

VM treatment options in 2016

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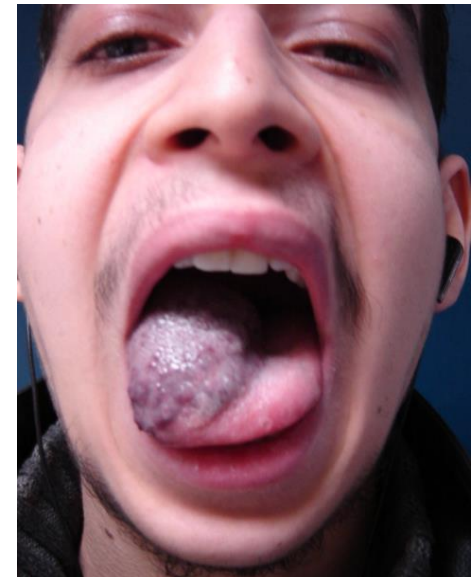
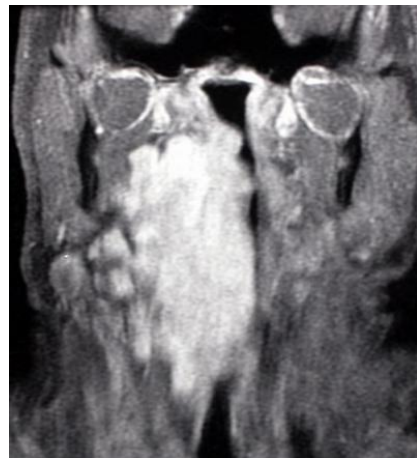
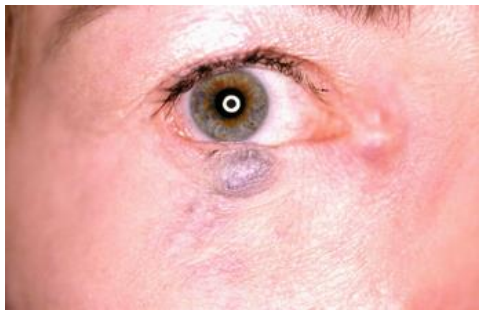


Disclosure

Speaker name:

A Bisdorff Bresson

- I have the following potential conflicts of interest to report:
- Consulting
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)
- I do not have any potential conflict of interest



Slow flow : direct punct versus High flow

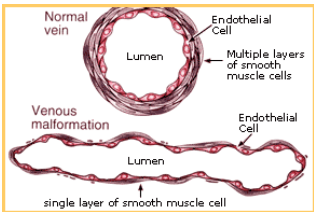
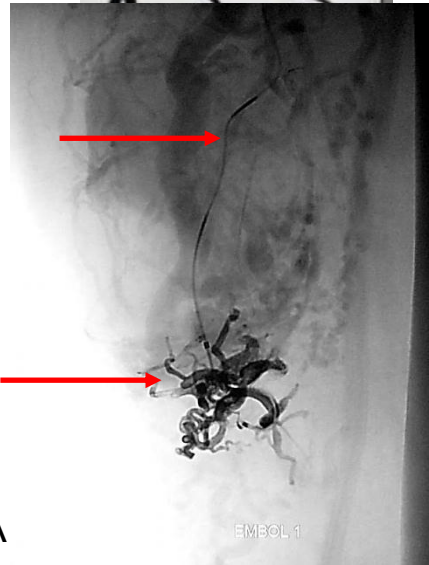
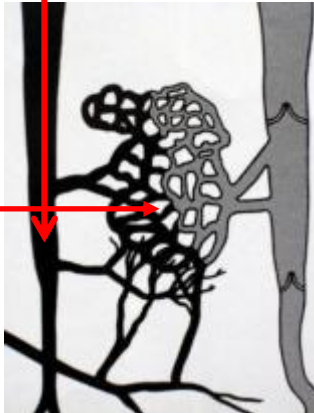
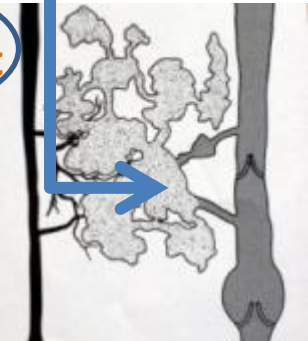
VM

AVM



Direct punct

Endovasc: microKT



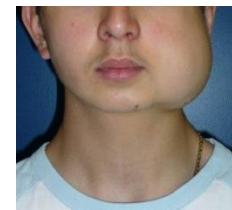
* Courtesy of P.E.Burrows,USA

Sclerosant agents

- **Liquid Agents** : Foam / ETOH / Bléomycine, Doxycycline (résorbable +++)
 - **Semi liquid Agents** : Glue / Onyx / Ethanol gel
 - **Permanent Agents** : Plug / Coils
 - Thermic endovenous ablation / Radiofrequency
- NON Résorbable

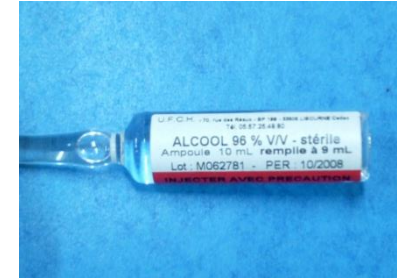
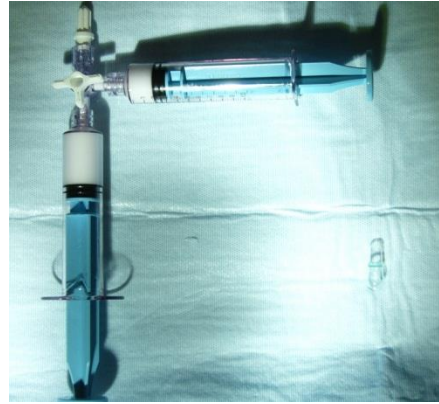


Agent choice depends on malformation location (deep or superficial) + lesion extension : Resorbable agent or not??



- **VM location : cervico facial** : sclerotherapy +++++ vs **Extremities** : sclero versus / surgery ++
- **Superficial lesions : prefer : liquid sclerosant agents:**
ETOH/ Aetoxisclerol/Sotradecol FOAM/ **Bleomycine/ Sclerosant gel/ Endovenous laser**
- **Deep lesions : ETOH /Gel/ Glue /Onyx**
- **Draining veins : Coils /amplatzer/ Glue**
- **No particles embolisation required in VM treatment**

Choice: Evaluate **complication risk** 2 d sclerosant agent and lesion location : **superficial vs deep**

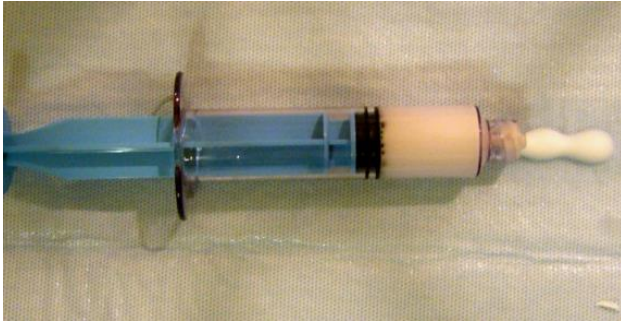


Glue/ NBCA

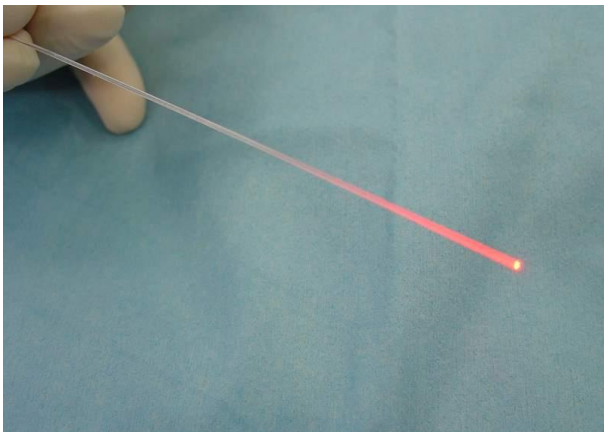


- Skin necrosis
- Transient paresis





Superficial lesions



Before

After



I) Foam and Laser TTT



GVM



2015



Aetoxisclerol Foam and endovenous laser TTT

Aetoxisclerol 3%
foam: 1/3 dilution

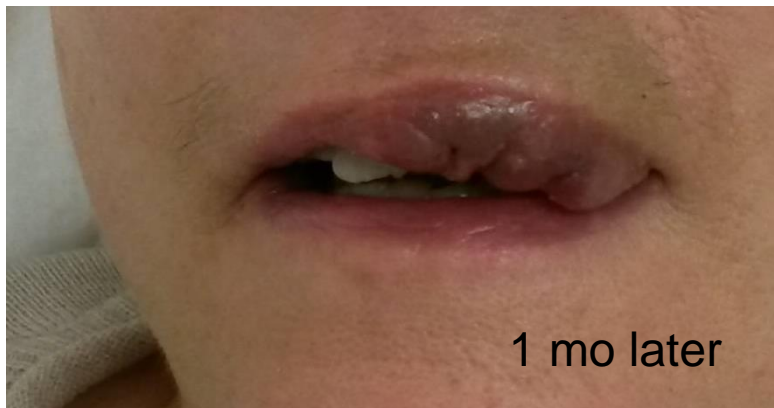


GVM

Necrosis
Aetoxi 3%
foam: 50-
50%



II) Endovenous laser treatment



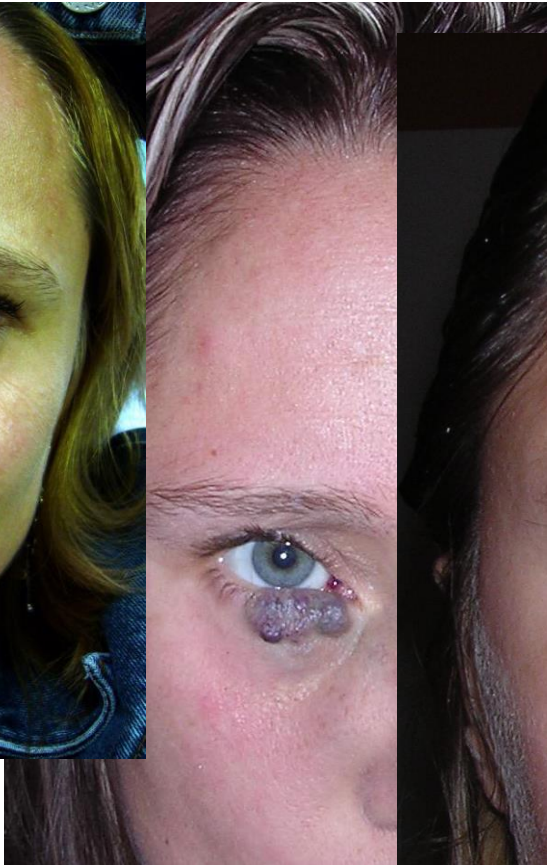


2 MO after 1 Laser session

Dr Larralde, Dr Aillet, Rennes



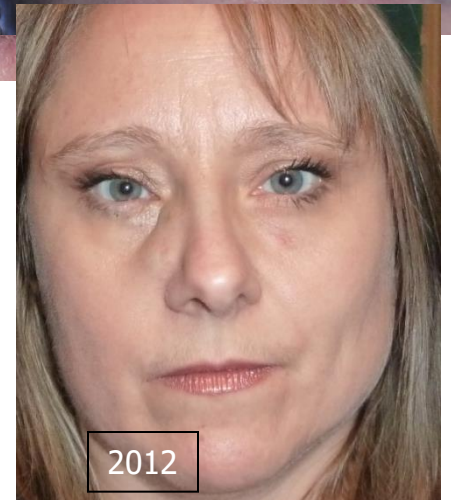
2006



J 7



J 30



2012

B Faucon



1 Mo after 1 laser + Aetoxisclero session
A Larralde , Rennes

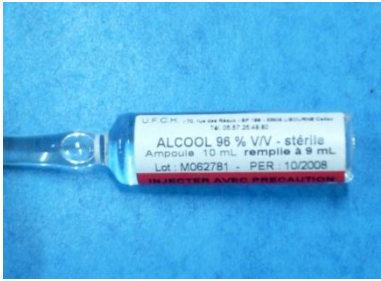
III) GEL

Malformation veineuse



(Pr. THERON – *Interventional Neuroradiology* 10:113-127, 2004. - CHU CAEN – France)

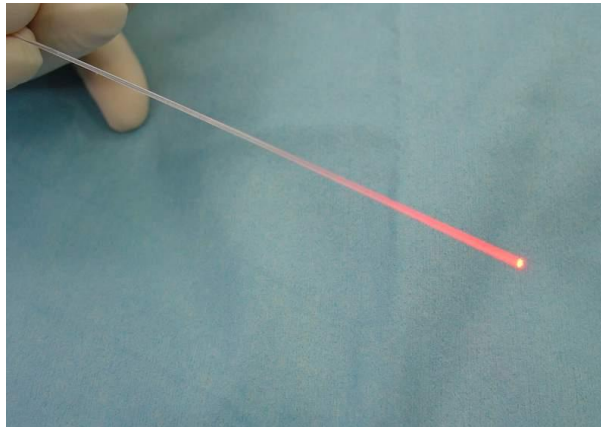
SCLEROGEL kit® est contre-indiqué chez les patients ayant des antécédents d'allergie connue à l'un des composants.
SCLEROGEL kit® n'est pas indiqué chez la femme enceinte.



Deep lesions



Gel



Glue/ NBCA

ETOH

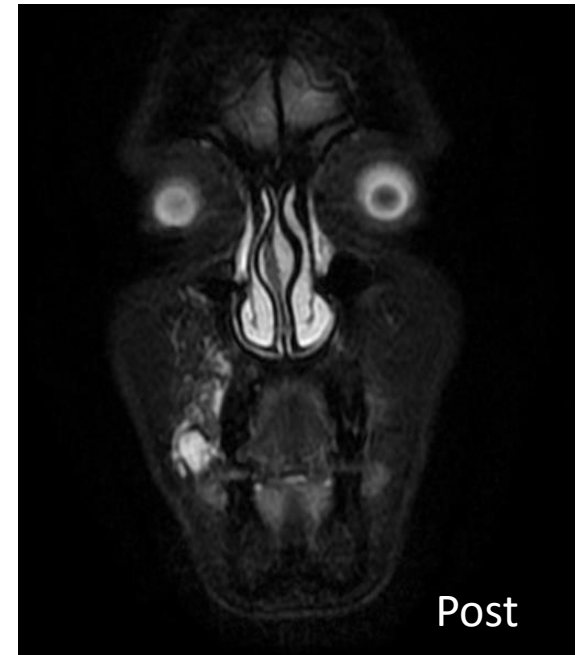
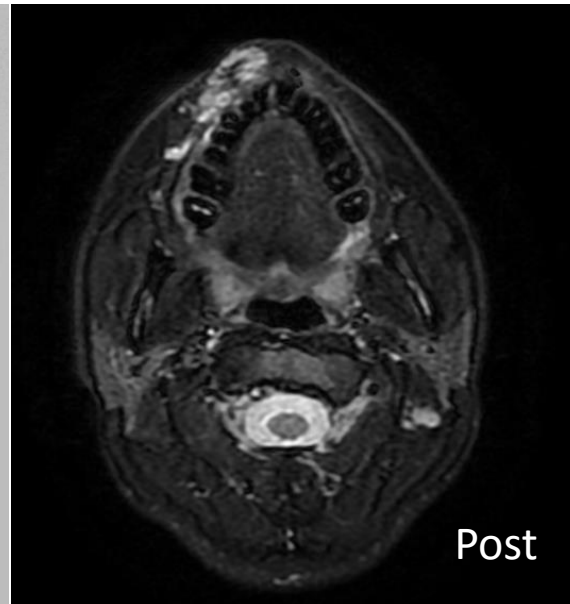
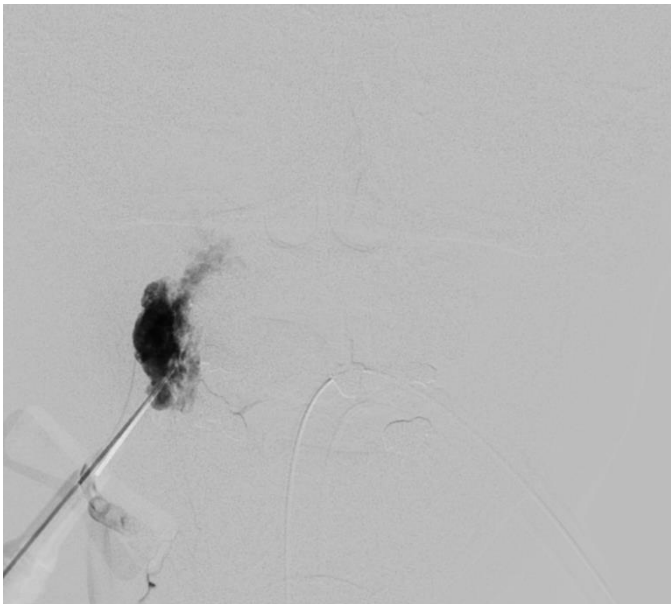
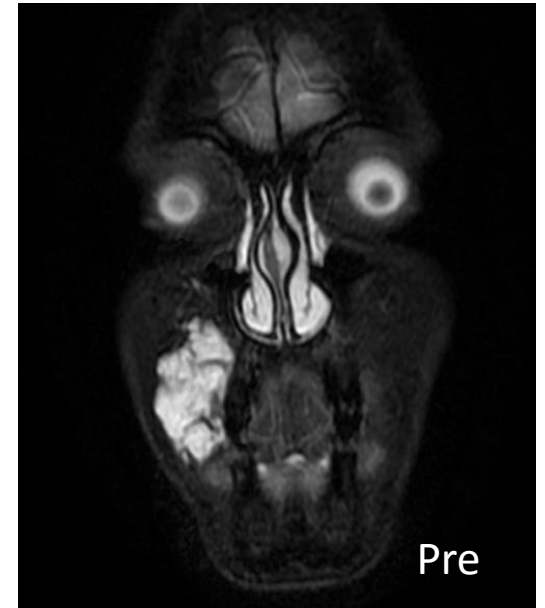
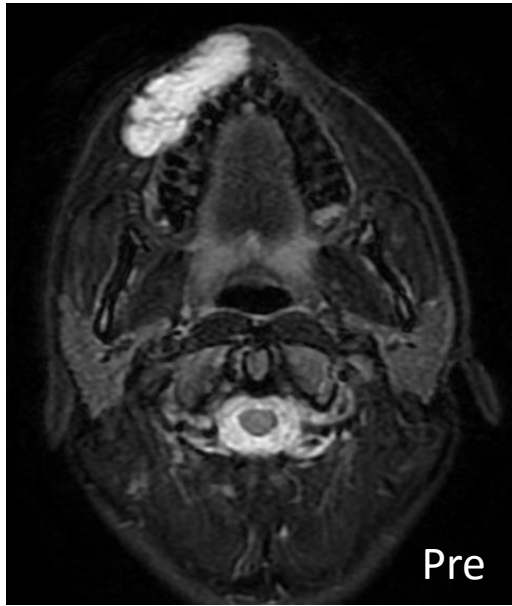
- Requires GA
- Powerfull sclerosant agent
- Less expensive

But Major complications : 2d ETOH sclerotherapy

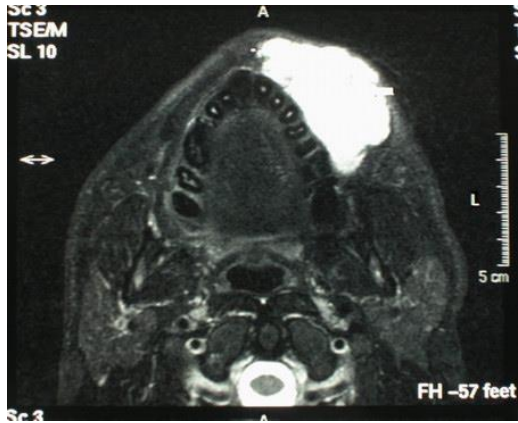
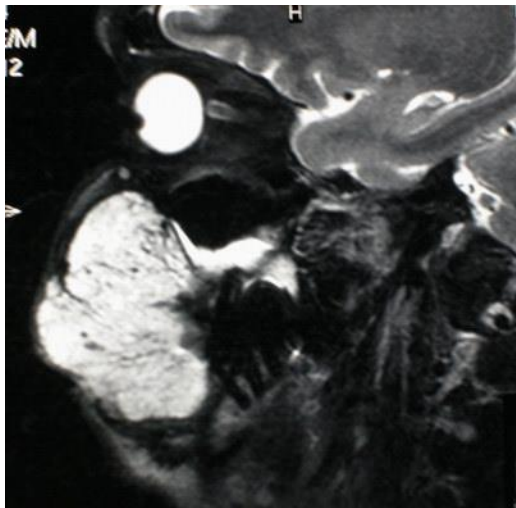
- Venous drainage ++ : DVP /PE
- Transient paralysis
- PAHT
- Arterial : occlusion (rare)
- Death : 2 cases in France

I)
ETOH/Lipiodol
mixture

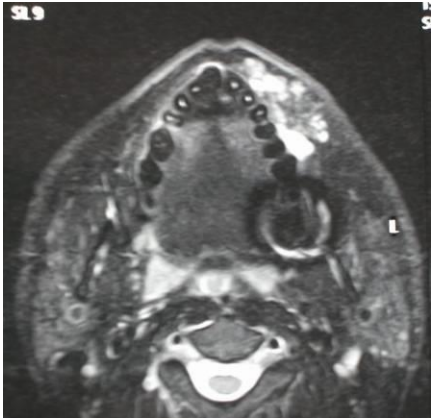
Direct puncture : ETOH



Before



After



before

after

before



after



Before

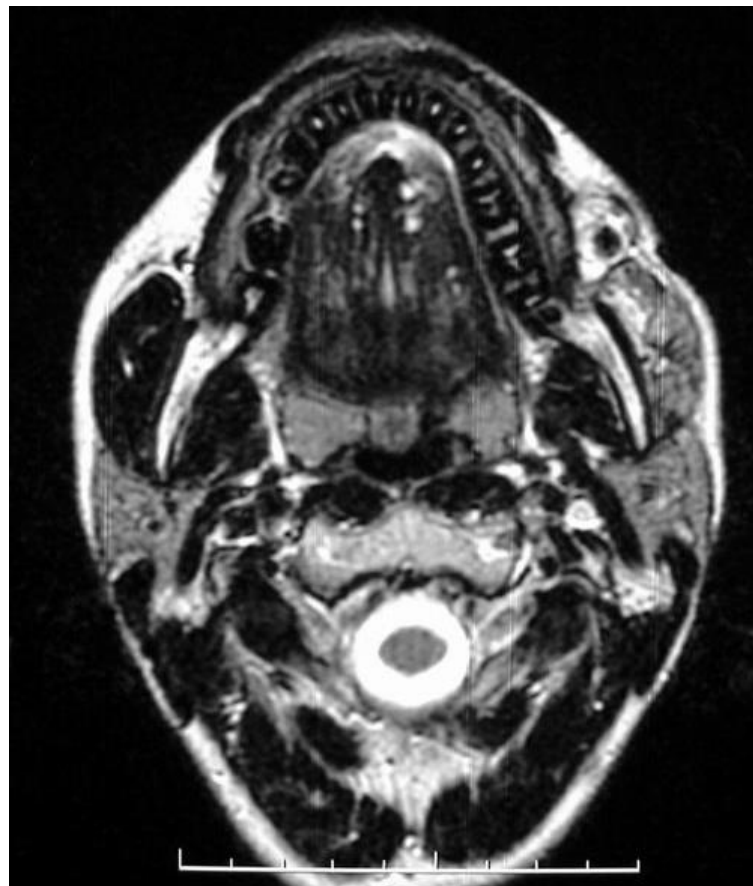


After

R Chapot

Before

After



RC

II) Bleomycine = liquid sclerosant agent

Glycopeptide antibiotic produced by the bacterium streptomyces verticillus. Usually, it is used as an **antineoplastic drug** to treat many kinds of cancer, such as lymphoma, cervical cancer, head and neck cancer, and testicular cancer.

Bleomycin A5, also named **pingyangmycin**, is the most commonly used sclerosing agent for the treatment of vascular anomalies in China

Due to potential toxicity related to **pulmonary fibrosis** there is limited experience with Bleomycin for the treatment of VM/ LM in North America and Europe .

Courtesy Dr G Soulez, Montréal





Before



After

Courtesy PE Burrows, USA



III) Sclerogel=ETOH gel in between liquid /non resorbable material

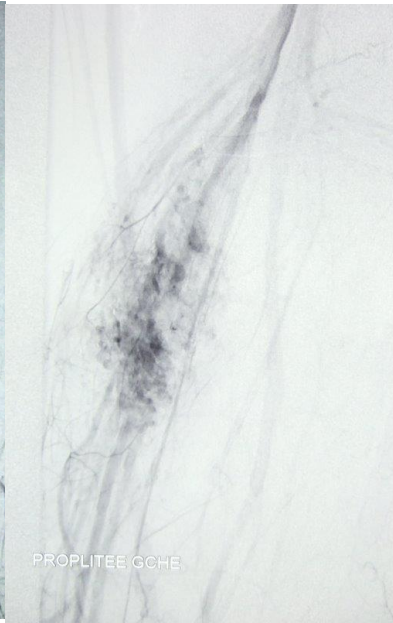


Pricy \$\$\$



Less painfull ETOH , slowly resorbable

III) Deep IMVM:
Calf region
non resorbable
agent might be used



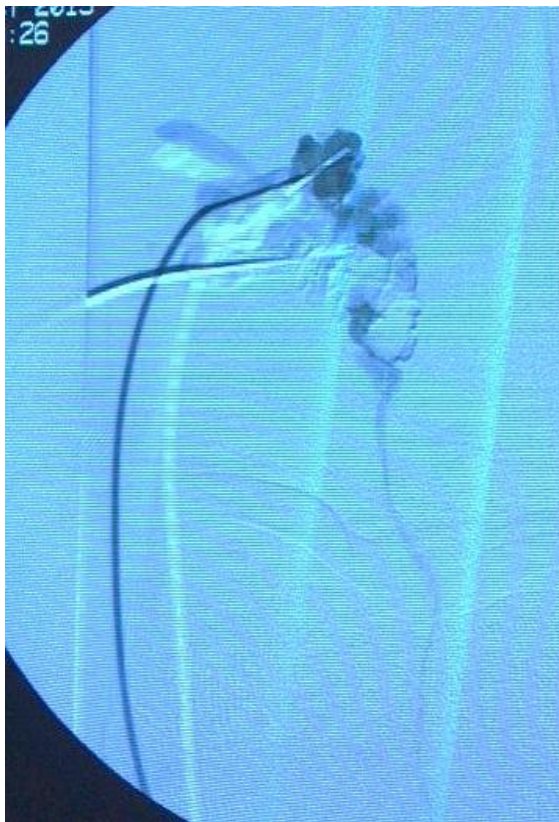
ONYX

DRAINING VEINS





IV) Non resorbable agent: NBCA cast

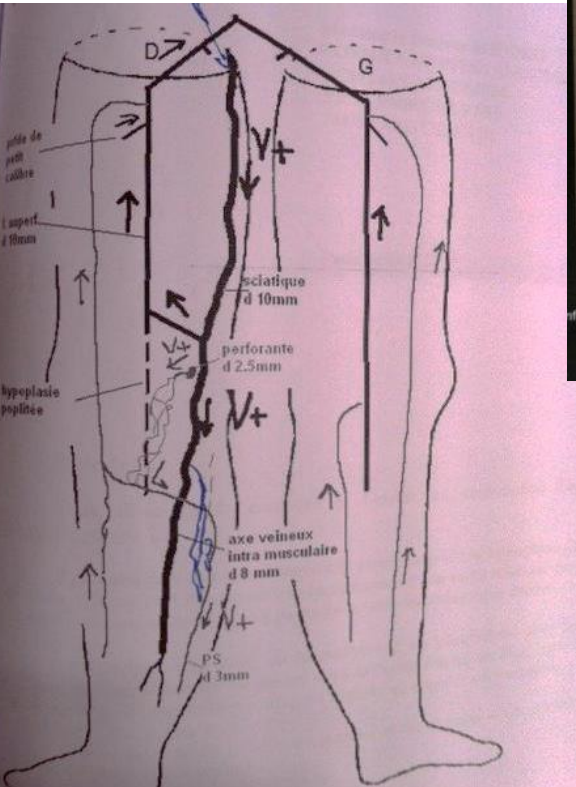


Glue/ NBCA

Truncular VM



Prior glue embo



Milka Greiner



Glue/ NBCA

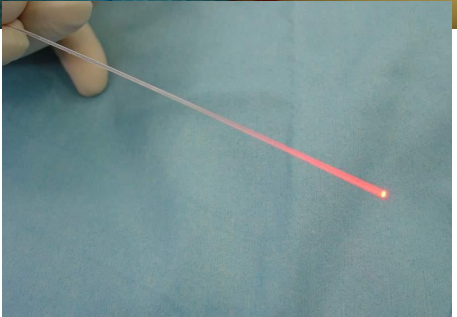


Post glue occlusion

IV) Endovenous laser treatment

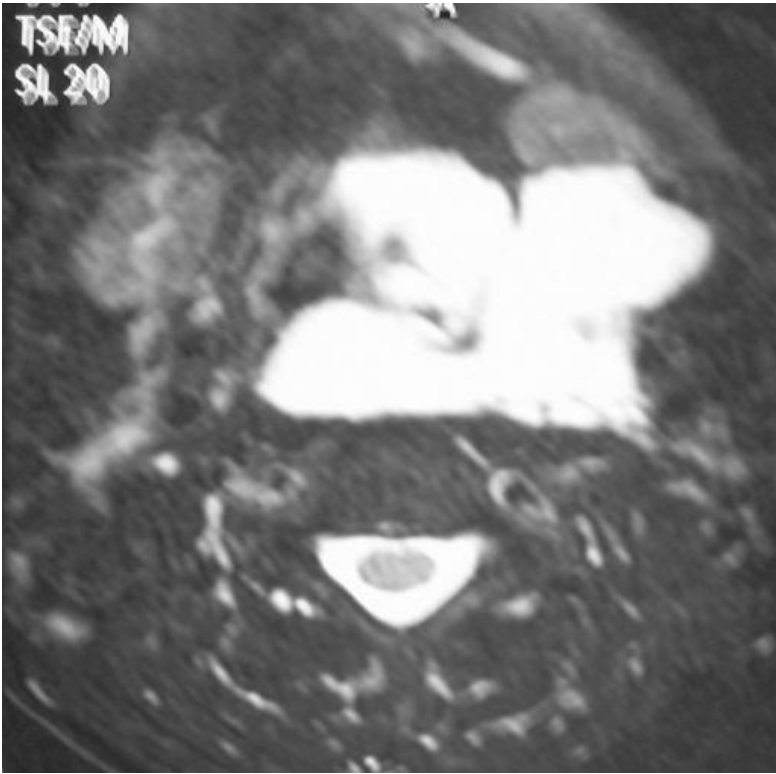


before laser



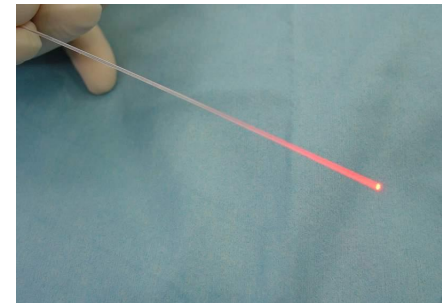
After laser

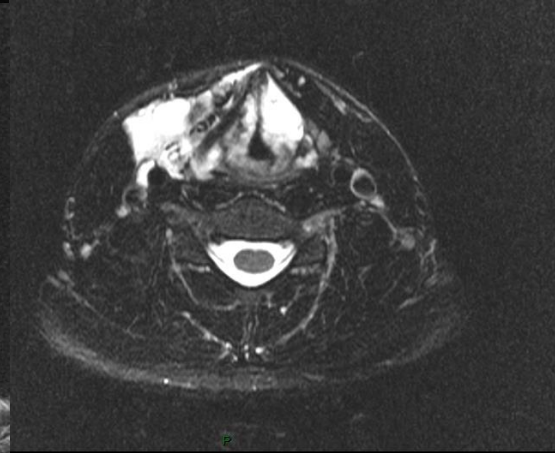
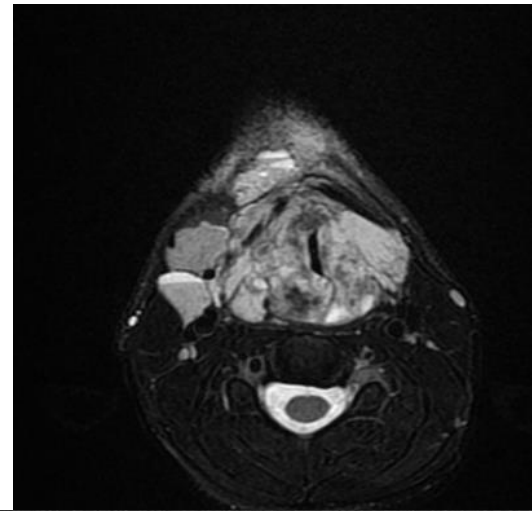
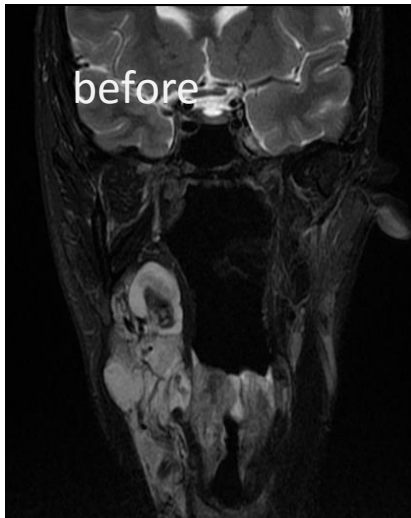
IV) Endovenous laser treatment



Before and after endovascular laser treatment :
post wall > lateral wall

Dr D Salvan





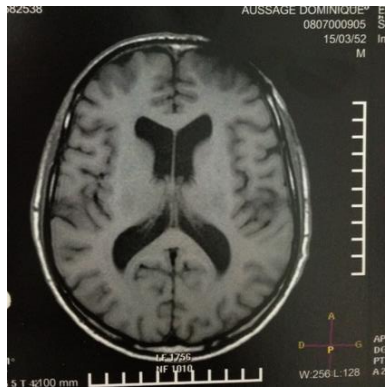
BUT : Surgery remains is still a good TTT option for some locations

Indications

Large extensive lesions

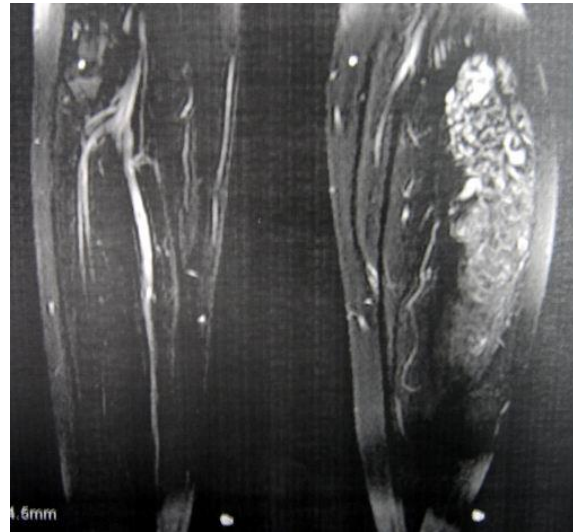
Connections large draining veins with deep system

Thromboses lesions



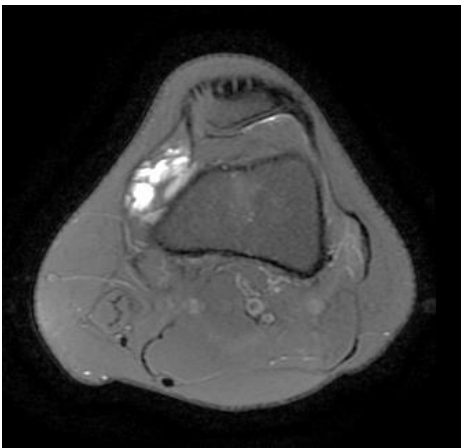
Excision surgery Frontal VM ,B Faucon, D Bresson

Excision surgery of Calf VM

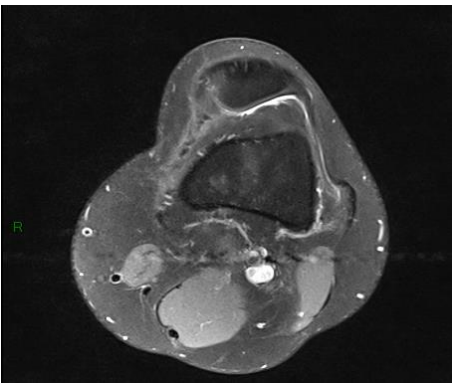
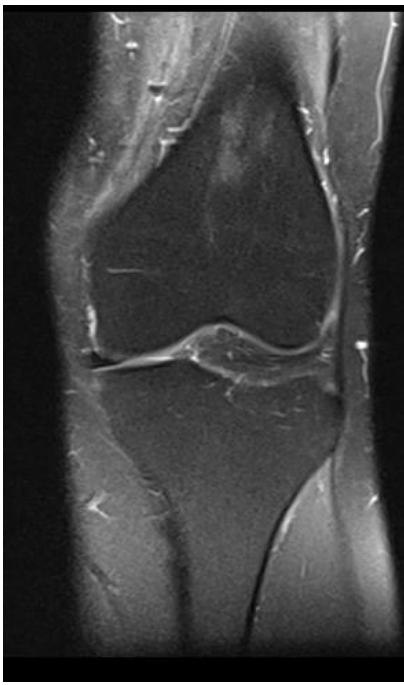


Cl Laurian

Excision surgery of IMVM



Requires Pre op US
+++ , **no** preop
tourniquet ++



Rapamycin improves *TIE2*-mutated venous malformation in murine model and human su

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Emmanuel Seront,⁴ Sophie Dupont,⁴ Jennifer Hammer,⁵ Catherine Legrand,⁶ Carlo Brugnara,⁷ Lauri Eklund,
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Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts, USA.

Venous malformations (VMs) are composed of ectatic veins with scarce smooth muscle cell coverage. Activat
in the endothelial cell tyrosine kinase receptor *TIE2* are a common cause of these lesions. VMs cause deform
local intravascular coagulopathy, and they expand with time. Targeted pharmacological therapies are not av
condition. Here, we generated a model of VMs by injecting HUVECs expressing the most frequent VM-causin
TIE2-L914F, into immune-deficient mice. *TIE2*-L914F-expressing HUVECs formed VMs with ectatic blood-fil
that enlarged over time. We tested both rapamycin and a *TIE2* tyrosine kinase inhibitor (*TIE2*-TKI) for their e
VM expansion and for their ability to inhibit mutant *TIE2* signaling. Rapamycin prevented VM growth, while
no effect. In cultured *TIE2*-L914F-expressing HUVECs, rapamycin effectively reduced mutant *TIE2*-induced

Conclusion

- **Agent choice depends on VM location and extension**
- Resorbable or non resorbable
- Endovenous laser treatment can be an option
- Surgery remains an option in some cases
- Futur Medical treatment : Rapamycine ? Others ?



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M Borsik
C Degrugillier-Chopiniet
C Laurian
L Drouet
M Wassef
N Leclerc

Our Mentors:



JJ Merland et MC Riché



Odile Enjolras