# Retrograde Chemical Microfoam Ablation of Superficial Venous Insufficiency: A Review of 250 Cases

### **Introduction & Objectives**

Retrograde chemical microfoam ablation is a new technique for the treatment of superficial venous insufficiency. This paper reviews our experience in treating 250 cases between March 2015 to June 2017.

Unlike surgical or thermal ablation of the greater saphenous vein (GSV) this technique allows for the treatment of venous hypertension above and below the knee and ankle areas from a single remote access site.

This technique is also useful for treating patients who had failed or incomplete treatment of superficial venous insufficiency by surgical or thermal ablation.



•Figure 1. Injection Technique

### Materials & Methods

The GSV is accessed with a 5 French micropunture catheter in the distal thigh. The leg is elevated 45 degrees to empty the varicose veins. Under ultrasound guidance the GSV is closed with polidocanol injectable microfoam 1%. Next a second injection is administered through the same catheter directing the polidocanol microfoam to flow distally in a retrograde fashion through the incompetent venous valves to the ankle. Figure 1





•Figure 3. Two weeks after treatment with 8 mL polidocanol injectable microfoam 1 %

Two thirds of the patients were female age 30 to 95 with mean venous valvular reflux in the GSV of 2,240 +/- 1,120 msec and mean vein diameter of 8 +/- 2.5 mm. Symptoms included aching/ pain, heaviness, fatigue and swelling. Patients were examined with duplex scan immediately post procedure and again 5 to 7 days after treatment.

Retrograde chemical microfoam ablation was successful in treating the venous valvular reflux in 89% of the patients; 22 % of these patients did require a second treatment for residual reflux in the below knee GSV segment. Total of 9.5 +/- 2.5 mL of polidocanol injectable microfoam 1% was used per treatment. Figure 2 and 3.

22% of the cases (56/250) had prior treatment with surgical (17) or thermal ablation (EVLT 36, RF closure 3) that did not adequately treat the patients' symptoms.

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•Figure 2. GSV Reflux 1,830 msec / GSV Diameter 16.1 mm

## Results

Patient with	CEAP 6	20	Non-Healing Ulcer	Vein Treated	Vein Size	Vein Reflux	Prior Adjunct Treatment	Polidocanol	Result
			0						
	Age	Sex	cm		mm	msec		mL Used	
JG	95	F	3	Accessory Br LGSV	6.4	840	Ligation & Stripping LGSV & 136 Unna Boots	5	Healed 31 days
WG	65	М	1.5	R GSV	10.6	1,590		8	Healed 20 days
ML	59	М	4&3	R GSV	7.4	500		10	Not healed
CM	46	М	2.5	R GSV	12	1,190		10	Healed 21 days
KG	39	F	2	Below Knee R GSV	10.3	1,400	R EVLT GSV & R Microfoam Possterior Br GSV	14	Healed 12 days
PK	38	М	1.5	R GSV	15.1	3,470	R EVLT	15	Healed 20 days
DS	65	F	3	R GSV	6.2	1,030		9	Healed 27 days
LW	66	М	2.5	R GSV	6.9	1,260	Varicose vein phlebectomy & 3 Unna boots	9	Healed 14 days
JW	<mark>4</mark> 9	М	6	L GSV	8.1	1,070	11 Unna boots	13	Not healed
JW	49	М	0.5	L Above & Below Knee GSV	4.6	1,370	Microfoam LGSV and 25 Unna boots	11	Partially healed
Patient with	CEAP 6		Bleeding Ulcer						
HB	72	F		R GSV	5.6	500		13	R GSV open No bleeding
EM	57	М		L GSV	10.6	2,830		9	LGSV closed No bleeding
DP	39	М		R GSV	6.4	2,030	RF Closure R GSV & R EVLT GSV	13	R GSV closed No bleeding
JR	39	F		R GSV	7.4	950		9	R GSV closed No bleeding
EH	63	М		R GSV	8.2	2,530	5 Unna boots	9.5	R GSV closed No bleeding
DR	56	F		LGSV	9.9	2,440	Microfoam L GSV	15	LGSV closed No bleeding

Table 1. CEAP 6 Ulcer Patients Treated with Polidocanol Injectable Microfoam 1%

16 patients had CEAP 6 ulcers; 6 with spontaneous bleeding and 10 with non healing ulcers 8 of 10 ulcers healed in less than 1 month. Table 1.

Complications included 2 DVT, I CFVTE (Common Femoral Vein Thrombus Extension) and 4 SVT. There were 14 technical failures.

Retrograde chemical ablation of greater saphenous venous insufficiency from a single remote injection site is described. This technique allows for the treatment of the GSV and its below knee tributaries that are not readily amenable to surgical or thermal ablation. The retrograde injection technique results in a shorter ulcer healing time as compared to thermal ablation of the GSV with or without adjunct surgical procedures. Elevating the leg before administering the polidocanol injectable microfoam 1% results in better closure rates than seen with other ablation techniques. Retrograde chemical microfoam ablation is also a useful adjunct in treating patients who have recurrent venous reflux after failed surgical or thermal ablation.

### References

Gloviczki, et al. JVS May suppl. 2011. Todd et al,. Phlebology. 2014; 608-618. Deak, ST. Vascular. 2016; 24.1S, 72-73.

### Conclusions