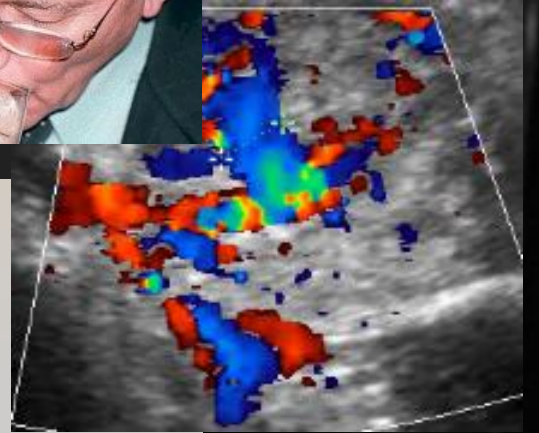
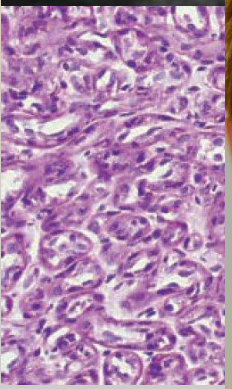
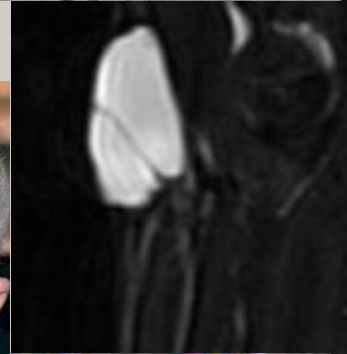
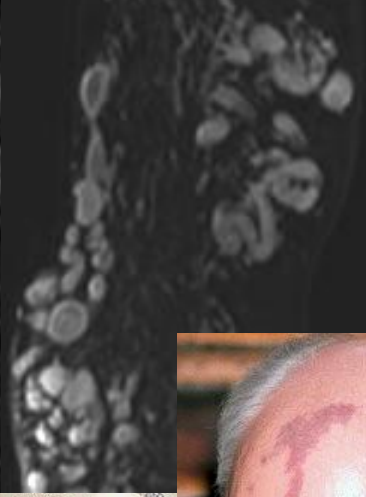
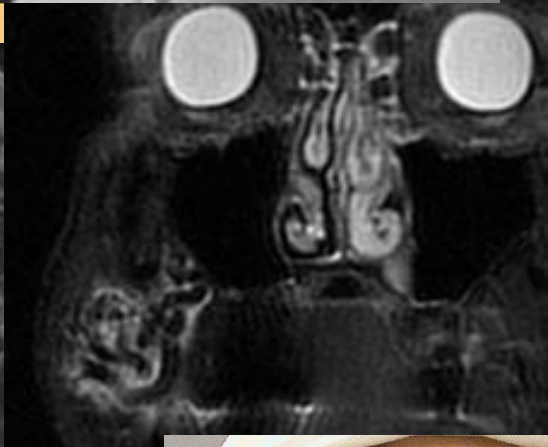
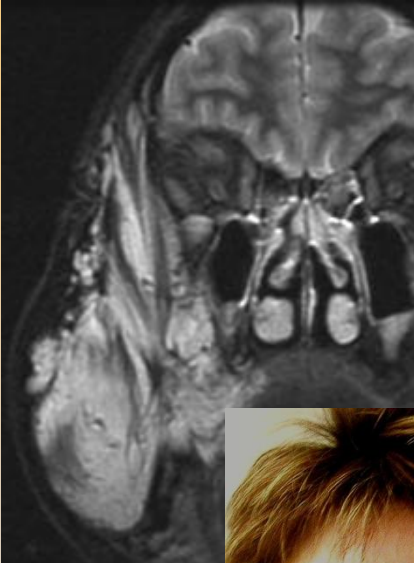
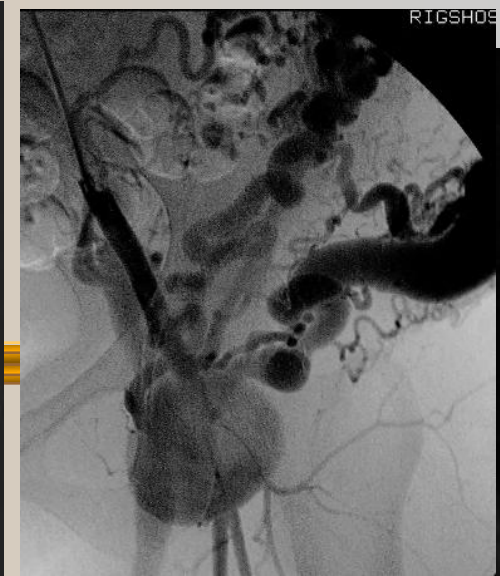
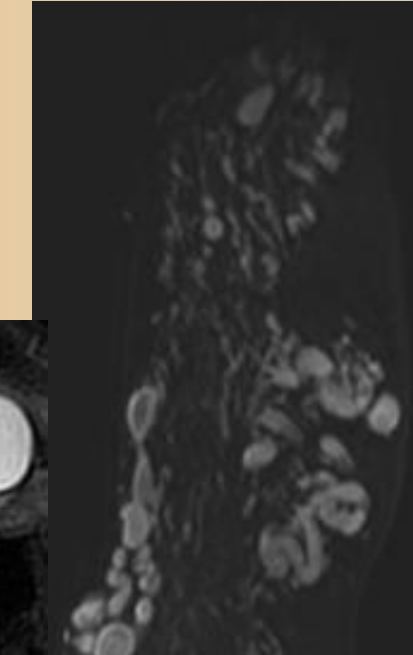
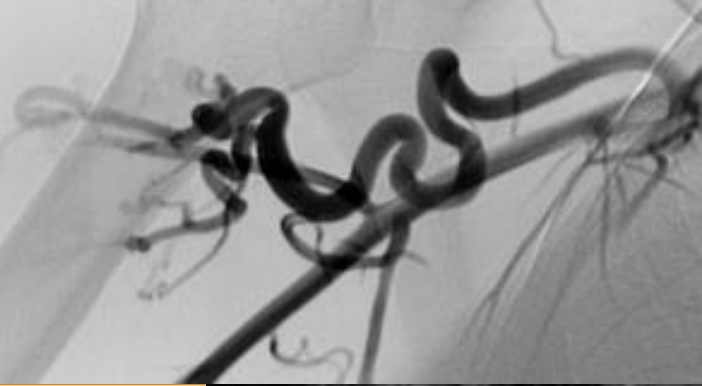
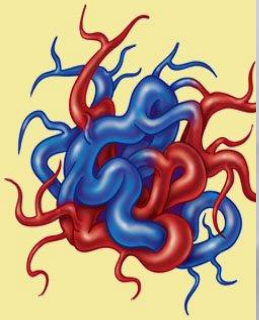
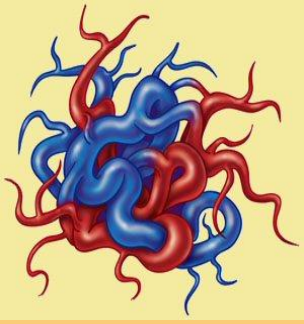


*Hemangiomer  
og  
Vaskulære Malformationer*

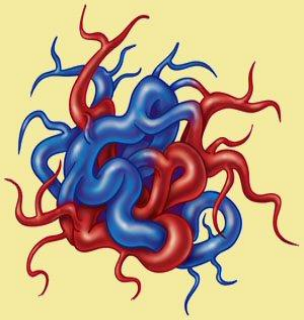
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# *Klassifikation*

- ★ Mulliken JB, Glowacki J: 1982; *Plast Reconstr Surg*. Hemangiomas and vascular malformations in infants and children. A classification based on endothelial characteristics.



Vasculær læsion

Hemangiom

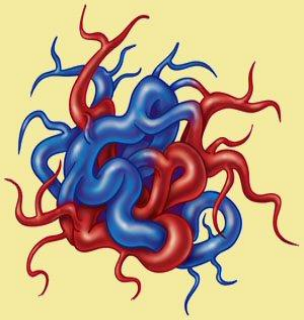
Vasculær malformation

Low flow

High flow

Venøs malformation  
Capillær malformation  
Lymfatisk malformation

Arteriovenøs malformation  
Arteriel malformation  
Arteriovenøs fistel



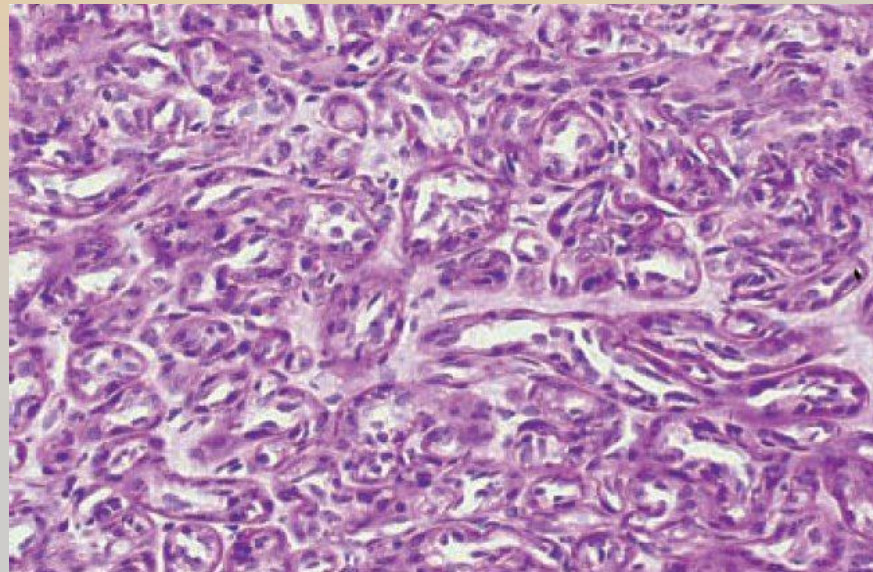
# *Histologi Hemangiom*

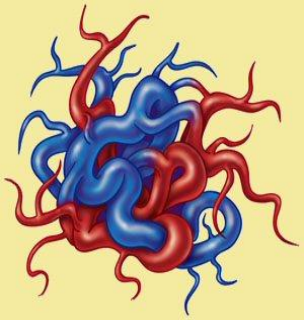
## ★ Proliferation

- Plumpe endothelceller med mange mitoser, mast celler og multilaminær basalmembraner

## ★ Involution

- Flade, inactive normalt udseende endothel celler i en fibrøs-fedt matrix





# *Hemangiomer 12% af alle børn*

★ Piger/Drenge 3/1

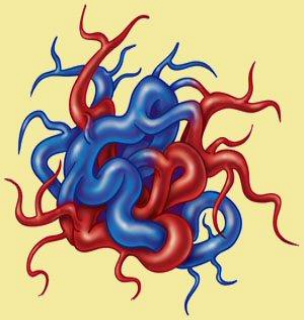
★ Solitære 80%

★ Hoved/Hals 60%

★ Trunk 25%

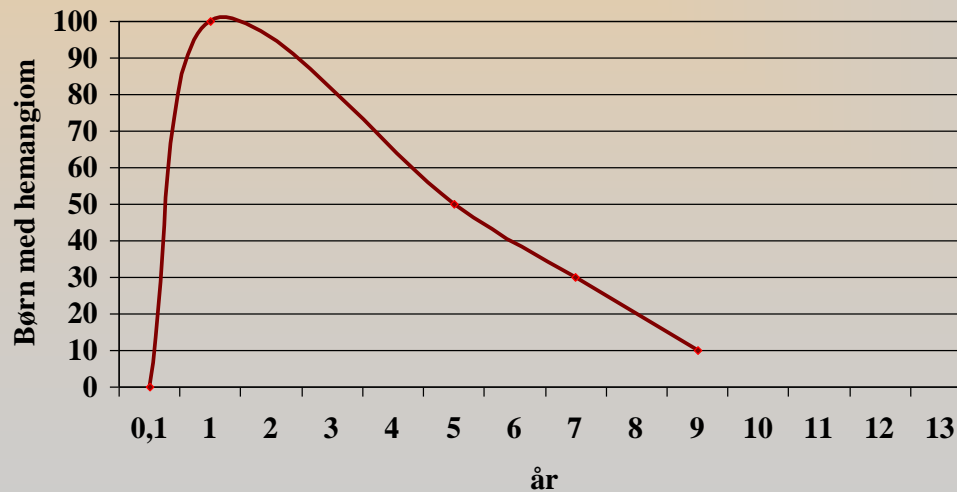
★ Ekstremiteter 15%

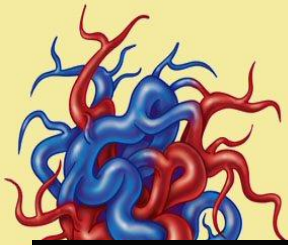




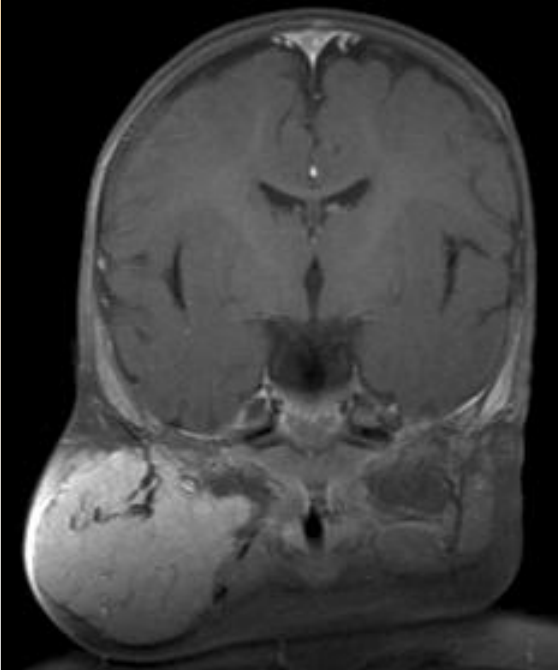
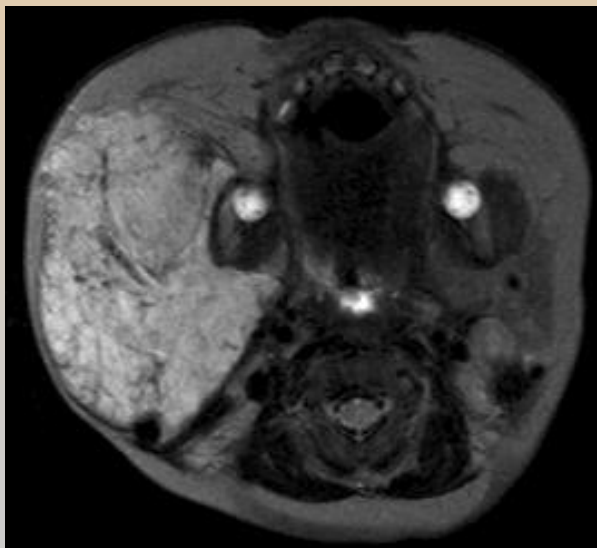
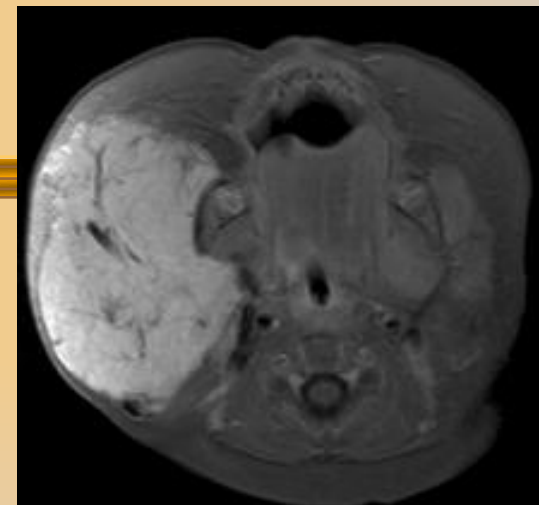
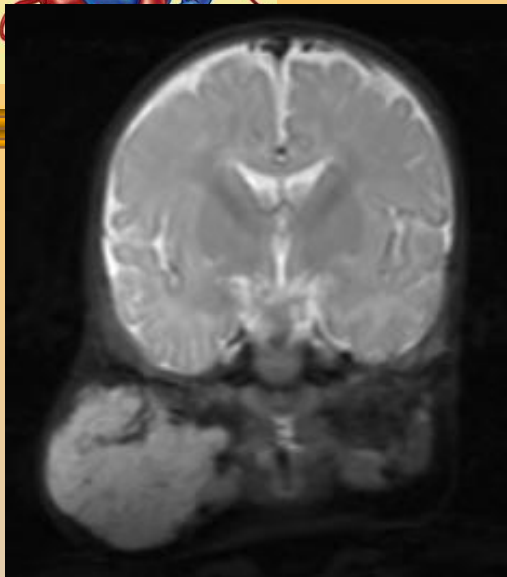
## *Klinisk forløb*

- ★ Kommer hurtigt efter fødslen < 3 mdr.
- ★ Proliferativ fase (vokser mere end barnet)
- ★ Langsom involution

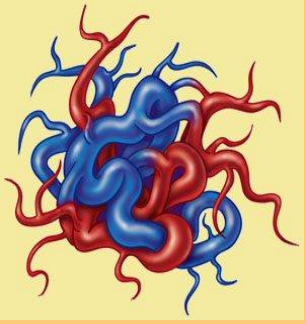




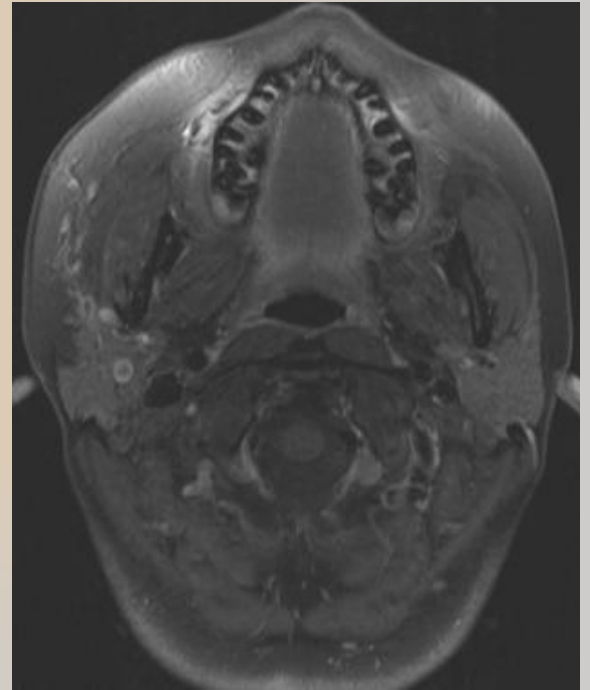
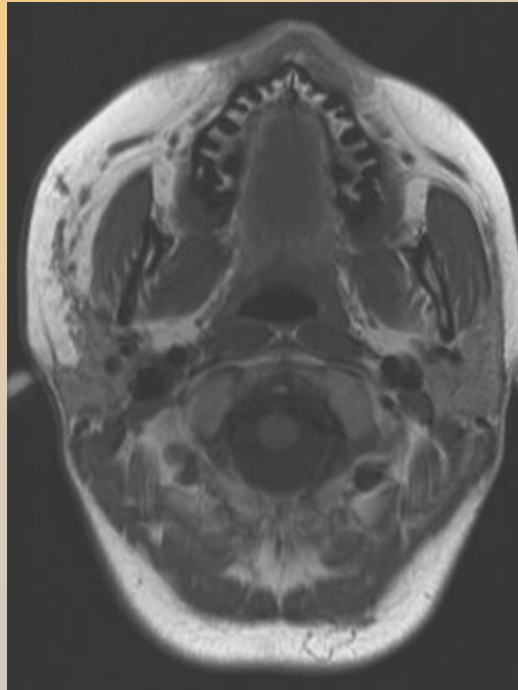
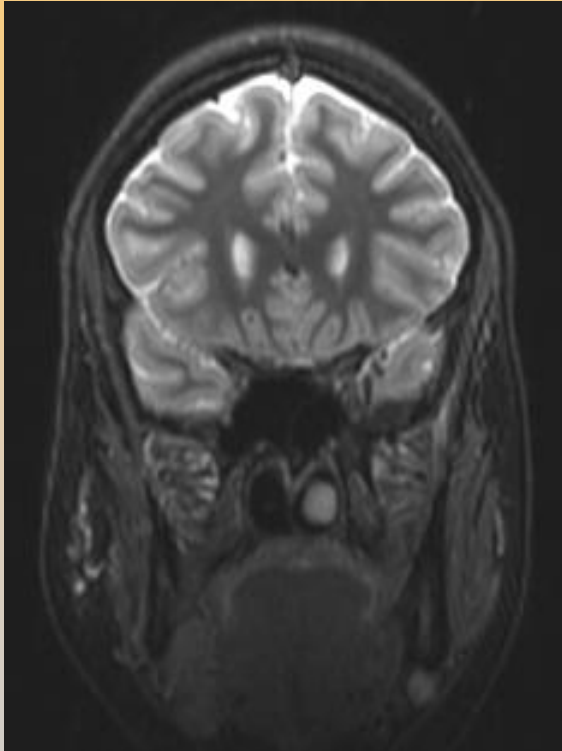
# MR

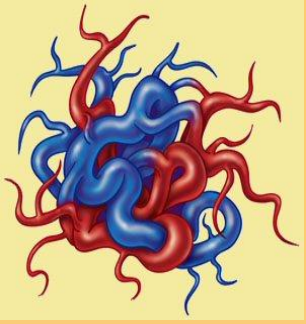






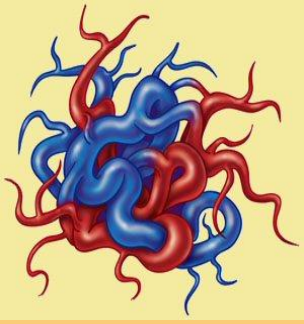
# *MR after involution*





# *Billede af barn med parotis hemangiom*



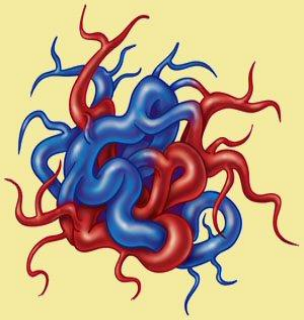


# *Hemangiom behandling*

★ Ekspekterende

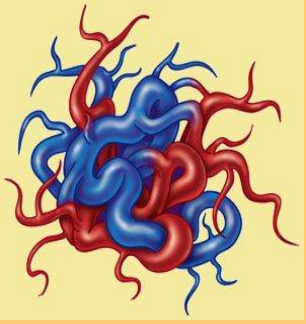
★ Absolut behandlings indikation

- Truet syn
- Høreelse
- Respiration
- Ulceration
- blødning



# *Behandlingsmetoder*

- ★ Steroid helst intralesionel
- ★ Medicin
  - Interferon (farligt)
  - Kemoterapi (ikke i danmark)
  - Propranolol
- ★ Laser af forskellig slags
- ★ Operation
- ~~★ Interventionel radiologi~~

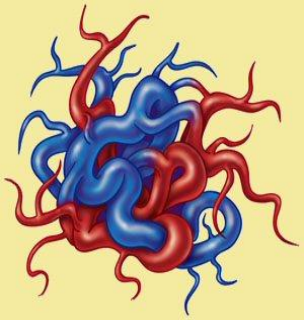


*Sequelae 40-50 %*

- ★ Telangectasier
- ★ Øget Fibrøst-fedtvæv
- ★ Ardannelse



Plastik kirurgi



Vaskulær læsion

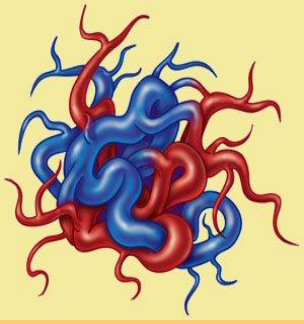
Vaskulær malformation

Low flow

High flow

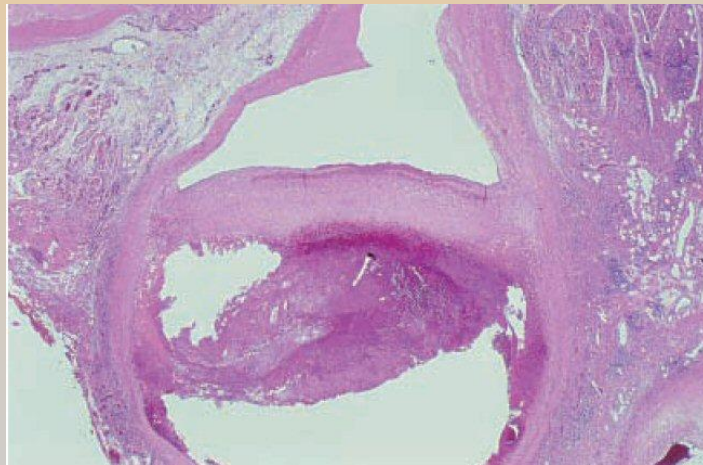
Capillær malformation  
Lymfatisk malformation  
Venøs malformation

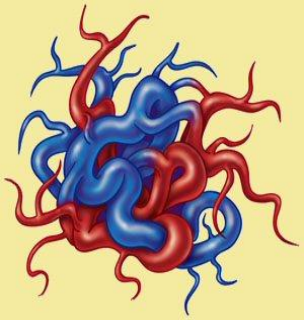
Arteriovenøs malformation  
Arteriel malformation  
Arteriovenøs fistel



# *Histologi Vaskulær malformation*

- ★ Flade normale endothelceller og ectatiske kar af en art

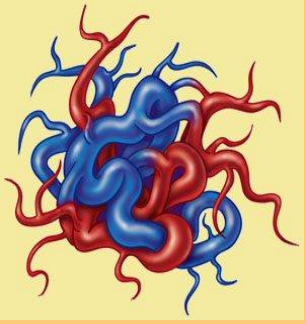




## *Klinisk forløb*

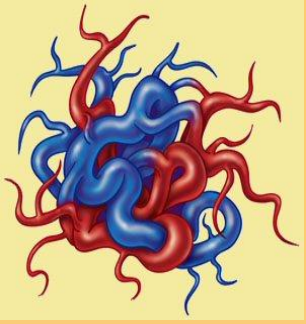
- ★ Tilstede ved fødslen
- ★ Vokser sammen med barnet
- ★ Regrediere aldrig
- ★ Dysplastiske kar





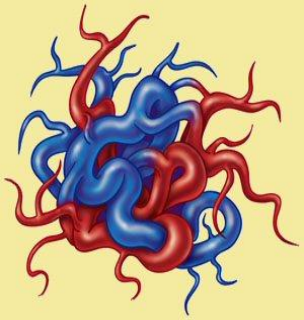
# *Udredning*

- ★ Anamnese
- ★ Som regel ultralyd først
- ★ Hvis tumor mistanke Biopsi
- ★ **MR scanning**



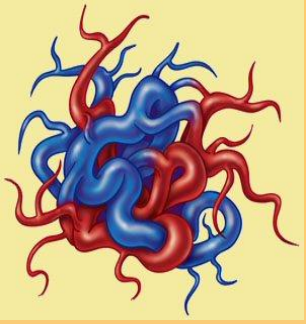
# *MR scanning af karmisdannelser*

- ★ Coronal T2
  - STIR eller tilsvarende
- ★ Axial T1
- ★ Time resolved angio sequence
- ★ Axial T1 med fatsat post gadolinium



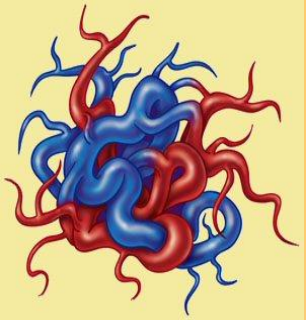
## *Hvad skal vurderes*

- ★ Flow void?
- ★ Large arterial feeders?
- ★ Udbredning
- ★ Involverede strukturer/organer
- ★ Forbindelse til det normale venøse og arterielle system
- ★ Andre kar anomalier
  - Fx: Manglende dybe vener



## *Low Flow*

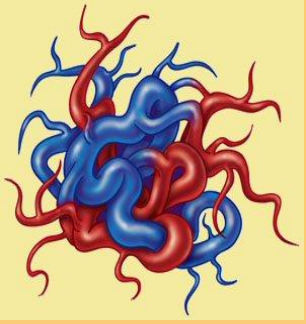
- ★ Capillær malformation
- ★ Lymfatisk malformation
- ★ Venøs malformation



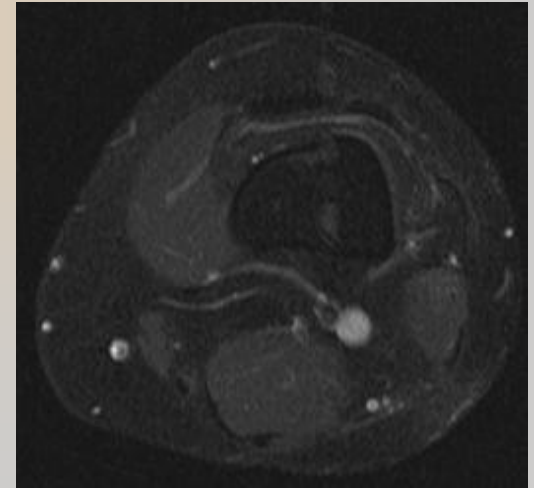
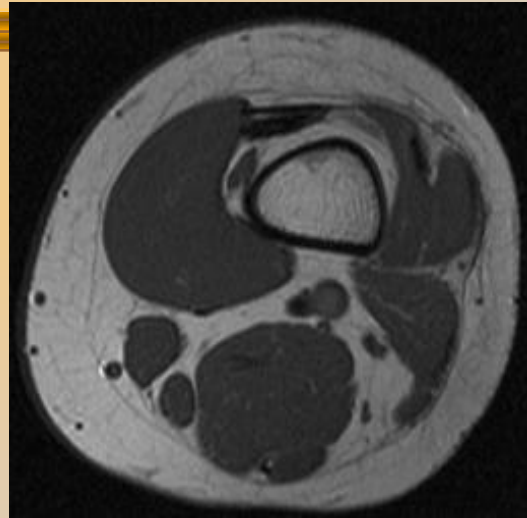
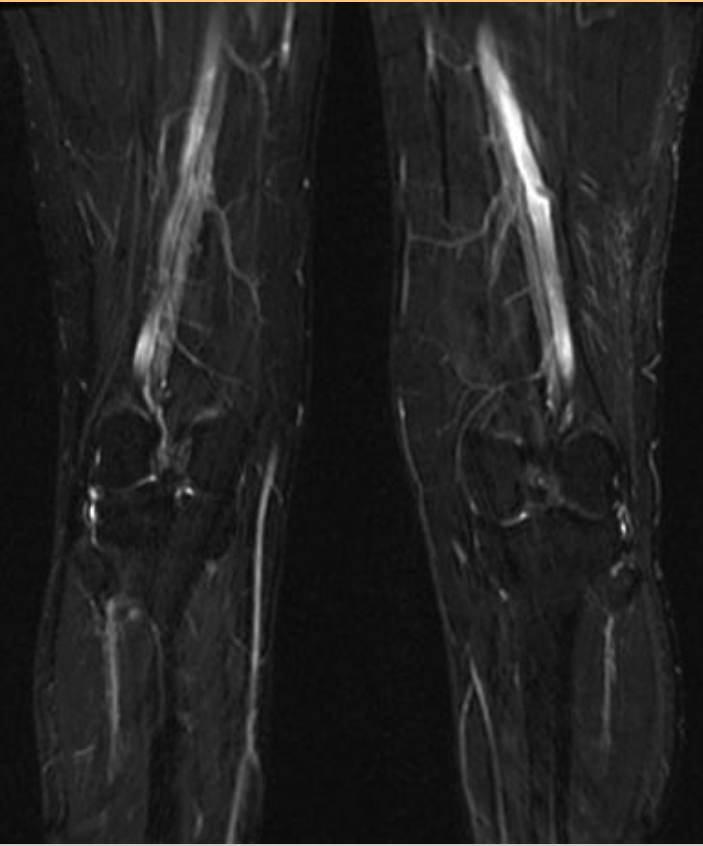
## *Low flow*

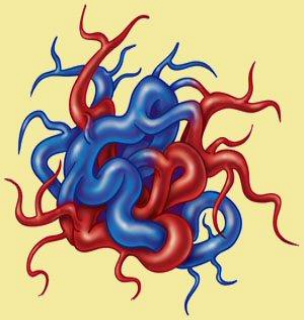
- ★ Kapillær malformation = Port wine stain
- ★ Lyse ved fødslen
- ★ Bliver mørkere med alderen og hypertrofiere
- ★ Kan behandles med laser





# *Kapillær malformation MR*

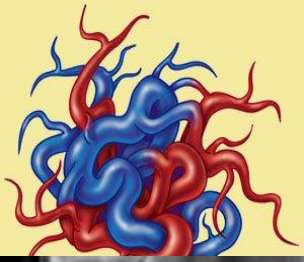




# *Lymfatisk malformation*

- ★ Tidligere cystisk hygrom
- ★ Tilstede ved fødslen
- ★ Sidder oftest på hals eller axil
- ★ Vokser ofte i forbindelse med forkølelse



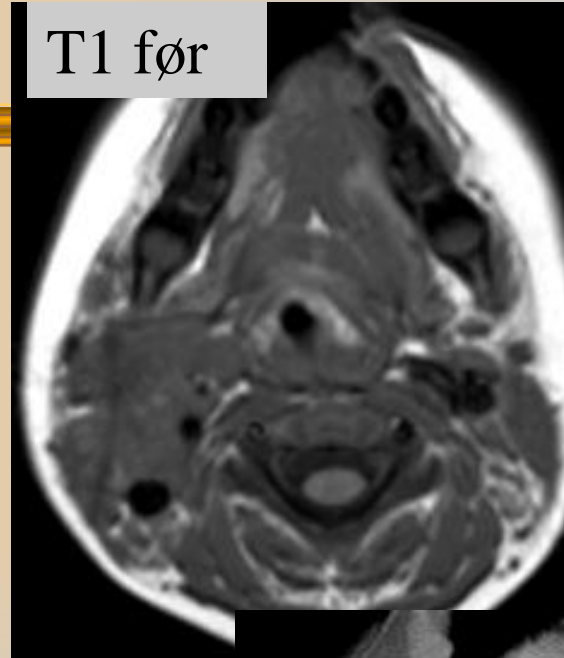


# *Lymfatisk malformation*

STIR



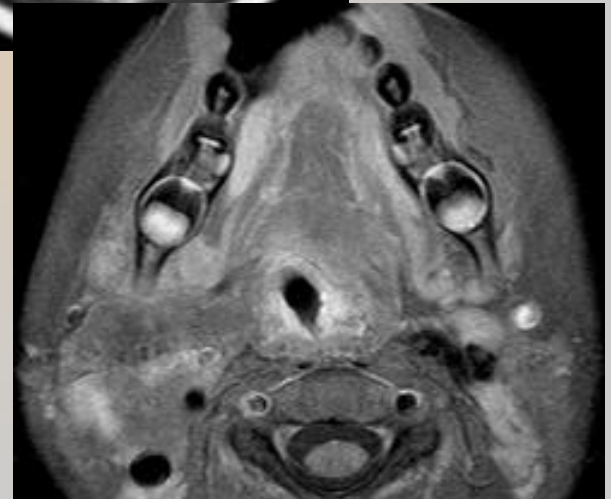
T1 før



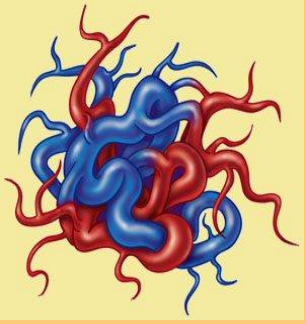
STIR



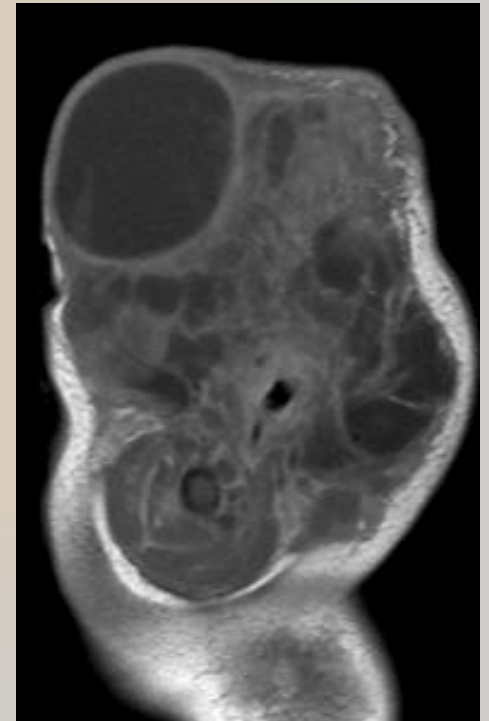
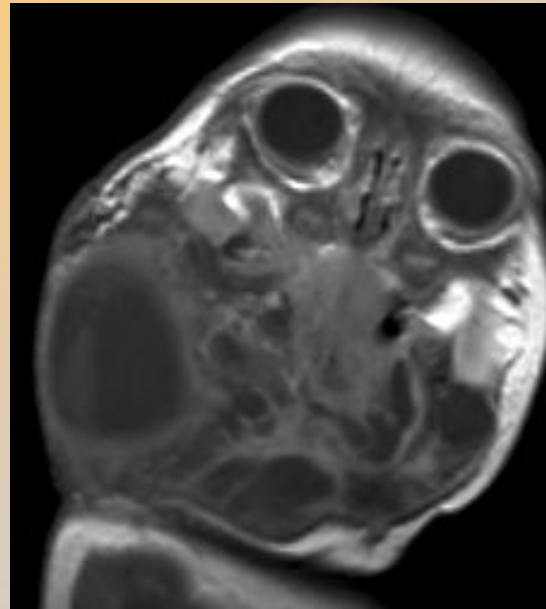
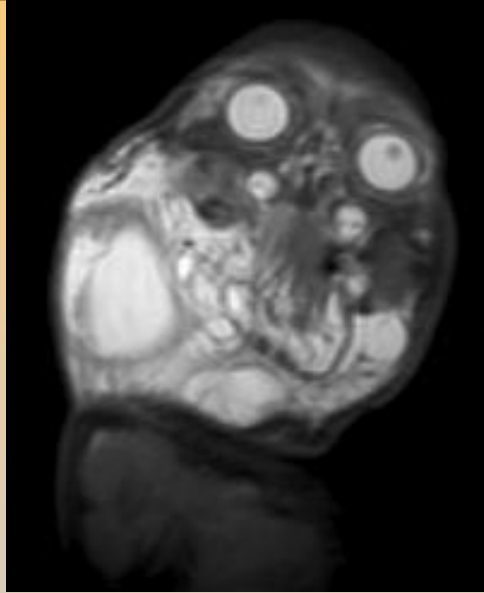
T1 efter med fatsat

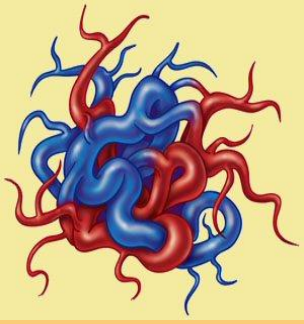






# *Barn med stort lymf malf*

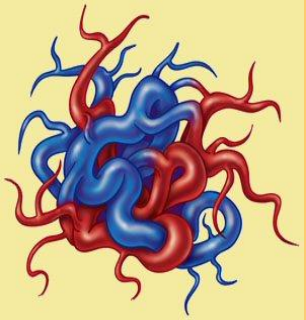




# *Lymfatisk malformation*

## ★ Behandling

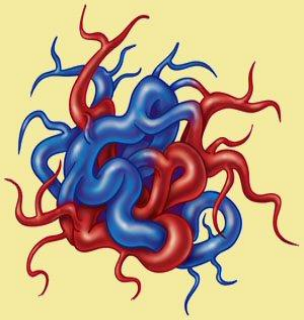
- Macrocystisk
  - OK 432
- Microcystisk
  - Operation



# *Venøse malformationer*

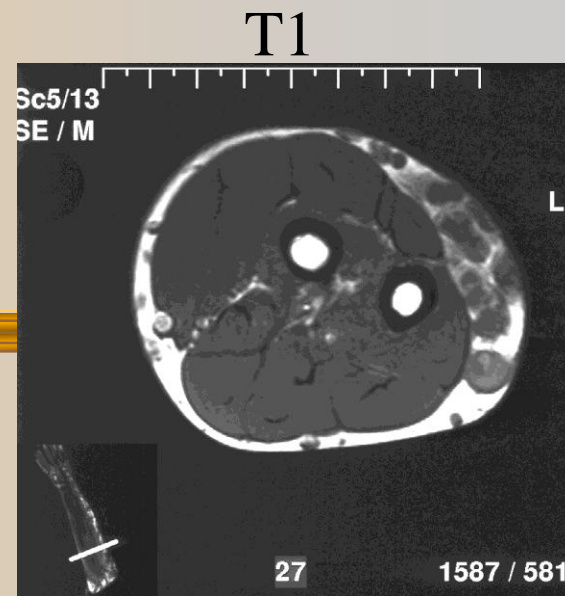
- ★ Phlebolitter på røntgen
- ★ Venøs ectasi
- ★ Afløb i normale/ektatiske vener



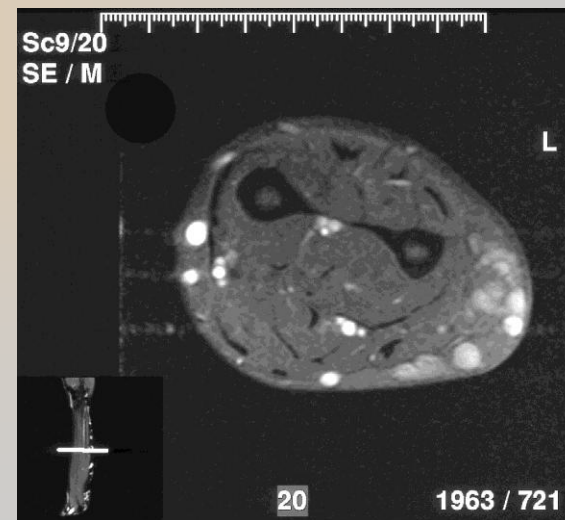
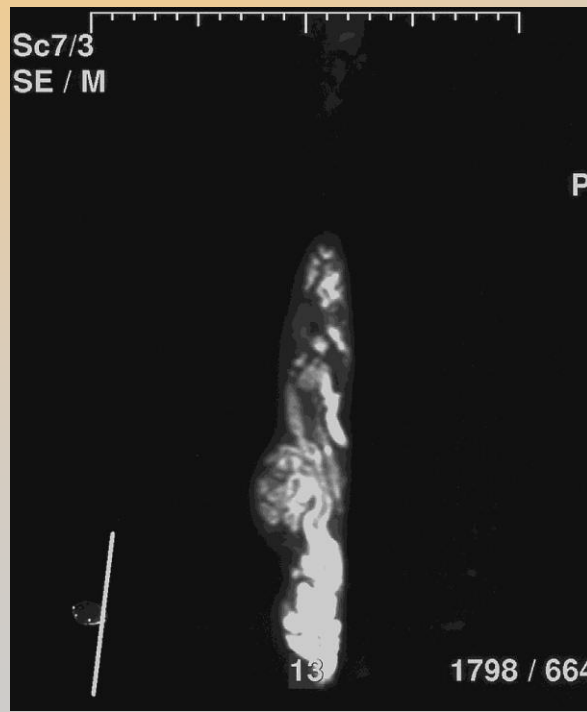


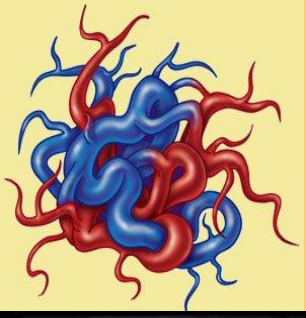
*VM*

STIR



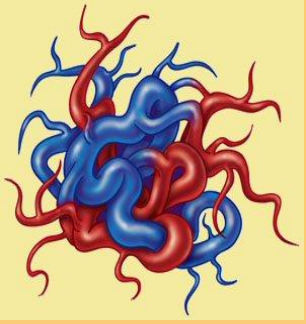
T1 med fat sat



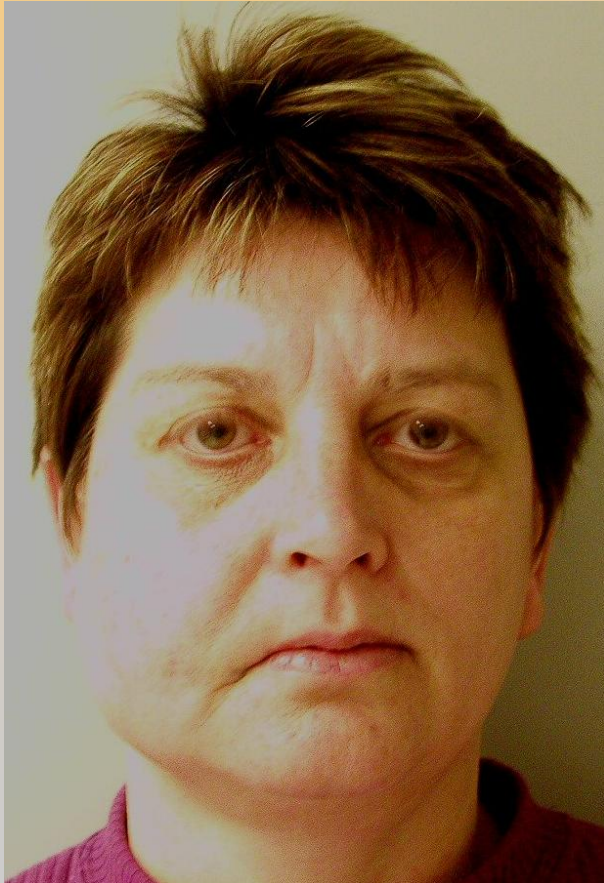


# *VM phlebografi*



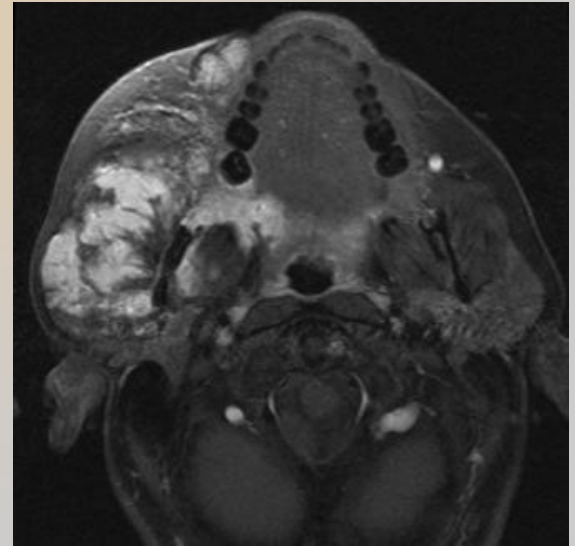
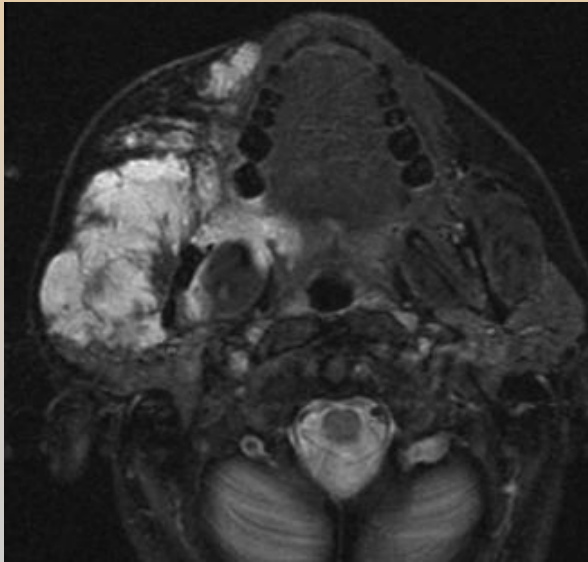
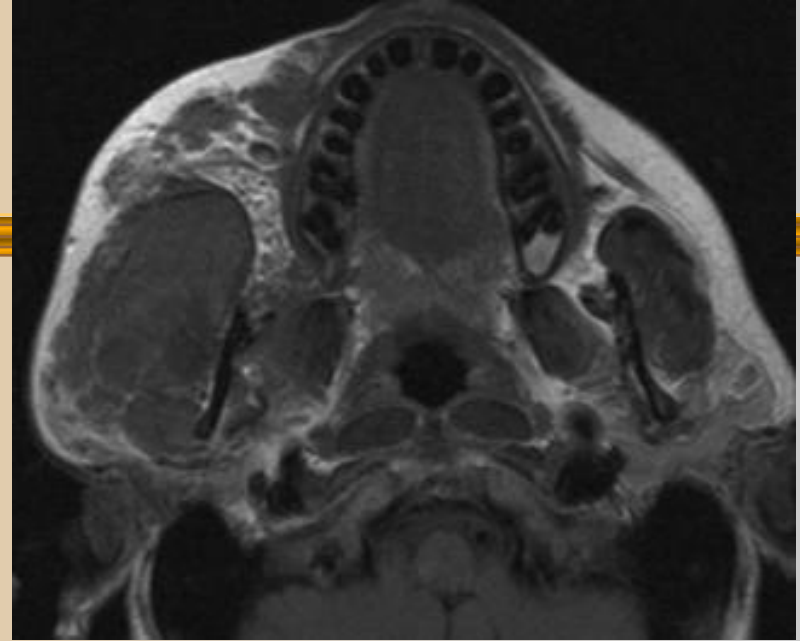
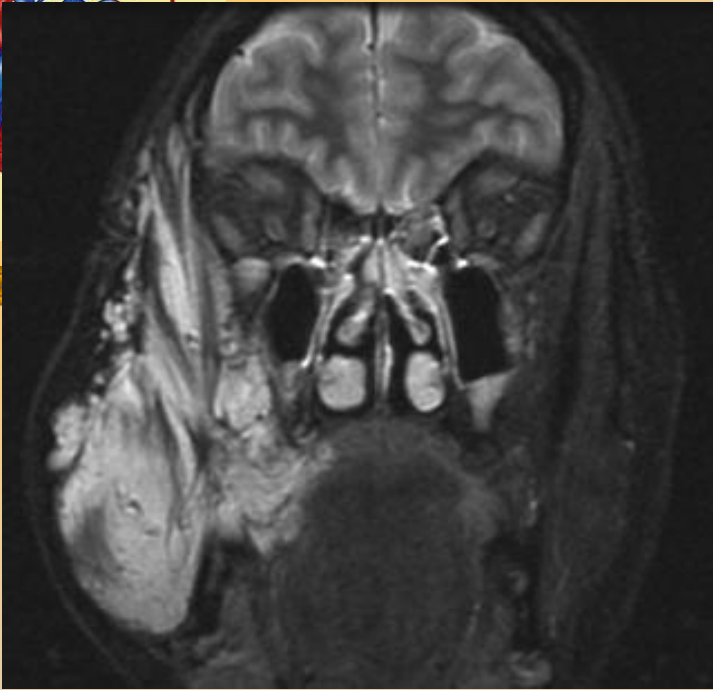


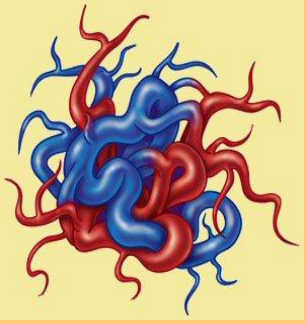
# *Venøs malformation*





*VM*

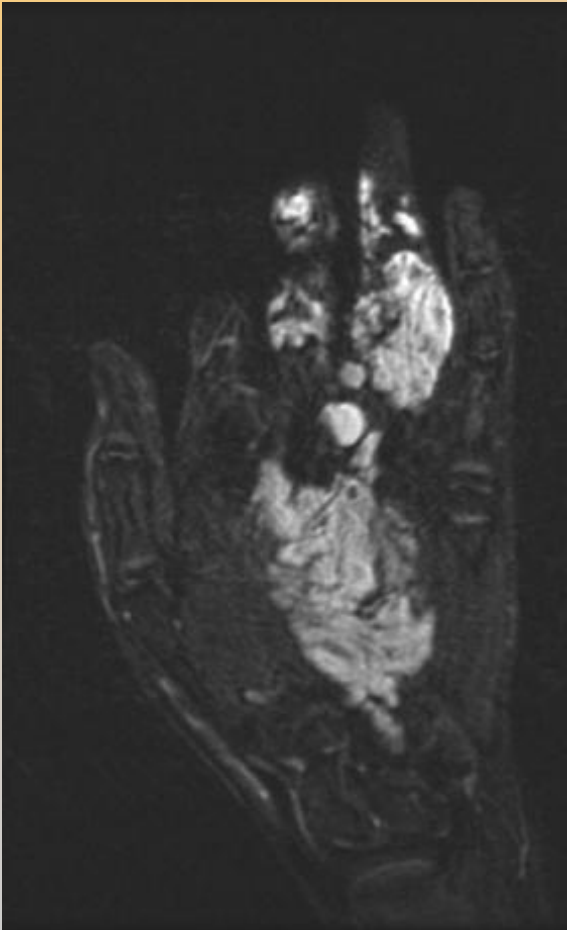
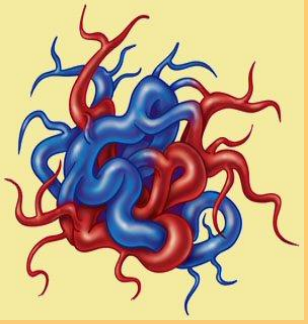


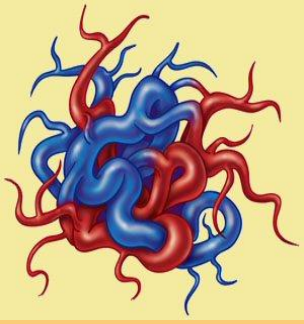


# *Behandling - sklerosering*









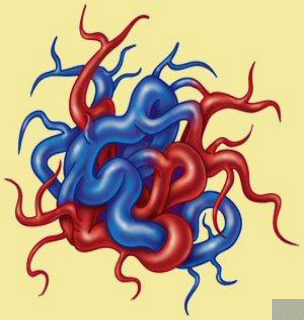
# *High Flow vaskulære malformationer*

## ★ Arteriovenøs malformation

- AV fistel
- Arteriolo-venøs malformation
- Arteriolo-venuløs malformation

## ★ MR karakteristik

- Flow void
- Ingen ”tumor”
- Hypertrofiske fødearterier og hurtig shuntning til vener



# *Stadie inddeling: Schobinger*



Stadie 1 i ro



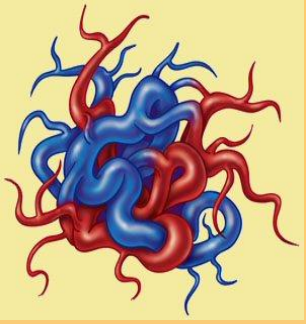
Stadie 2 ekspanderende



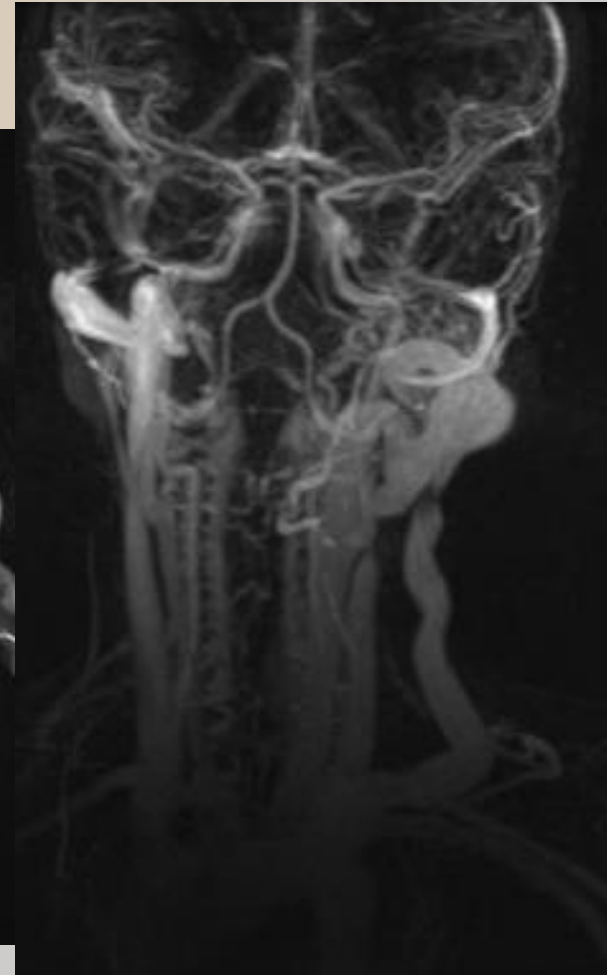
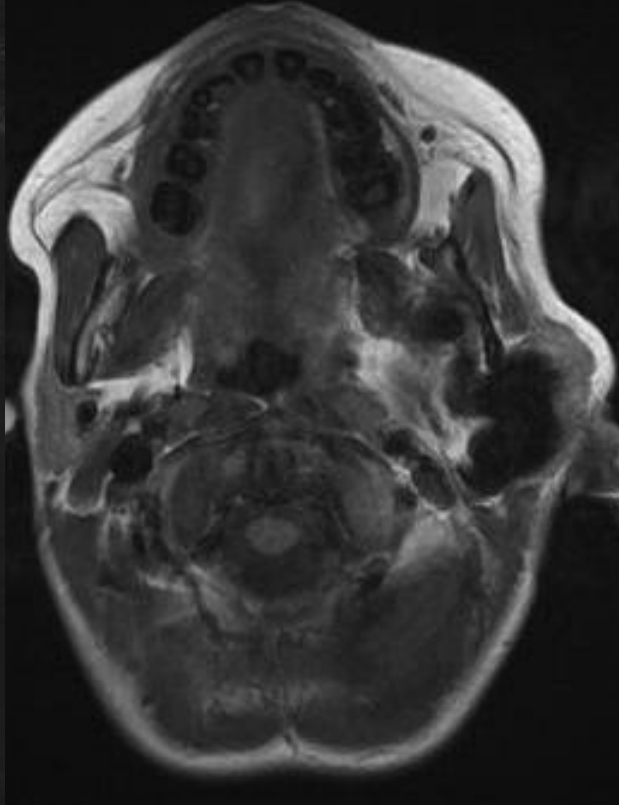
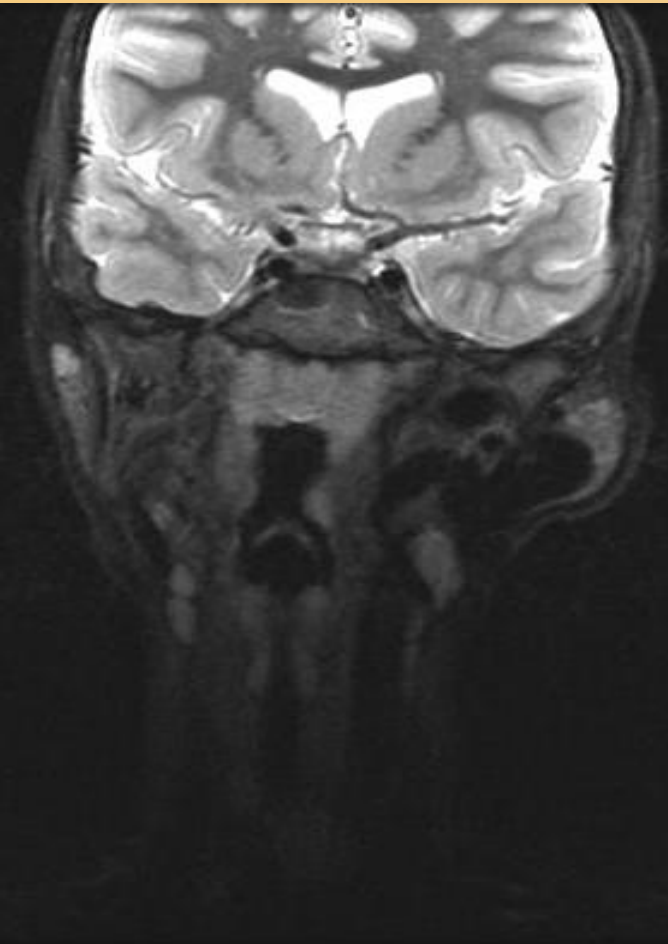
Stadie 3 destruksjon

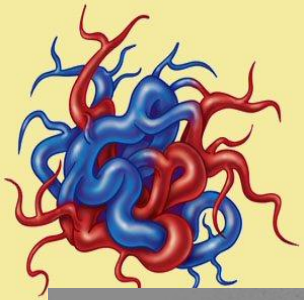


Stadie 4 kardiell inkompensasjon



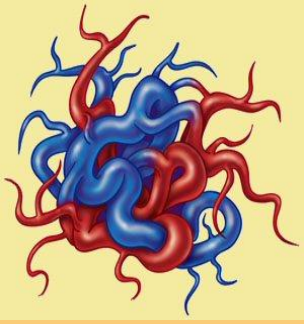
*AV Fistel mellem a. carotis  
externa og vena jugularis ext.*





# *AV Fistel mellem a. carotis externa og vena jugularis ext.*

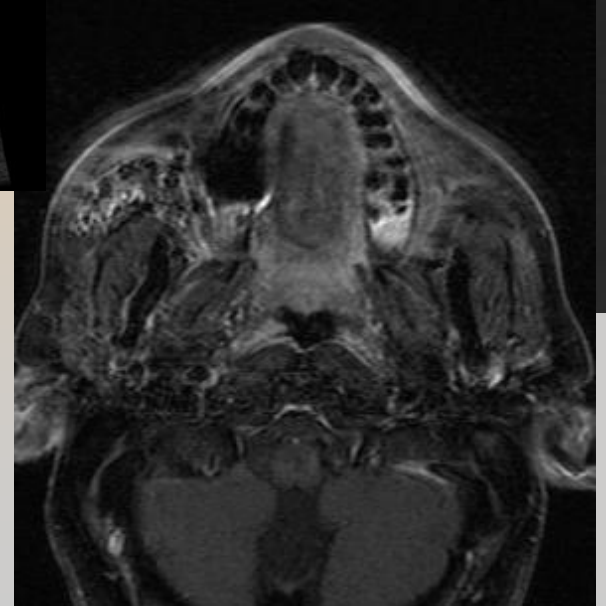
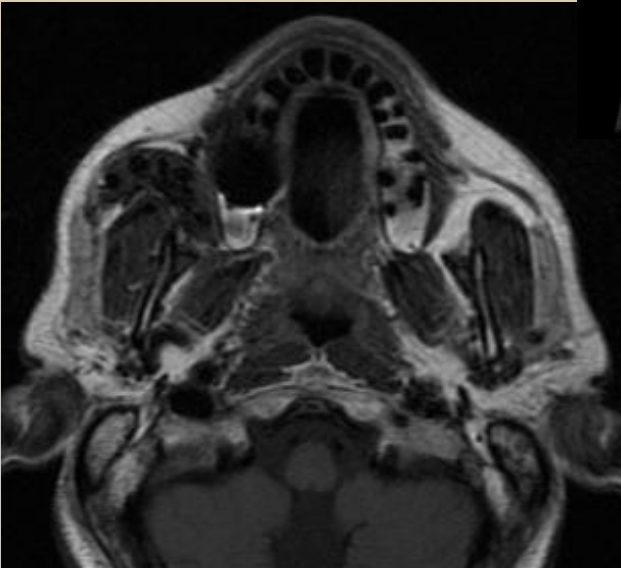
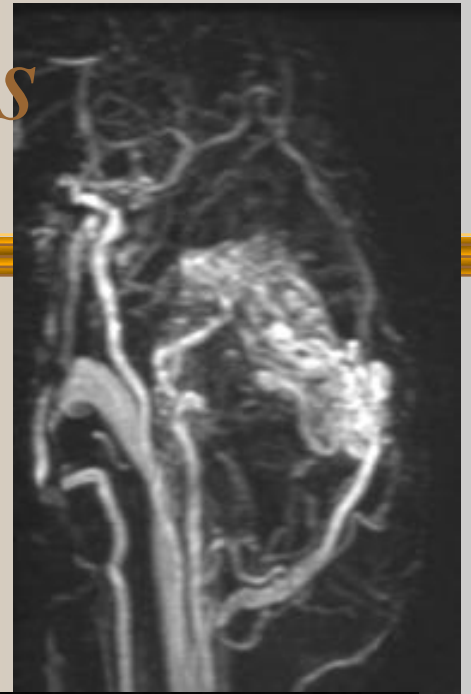
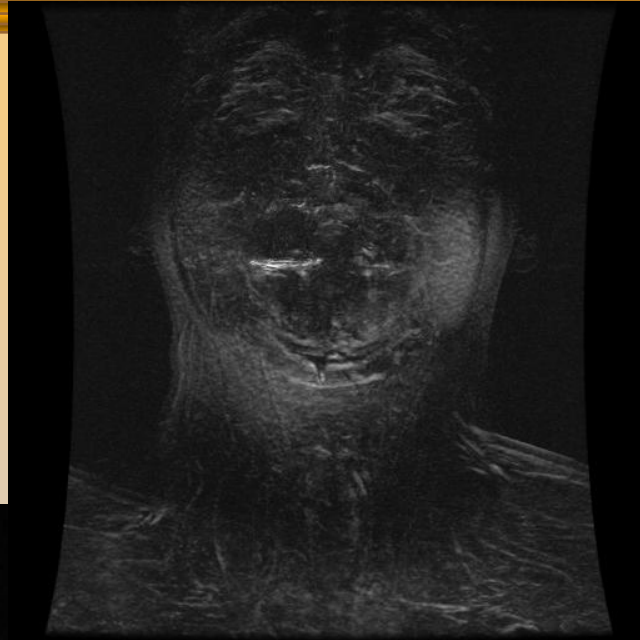
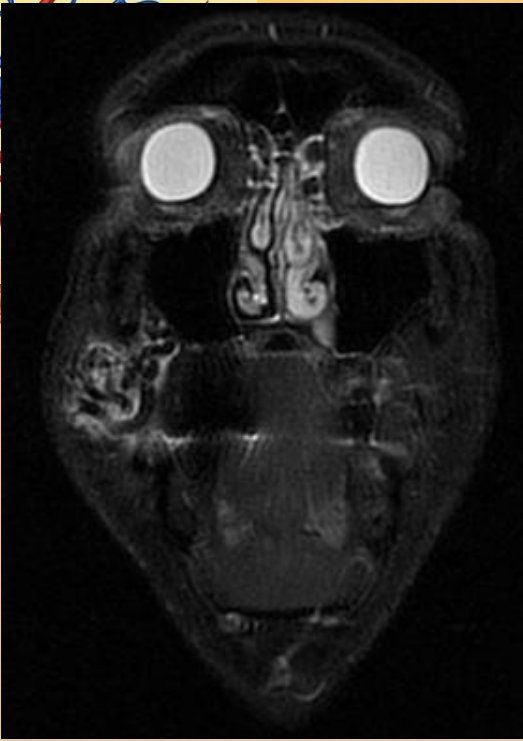


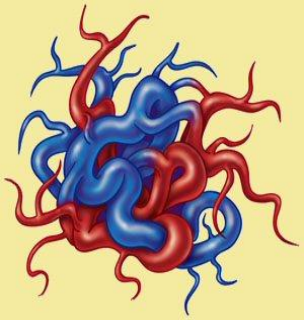


*Kind*



# *Arteriolo-venuløs*





## *Konklusion*

- ★ Hemangiomer ses hos børn, de gror frem og involererer
- ★ Vasculære malformationer er tilstede fra fødslen, gror med barnet og forsvinder ikke