

Cerebrale Aneurysma chirurgie

Refereeravond
Subarachnoidale bloeding

9 oktober 2019

Disclosures

- Behalve vak verslaving hebben beide sprekers geen disclosures te vermelden

Casus

- Man 50 jaar, onwel geworden op toilet
- Niet aanspreekbaar, gestart met BLS
- Snel herstel output , EMV max bij aankomst ambulance
- Hoofdpijnlachten op SEH elders
- CT : Subarachoidale bloeding: over naar Isala





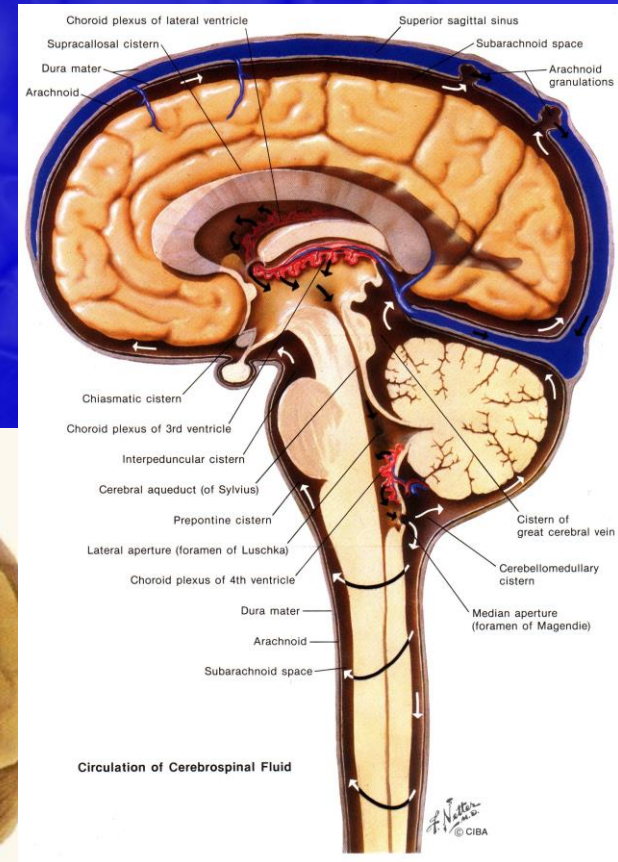
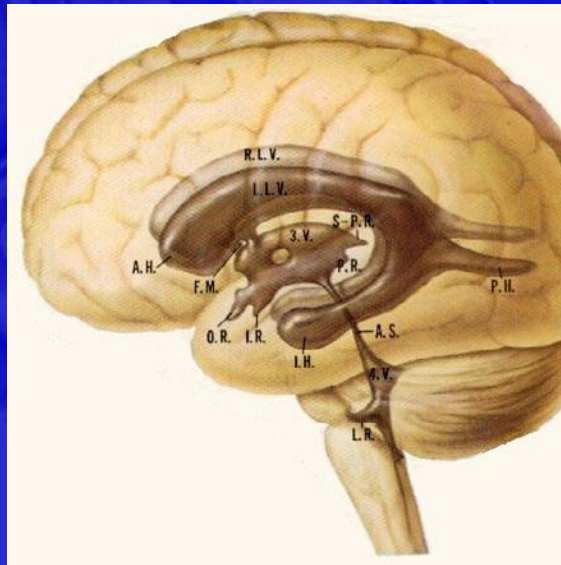
Klinische presentatie

- Spoed – Semi-Spoed
- Hydrocephalus
- Intracerebraal hematoom
- Acuut subduraal hematoom
- Vaatspasmen

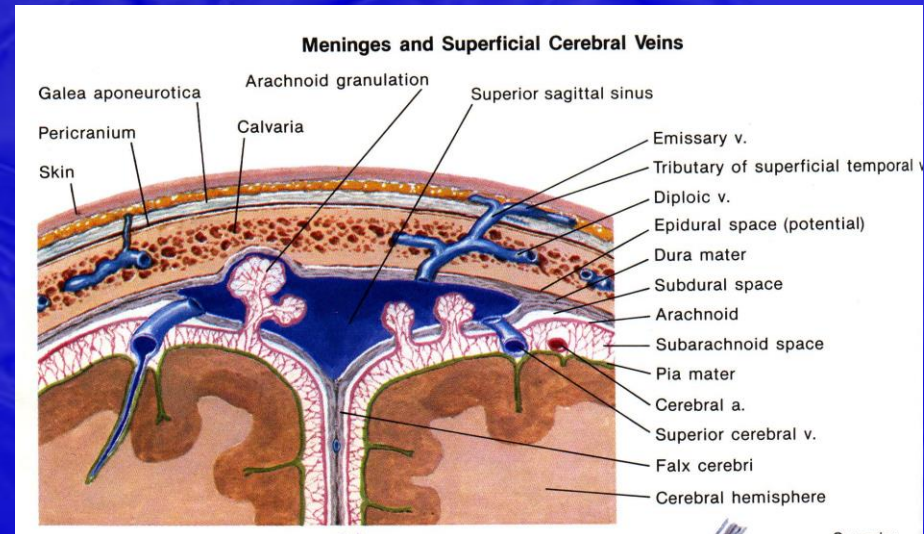
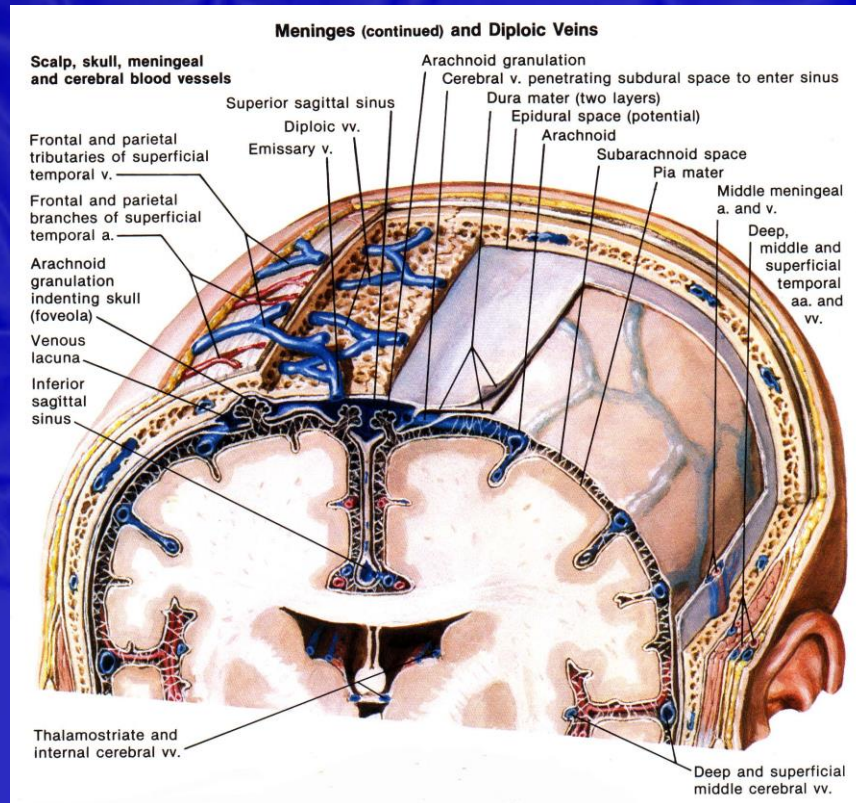
Liquor circulatie

Ventrikel I, II, III.
aqueduct, IV

Subarachnoidale ruimte

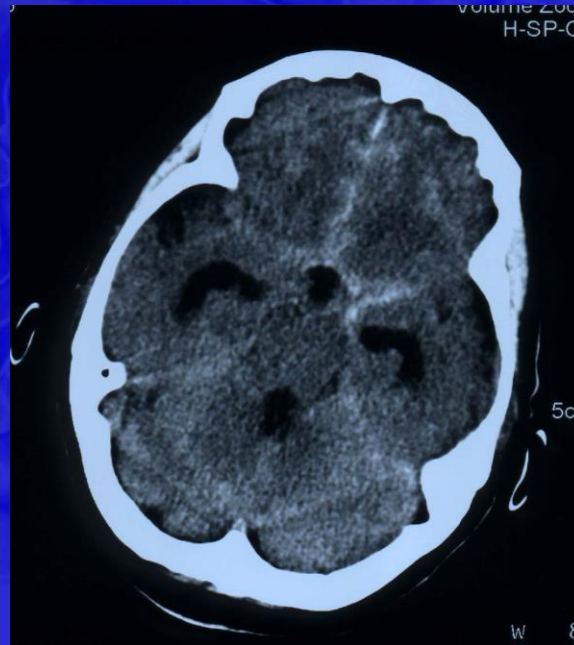


Liquor circulatie



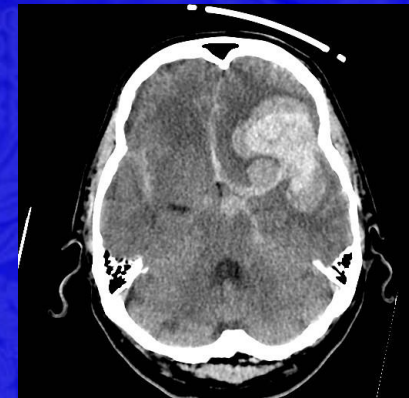
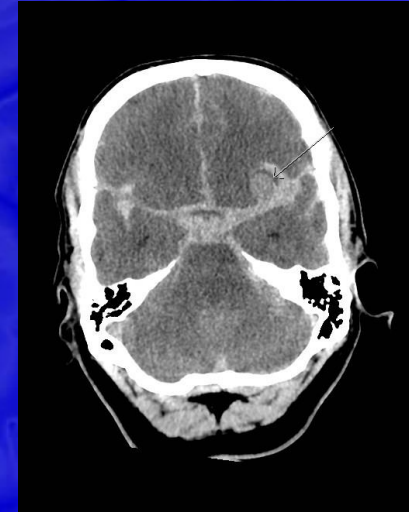
Obstructie van liquorflow

Spoed-ingreep: externe ventrikel drainage

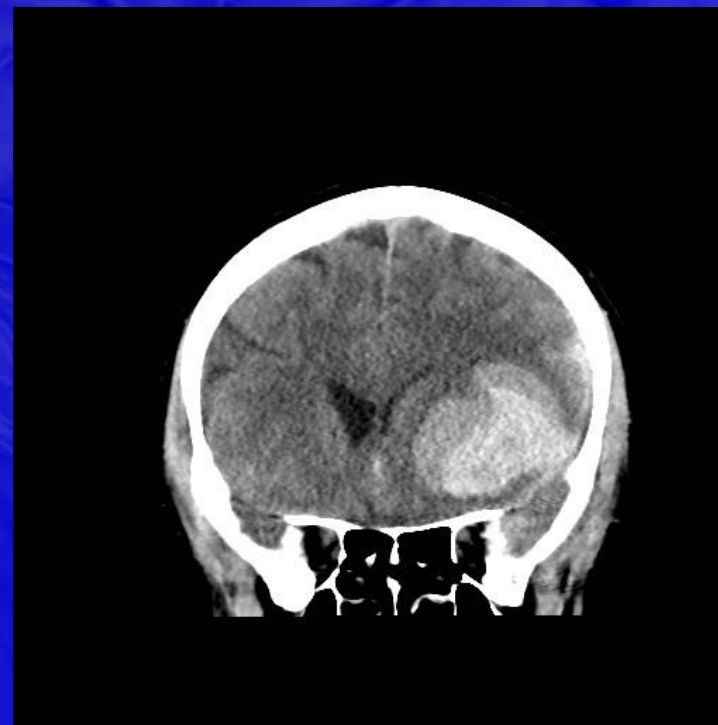


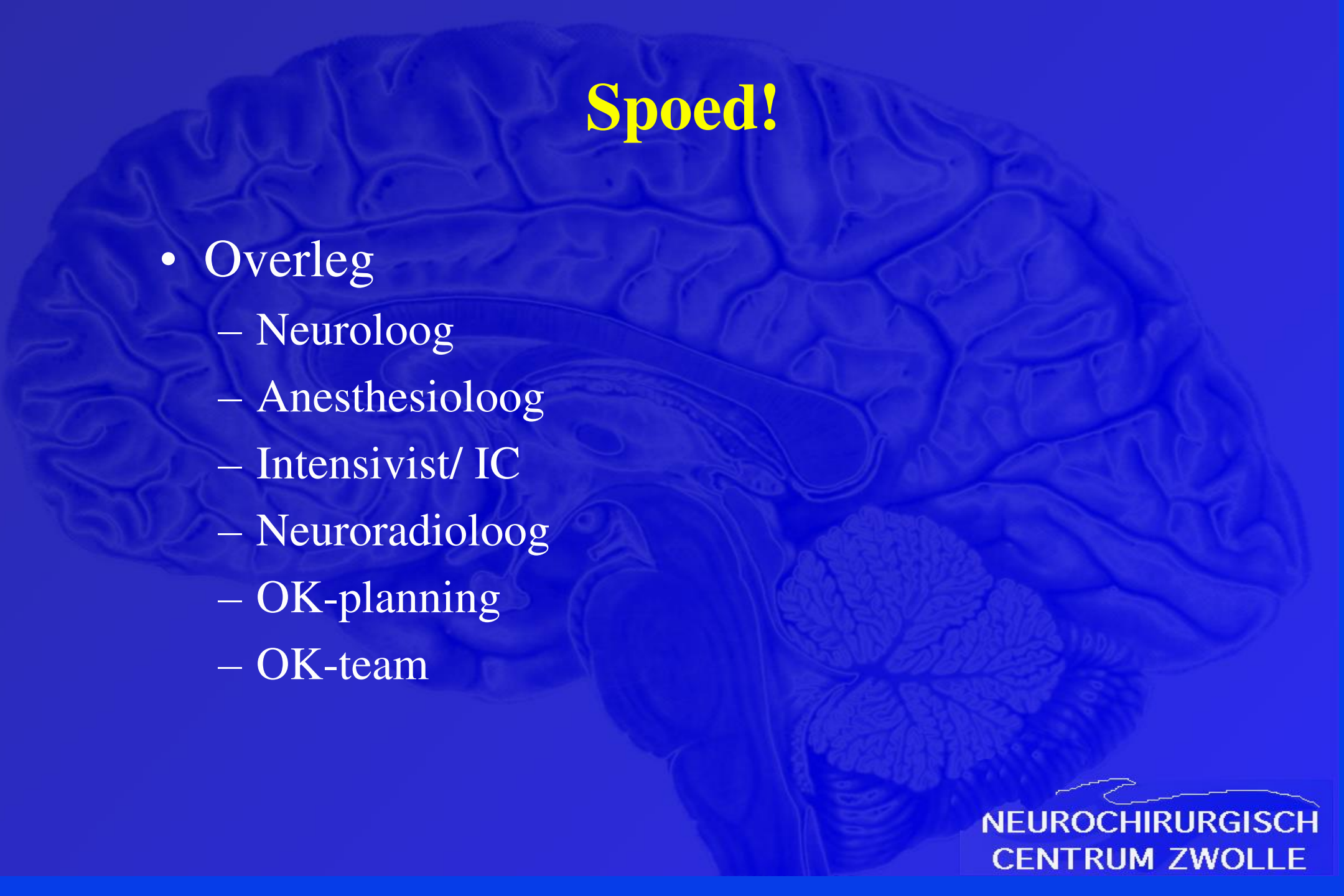
Spoed !

- Neuroloog SEH
- Klinisch beeld
- Leeftijd
- Locatie
- CT
- CTA
- 3D-Angio



Patient K.



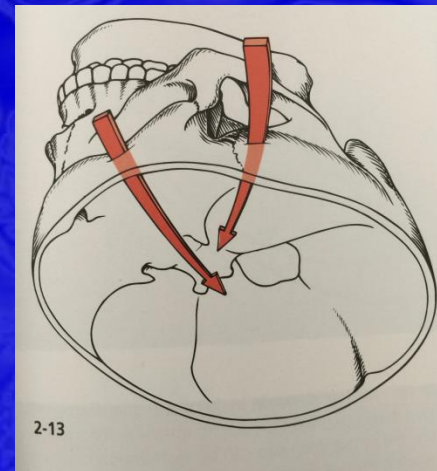
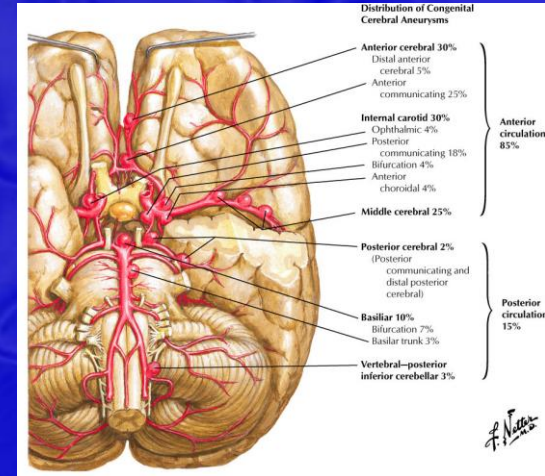


Speed!

- Overleg
 - Neuroloog
 - Anesthesioloog
 - Intensivist/ IC
 - Neuroradioloog
 - OK-planning
 - OK-team

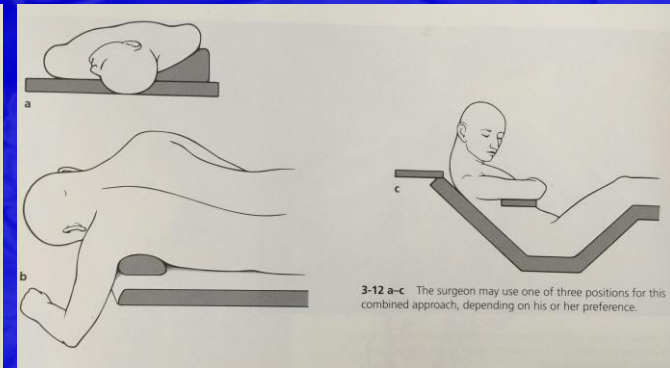
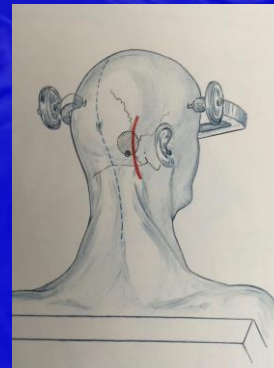
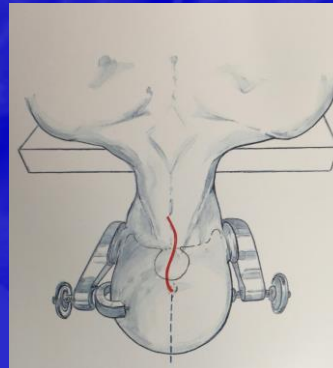
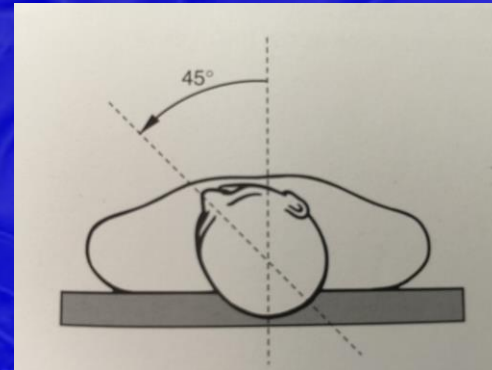
Benadering

- Lokalisatie
 - voorste circulatie
 - achterste circulatie
- Hematoom?



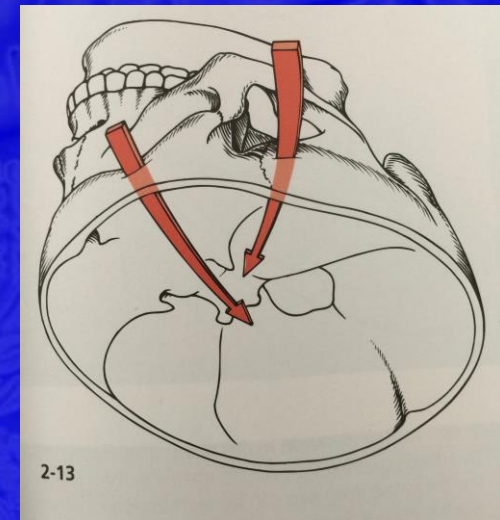
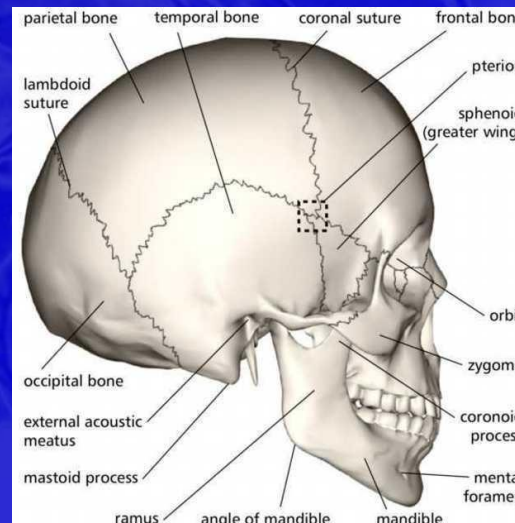
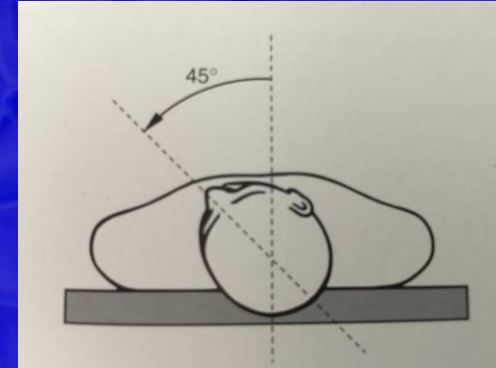
Benadering

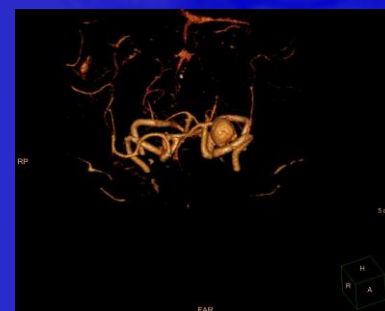
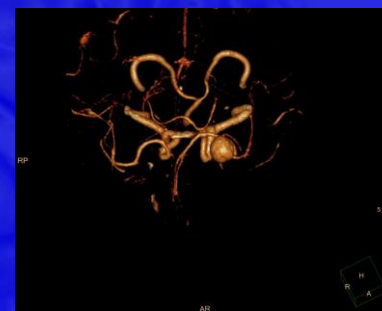
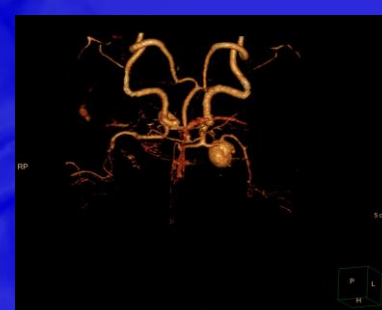
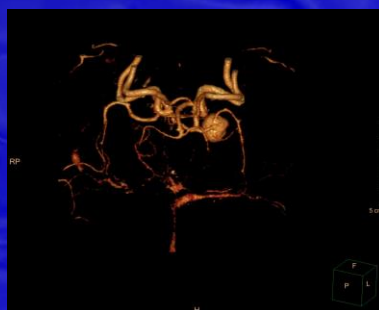
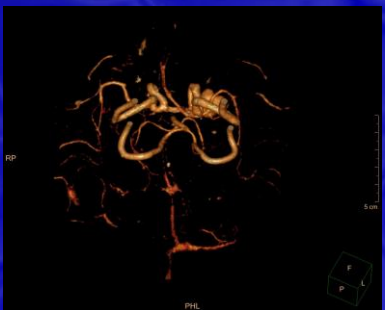
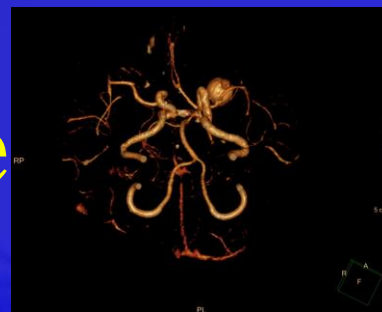
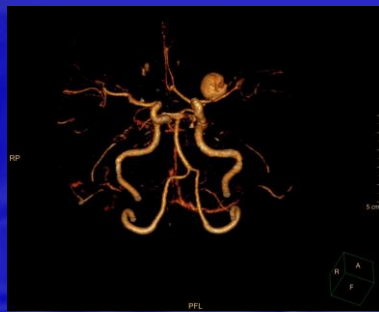
- Pterionaal
- Frontaal-parasagitaal
- Suboccipitaal



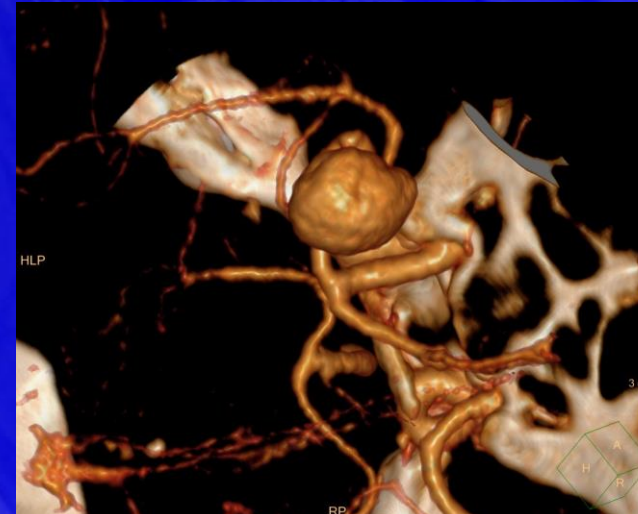
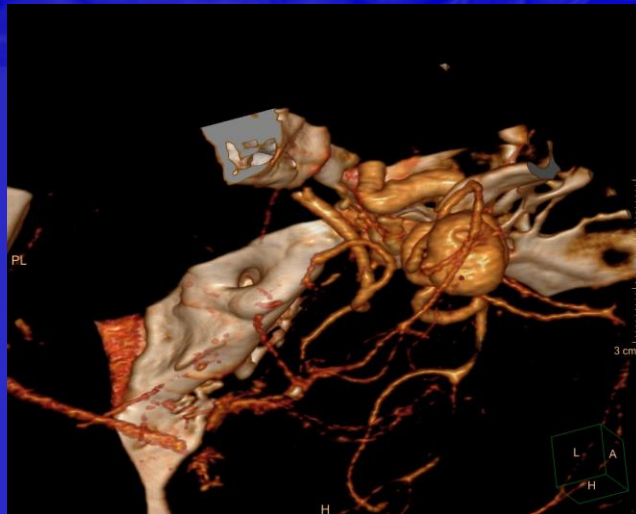
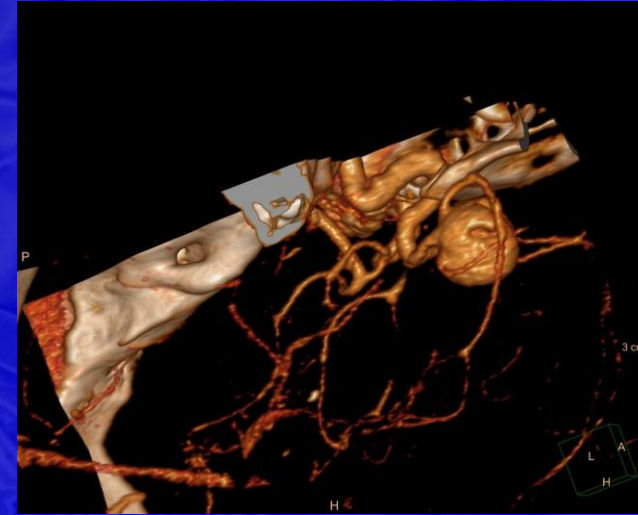
Pterionaal

- Positionering hoofd
 - 30-45-60 graden
- 3D-visualisatie

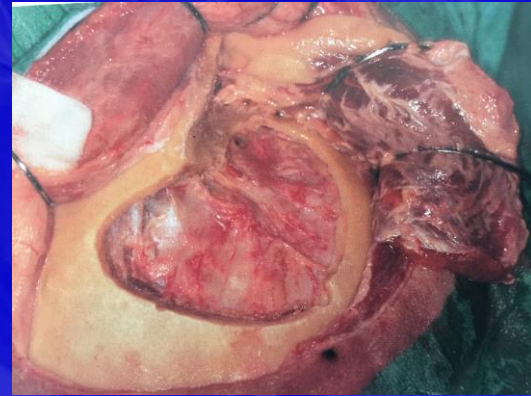
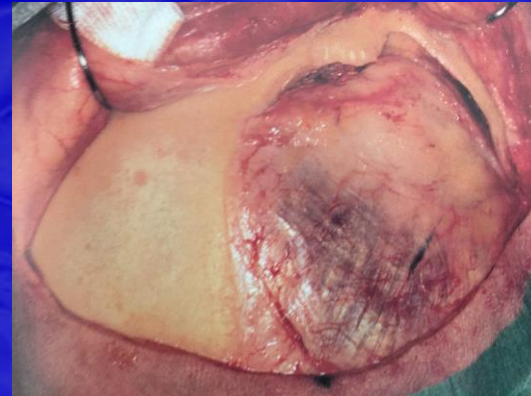
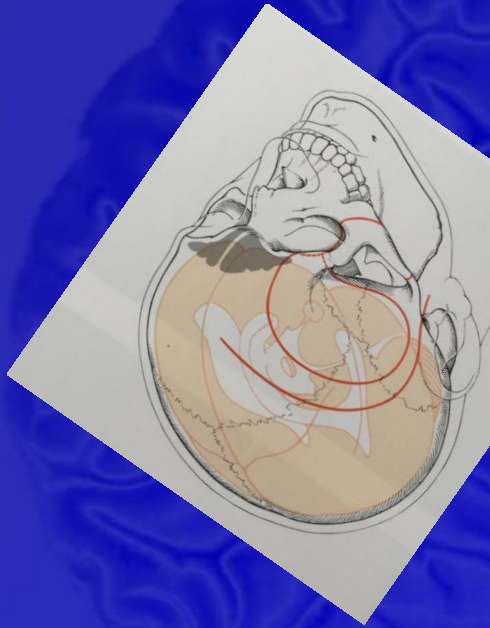


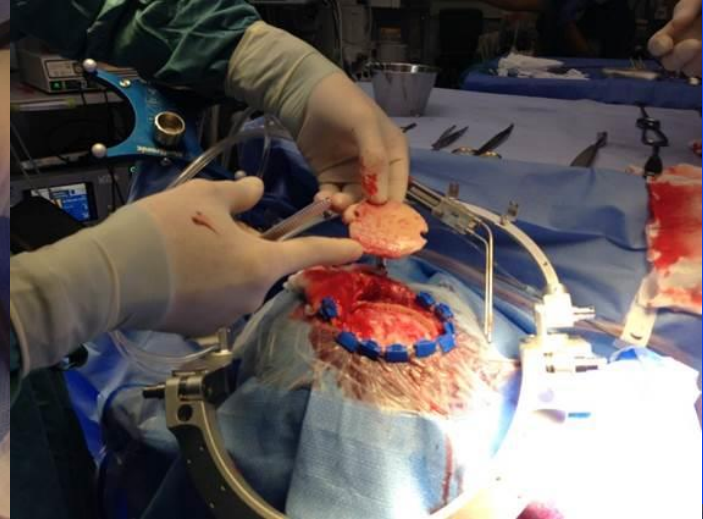
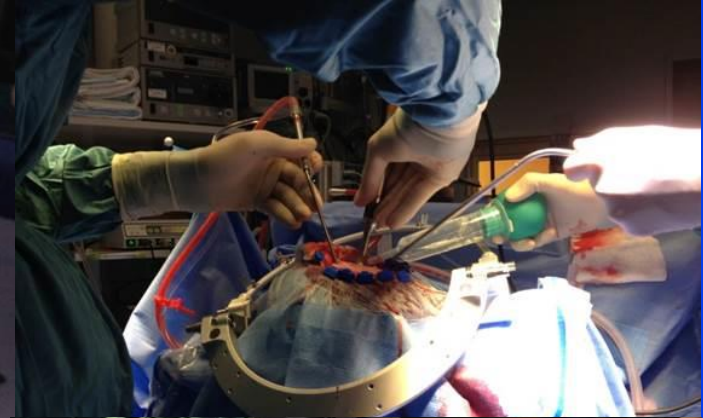
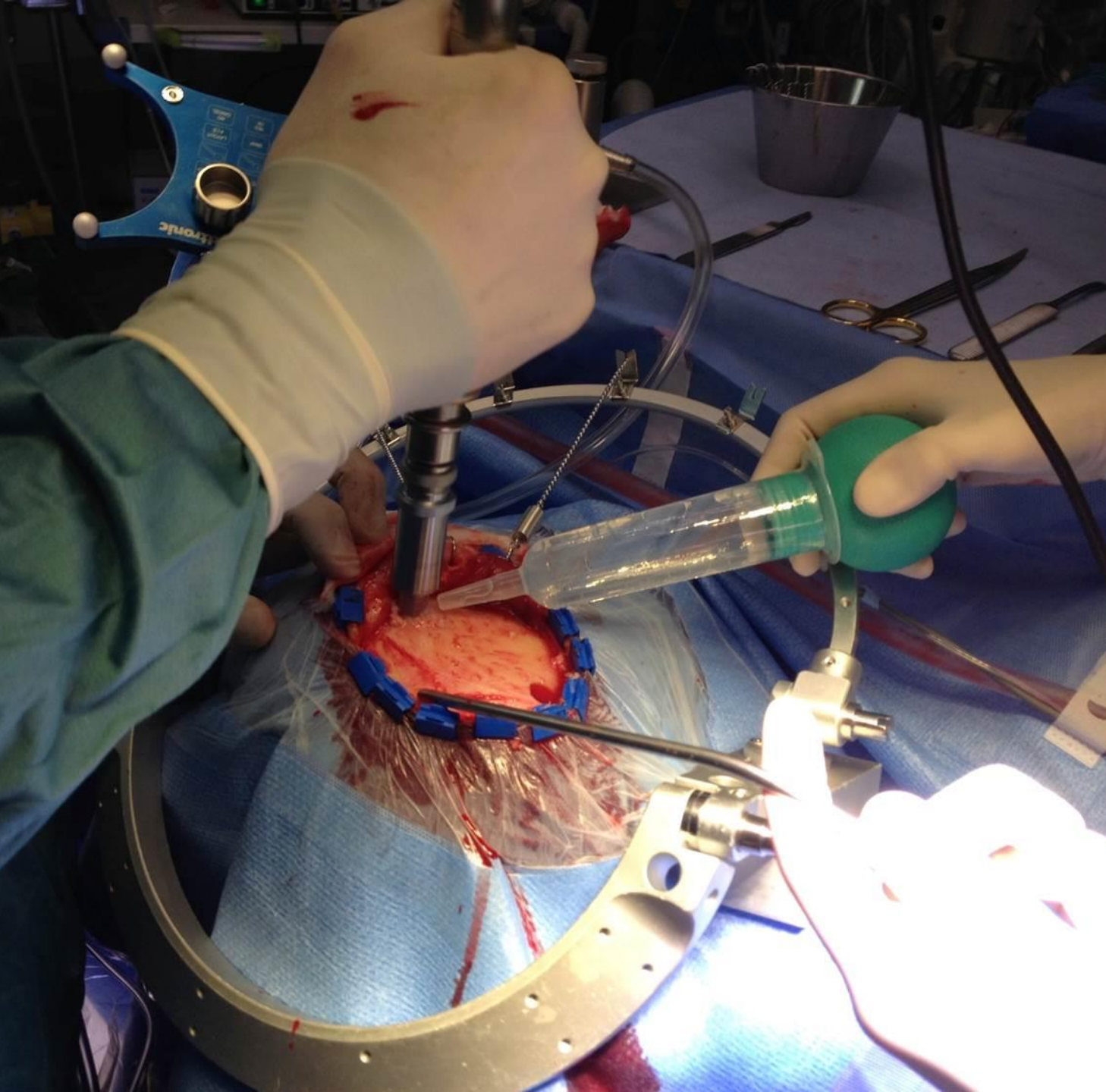


3D-Visualisatie

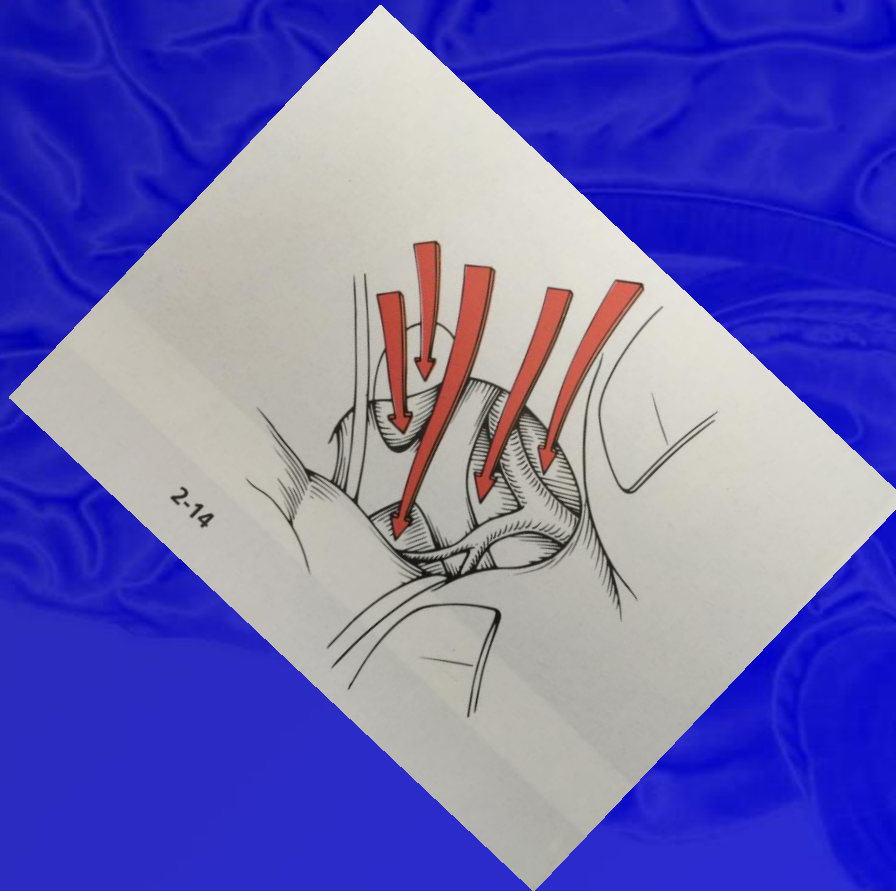


Craniotomie

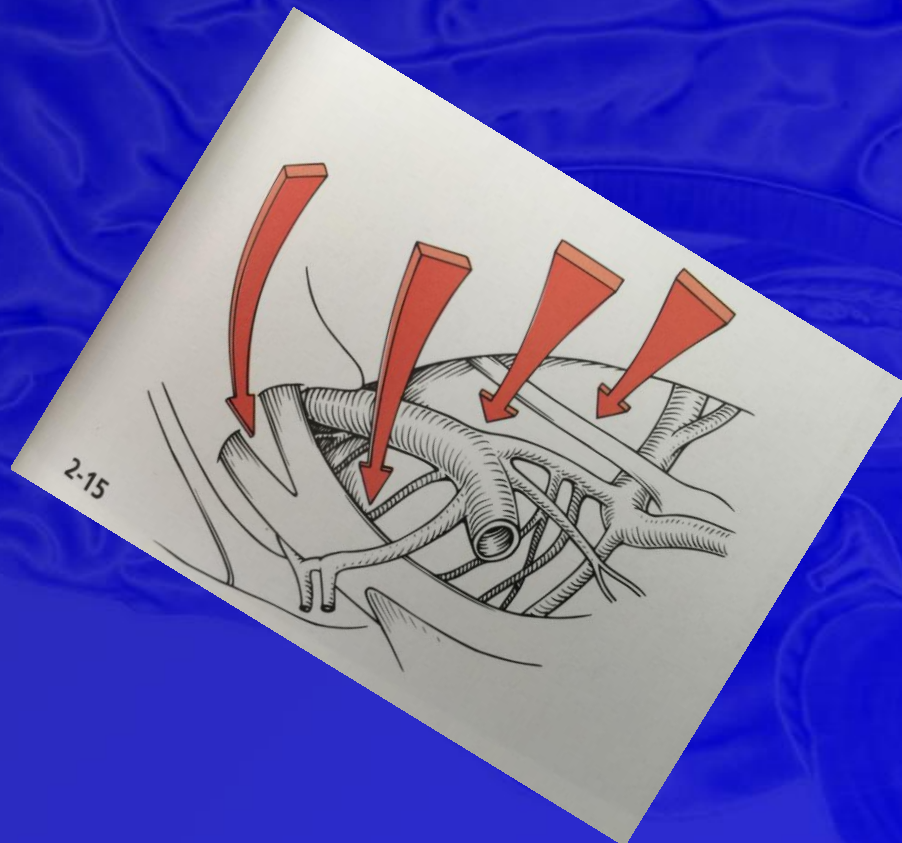




Intradurale exploratie

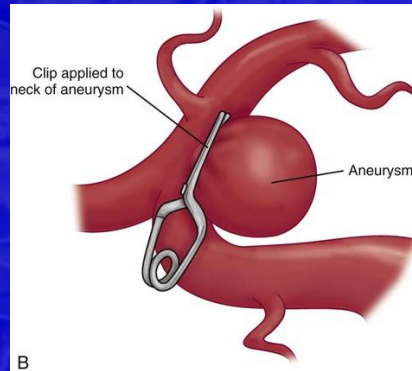


Intradurale exploratie

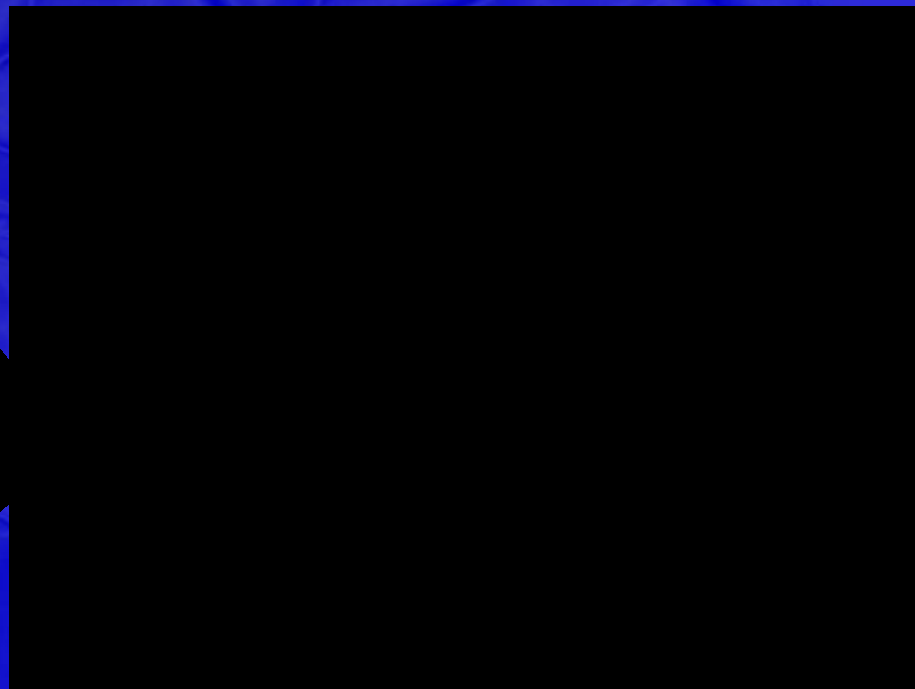
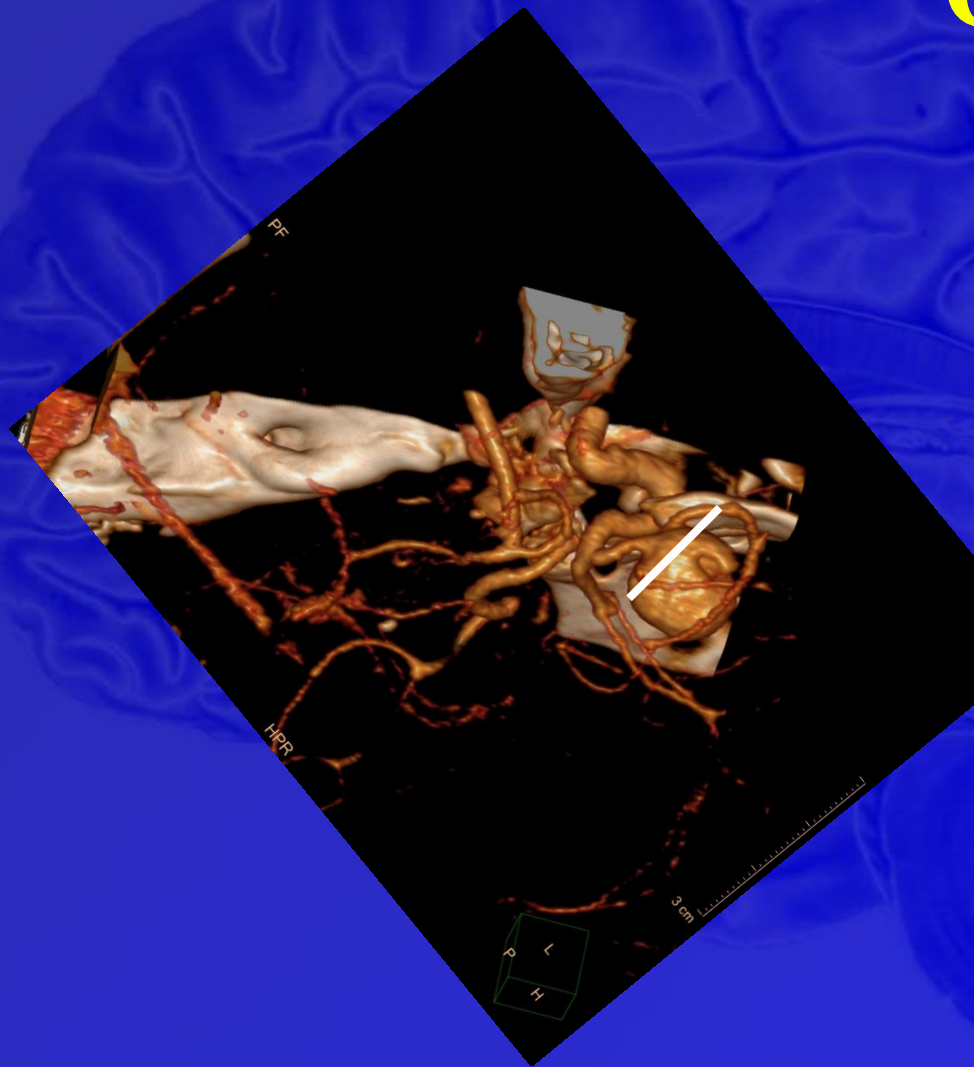


Clip

- direkt
- tijdelijke clip
 - tensie
 - temperatuur
 - etomidate



Clip

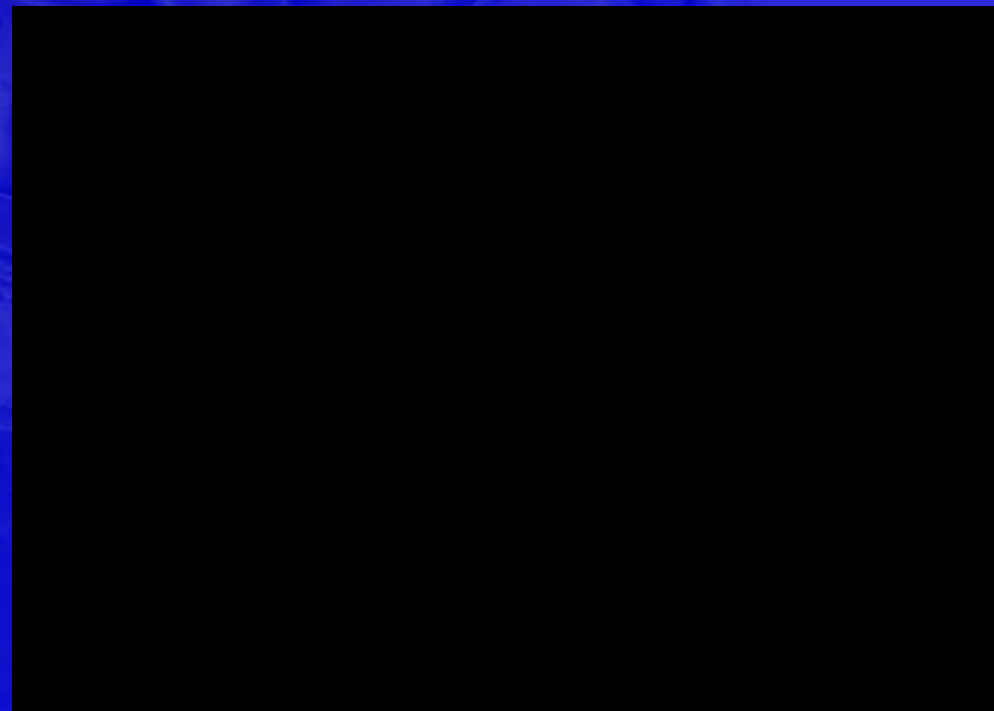
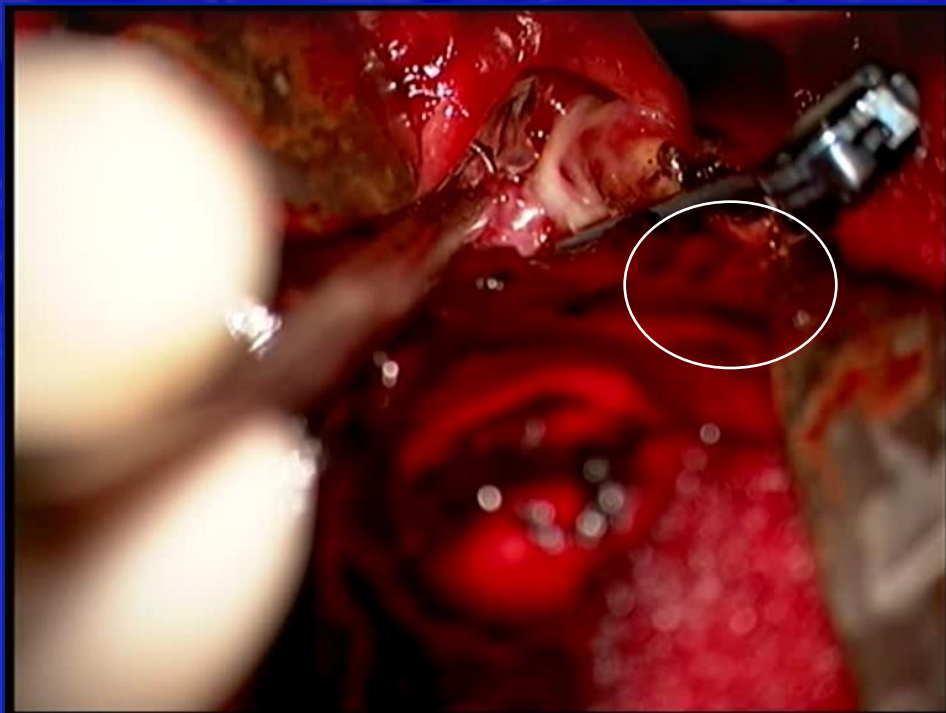


ICG

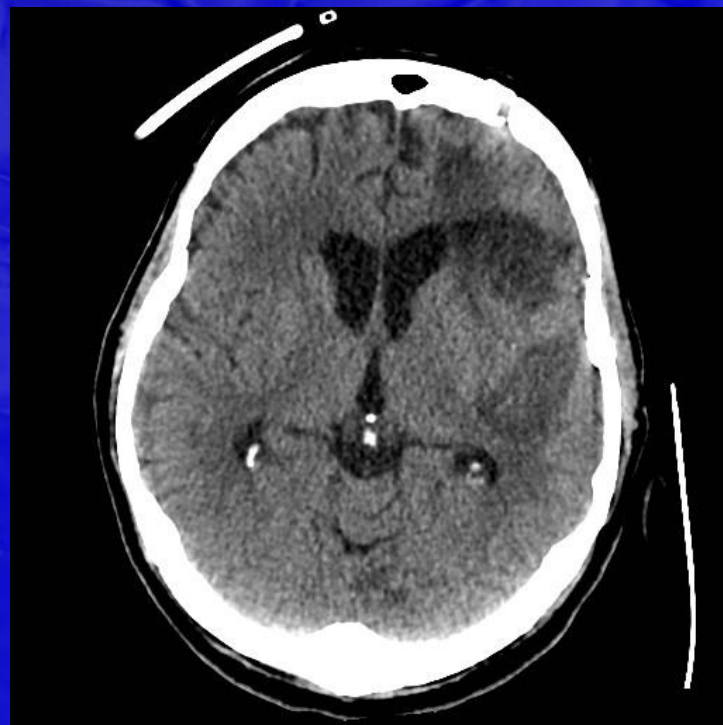
- Indocyanine Green
- Flow
- Aneurysma-vulling



ICG



Patient K.



Problemen/complicaties

- Rebleed
- Hydrocephalie
- Vaatspasme
- Neurogeen longoedeem
- Cardiale dysfunctie

Rebleed

- 7% van SAB's
- Risico factoren: leeftijd, grootte, multipele aneurysmata, cardiale aandoeningen
- Meest frequent in ACoA
- Geoptimaliseerde RR met NIRS??

Hydrocephalie

- Door obstructie door stolsels, maar ook inflammatie, apoptosis, autophagie, en oxidatieve stress (Chen, Biomed Res Int. 2017)
- Incidentie rond 20% in eerste 3 dagen
- 22% van de hydrocephalie patienten wordt shunt afhankelijk (di Russo, J Neurosurg Sci. 2019 Apr 2)
- Lim, Neurointervention. 2019 Mar: EVD vooraf aan behandeling geeft niet meer rebleeds

Vaatspasme

- 30 % van de SAB patienten, vroeg TCD meting
- Door vrij hemoglobine in subarachnoidale ruimte (minder NO)
- Nimodipine
- Nitroprusside / nicardipine intrathecaal (Dodson, World Neurosurg. 2019 May)
- Haptoglobine intrathecaal (Hugelshofer, J Clin Invest. 2019)
- L Arginine iv ?? Akar, World Neurosurg. 2019 Sep)
- Intra cisternale fibrinolyse lijkt betere outcome te geven

Neurogeen longoedeem

- Heftiger bij slechtere HH scores
- Tot 25% van de SAB patienten
- Verslechtert door cardiale dysfunctie, vaker bij CRP stijging en vroege lactaat stijging
- Triple H geeft slechtere gaswisseling
- Propofol lijkt protectief te zijn tegen ontwikkelen NLE

Neurogeen longoedeem



Cardiale dysfunctie

- Neurogeen stunned myocard (NSM): potentieel fataal, maar is een reversibele linker ventrikel dysfunctie.
- Geeft arrhythmie, long oedeem en verlengde beademingsduur (hypoxemie)
- Diagnostiek : ECG en echo afwijkingen met verhoogde troponines.
- Oorzaak: hypothalamie en myocardiale peri/microvasculaire laesies en endotheliale dysfunctie.
- Catecholamine surge is ook een mechanisme waarbij adrenerge blokkade preventief lijkt.

Beleid

- Goede observatie
- Niet teveel vocht, niet te hoge RR
- Start nimodipine
- TCD monitoring
- Overweeg fibrinolyse it
- Overweeg preventie vaatspasme

Toekomst

- Aantallen
- Complexiteit
- Ervaring
- Spoed
- Asymptotisch