



## Electrical calf muscle stimulation prevents recurrent DVT after cessation of standard anticoagulation in patients with residual venous obstruction



Lobastov K, Ryzhkin V, Vorontsova A, Schastlivtsev I, Barinov V, Laberko L, Boyarintsev V, Rodoman G



Pirogov's Russian National Research Medical University; Clinical Hospital no.24 of Moscow Healthcare Department; Ivanteevka Central City Hospital; Clinical Hospital no. 1 of the President's Administration of Russian Federation

**Aim:** To assess the efficacy of electrical calf muscle stimulation (EMS) in patients with post-thrombotic syndrome (PTS) and residual venous obstruction (RVO) after cessation of a standard anticoagulation.

**Design:** prospective comparative non-randomized clinical trial with masked outcome assessor.

**Inclusion criteria:** first episode of unprovoked femoro-popliteal DVT, completed a standard 6-month course of anticoagulation, signs of RVO in the affected veins, Villalta score of 5 and more, informed consent given (approved by RNRMU IRB).

**Methods:** 60 patients in the age of 40-86 years (mean - 58,5±11,4), 38 men and 22 women, divided into two groups (30+30). In both groups PTS was treated by active walking (at least 5,000 steps per day controlled by an individual pedometer), below-knee graduated compression stockings (23-32 mm Hg) and MPFF (2-month course 2/year). In the main group, EMS with «Veinoplus VI» device (3 procedures of 30 minutes every day) also was used.

**The primary endpoint:** symptomatic or asymptomatic recurrent DVT confirmed by duplex ultrasound (DUS).

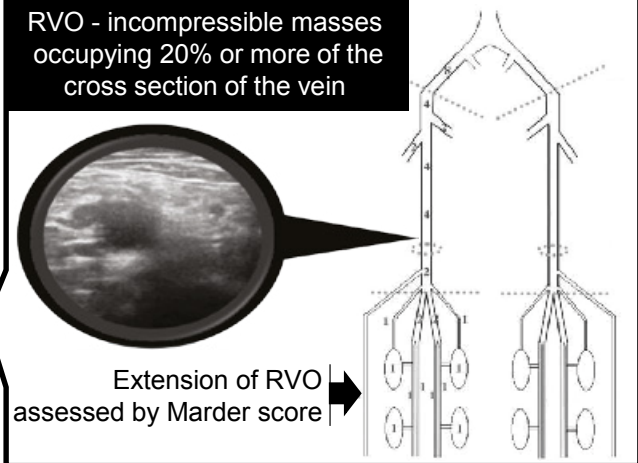
**The secondary endpoint:** changes in the degree of RVO.

**Follow up:** 12 months with monthly DUS, aimed to reveal recurrent DVT, and 6-monthly DUS with evaluation of stenosis degree.

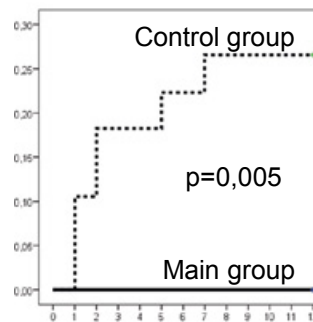
### Results:

	Main (n=30)	Control (n=30)	p
<b>Incidence of RVO in different veins (%)</b>			
Common femoral	13,3	26,7	0,333
Superficial femoral	13,3	40,0	0,039
Popliteal			
<b>Mean value of RVO in different veins (M±σ)</b>			
Common femoral	47,2±14,3	48,3±14,9	0,903
Superficial femoral	54,8±23,6	52,5±21,5	0,862
Popliteal	60,8±17,5	49,6±21,4	0,030
Marder score	5,6±2,8	5,6±3,5	0,935

**Disclosure:** Veinoplus devices and individual pedometers were provided by «BEHO+» ltd. The Company had no influence on the design of the study, data collection and their interpretation or preparing of this e-poster.



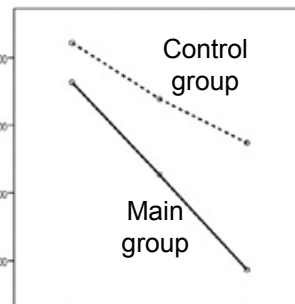
### Cumulative incidence of DVT recurrence at 12m



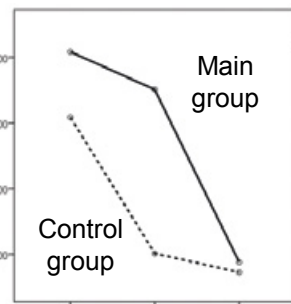
**EMS vs controls:**  
0% (95% CI: 0-11,4%)  
vs  
23,3% (95% CI: 11,8%  
40,9%)

**5 of 7 recurrent DVT - asymptomatic**

### Trends in Marder score



### Trends in popliteal RVO



**Conclusions:** There is an ongoing process of deep veins recanalization during 12 months after cessation of anticoagulation in patients with RVO and PTS. Using of EMS in complex treatment of PTS allows to reduce the rate of recurrent DVT and increase the speed of recanalization.