

**Comparison of EVRF versus VNUS in Radiofrequency Ablation  
of Chronic Venous Insufficiency**

Pravin LINGAM<sup>1#</sup>, Jun-Yi Ryan TAN<sup>1</sup>, Zhiwen Joseph LO<sup>1</sup>, Qiantai HONG<sup>1</sup>,  
Sadhana CHANDRASEKAR<sup>1</sup>, Sriram NARAYANAN<sup>1</sup>, Glenn Wei Leong TAN<sup>1</sup>

<sup>1</sup>Department of General Surgery, Tan Tock Seng Hospital, Singapore

#Corresponding Author:

Dr Pravin LINGAM

Vascular Surgery Service

Department of General Surgery

Tan Tock Seng Hospital

11 Jalan Tan Tock Seng

Singapore 308433

Email: [pravin.lingam@mohh.com.sg](mailto:pravin.lingam@mohh.com.sg)

Mobile: (+65) 9827 6937

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**Aim:** To compare the outcomes in patients with chronic venous insufficiency who were treated with EVRF® (F Care Systems, Belgium) versus VNUS® ClosureFast™ (Covidien, USA) radiofrequency ablation (RFA) therapy.

**Methodology:** Retrospective study of 327 limbs treated for long saphenous vein insufficiency between January 2014 and May 2015.

**Results:** 327 limbs were treated with radiofrequency ablation during this period, with 160 treated with EVRF and 167 treated with VNUS (Table 1). In both groups, the average age of patients was 57 years old with average body mass index (BMI) at 26. There were more males in the EVRF group (74 as compared to 59,  $p=0.05$ ) with more being of American Society of Anaesthesiologists grade 2 (129 as compared to 113,  $p=0.01$ ). There were no patients with mixed arterio-venous disease in both groups and pre-operative venous disease classification was similar in both groups. Pre-operatively, there were more patients with sapheno-femoral junction (106 as compared to 86,  $p=0.01$ ) and sapheno-popliteal junction (14 as compared to 2,  $p=0.01$ ) incompetence within the EVRF group. All patients in both groups had long saphenous vein reflux. Intra-operatively, there were more patients with below knee punctures (115 as compared to 79,  $p=0.01$ ) and with anterior thigh veins treatment (29 as compared to 3,  $p=0.01$ ) within the EVRF group. Outcomes, in terms of transient superficial neuropathy, were similar in both groups (8 in EVRF verse 5 in VNUS) and there were no deep vein thrombosis in both groups. There was 1 recurrence within the VNUS group. Phlebitis was more significant within the EVRF group (8 as compared to 1,  $p=0.01$ ).

**Conclusion:** Both EVRF and VNUS are safe endovenous modalities in the treatment of lower limb chronic venous insufficiencies. The shorter active tip of EVRF

allowed for treatment of shorter vein segments such as anterior thigh veins. Within our EVRF group, there was a greater incidence of phlebitis rate but this may be associated with greater proportion of below knee catheter puncture.

**Table 1: Patient characteristics and outcome**

	<b>Monopolar RFA (n=160)</b>	<b>Segmental RFA (n=167)</b>	<b>p value (Fisher's 2-tailed)</b>
<b>Demographics</b>			
Male : Female	74 (46%) : 86 (54%)	59 (35%) : 108 (65%)	<b>0.05</b>
Average age (range)	57.3 (27-78)	57.4 (20-85)	1.00*
Average BMI (range)	26.5 (17.3-45.1)	26.4 (16.6-41.9)	0.65*
<b>Co-morbidities</b>			
ASA Classification 1	16 (10%)	27 (16%)	0.10
ASA Classification 2	129 (81%)	113 (68%)	<b>0.01</b>
ASA Classification 3	15 (9%)	27 (16%)	0.07
Smoker	11 (7%)	5 (3%)	0.13
Type 2 diabetes mellitus	21 (13%)	31 (19%)	0.23
Peripheral arterial disease	0 (0%)	0 (0%)	N.A.
Previous venous surgery	5 (3%)	11 (7%)	0.20
<b>Venous Disease Clinical Manifestation</b>			
1	3 (2%)	6 (4%)	0.50
2	38 (24%)	39 (23%)	1.00
3	28 (17%)	24 (14%)	0.45
4	43 (27%)	61 (37%)	0.07
5	33 (21%)	22 (13%)	0.08
6	15 (9%)	15 (9%)	1.00
<b>Pre-op Venous Duplex</b>			
SFJ incompetence	106 (66%)	86 (51%)	<b>0.01</b>
LSV reflux	160 (100%)	167 (100%)	1.00
SPJ incompetence	14 (9%)	2 (1%)	<b>0.01</b>
SSV reflux	13 (8%)	14 (8%)	1.00

Deep veins reflux	2 (1%)	8 (5%)	0.10
<b>Surgical Procedure</b>			
Below knee LSV puncture	115 (72%)	79 (47%)	<b>0.01</b>
ATV ablation	29 (18%)	3 (2%)	<b>0.01</b>
Below knee stab avulsions	158 (99%)	160 (96%)	0.17
SSV ablation	18 (11%)	17 (10%)	0.86
SPJ ligation	0 (0%)	0 (0%)	N/A
<b>Post-op Outcomes</b>			
Transient neuropathy	8 (5%)	12 (7%)	0.49
Phlebitis	9 (6%)	1 (1%)	<b>0.01</b>
DVT	0 (0%)	0 (0%)	N/A
Recurrence	0 (0%)	1 (1%)	1.00

\* Unpaired t test

ASA: American Society of Anaesthesiologists ; ATV: anterior thigh vein ; BMI: body mass index ; DVT: deep vein thrombosis ; LSV: long saphenous vein ; RFA: radiofrequency ablation ; SFJ: sapheno-femoral junction ; SPJ: sapheno-popliteal junction ; SSV: short saphenous vein