

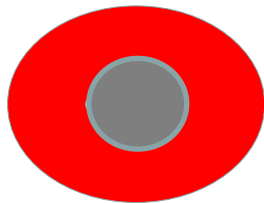
**Initial and permanent vein lumen
minimization obtained with
endovenous occlusion techniques
by using hyaluronan solution
instead of tumescent fluid**

Johann C. Ragg, MD

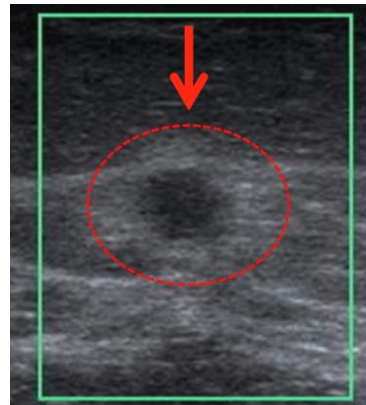
Founder and head of angioclinic® vein centers
Berlin – München – Zürich

background

Tumescent anaesthesia is usually applied prior to thermo-occlusive methods, but the benefit of vein lumen reduction is lost within hours to days due to rapid fluid resorption. Consequence: Painful inflammatory reactions, indurations and discolorations. Incidence is increasing with vein diameter.



inflammation



study

endoluminal treatment + perivenous gel cover

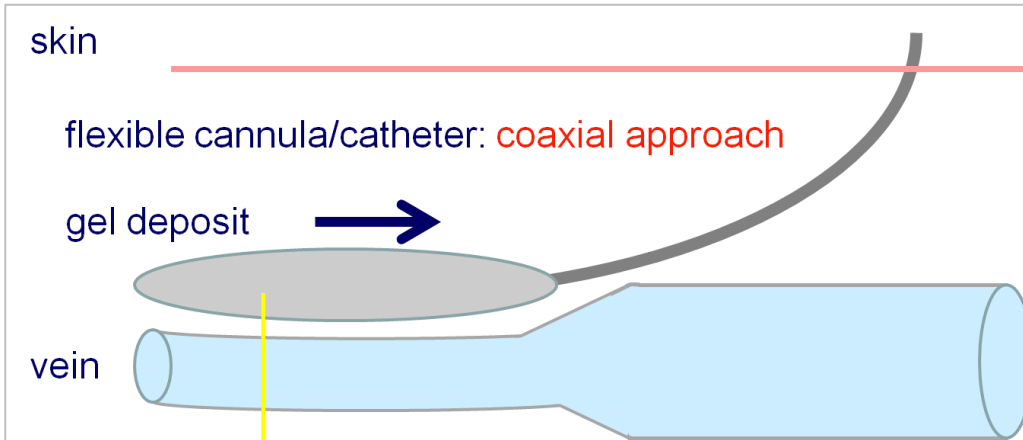
- 48 patients (33 f, 15 m, 46 – 74 y.)
 - saphenous insufficiency (GSV, intrafascial)
 - diameter: 7.2 – 23.9 mm, distance to skin > 8 mm
 - laser 1470 nm (radial, Biolitec, n = 24)
 - microfoam (Aethoxysklerol, 1%, catheter, n = 24)
 - hyaluronan: 2% solution, crosslinkage: 1%
 - no external compression applied
 - clinical + sonogr. examinations after 2 and 8 w.
-

injection tool

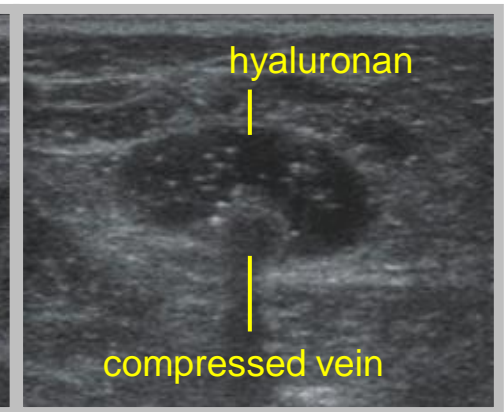
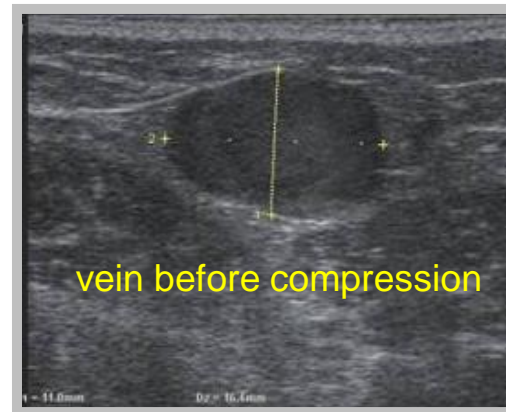
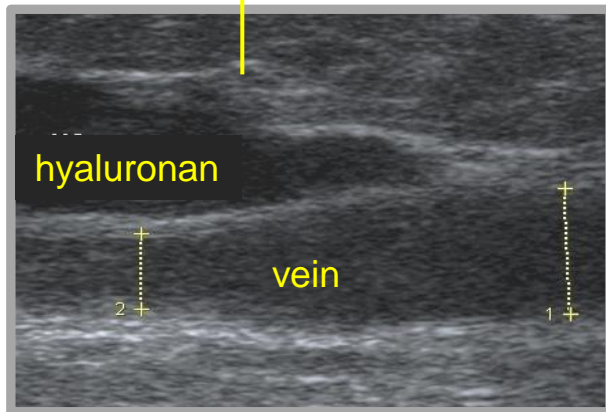
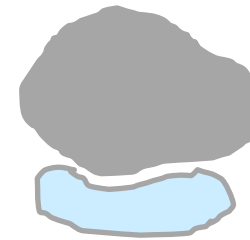
- hollow needle, ID: 0.6 mm, Luer-Lock
- catheter: PTFE; ID: 0.8 mm, OD: 1.3 mm
- flexible, working length: 200 mm
- tip switchable sharp/blunt



injection before foam sclerotherapy



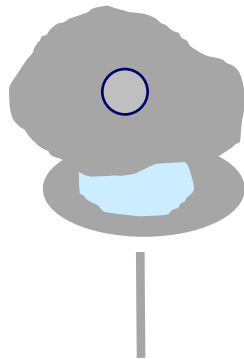
scheme of vein compression
cross-sectional view



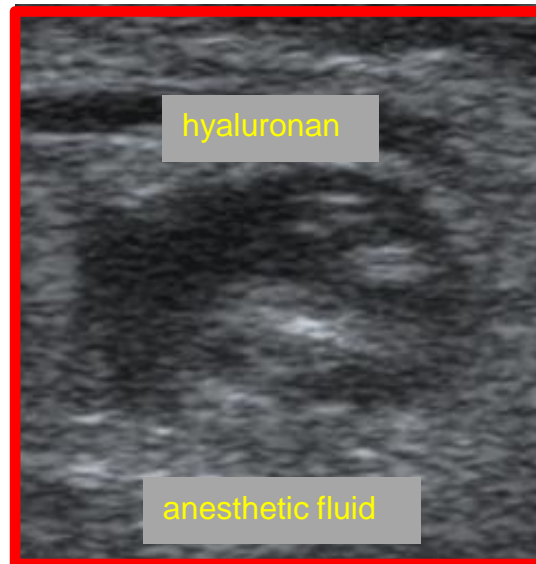
injection before laser/RF

For use with laser or RF, a small amount of diluted local anaesthetic has to be placed around the target vein:

hyaluronan



anesthetic fluid



results

catheter application of gel:

- technically successful in the first attempt during catheter withdrawal in 45/48 cases (93.7%)
- 3 cases received additional needle injections
- *all diseased veins occluded (n=48, week 2)*

reduction of vein cross section:

- 50 – 81%, **mean: 68.2%** (week 2)
- 62 – 84%, **mean: 73.1%** (week 8)

results

gel volumina:

laser	mean 1.9 ml/cm (1.4 – 2.9 ml/cm)
sclerofoam	mean 2.1 ml/cm (1.3 – 3.1 ml/cm)

application time:

laser	mean 6.7 s/cm (3.5 – 13.7 s/cm)
sclerofoam	mean 3.8 s/cm (2.2 – 8.8 s/cm)

complications:

- no major adverse events (infection, DVT, embolism)
 - no problems related to vein compressing medium
-

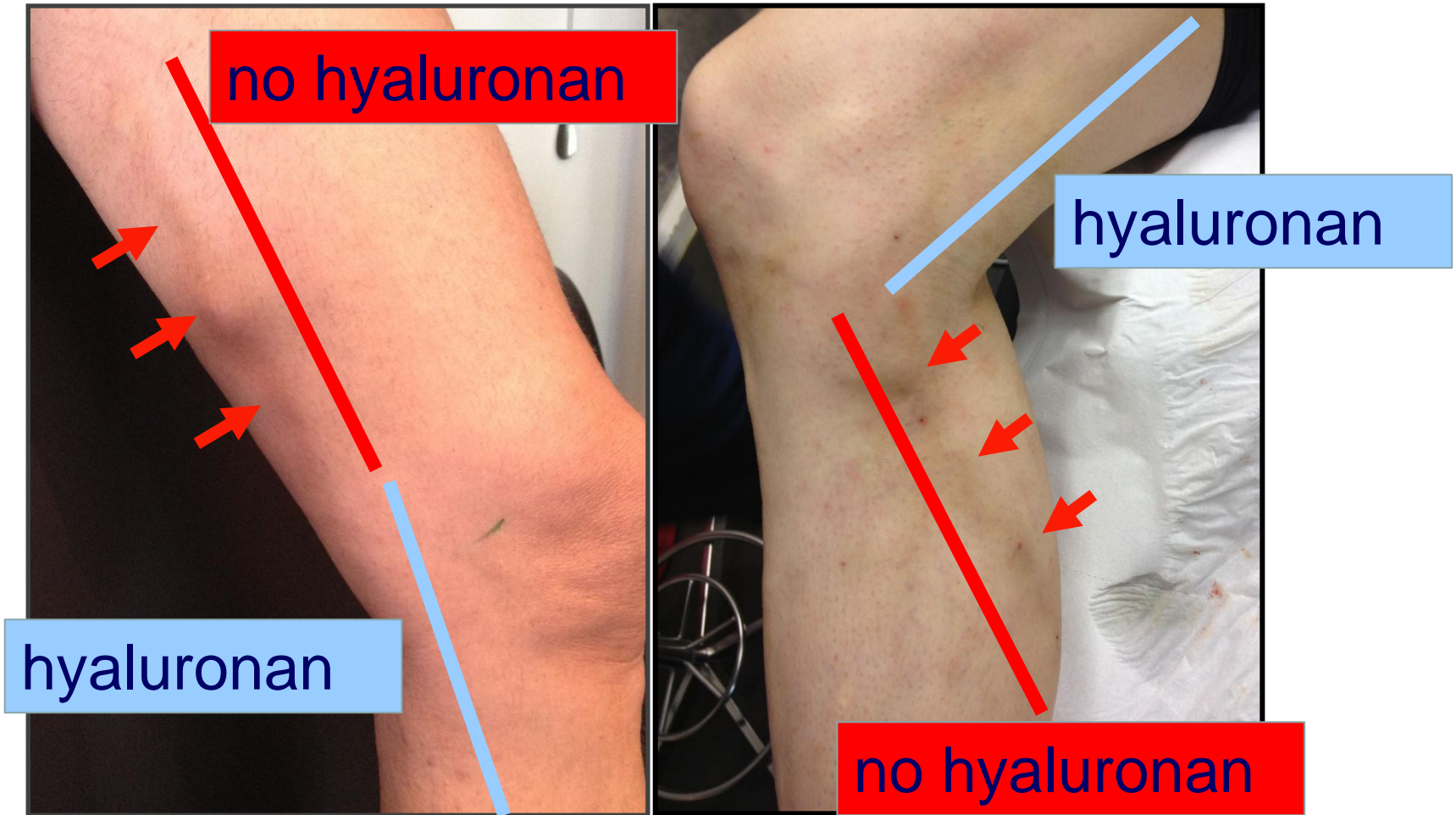
results

<i>segments</i>	<i>with hyaluronan</i>		<i>without</i>	
visible small hematoma (week 2)				
laser	2/24	8.3%	9/24	9.5%
sclerofoam	0		2/24	8.3%
minor discomfort not limiting any activities				
laser	2/24	8.3%	14/24	58.3%
sclerofoam	1/24	4.1%	15/24	62.5%
pain (oral analgetics)				
laser		0	8/24	33.3%
sclerofoam		0	5/24	20.8%

results

<i>segments</i>	<i>with hyaluronan</i>	<i>without</i>
discolorations (week 8)		
laser	0	9/24 37.5%
sclerofoam	0	8/24 33.3%
mini-thrombectomies (aspiration), related to...		
laser	0	6/24 25.0%
sclerofoam	0	2/24 8.3%

visual comparison



conclusions

Hyaluronan injection used with catheter sclerotherapy or endovenous laser provides...

- invisible „internal“ vein compression
- effective and save prevention of symptoms
- improvement of patient comfort
- optimized aesthetic results

Replacement of tumescent fluid is therefore recommended for saphenous veins > 6 mm.

Read more: www.venartis.org (non-commercial)
