

Seasonal Variability on Outcomes Following Endovenous Ablation for Chronic Venous Insufficiency

Kristine L. So MD, Ahsan Zil-E-Ali MBBS MPH, Faisal Aziz MD MBA

Division of Vascular Surgery, Heart and Vascular Institute, PennState Health Milton S. Hershey Medical Center



Background

Previous seasonal relationships in venous disease performed predominantly in Europe

- **Summer** – frequency and severity of symptomatic varicose veins and increased rates of SVT
- **Fall/Winter** – increased venous ulcer onset
- **Winter** – increased number of procedures, timing affected by occupational commitments

Objective

To investigate the seasonal variability on outcomes following endovenous ablation for chronic venous insufficiency (CVI) in North America

- Outcomes measured via Venous Clinical Severity Score (VCSS) and Patient Reported Outcomes (PROs)

Methods

- Retrospective review of the SVS-VQI between 2014 to 2021
- N = 9837
- C2 or greater disease
- At least 1 year of follow-up data
- Unilateral thermal or laser ablation for greater saphenous vein (GSV) reflux
- 4 groups: (1) Spring, (2) Summer, (3) Fall, (4) Winter

Results

Venous Clinical Severity Score (VCSS)						
	Total Sample	Group 1 (Spring)	Group 2 (Summer)	Group 3 (Fall)	Group 4 (Winter)	p-value
Pain	1.14 ± 0.98	1.11 ± 0.98	1.12 ± 0.99	1.88 ± 1.01	1.14 ± 0.96	0.021
Varicose veins	1.25 ± 1.08	1.26 ± 1.12	1.25 ± 1.08	1.28 ± 1.04	1.21 ± 1.08	0.135
Venous edema	0.73 ± 0.92	0.71 ± 0.97	0.75 ± 0.92	0.77 ± 0.90	0.69 ± 0.89	<0.001
Skin pigmentation	0.23 ± 0.68	0.20 ± 0.65	0.27 ± 0.74	0.22 ± 0.68	0.21 ± 0.66	0.003
Inflammation	0.19 ± 0.61	0.20 ± 0.61	0.20 ± 0.62	0.18 ± 0.60	0.19 ± 0.60	0.524
Induration	0.14 ± 0.53	0.14 ± 0.55	0.12 ± 0.52	0.15 ± 0.55	0.13 ± 0.50	0.123
Active ulcer size	0.06 ± 0.35	0.06 ± 0.35	0.07 ± 0.37	0.07 ± 0.35	0.05 ± 0.32	0.130
No. of active ulcers	0.05 ± 0.31	0.05 ± 0.28	0.06 ± 0.31	0.06 ± 0.36	0.04 ± 0.28	0.078
Ulcer duration	0.07 ± 0.39	0.07 ± 0.40	0.07 ± 0.41	0.07 ± 0.42	0.05 ± 0.33	0.509
Compression therapy	0.68 ± 1.53	0.72 ± 1.59	0.69 ± 1.49	0.67 ± 1.47	0.66 ± 1.56	0.628
Mean VCSS score improvement	7.46 ± 3.69	7.72 ± 3.64	7.50 ± 3.68	7.48 ± 3.83	7.16 ± 3.60	<0.001

Patient Reported Outcomes (PROs)						
	Total Sample	Group 1 (Spring)	Group 2 (Summer)	Group 3 (Fall)	Group 4 (Winter)	p-value
Heaviness	1.47 ± 1.68	1.41 ± 1.66	1.50 ± 1.67	1.49 ± 1.69	1.48 ± 1.71	0.384
Achiness	1.65 ± 1.73	1.62 ± 1.75	1.67 ± 1.70	1.67 ± 1.75	1.63 ± 1.74	0.712
Swelling	1.42 ± 1.77	1.43 ± 1.84	1.53 ± 1.73	1.45 ± 1.72	1.30 ± 1.78	<0.001
Throbbing	1.21 ± 1.54	1.14 ± 1.57	1.27 ± 1.56	1.26 ± 1.51	1.16 ± 1.54	0.002
Itching	0.74 ± 1.38	0.76 ± 1.45	0.75 ± 1.37	0.74 ± 1.32	0.71 ± 1.37	0.184
Appearance	1.48 ± 1.56	1.40 ± 1.55	1.50 ± 1.56	1.56 ± 1.54	1.45 ± 1.60	0.0129
Work impact	1.19 ± 1.48	1.19 ± 1.49	1.26 ± 1.46	1.19 ± 1.46	1.14 ± 1.50	0.004
Mean PRO score improvement	9.16 ± 8.01	8.96 ± 8.04	9.48 ± 7.87	9.36 ± 7.85	8.86 ± 8.24	<0.001

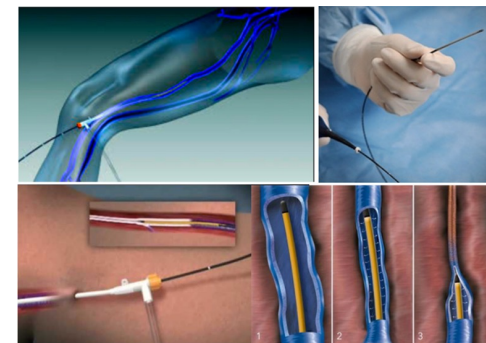
Number of Cases: Winter (842) > Fall (795) > Spring (765) > Summer (724); p = 0.026

Results

- Most procedures were performed in the winter, least in the summer for C3 venous disease
- Highest mean VCSS score improvement reported in the Spring and Summer, least in the Winter months
- Mean PRO improvement was found to be highest in the Summer and least in the Winter

Conclusion

- Mean VCSS and PRO score improvement:
 - **Greatest** in the Spring and Summer
 - **Lowest** in the Winter
- Most procedures performed in the Winter
- Future research to focus on factors contributing to this seasonal variation



<https://www.dravinashkatara.com/endovenous-thermal-ablation.html>

*Authors have nothing to disclose