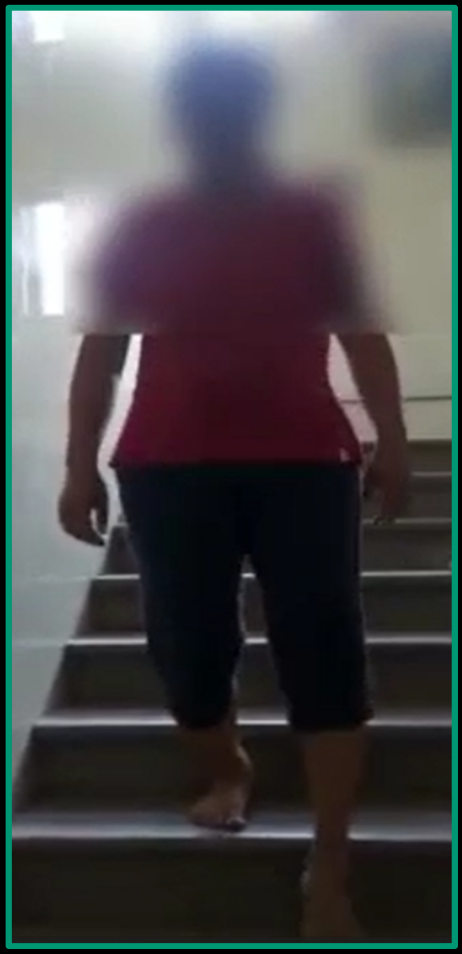
Dissecting Aneurysm





Inside out coiling of dissecting aneurysm with parent vessel occlusion

Post Coiling



- She underwent DSA which showed right ACA dissecting aneurysm
- She underwent inside out coiling of the aneurysm with parent vessel occlusion
- Post procedure she had left hemiparesis - upper limb grade 2-3 & lower limb grade 0 which improved over a period of 3 months

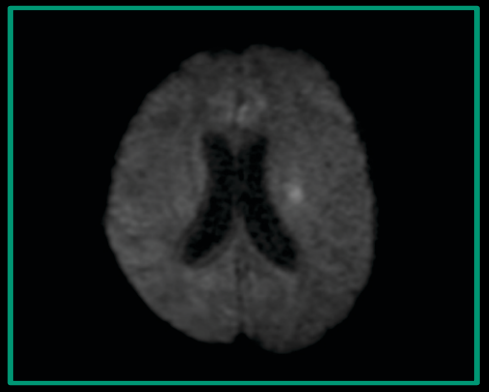
FLOW DIVERTER TREATMENT FOR ANEURYSM

Flow Diversion is an endovascular technique where, instead of placing coils inside the aneurysm sac, a cylindrical, metallic, mesh stent is placed in the parent blood vessel across the aneurysm neck. These stents differ from traditional stents in that they divert blood flow away from the aneurysm dome. These stents disrupt the intra-aneurysmal blood flow, providing significant rheologic effects with potential changes in transmural pressure gradient and progressively create intra-aneurysmal thrombosis. Flow diverters take advantage of hemodynamics, thrombosis, inflammation, healing, and endothelial regrowth to achieve endoluminal reconstruction and aneurysm obliteration. The presence of a metallic stent within the artery lumen increases the risk of thrombosis and stroke, and requires the patient be maintained on two anti platelet agents for at least six months until the stent is incorporated into the artery wall. One of the main concerns with flow diversion is related to the patency of side-branch and perforating vessels in the vicinity of treated aneurysms. Despite the low porosity and higher metal content of the flow-diversion device, outflow into perforators is usually maintained as long as there is a pressure gradient from the high-pressure parent artery branch to the low-pressure perforator territory.Flow diverters represent a major paradigm shift in the endovascular treatment of intracranial aneurysms.

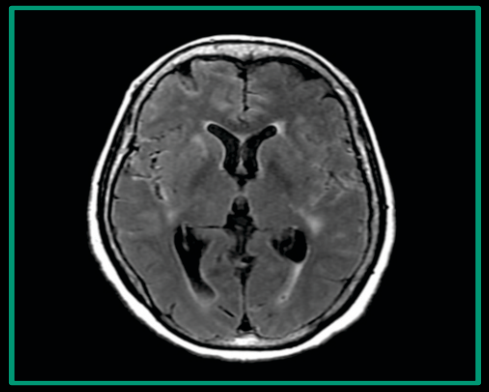
Case 9:
Flow Diverter Assisted Coiling

65 YEAR OLD FEMALE

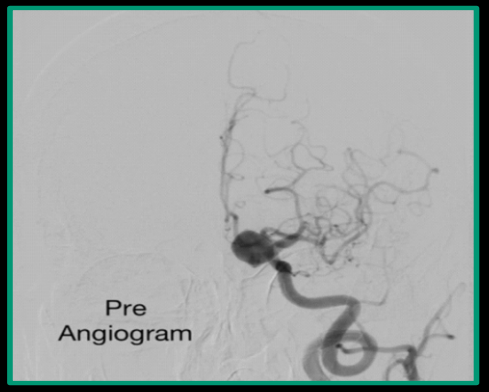
- Presented with acute severe headache and vomiting
- On examination patient was conscious, mildly disorientated, there was neck stiffness. No other focal deficits
- CT brain showed diffuse SAH with early hydrocephalus
- DSA showed left Para Pcom giant aneurysm



DWI MRI Showing left
MCA subcortical infarcts



FLAIR MRI Showing
diffuse cerebral oedema



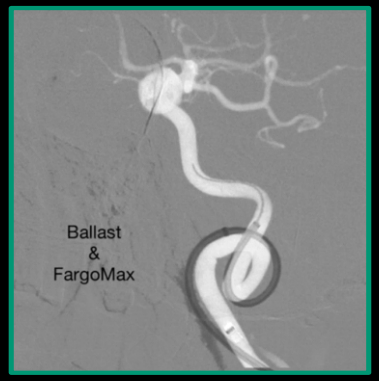
Very tortuous left ICA and
Left Para PcOM Aneurysm

- Four days after admission patient became drowsy, aphasic & had right hemiparesis
- Repeat MRI showed diffuse cerebral oedema with right MCA subcortical infarcts suggesting vasospasm

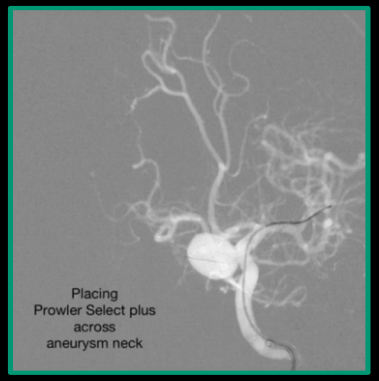
Scan/click to view Cath Images

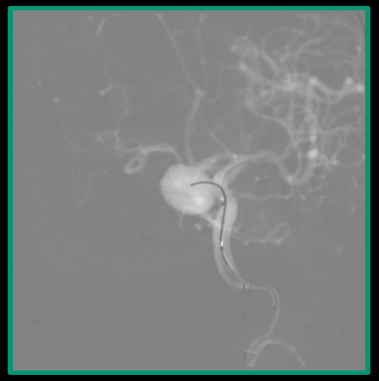
Scan/click to view is Patient's clinical status

- Initially she was managed conservatively with anti oedema measures along with intravenous nimodepine & later milrinone was added.
- After initial worsening her neurological status got stabilized and she started improving clinically.
- Nearly 15 days later she improved significantly and was stable. As vasospasm period was already gone we decided to go for Flow-diverter assisted coiling.
- Procedure was technically challenging in view of severe tortuosity which was managed with tri-axial system.
- Patient was discharged 4 days after coiling with mild right hemiparesis.

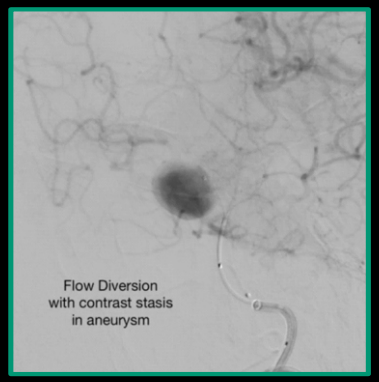


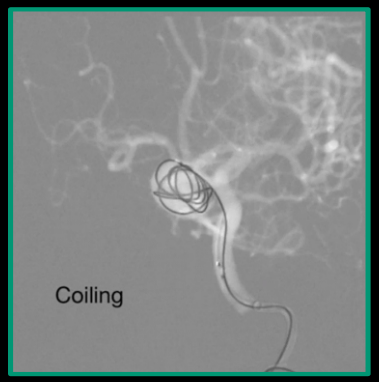
Difficult navigation of Long Sheath (Ballast) and Guiding Catheter (FargoMax)

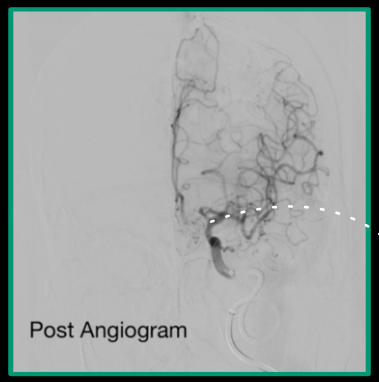




Jailing of Coiling micro-catheter inside the aneurysm sac







Complete obliteration of aneurysm sac

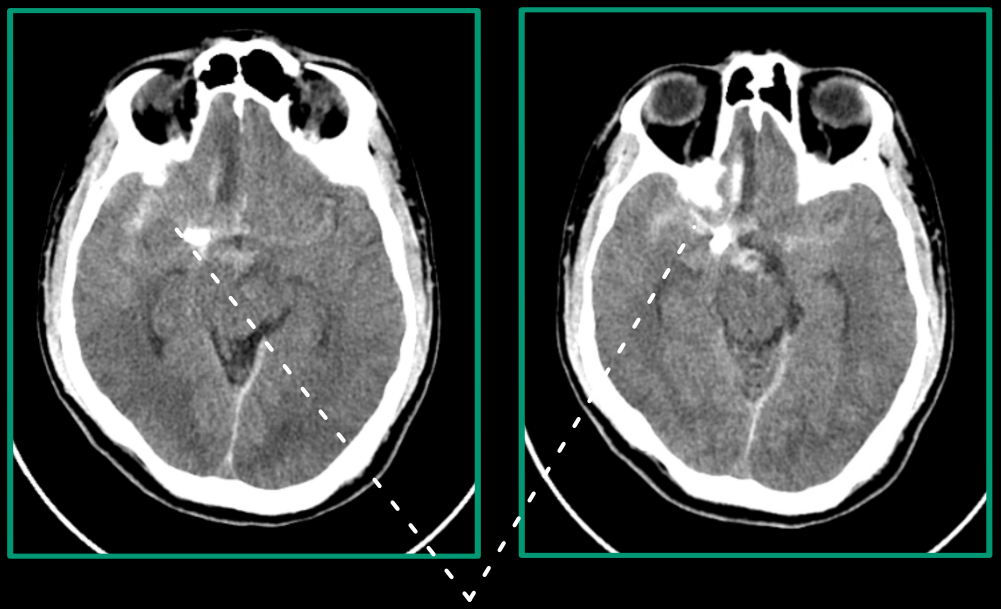
One Month Follow Up
No Focal Deficits

Case 10:
Blister Aneurysm

Blister aneurysms represent 1% of intracranial aneurysms and are usually located at nonbranching segments of the supraclinoid internal carotid artery, but they can also arise at other locations such as the basilar artery. They are small lesions of intracranial blood vessels with only a fibrous layer of tissue in the wall in a hemispheric configuration.For many years, treatment of blister-like aneurysms has been technically challenging for both clipping and coiling. The introduction of flow diverters, however, has allowed a safe and effective treatment option for blister-like aneurysms. Several studies on the treatment of blister-like aneurysms with Flow Diverter have shown good clinical and angiographic results

40 YEAR OLD MALE

- Presented with acute severe headache with vomiting followed by one episode of seizure
- He was brought in casualty
- On examination
- Vital parameters were normal
- He was drowsy but easily arausable
- There were no focal deficits except neck stiffness
- He underwent CT brain which showed subarachnoid haemorrhage predominant in right Sylvia fissure

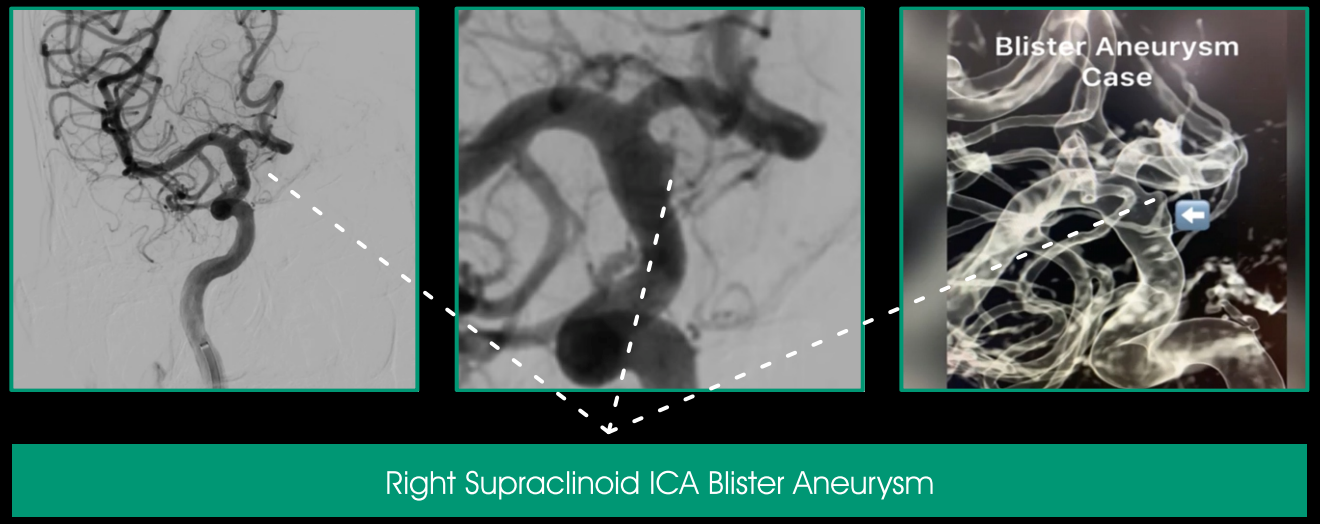


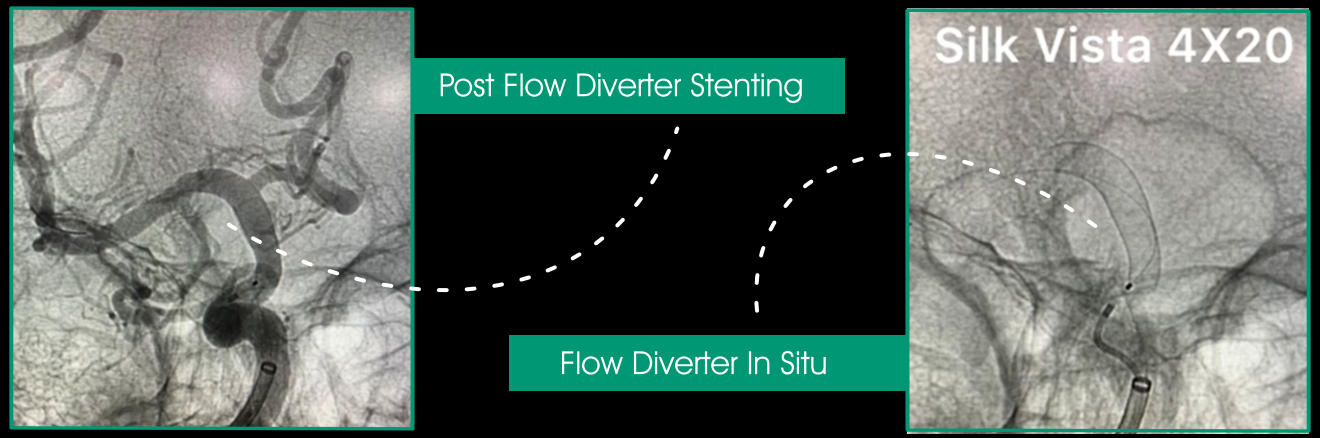
Subarachnoid Haemorrhage predominantly in right Sylvia fissure

- He underwent DSA which showed right spura-clinoid ICA blister aneurysm
- After detailed discussion with relatives he underwent Flow diverter stenting uneventfully
- He was managed with injectable nimodepine for prevention of vasospasm
- He was discharged after 15 days without focal deficits

Scan/ click to view Cath Images

Scan/ click to view is Patient's clinical status



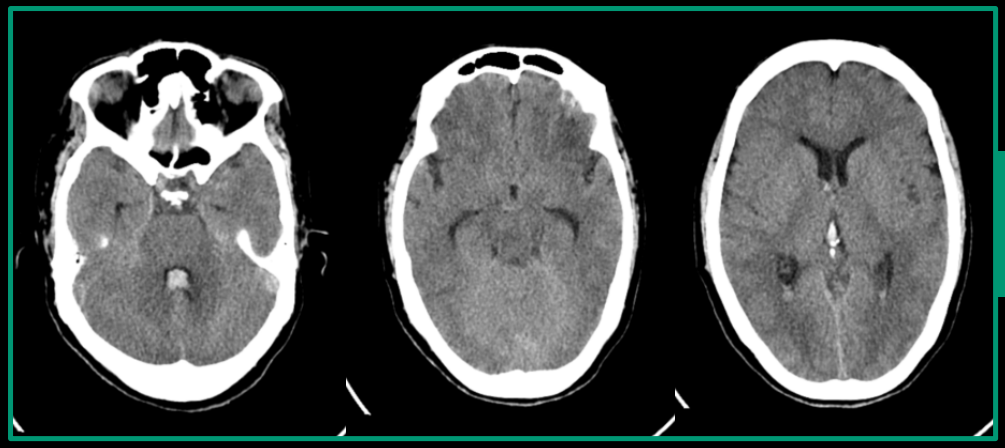


Case 11:
Flow Diverter Treatment for Dissecting Aneurysm

Dissecting aneurysms and pseudoaneurysms are challenging to treat with conventional microsurgical and endovascular techniques. The established treatment strategies include stenting, trapping, bypass, parent vessel sacrifice and onstruction with Flow Diverters. The FDs are the supportive enough to allow reconstruction of the parent artery but still flexible enough to conform to the tortuosity of vertebrobasilar regions.

60 YEAR OLD FEMALE

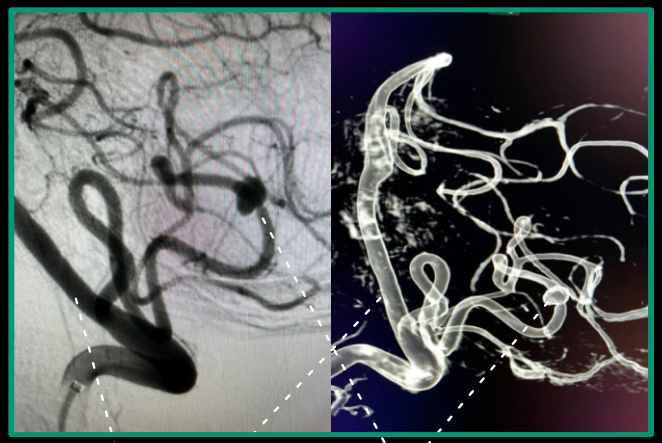
- Presented with acute sever headache, giddiness and vomiting followed by brief loss of consciousness
- On examination she was drowsy, irritable, mild disoriented and neck stiffness. There were no focal lateralised focal deficits
- CT brain showed intra-ventricular bleed, predominantly in fourth ventricle and diffuse cerebral oedema



Intra-ventricular bleed, predominantly in fourth ventricle & diffuse cerebral oedema

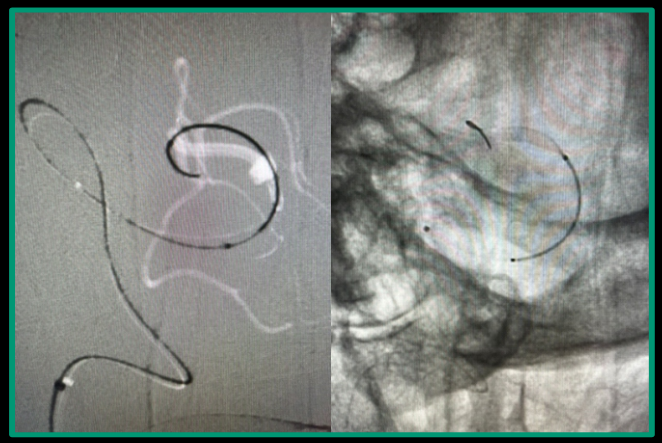
- She underwent DSA which showed right PICA dissecting aneurysm
- She underwent Flow-diverter stetting for right PICA aneurysm
- Patient improved gradually & stabilised over 5-6 days & discharged on 8th day after procedure

Scan/click to view
Cath Images



Basilar artery

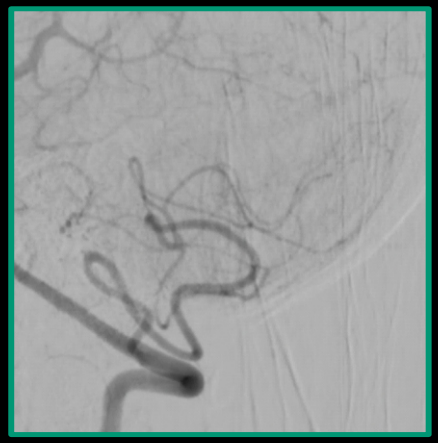
Right PICA
Dissecting Aneurysm



Tortuous Right PICA

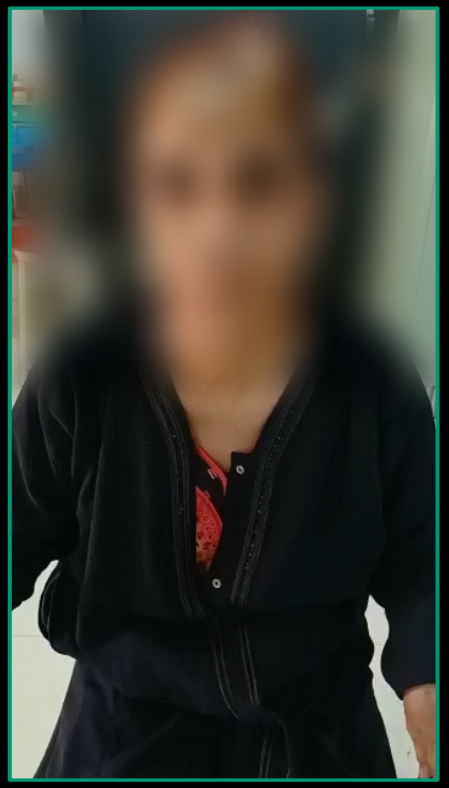
FD deployment
acrossthe aneurysm

Post FD Deployment



Three month follow up DSA
remodelling of the right PICA

Scan/click to view is
Patient's clinical status



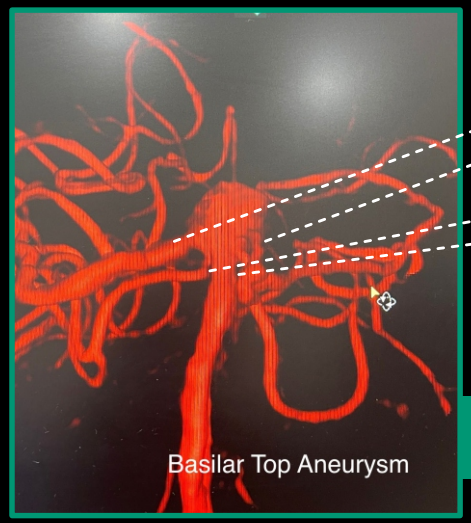
one month follow up
No focal deficits

Case 12:
Endovascular Treatment with Contour Device

Over the last decades diverse techniques have been conceived for the endovascular treatment of intracranial aneurysms, one such novel techniques in intra-saccular flow diversion and disruption have been devised at galloping paces, with the Woven EndoBridge (WEB-Device) and Contour Neurovascular System are the latest intrasaccular flow-disruption devices, intended for treatment of wide-neck bifurcation aneurysms. By covering the aneurysm neck with a tight mesh, it leads to stasis and intrasaccular thrombus formation, comparable to flow-diverting stents, but without affection of the parent vessel.

64 YEAR OLD FEMALE

- Acute onset headache and vomiting followed by one episode of seizures
- On examination - mild disorientation, slurring of speech, neck stiffness - no lateralised focal deficits
- CT brain - diffuse thin SAH
- DSA - Basilar top aneurysm with bilateral PCA and SCA arising from the dome and neck o the aneurysm respectively



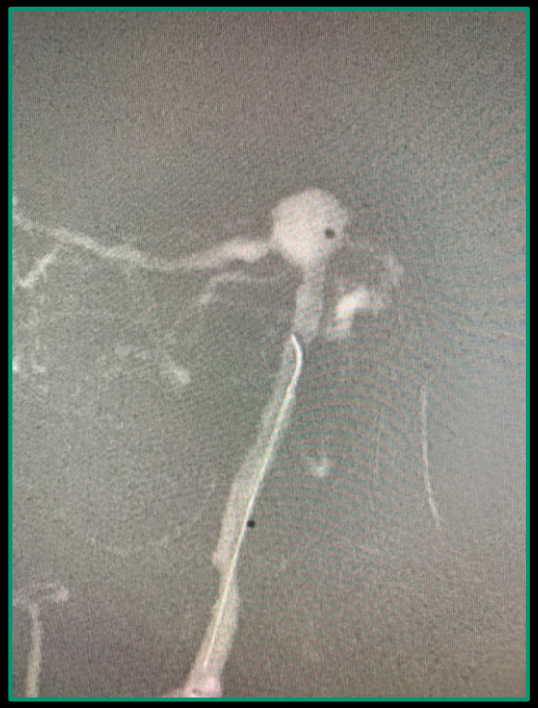
Bilateral PCAs

Bilateral SCAs

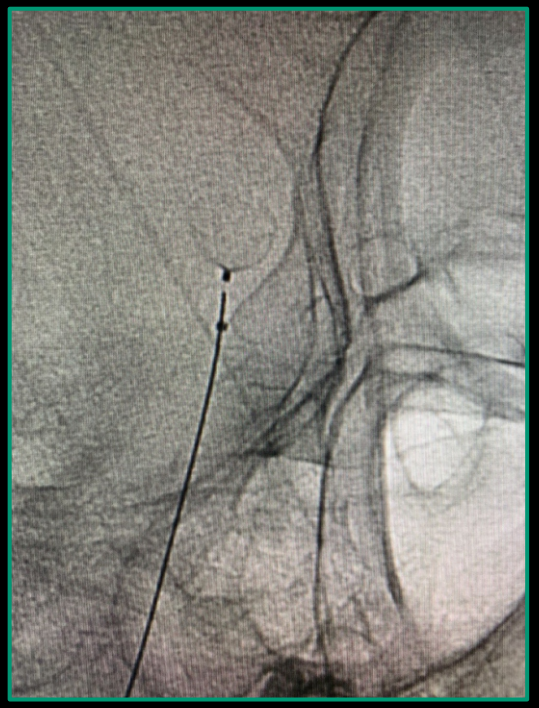
Arising from the neck of the aneurysm

Scan/click to view is
Patient's clinical status

- In view of complex aneurysm with bilateral PCAs and SCAs arising from the neck of the aneurysm simple or assisted (balloon or stent) coiling was not possible
- Hence decided to go for contour device embolisation



Micro-catheter in aneurysm sac



Contour Device opened within aneurysm sac

- Patient improved over a period of 4-5 days
- She was discharged without focal neurological deficits

Contour device with contrast stasis within aneurysm sac Bilateral PCAs and SCAs were filling well with good run off

Contour Device in situ

Contrast stasis within aneurysm sac after contour device deployment All branches of the basilar artery including bilateral PCAs & SCAs were filling well with good run off

पुढारी

सिटीकेअर रुग्णालयात मेंदूवरील कन्टूर डिव्हाईस शस्त्रक्रिया यशस्वी

औरंगाबाद, पुढारी वृत्तसेवा : मेंदूवरील कन्टूर डिव्हाईसची जटिल शस्त्रक्रिया यशस्वी करत शहरातील ओरिऑन सिटीकेअर सुपरस्पेशालिटी हॉस्पिटलमध्ये एका महिला रुग्णाचे प्राण वाचविले. पुणे, मुंबईनंतर औरंगाबाद शहरात झालेली ही मराठवाड्यातील पहिलीच शस्त्रक्रिया असल्याची माहिती मेंदूरोग तज्ज्ञ डॉ. पांडुरंग वट्टमवार यांनी शनिवारी (दि.८) पत्रकार परिषदेत दिली.

लातूर येथील ६२ वर्षीय महिला हॉस्पिटलमध्ये अत्यवस्थेत दाखल झाली होती. मेंदूच्या रक्तवाहिन्यांची ॲंजिओग्राफी केल्यानंतर त्यांच्या मेंदूच्या रक्तवाहिनीवर बेसीलर धमनी छोट्या मेंदूला रक्तपुरवठा करणाऱ्या रक्तवाहिनीवर फुगा होता. हा धमनीविकार खूपच किचकट स्वरूपाचा होता. मेंदूरोगतज्ज्ञ डॉ. वट्टमवार डॉ. अश्वीन वळसणकर, भूलतज्ज्ञ डॉ. भूषण मोहरीर, डॉ.संजय इथापे यांनी या शस्त्रक्रियेद्वारे धमनीविकार पूर्णपणे बंद करत या महिलेचे प्राण वाचवले.

(वाणिज्य वार्ता)

काय आहे कन्टूर डिव्हाईस शस्त्रक्रिया

बिनटाक्याची ही आधुनिक एन्युरिझम कॉईलिंग उपचारपद्धत आहे. काही धमनीविकारात ही शस्त्रक्रिया करणे अशक्य असते. अशा रुग्णांसाठी कन्टूर डिव्हाईस एम्बोलायझेशन शस्त्रक्रियेचा पर्याय आहे. यामध्ये कन्टूर म्हणजे एक अर्धगोल डिव्हाईस असते. जो डिव्हाईस आपण धमनीविकाराच्या फुग्यामध्ये सोडून देतो. आणि हा फुगा त्या डिव्हाईसमुळे बंद होतो असेही डॉ. वट्टमवार यांनी नमूद केले.

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मेंदूवरील कन्टुर डिव्हाईसची शस्त्रक्रिया यशस्वी

औरंगाबाद, (सांजवार्ता ब्युरो) : परदेशातील मेंदूवरील रक्तवाहिन्याची कन्टुर डिव्हाईस ही जटील शस्त्रक्रिया मराठवाड्यातील ओरिऑन सिटीकेअर सुपर स्पेशालिटी हॉस्पिटलमध्ये मेंदूरोग विभागातील मेंदूरोग तज्ज्ञ डॉ. पांडुरंग वट्टमवार यांनी यशस्वी केली आहे. यामुळे मारतात नोजवयाच ठिकाणी होत असलेल्या शहरात आता औरंगाबादचा क्रमांक लागला असल्याचे डॉ. पांडुरंग वट्टमवार यांनी हॉस्पिटलमध्ये शनिवारी आयोजित पत्रकार परिषदेत सांगितले.

मारतात नुकतीच आलेली कन्टुर डिव्हाईस ही सर्वात आधुनिक प्रभावी उपचार पद्धती मराठवाड्यात ओरिऑन सिटीकेअर सुपरस्पेशालिटी हॉस्पिटलमध्ये प्रथमच करण्यात आली आहे. या शस्त्रक्रीयेचा पहिला यशस्वी प्रयोग देखील करण्यात आला आहे. डॉ. पांडुरंग वट्टमवार यांनी सांगितले की, लातुर येथील ६२ वर्षीय महिला रुग्णालयात अत्यावस्थेत दाखल झाली होती. यावेळी रुग्णाची तपासणी करून रुग्णाला आधुनिक शस्त्रक्रिया कन्टुर डिव्हाईस टाकायची गरज असल्याचे लक्षात आल्यानंतर डॉक्टरांनी रुग्णाच्या नातेवाईकांशी चर्चा करून कन्टुर डिव्हाईस टाकण्यासाठी सहमती दिली. डॉ. पांडुरंग वट्टमवार यांच्या मार्गदर्शनाखाली झालेल्या शस्त्रक्रीयेचा पहिला यशस्वी प्रयोग देखील झाला.

शस्त्रक्रीया यशस्वी करण्यासाठी मेंदूरोग विभागाच्या टीमचे डॉ. पांडुरंग वट्टमवार, डॉ. अश्विन वळसणकर (मेंदूरोग तज्ज्ञ), डॉ. भूषण मोहरीर (भूलतज्ज्ञ), डॉ. संजय इथापे (भूलतज्ज्ञ) काम केले.

> कन्टुर डिव्हाईसची शस्त्रक्रिया परदेशातील असुन यासाठी तब्बल २२ लाखांपर्यंतचा खर्च येतो. मराठवाड्यात ओरिऑन सिटीकेअर सुपरस्पेशालिटी हॉस्पिटल मध्ये या शस्त्रक्रीयेचा पहिल्यांदाच प्रयोग करण्यात आला आसुन यात लातुर येथील ६२ वर्षीय महिलेवर हि शस्त्रक्रिया यशस्वी झाल्याने रुग्णांना आशेचा किरण ठरणार आहे.
> **–डॉ. पांडुरंग वट्टमवार, मेंदूरोग तज्ज्ञ**

पत्रकार परिषदेत माहिती देताना मेंदूरोग विभाग पथकाचे डॉ. पांडुरंग वट्टमवार, डॉ. अश्विन वळसणकर व इतर

पुण्य नगरी

मेंदूवरील कन्टूर डिव्हाईसची जटील शस्त्रक्रिया यशस्वी

ओरिऑन सिटीकेअर हॉस्पिटलच्या डॉक्टरांची माहिती

औरंगाबाद / प्रतिनिधी

ओरिऑन सिटीकेअर सुपरस्पेशालिटी हॉस्पिटल येथे मेंदूवरील कन्टूर डिव्हाईसची पहिली जटील शस्त्रक्रीया यशस्वी करण्यात आल्याची माहिती मेंदूरोग विभागातील डॉ. पांडुरंग वट्टमवार यांनी पत्रकार परिषदेत दिली.

लातुर येथील ६२ वर्षीय महिला हॉस्पिटलमध्ये अत्यावस्थेत दाखल झाली होती. मेंदूच्या रक्तवाहिन्यांची ॲन्जीओग्राफी केल्यानंतर त्यांच्या मेंदूच्या रक्तवाहिनीवरती बेसीलर धमनी जी छोट्या मेंदूला रक्तपुरवठा करते त्या रक्तवाहिनीवरती फुगा होता. हा धमनीविकार खुपच किचकट स्वरुपाचा होता. ज्यास ओपन सर्जरी ज्यात मेंदूची कवटी बाजूला सारुन क्लिपिंग करण्यासारख्या शस्त्रक्रिया शक्य नव्हत्या. रुग्णास कन्टूर डिव्हाईस ही आधुनिक शस्त्रक्रिया करण्याचे ठरले. मेंदूरोगतज्ज्ञ डॉ. अश्विन वळसणकर, भुलतज्ज्ञ डॉ. भुषण मोहरीर, डॉ. संजय इथापे यांनी शस्त्रक्रियेद्वारे धमनीविकार पूर्णपणे बंद केला. मेंदूच्या रक्तवाहिन्यांचे वेगवेगळे आजार असतात. सर्वसाधारणपणे मेंदूची धमनी फुटल्यामुळे रक्तस्त्राव होऊन आधुनिक उपचारपध्दती न मिळाल्याने १०० पैकी ४० ते ४५ टक्के रुग्णांच्या जीवाला धोका होऊ शकतो. धमनीविकार आजारासाठी वेगवेगळ्या उपचार पद्धती आहेत. यात ओपन शस्त्रक्रिया ही सर्वात जुनी पद्धत आहे. परंतु गेल्या १० ते १५ वर्षापासुन बिनटाक्याची आधुनिक शस्त्रक्रिया उपलब्ध झालेली आहे. त्यामध्ये प्रामुख्याने एन्युरिझम कॉईलिंग ही उपचारपद्धत आहे. काही धमनीविकारात ही शस्त्रक्रिया करणे अशक्य असते. अशा रुग्णांसाठी कन्टूर डिव्हाईस एम्बोलायझेशन ही बिनटाक्याची आधुनिक शस्त्रक्रियेचा पर्याय आहे. यामध्ये कन्टूर म्हणजे एक अर्धगोल डिव्हाईस असते. जो डिव्हाईस आपण धमनीविकाराच्या फुग्यामध्ये सोडून देतो आणि हा फुगा त्या डिव्हाईसमुळे बंद होतो.

AURANGABAD
Page No.5 January 09, 2022

मराठवाड्यात पहिल्यांदाच मेंदुवरील कन्टुर डिव्हाईसची शस्त्रक्रिया यशस्वी

देशोन्नती वृत्तसंकलन...

औरंगाबाद ■ परदेशातील मेंदुवरील रक्तवाहिन्याची कन्टुर डिव्हाईस ही जटील शस्त्रक्रीया मराठवाड्यातील ओरिऑ सिटीकेअर सुपर स्पेशालिटी हॉस्पिटल मध्ये मेंदूरोग विभागातील मेंदूरोग तज्ञ डॉ.पांडुरंग वट्टमवार यांनी यशस्वी शस्त्रक्रिया केल्याने मराठवाड्यातील रुग्णांसाठी आशेचा किरण ठरत आहे. मराठवाड्यातील अनेक रुग्णांना मेंदुवरील जटील शस्त्रक्रीया रुग्णाना अडचणी येत होत्या.मात्र भारतात नुकतीच आलेली कन्टुर डिव्हाईस ही सर्वात आधुनिक प्रभावी उपचार पद्धती ओरिऑ सिटीकेअर सुपरस्पेशालिटी हॉस्पिटल मध्ये मराठवाड्यात सर्वप्रथम आणण्यात आली आहे.या शस्त्रक्रीयेचा पहिला यशस्वी प्रयोग देखील करण्यात आला आहे.मेंदूरोग तज्ञ डॉ. पांडुरंग वट्टमवार यांनी सांगितले की, लातुर येथिल ६२ वर्षीय महिला रुग्णालयात अत्यावस्थेत दाखल झाली होती.यावेळी रुग्णाची तपासणी करुन रुग्णाला आधुनिक शस्त्रक्रिया कन्टुर डिव्हाईस टाकायची गरज असल्याचे लक्षात आल्यानंतर डॉक्टरांनी रुग्णाच्या नातेवाईकांशी चर्चा करून कन्टुर डिव्हाईस टाकण्यासाठी सहमती दिला.मेंदूरोग तज्ञ डॉ. पांडुरंग वट्टमवार यांच्या मार्गदर्शनाखाली झालेल्या शस्त्रक्रीयेचा पहिला यशस्वी प्रयोग देखील झाला.शस्त्रक्रीया यशस्वी करण्यासाठी मेंदूरोग विभागाच्या टीमचे मेंदूरोग तज्ञ डॉ. पांडुरंग वट्टमवार,डॉ. अश्वीन वळसणकर (मेंदुरोग तज्ञ), डॉ. भुषण मोहरीर (भुलतज्ञ), डॉ. संजय दयापे (भुलतज्ञ) काम केले.

कन्टुर डिव्हाईसची शस्त्रक्रिया परदेशातील असुन यासीठी तब्बल २२ लाखांपर्यंतचा खर्च येतो. मराठवाड्यात ओरिऑसिटीकेअर सुपरस्पेशालिटी हॉस्पिटल मध्ये या शस्त्रक्रीयेचा पहिल्यांदाच प्रयोग करण्यात आला आसुन यात लातुर येथिल ६२ वर्षीय महिलेवर हि शस्त्रक्रिया यशस्वी झाल्याने रुग्णांना आशेचा किरण ठरणार आहे.
-डॉ. पांडुरंग वट्टमवार ,मेंदूरोग तज्ञ

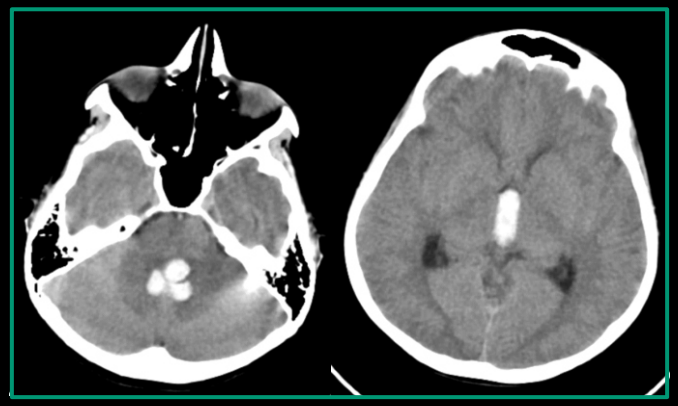
Case 13:
Arterio-venous Malformation

Scan/click to view
MRI Images

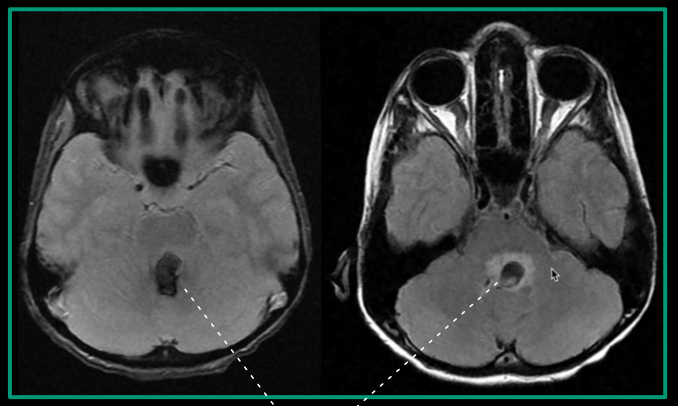
An arteriovenous malformation (AVM) is an abnormal tangle of blood vessels that causes shunting of blood from arteries to veins. AVMs most often occur in the spinal cord and in the brain. These AVMs usually presents with spontaneous intracranial hemorrhage (ICH), seizures, or headache typically in young adults. In some of the patients it may be detected incidentally on MRI or CT scan. Definitive treatment is required only when AVM ruptures as there is four fold increase in risk of rebleed in these patients. Current treatment options include conservative management, surgical resection, stereotactic radiosurgery (SRS), endovascular embolization, or combinations of these treatments (multimodal therapy). The primary goal of these interventions is complete elimination of the nidus and the arteriovenous shunt to prevent recurrence of haemorrhage.

12 YEAR OLD BOY

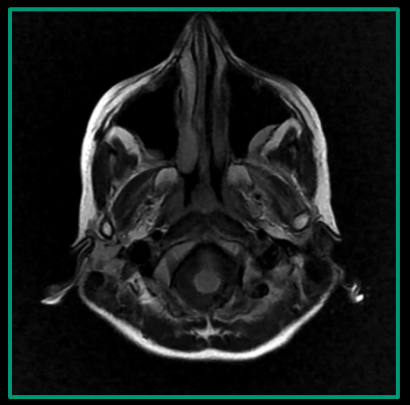
- Presented with acute onset severe headache and vomiting followed by drowsiness
- On admission he was drowsy arousable, pupils were reacting but sluggish, had up-gaze and left lateral gaze palsy, bilateral - right more than LMN facial palsy and palatal weakness and quadriparesis
- CT brain showed intra-ventricular bleed predominantly in 4th and 3rd ventricle with brainstem oedema and mild hydrocephalous



CT brain showing 4th and 3rd
Intra-ventricular bleed



MRI GRE and FLAIR images showing 4th intra-ventricular bleed with mass effect over brain stem

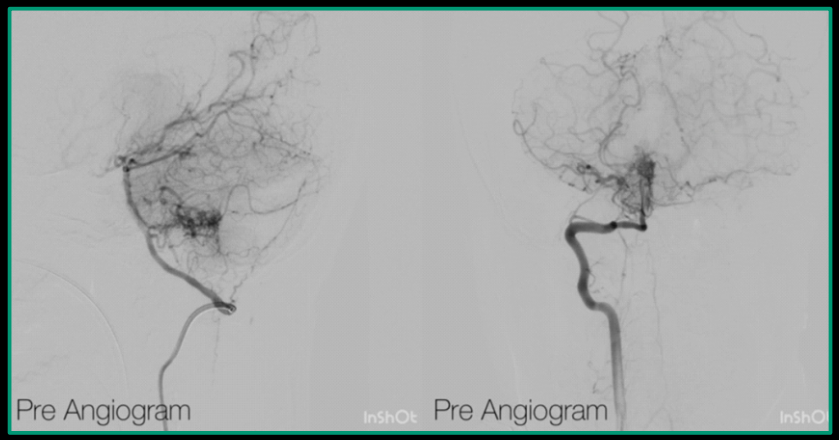


MRI FLAIR Images

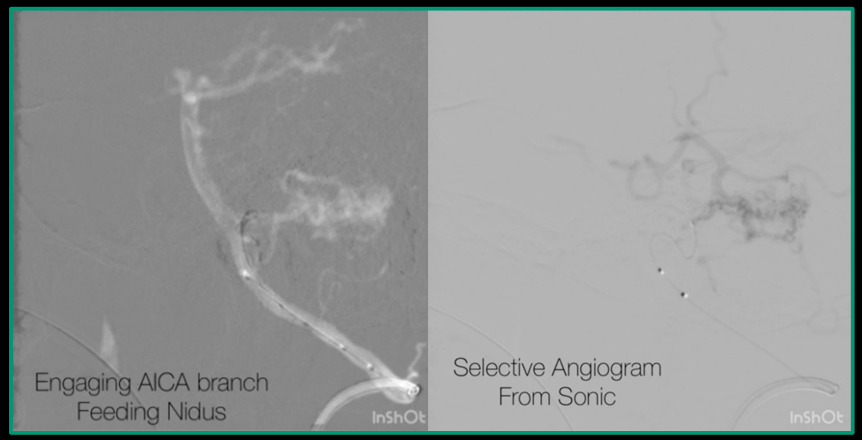
Scan/click to view
Cath Images

- He underwent DSA which showed AVM with feeders from right anterior inferior cerebellar artery (AICA)

DSA showing posterior fossa AVM with feeder from right AICA



DSA Lateral View | DSA Towne View



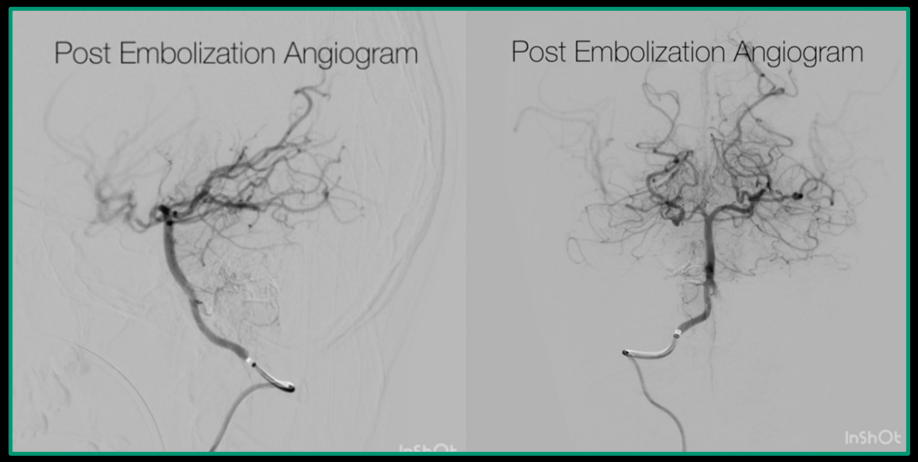
Engaging right AICA branch feeding nidus with Sonic Micro-catheter and selective angiogram

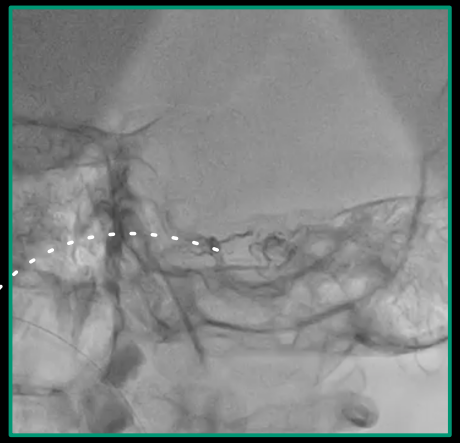
- He required intubation and ventilation in view of neurological deterioration and increase in drowsiness
- He underwent AVM embolisation 2 days later
- Gradually patient stabilised, became conscious more alert and had quadriparesis left more than right
- In view of lower cranial nerve palsies, he could not be extubated and later underwent tracheotomy

- Gradually he was weaned off ventilator and was mobilised with intensive physiotherapy
- As he improved he was discharged on tracheotomy tube after 3 weeks
- He was de-cannulated during follow up nearly 2 months after discharge

Scan/click to view is
Patient's clinical status

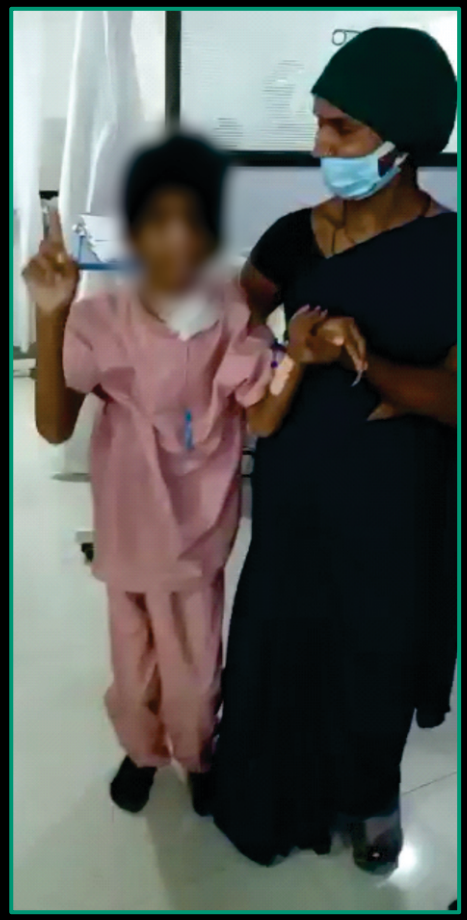
Post embolisation angiogram complete obliteration of the AVM





Squid Cast

Posterior fossa AVM SQUID embolisation



DURAL ARTERIO VENOUS FISTUAL (DAVF)

Intracranial DAVFs are pathologic dural-based shunts which derive their arterial supply primarily from meningeal vessels, and the venous drainage is either via dural venous sinuses or through the cortical veins. DAVFs have a reported association with dural sinus thrombosis, venous hypertension, previous craniotomy, and trauma, though many lesions are idiopathic.

Clinical presentation varies significantly depending upon location like pulsatile tinnitus, ophthalmoplegia, proptosis, chemosis, retro-orbital pain, or decreased visual acuity. Other presentations include intracranial haemorrhage, seizures, parkinsonism, cerebellar symptoms, apathy, failure to thrive, progressive dementia and cognitive decline which may improve after treatment.

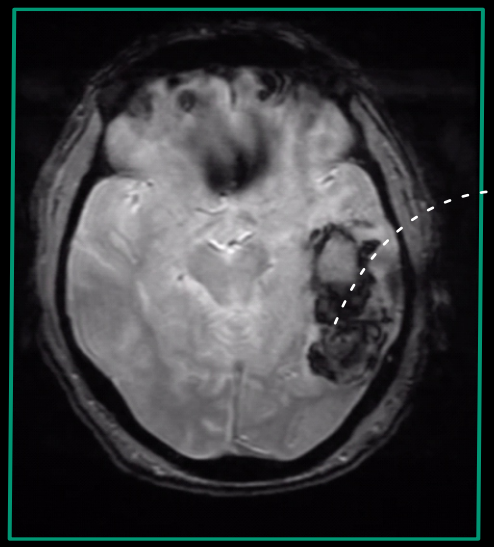
The diagnosis is dependent on a high level of clinical suspicion and high-resolution imaging, however conventional digital subtraction angiography (DSA) remains the most accurate method for complete characterization and classification of DAVFs.

During the past 2 decades, embolization by using transarterial, transvenous, or combined approaches has become a first-line treatment for DAVFs. Microsurgical resection or stereotactic radio-surgery is considered only in select patients where endovascular treatment is not feasible

Case 14:
Dural AVF Embolization

80 YEAR OLD MALE

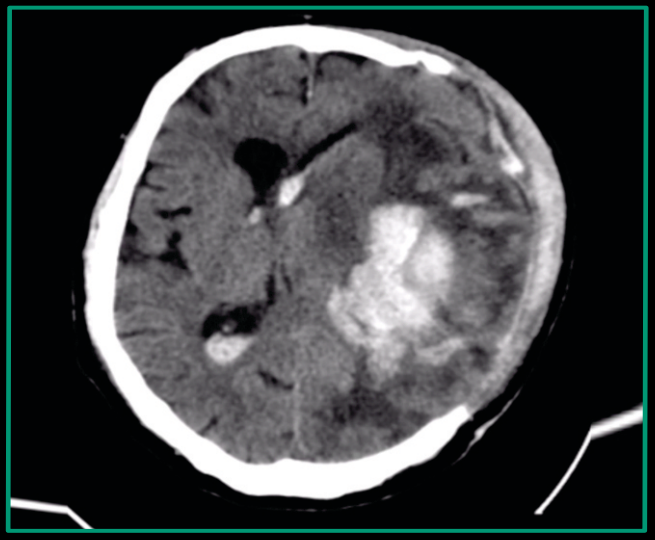
- Presented with headache, word finding difficulties and confusion 4-5 days duration
- He was admitted and evaluated elsewhere, underwent MRI which was suggestive of cerebral venous sinus thrombosis
- He was started on LMWH & anti-oedema measures, however he was deteriorating clinically and radiologically hence was shifted to us for further treatment



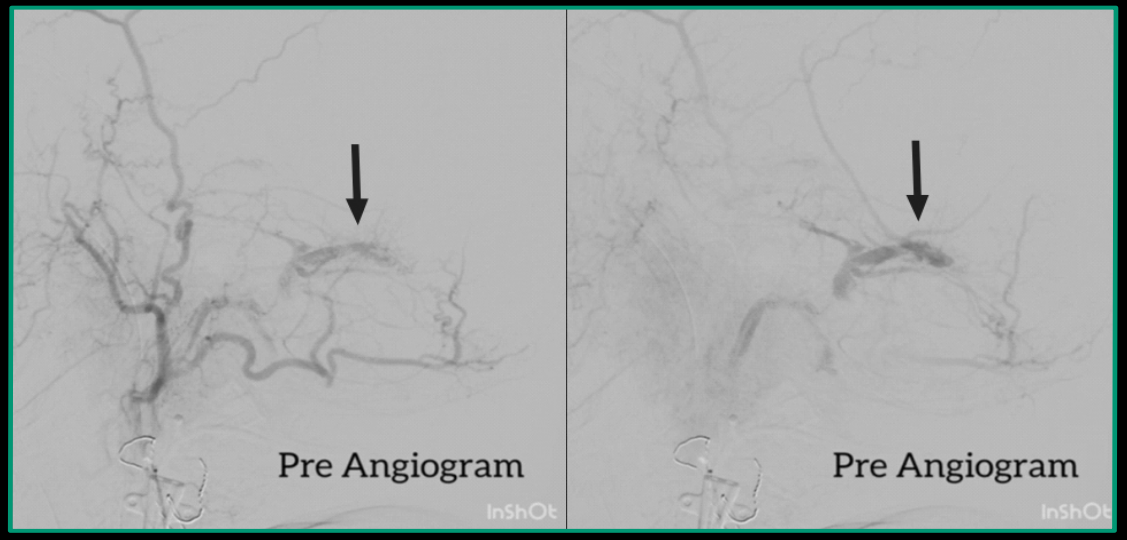
MRI GRE showing left temporal hemorrhagic venous infarct

MRI Venogram showing non-visualisation of left transversesinus suggesting thrombosis

- Inspite of best medical management he deteriorated clinically intubated & underwent left fronto-temporal decompressive craniotomy in view of mass effect and mid line shift
- As he was gradually deteriorating while on adequate medical management & decompression a possibility of of underlying dural AVF was suspected
- Hence he underwent DSA which confirmed presence of Dural AVF with feeders from left MMA



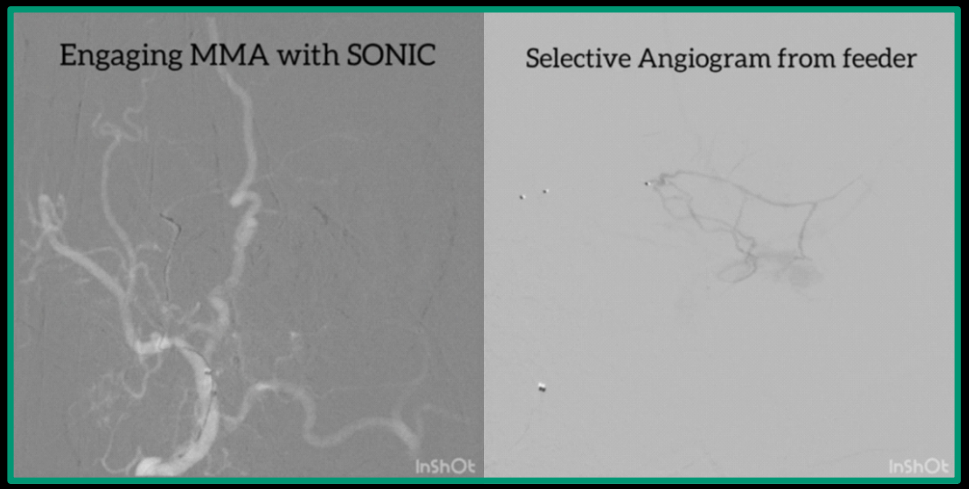
CT Brain Post Decompressive Craniotomy

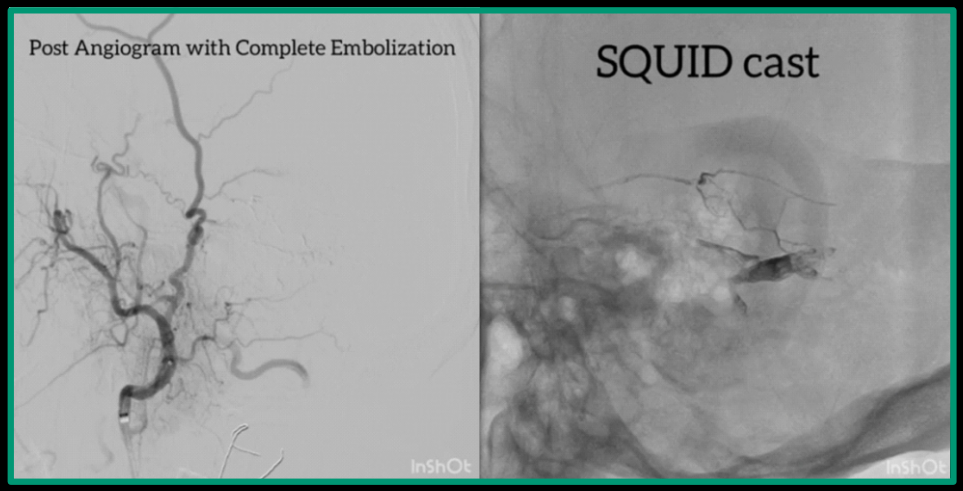


DSA showing Dural AV Fistula with feeders from left MMA & occipital branches & draining into the left transverse sinus

- After detailed counselling he underwent Dural AVF embolisation
- Patient stabilised and improved gradually, became conscious with spontaneous movements on left side and discharged with right hemiparesis (grade 2-3) on T-piece

Scan/click to view is
Patient's clinical status





Case 15:
Spinal Dural AV Fistula

Scan/click to view
DAVF Images

Spinal dural arteriovenous fistula (SDAVF) is a rare disease, the etiology of which is not entirely clear. It is the most common vascular malformation of the spinal cord, comprising 60–80 % of the cases.

The time between the onset of symptoms and diagnosis is typically late in the disease course because of vague symptoms and signs in initial stages often mistaking it for other entities like demyelinating or degenerative diseases of the spine. It induces abnormal flow of the blood from the arterial system to the venous system, venous hypertension, venous occlusion, intramedullary edema, and progressive myelopathy. If left untreated it is associated with severe morbidity and may lead to progressive myelopathy. Hence early diagnosis and treatment is very important in this completely treatable condition.

Spinal angiography is still considered the gold standard for diagnosis; however, MRI/MRA is increasingly used as a screening tool.

Modern endovascular techniques like embolisation are becoming increasingly more effective in treating SDAVF offering a less invasive treatment option as compared to microsurgical treatment options..

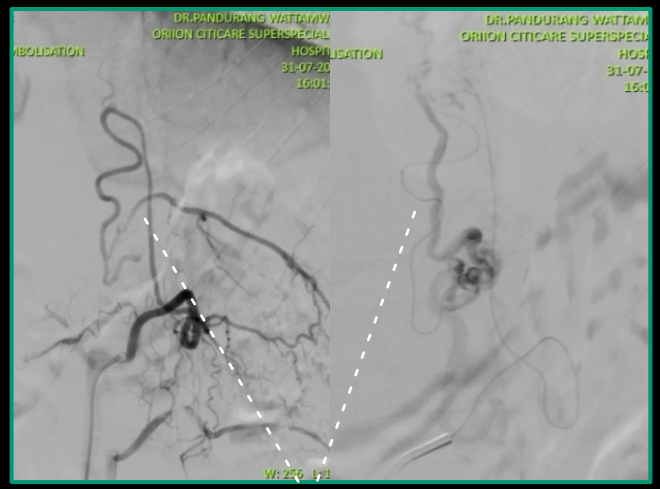
Heightened awareness by radiologists and clinicians to this rare entity is essential to make a timely diagnosis of this treatable disease

20 YEAR OLD GIRL

- Presented with subacute onset weakness in both lower limbs right more than left over 3-4 days with incontinence of urine prior to presentation
- On examination she had paraparesis, right lower limb grade 1& left lower limb grade 2 power with brisk deep tendon reflexes and extensor plantar
- She had decreased sensation up to D10 level

MRI T2 Sag - Cord oedema
with intra-axial haemorrhage

Multiple flow voids suggesting spinal DAVF



Spinal DSA - spinal DAVF with
Single feeder from radicular artery

Scan/click to view
Cath Images

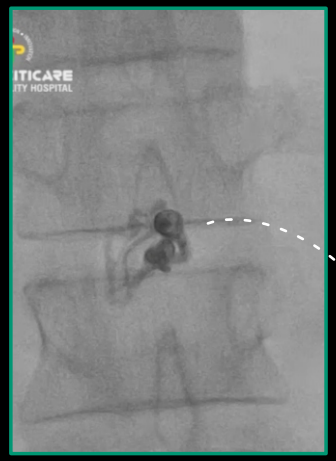
Scan/click to view is
Patient's clinical status

- Her MRI of whole spine showed - hyperintensities involving spinal cord from T11 to L2 with multiple flow voids suggesting a possibility of spinal dural aretrio-venous fistula (DAVF)
- She underwent DSA which confirmed the presence of DAVF with a single feeder at T11 level

Partial

Complete

Spinal DAVF Embolisation



SQUID Cast

Post Embolisation one month follow up

- She underwent DAVF embolisation through right femoral route
- She was stabilised and started improving
- At 1 month follow up she improved completely except for mild dorsiflexion weakness in right LL

CAROTID-CAVERNOUS FISTULA (CCF)

Carotid-Cavernous Fistula Carotid cavernous fistula (CCF) is an abnormal communication between the cavernous sinus and the carotid arterial system. A CCF can be due to a direct connection between the cavernous segment of the internal carotid artery (ICA) and the cavernous sinus, or a communication between the cavernous sinus, and one or more meningeal branches of the internal carotid artery, external carotid artery or both. These fistulas may be divided into spontaneous or traumatic in relation to cause and direct or dural in relation to angiographic findings. The most common (70%-90%) etiology of direct CCF is trauma resulting in tear in the ICA within the cavernous sinus.

Patients usually presents with corkscrew episcleral blood vessels, conjunctival chemosis, pulsating proptosis, thrill, bruit and external ophthalmoplegia.
CT or MRI typically shows enlarged superior ophthalmic vein (SOV), thick extraocular muscles and evidence of enlarged cavernous sinus with a convexity of the lateral wall. Conventional angiogram (DSA) not only helps in confirming diagnosis but also in classification based upon communications.

Endovascular embolisation of the fistula is the treatment of choice with a combination of detachable balloons, coils, stents, or liquid embolic agents. The procedure can be performed from either an arterial or venous approach. Use of these materials and techniques can yield a high cure rate with minimal complications

Case 16:
Bilateral Carotid-Cavernous Fistula

32 YEAR OLD MALE

- Presented Wit History Of Road Traffic Accident 4 Months Back, He Had Right Fronto-pareito-temporal (FTP) Subdural Haemorrhage
- He Underwent Right Ftp Decompressive Craniotomy Followed By Cranioplasty
- Now He Presented With Proptosis & Redness Of Both Eyes With Double Vision Since Last 15 Days

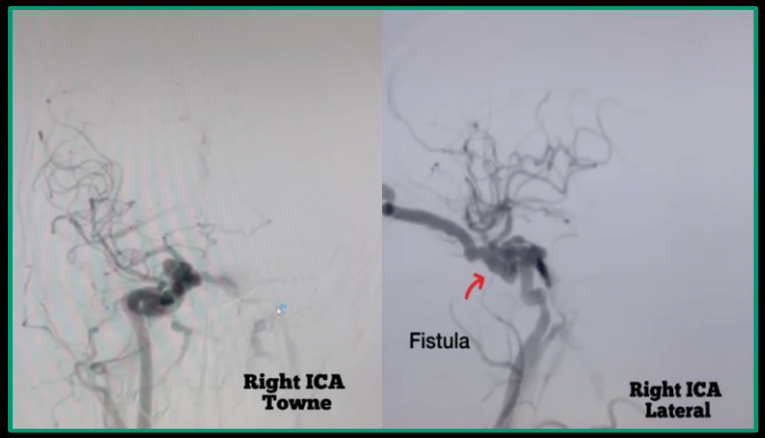
Bilateral Proptosis

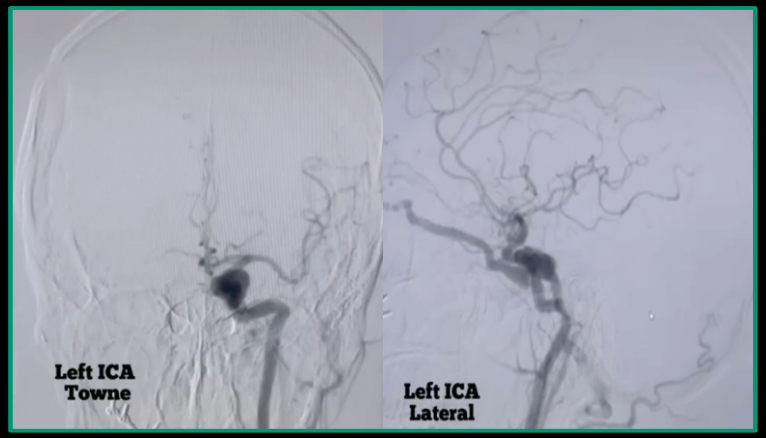
- He Underwent Dsa Which Showed Bilateral Direct (Type A) Carotid Cavernous Fistula
- There Was Good Cross Flow From Left to right Through Acom on Right Carotid Compression
- Plan Was To Go for Balloon Assisted Coiling First on Left Side Followed By Right Side and/or If Required Right Ica Sacrifice

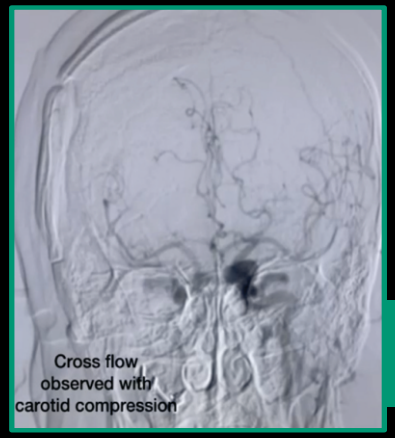
FIRST SITTING

- He Underwent Balloon Assisted Coiling Of Left Side In First Sitting, However Post Procedure There Was Some Residual Ccf With Delayed Flow Into The Fistula.
- Hence Decided For Check Angiogram 2 Weeks Later & Further Plan Accordingly.
- Two Weeks Later Fistula Had Grown Significantly & Again Underwent Complete Embolisation In The Second Sitting.

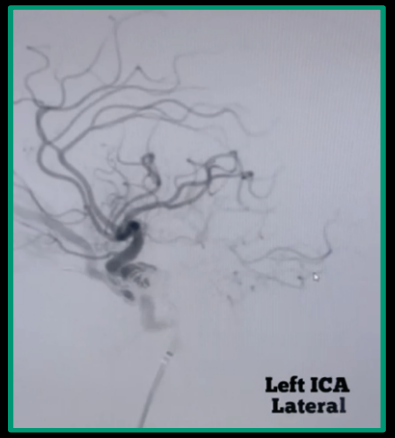
Left CCA Balloon assisted Coiling First Sitting





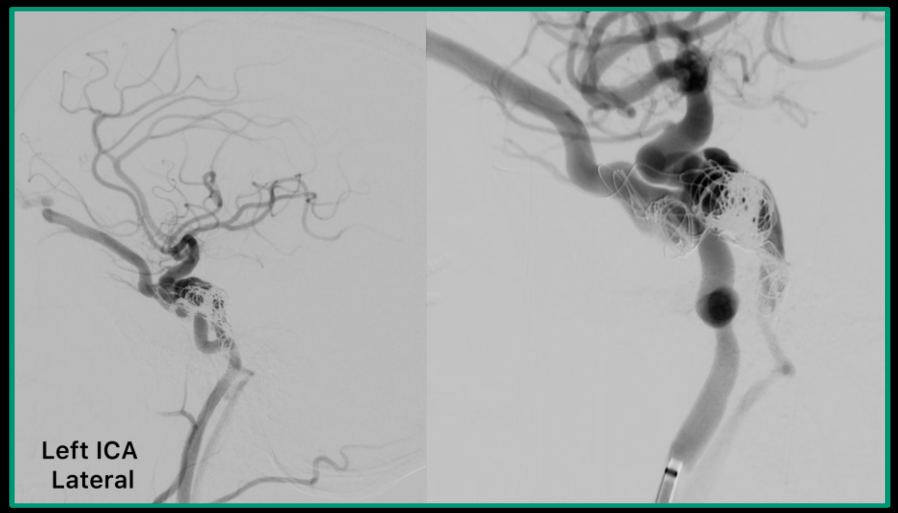


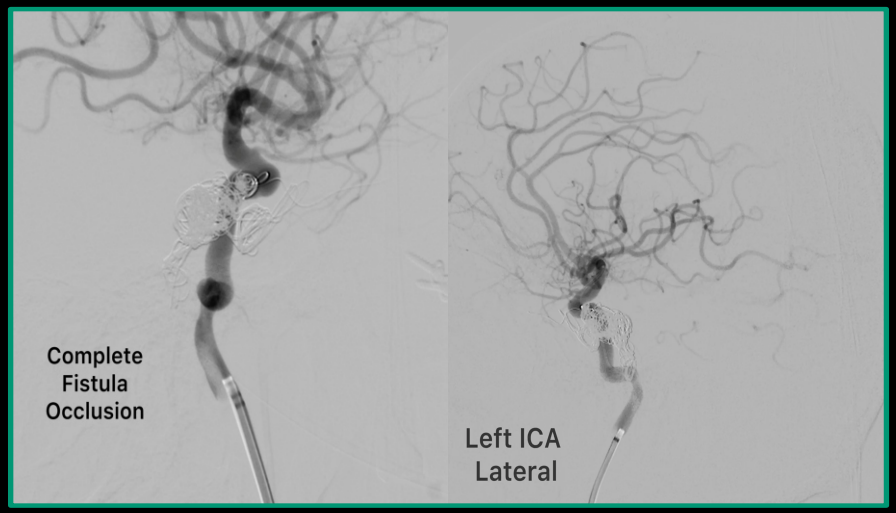
There was cross flow from left to right through AcOM



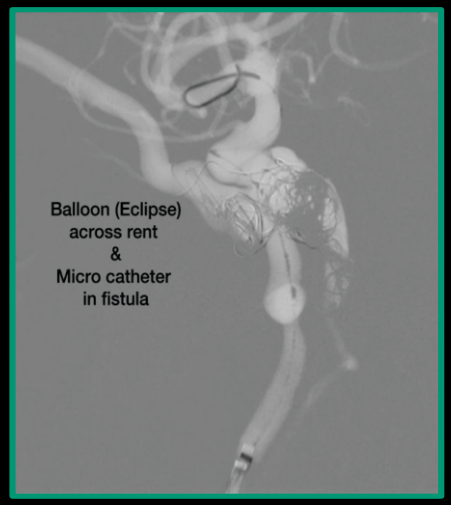
SECOND SITTING

Left CCA Balloon assisted Coiling Second Sitting





Complete occlusion of the CCF after second sitting

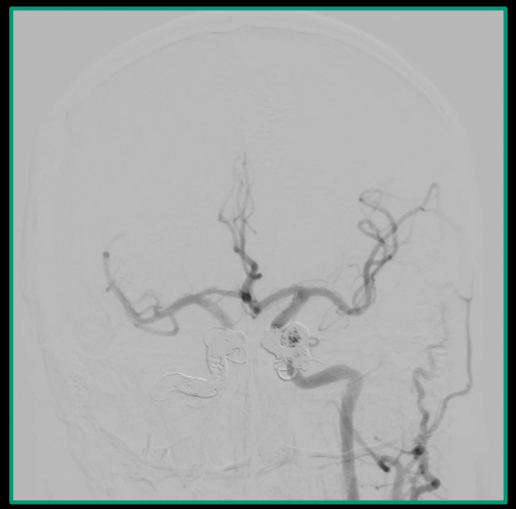


- Two weeks later he underwent parent vessel sacrifice (occlusion) on the right.
- There was total occlusion of the bilateral CCF.
- Right ACA, MCA & its branches were filling from the left side through AcOM with very good cross flow.
- He was discharged after 2 days without any neurological deficits.

FINAL SITTING

Post Procedure final left ICA run showing total occlusion of bilateral CCF

In & out Coiling of the right CCF & right ICA with Parent Vessel Sacrifice



Before

After

Challenging Angioplasty & Stenting

Only medical management with antiplatelets and statins in patients with high grade stenotic lesions in extra-cranial or intra-cranial cerebral vessels is associated with a high rate of failure, resulting in recurrent transient ischemic attack (TIA), stroke or death. Endovascular therapy that is angioplasty and stenting is being widely used for secondary prevention in such patients.Internal Carotid artery angioplasty and stenting, one of the most common procedure done, is now recommended when patient has symptomatic extra-cranial ICA stenosis of more than 50% or stenosis is more than 70% even if patient is asymptomatic. Intracranial ICA, MCA or vertebro- basilar angioplasty and stenting is usually considered when patient has high grade stenosis (typically >70%) and is symptomatic in spite of best medical management.Here I would like to share few challenging cases where angioplasty and stenting was performed for secondary prevention

Case 17:
Complex Angioplasty

Scan/click to view
Cath Images

62 YEAR OLD MALE

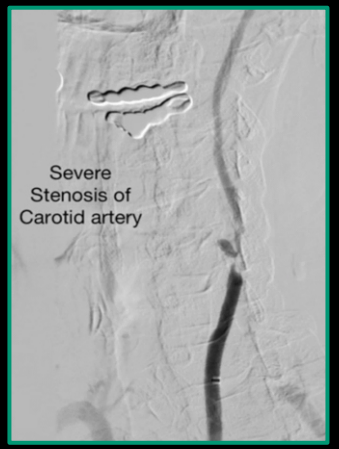
- Presented with recurrent episodes of right sided weakness followed by recovery since last 3 months
- K/c/o HTN, DM, IHD- post PTCA 2 years back, Chronic smoker
- Patient was on dual anti-platelets
- Examination - mild right upper limb drift - no other deficits

- MRI brain showed - watershed infarcts in left MCA-ACA & MCA-PCA territory
- MR angio - Left ICA severe stenosis at origin
- DSA - Bovine aortic arch with severe more than 90% stenosis of left ICA at origin
- Decided to go for Carotid angioplasty and stenting

- Challenges
  1. Bovine arch
  2. Difficulty in cannulating left CCA even with diagnostic
  3. Difficulty to take the guide catheter in to the left CCA
- Initially left CCA was cannulated with 5Fr SRC then it was exchanged with 5Fr Impress & Ballast Long Sheath over emerald exchange length wire
- Patient underwent ICA angioplasty and stenting uneventfully & was discharged without new neurological deficits

Left CCA Shoot through SRC

Impress being cannulated in Left CCA

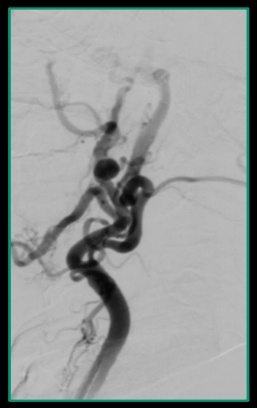


Case 18:
Complex Angioplasty

Scan/click to view
Cath Images

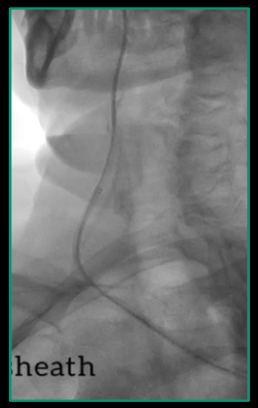
66 YEAR OLD MALE

- Recurrent episodes of weakness in left UL and LL followed by complete recovery since last 3-4 months
- No HTN, DM
- On best medical treatment
- MRI showed right ICA stenosis at origin
- DSA - confirmed right ICA stenosis of 80-90% at origin
- Decided to go for right ICA angioplasty and stenting
- Main challenge was tortousity of the brachiocephalic trunk, posterior origin of the right CCA and tortous right ICA hence cannulating and taking the Guide catheter into the distal right CCA was very difficult.
- Patient underwent right ICA angioplasty and stenting uneventfully and was discharged without focal deficits.



Right ICA
stenosis at origin

Road Map showing
tortious anatomy



Advancing Long
sheath over Impress

Road Map
with Long Sheath

Post Dilatation with
Viatrac Balloon

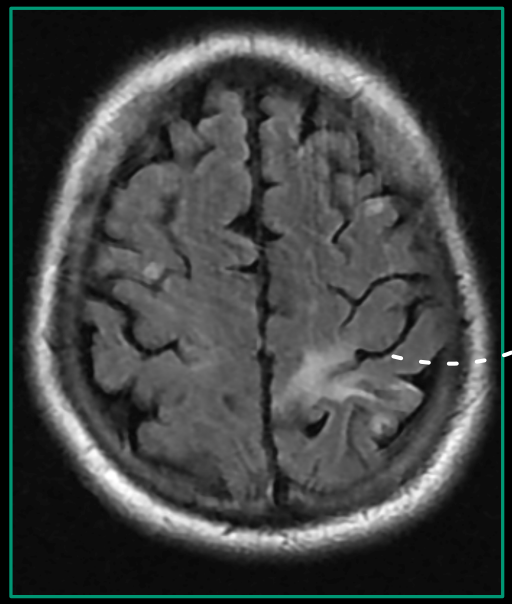
Post Right ICA
Angioplasty & Stenting

Case 19:
Complex Angioplasty

66 YEAR OLD MALE

- K/C/O HTN, DM, Post CABG had recurrent episodes of transient weakness in left UL and LL followed by complete recovery in few minutes.
- There were no neurological deficits at that time
- MRI brain showed small acute infarct in right high parietal region
- MR angiogram and CT angiogram showed severe bilateral carotid stenosis with thick calcification

- After many consultations relatives decided to go for right carotid endarterectomy as he was adviced that carotid angioplasty and stenting may not be possible due to thick calcified lesions
- He underwent right Carotid endarterectomy under GA
- On post operative day 2 had weakness in left UL and LL which improved partially over 2 months
- He had 2 episodes of transient weakness in right UL and LL few months later and came for opinion
- On examination he had grade 3+ power in left UL and grade 4 in left LL. Rest neurological examination was normal
- His repeat MRI showed chronic infarct in left high parietal region with total occlusion on left CCA



Left Parietal old Infarct

Left CCA & ICA otal Occlusion

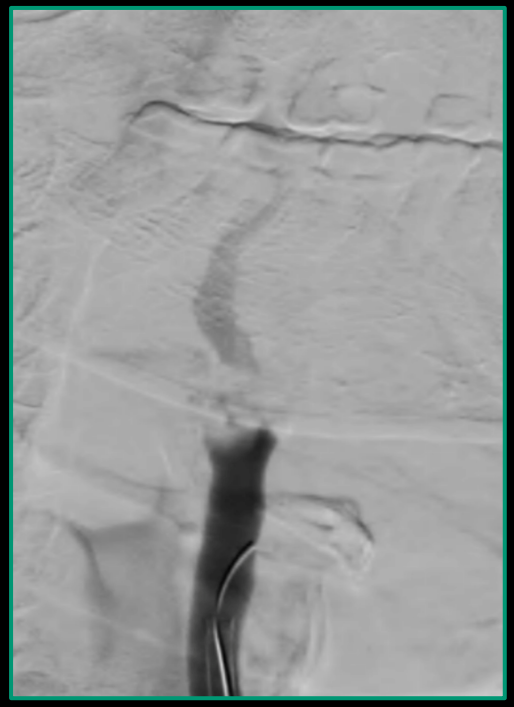
- He underwent DSA which showed critical left ICA stenosis with thick calcifications and very sluggish flow across the stenotic lesion
- After detailed discussion he underwent left ICA angioplasty and stenting under local anaesthesia
- The main challenge in this case was crossing the micro-wire across the stenotic lesion which was possible with the help of coronary balloon
- He was discharged on day 4 after the procedure without any new neurological complaints or deficits

Scan/click to view
Cath Images

Scan/click to view is
Patient's clinical status

- Clinical pearls

  1. DSA should be offered if the patient is symptomatic even if that MRI angiogram is showing total occlusion as it is a Gold standard investigation for cerebrovascular disease
  2. CEA (Carotid Endarterectomy) v/s CAS (Carotid angioplasty and stenting) - CAS is possible even is critical stenosis and thick calcified lesions.



Left ICA critical stenosis with thick calcification

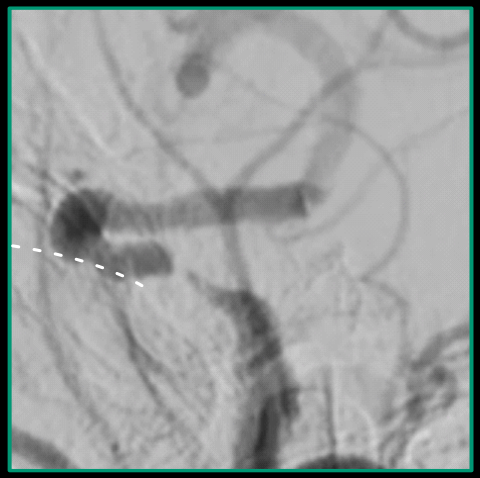
Post Left ICA Carotid Angioplasty & stenting

Case 20:
Complex Angioplasty Intra-cranial

67 YEAR OLD MALE

- Presented with recurrent episodes of weakness in right UL & LL with difficulty in speaking
- K/c/o HTN, DM, IHD - post PTCA
- On examination - mild right UL drift and slurring dysarthria
- MRI brain showed left frontal infarct
- MRI angiogram showed decreased flow in left ICA
- He underwent DSA which showed severe stenosis of left ICA (Pre-cavernous segment
- As patient was symptomatic on best medical management we decided to go for angioplasty and stenting after detail discussion with relatives

Left intra-cranial ICA
sever stenosis



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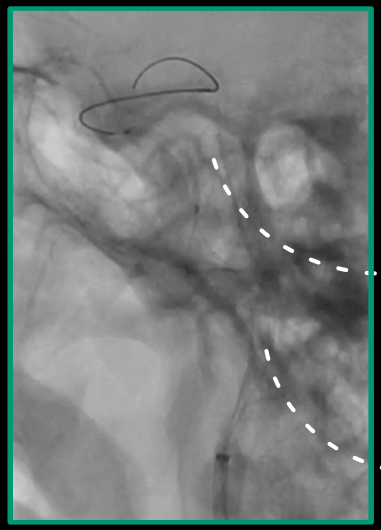
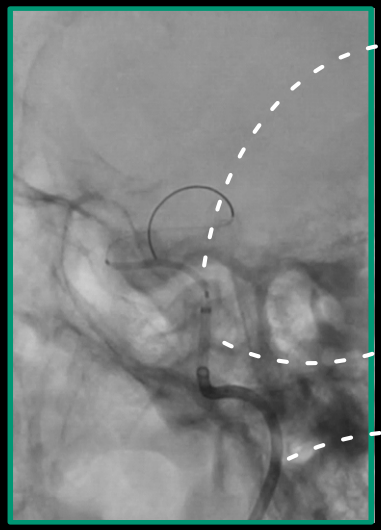
Patient's clinical status



Stent could not be crossed inspite of using buddy wire

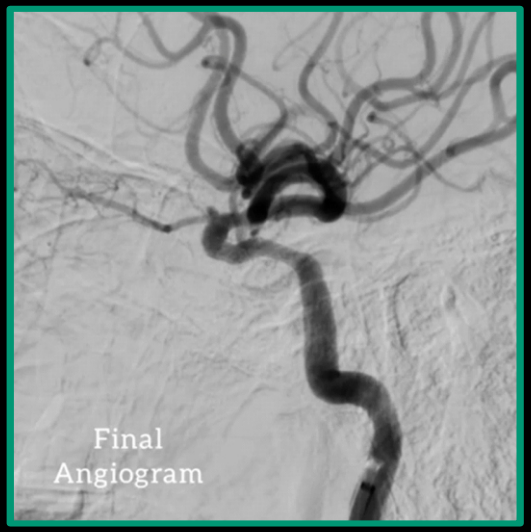
Two micro-wire were taken for the support as Buddy wire technique



Stent placed within the lesion

Guideliner was used for the support & crossing the stent across the stenotic lesion

Guide Catheter



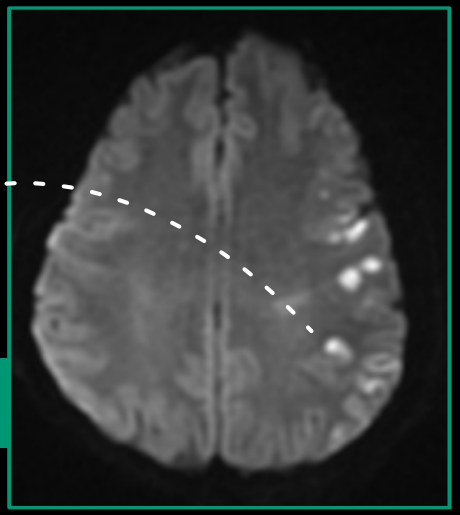
- Main challenge was crossing lesion with balloon and stent
- Initially Buddy wire was used - pre- dilatation could be done using buddy wire but stent could not be crossed
- Hence Guideliner was used to navigate the stent across the stenotic lesion
- Procedure was uneventful and patient was discharged in 2-3 days

Case 21:
MCA Angioplasty

44 YEAR OLD FEMALE

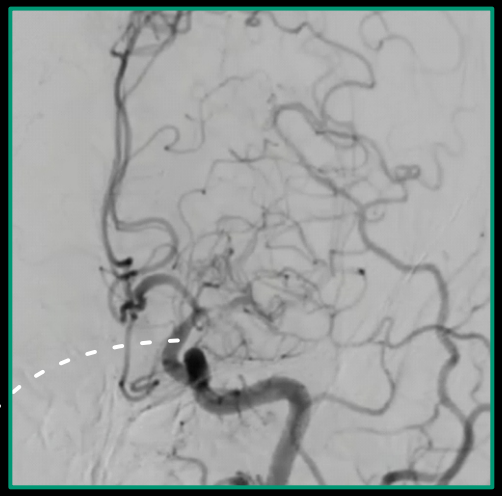
- Had right UL and LL weakness 2 months back, recovered completely while on medications had 2-3 episodes of transient weakness in right UL with slurring dysarthria
- MRI showed multiple left MCA territory infarcts
- MRI angiogram showed left M1 sever stenosis
- She underwent DSA which confirmed left MCA (M1) severe stenosis.
- Patient underwent left MCA angioplasty & stenting
- Discharged without any further episodes & deficits

Left M1 severe stenosis

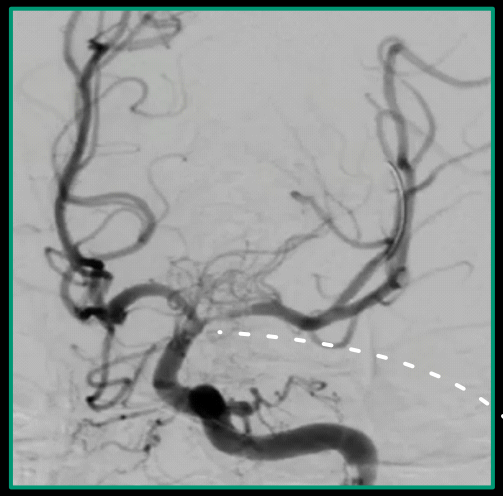


Stent could not be crossed inspite of using buddy wire

Scan/click to view
Cath Images



Left M1 severe stenosis



Left MCA after
Balloon angioplasty

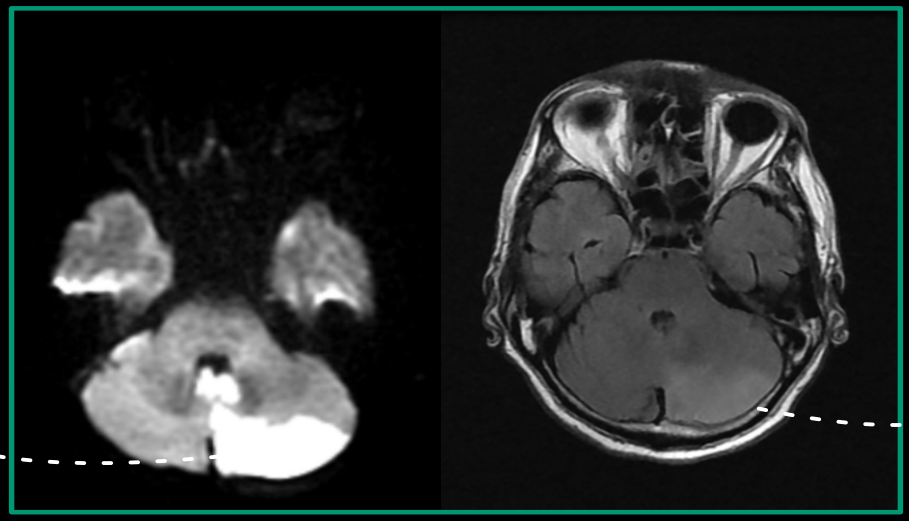
Left MCA after stenting

Case 22:
ICAD Credo Stent

53 YEAR OLD MALE

- Presented with history of recurrent posterior circulation ischemic strokes
- His MRI brain showed left cerebellar & brain stem infarcts while angiogram showed left vertebral stenosis involving V4 segment
- DSA confirmed the left V3-V4 long segment significant stenosis
- As patient was having recurring episodes of stroke despite best medical management we decided to go for intervention.
- He underwent Left VA (V4) angioplasty followed by stenting with CREDO stent 4 weeks after stabilisation
- He was discharged without any new deficits & did not have further ischemic stroke during follow up

DWI MRI



FLAIR MRI

DWI & FLAIR MRI showing left cerebellar Infarct

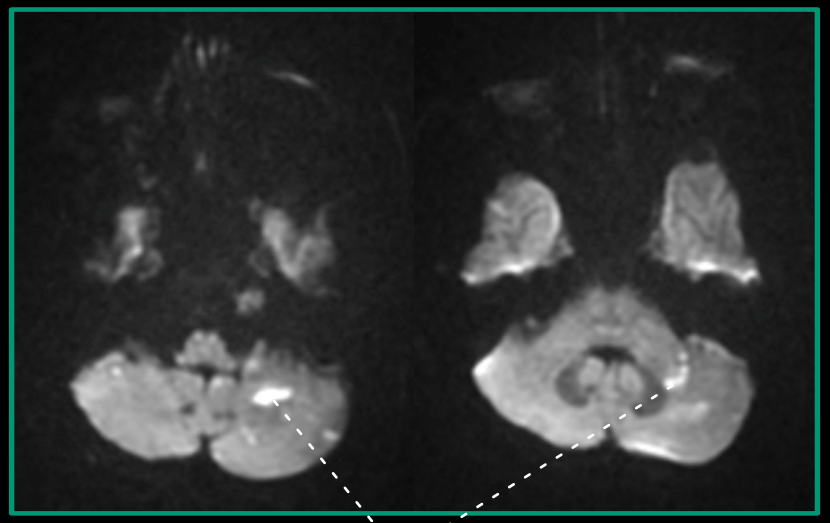
Scan/click to view
Cath Images

Before & After angioplasty & stenting

Case 23:
ICAD Vertebro-Basilar Angioplasty

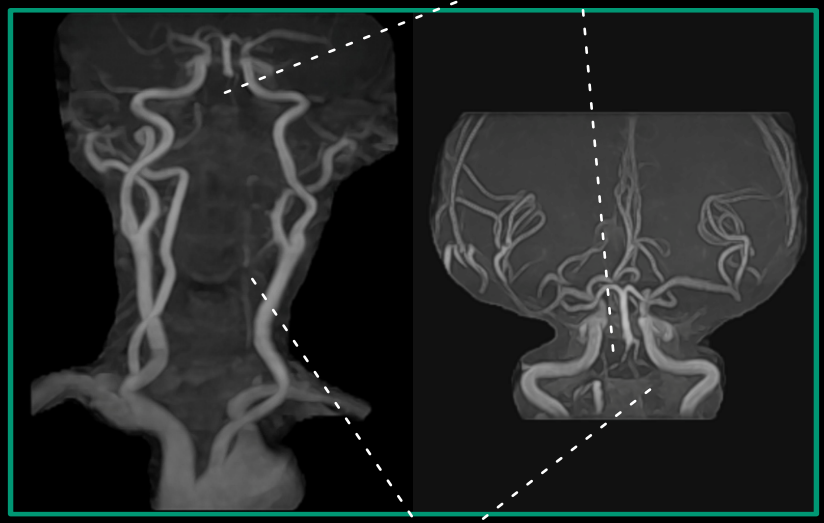
63 YEAR OLD FEMALE

- Known case of HTN and DM.
- Presented with acute onset giddiness, vomiting and imbalance while walking.
- On examination she had left UL ataxia with gait ataxia.
- MRI brain stroke protocol revealed left cerebellar and MCP infarct with total occlusion of left vertebral artery.



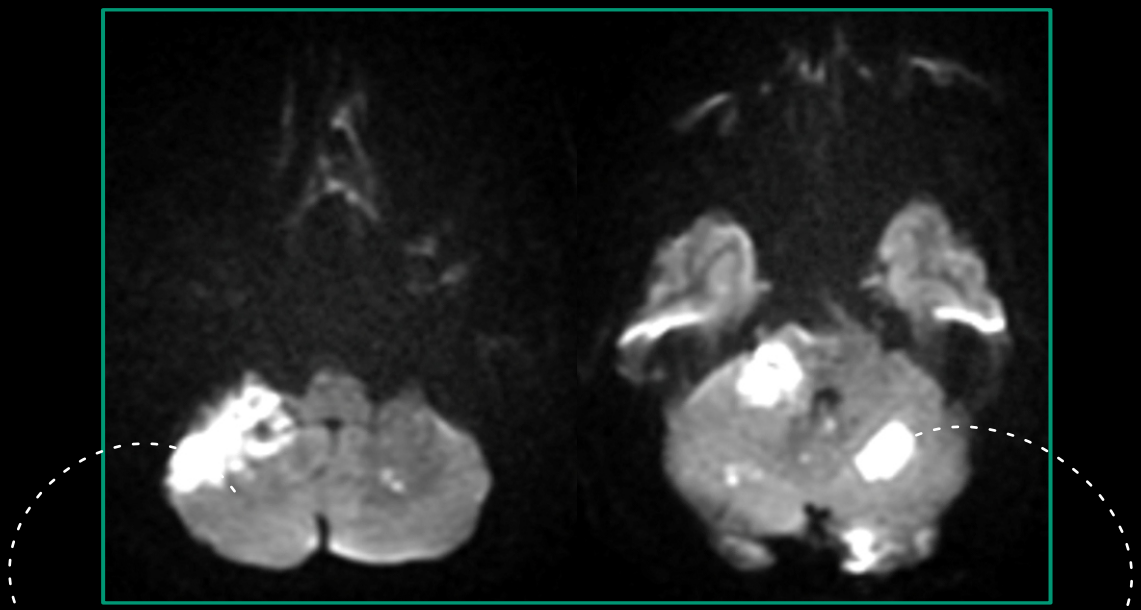
Left Cerebellar and Left MCP Infarct

Right VA Vertebro-Basilar Stenosis



Left VA Total Occlusion

- She was admitted and treated at another hospital became stable and improved over 3-4 days
- However 10 days later again started having recurrent episodes of giddiness, slurring of speech and imbalance while walking with partial recovery
- She was referred to us for further treatment
- Repeat MRI showed bilateral cerebella infarcts



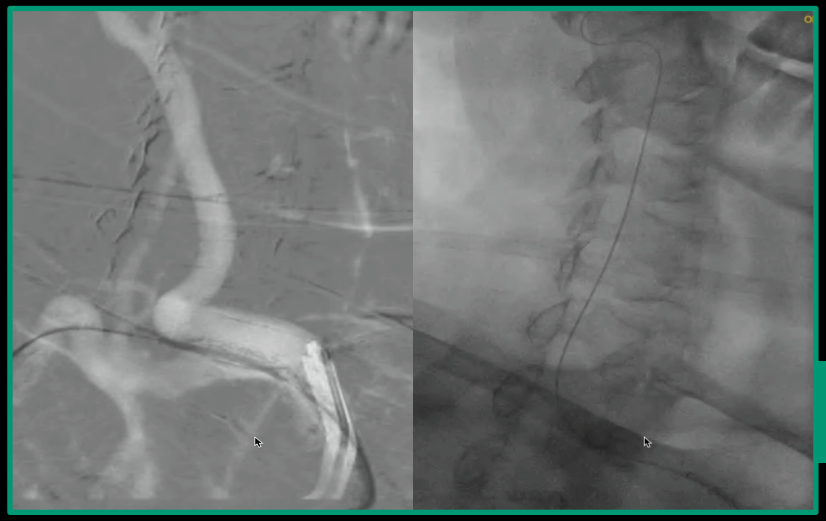
Bilateral Cerebellar Infarcts

- She underwent DSA which confirmed left VA total occlusion and severe right vertebro-basilar (VB) stenosis.
- After detailed discussion with relatives she underwent right vertebro-basilar angioplasty and stenting uneventfully.

First
Difficult Access

Second
Difficult Access

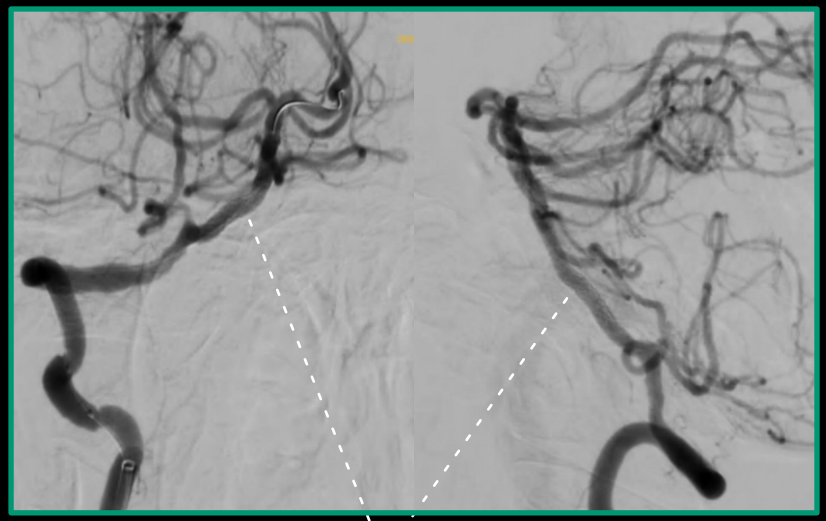
Scan/click to view is
Patient's clinical status



- The main challenge was cannulating right VA and exchanging diagnostic with guide catheter because of significant tortuosity
- Post procedure she did not develop any further stroke/TIAs
- She was discharged with minimal ataxia

Significantly tortuous anatomy of the brachiocephalic trunk, right subclavian artery

Right VB Severe Stenosis



Post Angioplasty and stenting

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