| Publication/Citation | Summary | Link |
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| Todd KL III, Wright DI, for the VANISH-2 Investigator Group. The VANISH-2 study: a randomized, blinded, multicenter study to evaluate the efficacy and safety of polidocanol endovenous microfoam 0.5% and 1.0% compared with placebo for the treatment of saphenofemoral junction incompetence. [*Phlebology*.](http://www.ncbi.nlm.nih.gov/pubmed/23864535) 2014 Oct;29(9):608-18. doi: 10.1177/0268355513497709. Epub 2013 Jul 17 | This pivotal, randomized, controlled trial in 232 patients established the efficacy and safety of Varithena®. Efficacy was demonstrated in a number of ways. Patient-reported improvement in symptoms (VVSymQ®) was highly statistically significant following Varithena® at Weeks 4 and 8 vs placebo (P<0.0001); improvement in visible appearance as assessed by the patient (PA-V3) and independent clinicians (IPR-V3) was statistically significant following Varithena® at Week 8 vs placebo (P<0.0001), and duplex response was achieved by 83% and 86% of patients receiving 0.5% Varithena® and 1.0% Varithena®, respectively. A highly tolerable adverse event profile was seen, with 60% of Varithena®-treated patients reporting an adverse event compared with 39% of placebo patients. Importantly, these results were seen across a broad spectrum of vein disease which supports the relevance of these results in a real-world setting. | <http://phl.sagepub.com/content/29/9/608.full> |
| King JT, O'Byrne M, Vasquez M, Wright D, for the VANISH-1 Investigator Group. Treatment of truncal incompetence and varicose veins with a single administration of a new polidocanol endovenous microfoam preparation improves symptoms and appearance. *Eur J Vasc Endovasc Surg*. 2015 Dec;50(6):784-93. doi: 10.1016/j.ejvs.2015.06.111. Epub 2015 Sep 16. | As part of the wider Phase III program, this pivotal, randomized, controlled study in 279 patients demonstrated the clinically significant benefits of Varithena® as measured by patient reported outcomes (VVSymQ® scores for pooled Varithena® patients were significantly superior to placebo at Week 8 (p < .0001); visible appearance (mean changes from baseline to Week 8 in IPR-V3 and PA-V3 scores were significantly greater in the pooled Varithena® group compared with placebo (p < .0001); and GSV closure (duplex ultrasound response rates for pooled and individual Varithena® patients ranged from 59% to 83%). Similarly to the VANISH-2 study patients treated with Varithena® achieved a successful outcome in that their veins looked better, felt better and their quality of life improved in addition to the good levels of GSV closure that were shown in the study. | <http://www.ejves.com/article/S1078-5884(15)00539-0/fulltext> |
| Regan JD, Gibson KD, Rush JE, Shortell CK, Hirsch SA, Wright DI. Clinical significance of cerebrovascular gas emboli during polidocanol endovenous ultra-low nitrogen microfoam ablation and correlation with magnetic resonance imaging in patients with right-to-left shunt. *Journal of Vascular Surgery.* 2011; 53:131-8. | In foam sclerotherapy utilizing air-base physician compounded foams, adverse events have been reported that are believed to be a result of embolic events either from the bubbles or the nitrogen gas within the bubble. In this study, a cohort of 60 high-risk patients with R-L cardiac shunt, and therefore at higher risk of cerebral embolic events, had their coexisting GSV disease treated with Varithena®. Doppler was utilized to demonstrate the flow of Varithena® bubbles across the shunt and into the cerebral circulation. Although MCA bubble emboli were detected in 60 patients during or after treatment with Varithena®, there was no evidence of cerebral or cardiac microinfarction. This study demonstrates that as presence of bubbles in the cerebral circulation is essentially inevitable in patients with a R-L shunt it is imperative that the treatment is proven to be safe in this regard. Duplex ultrasound was used to measure efficacy, which confirmed complete occlusion of the GSV in 71 of 81 patients (88%) and elimination of saphenous reflux in 73 of 81 patients (90%). | <http://www.jvascsurg.org/article/S0741-5214(10)01839-2/fulltext> |
| Gibson K, Kabnick L, for the Varithena® 013 Investigator Group. A Multicenter, Randomized, Placebo-Controlled Study to Evaluate the Efficacy and Safety of Varithena® (Polidocanol Endovenous Microfoam 1%) for Symptomatic, Visible Varicose Veins With Saphenofemoral Junction Incompetence. | This randomized, controlled trial, in addition to showing that Varithena® improves symptoms and appearance of varicose veins, established the acceptably safe volume of Varithena® 1% and contributed to the validation of the patient-reported VVSymQ® instrument that has been developed and the VVSymQuick® instrument that is under development. Varithena® provided greater mean changes from Baseline in patient-reported assessments of symptoms [[primary endpoint (30.7 points vs 16.7 points, P=0.0009); and modified-VEINES-QOL/Sym (p<0.001)], physician-assessed VCSS, and physician- and patient-assessed appearance compared with placebo. | <http://phl.sagepub.com/content/early/2016/03/23/0268355516635386.full> |
| Vasquez M, Gasparis AP, for the Varithena® 017 Investigator Group. A Multicenter, Randomized, Placebo-Controlled Trial of Endovenous Thermal Ablation With or Without Polidocanol Endovenous Microfoam Treatment in Patients With Great Saphenous Vein Incompetence and Visible Varicosities. | This randomized, controlled trial in 117 patients assessed the effect of combination therapy on varicose vein appearance, which had not previously been studied. Physician-rated vein appearance at Week 8 was significantly better with Varithena® (p=0.001 vs placebo); patient-assessed appearance trended similarly. Additionally, Varithena® reduced the proportion of patients who received additional treatment for residual varicosities between Week 8 and Month 6 (p<0.05), and increased the proportion of patients with successful elimination of saphenofemoral junction reflux at Week 8 (ETA+ Varithena® 87.3% vs ETA alone 79.9%). | <http://phl.sagepub.com/content/early/2016/03/07/0268355516637300.full> |
| D Wright, JP Gobin, AW Bradbury et al, for the Varisolve® European Phase Ill Investigators Group. Varisolve® polidocanol microfoam compared with surgery or sclerotherapy in the management of varicose veins in the presence of trunk vein incompetence: European randomized controlled trial. *Phlebology*. 2006; 21: 180-190. | This trial demonstrated the non-inferiority of Varithena® to surgery and sclerotherapy in 710 patients. Varisolve® (Varithena®) was shown to be superior to alternative sclerotherapy at 12 months, with an overall response rate of 78.9% vs 80.4%, respectively. When patients received Varithena® compared to surgery, they suffered less pain (day 6: surgery median VAS score 9, Varithena® VAS score 2, full scale 0-100; P < 0.001).and were able to return to work sooner (median time to resumption of normal activities following treatment was considerably shorter in the Varithena® group (2 days) than in the surgery group (13 days; P < 0.001). | <http://phl.sagepub.com/content/21/4/180.abstract> |
| Todd KL III, Wright DI, for the VANISH-2 Investigator Group. Durability of treatment effect with polidocanol endovenous microfoam on varicose vein symptoms and appearance (VANISH-2). *Journal of Vascular Surgery: Venous and Lymphatic Disorders*. 2015;1-8.  DOI: <http://dx.doi.org/10.1016/j.jvsv.2015.03.003> | This one-year data in 232 patients from the pivotal, randomized, controlled VANISH-2 trial demonstrates the durability of treatment effect with Varithena®. A group of patients from the original VANISH-2 study were followed up for 12 months following treatment with Varithena® and efficacy measures (56 patients total assessed for efficacy) were repeated at this point in time. Patients reported continued clinically meaningful improvements in the primary endpoint of VVSymQ® (results at visit 10/year 1 were as good as or better than (64% with total VVSymQ scores of 3 or less at week 8 vs 85% at year 1) those seen at visit 5/week 8.) and also the secondary endpoints relating to visible appearance as determined by both the patient and an independent investigator (improvements from baseline in appearance as assessed by both patients (PAV3 score) and blinded experts reading standardized photographs (IPR-V3 score) were maintained, with a small trend toward further improvement between visit 5/week 8 and visit 10/year 1). These key results demonstrate the longevity of treatment effect with Varithena® which is important when considering the modality of treatment to be used. | <http://www.jvsvenous.org/article/S2213-333X(15)00055-4/fulltext> |
| Carlton R, Mallick R, Campbell C, Raju A, Eaddy M, O’Donnell TF. Evaluating the Expected Costs and Budget Impact of Interventional Therapies for the Treatment of Chronic Venous Disease. American Health and Drug Benefits. October 2015, Vol 8, No 7. | This analysis—evaluating expected patient-level total costs and health plan–level budgetary impact of Varithena from a third-party payer perspective, based on published CMS professional payment and Hospital Outpatient Prospective Payment System schedules, published wholesale drug costs, and retreatment rates compared with traditional therapeutic interventions—showed that Varithena offers a cost-neutral alternative to other interventional options for the treatment of varicose veins. From a health plan perspective, this drug is likely to have a relatively low budget impact even as it becomes more widely used. | <http://www.ahdbonline.com/issues/2015/october-2015-vol-8-no-7/1998-evaluating-the-expected-costs-and-budget-impact-of-interventional-therapies-for-the-treatment-of-chronic-venous-disease> |
| Raju A, Mallick R, Campbell C, Carlton R, O’Donnell TF, Eaddy M. Real-World Assessment of Interventional Treatment Timing and Outcomes for Varicose Veins: A Retrospective Claims Analysis. Journal of Vascular and Interventional Radiology. 2015 Nov 30. DOI: <http://dx.doi.org/10.1016/j.jvir.2015.10.001>. [Epub ahead of print]. | This retrospective analysis of a large US commercial and Medicare claims database showed that only about 30% of patients received interventional treatment for varicose veins. Among patients who did receive interventional treatment, early vs. later initiation of interventional treatment was significantly associated with a decreased risk of disease progression and costs. | <http://www.jvir.org/article/S1051-0443(15)00965-3/fulltext> |
| Carlton R, Mallick R, Campbell C, Raju A, Eaddy M, O’Donnell T. Evaluating the expected budget impact and cost-effectiveness of interventional therapies used in the treatment of chronic venous disease. Presented at the Annual Meetings of the Society for Interventional Radiology (SIR), Atlanta, GA, March 2015. | This analysis—evaluating 8-week expected patient-level total costs and health plan–level budgetary impact of Varithena from a third-party payer perspective, based on published CMS professional payment and Hospital Outpatient Prospective Payment System schedules, published wholesale drug costs, and one-year retreatment rates compared with traditional therapeutic interventions—showed that Varithena offers a cost-neutral alternative to other interventional options for the acute treatment of varicose veins. From a health plan perspective, this drug is likely to have a relatively low budget impact even as it becomes more widely used. | <http://www.jvir.org/article/S1051-0443(14)01834-X/pdf> |
| Mallick R, A. Raju, C. Campbell, R. Carlton, J. Harmon, M. Eaddy. Evaluating treatment patterns, outcomes and costs in patients diagnosed with varicose veins. Presented at the Annual Meetings of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR), Montreal, Canada, June 2014. | This large retrospective claims data study of over 140,000 patients with diagnosed varicose veins found that about 70% of patients did not receive interventional therapy for varicose veins. Those receiving interventional treatment were likely to be younger, female and associated with fewer comorbid conditions. Among the patients that did receive interventional treatment, surgery was associated with lowest 8-week and 1-year retreatment rates; on the other hand, laser and radiofrequency ablation when performed alone, were associated with highest retreatment rates. | <http://www.ispor.org/research_pdfs/46/pdffiles/PCV45.pdf> |
| Mallick R, Carlton R, Campbell C, Raju A, Eaddy M. Expected costs and projected annual budget impact of treatment of varicose veins with Polidoconal endovenous microfoam 1%. Presented at the Annual Meetings of the Academy of Managed Care Pharmacy – Nexus (AMCP-Nexus). Orlando, FL, October 2015. | This analysis—evaluating1-year expected patient-level total costs and health plan–level budgetary impact of Varithena from a third-party payer perspective, based on published CMS professional payment and Hospital Outpatient Prospective Payment System schedules, published wholesale drug costs, and one-year retreatment rates in Varithena clinical data compared with corresponding one-year retreatment rates for traditional therapeutic interventions in retrospective claims data —showed that Varithena offers a cost-neutral alternative to other interventional options for the treatment of varicose veins. From a health plan perspective, this drug is likely to have a relatively low annual budget impact even as it becomes more widely used. | <http://www.amcp.org/WorkArea/DownloadAsset.aspx?id=20165> |
| Mallick R, Daugherty C, Hye R. Functional impairments in patients with varicose veins and improvement with treatment: Polidoconal endovenous microfoam 1% vs. placebo. Presented at the Annual Meetings of the Academy of Managed Care Pharmacy – Nexus (AMCP-Nexus). Orlando, FL, October 2015. | In pooled clinical studies comparing treatment with PEM 1% vs. placebo in patients with varicose veins (VV), there was substantial patient-reported functional limitation at baseline. About 76% of patients were limited at baseline on activities requiring standing and 62% were limited on activities requiring sitting for prolonged periods. About 45% of patients had difficulty at work and 28% actually cut down on work. At end of 8-week treatment, only 36% of patients in the PEM 1% group vs. 59% in the placebo group continued to be limited on activities requiring standing for prolonged periods and 29% vs. 56% respectively continued to be limited on activities requiring sitting for prolonged periods. There were similar patterns across the treatment groups in improvement on work function. US health plans’ emphasis on persistent symptoms and functioning is well placed but treatment choices should also be evaluated in terms of improvement on symptoms and functioning. | <http://www.amcp.org/WorkArea/DownloadAsset.aspx?id=20165> |
| Carlton R, Mallick R, C. Campbell, A. Raju, M. Eaddy. Evaluating the cost-effectiveness of interventional therapies used in the treatment of chronic venous disease. Presented at the Annual Meetings of the Academy of Managed Care Pharmacy – Nexus (AMCP-Nexus). Boston, MA, October 2014. | This analysis—evaluating cost-effectiveness of Varithena from a third-party payer perspective, based on published CMS professional payment and Hospital Outpatient Prospective Payment System schedules, published wholesale drug costs, retreatment rates, prevention of new ulcers and symptom-free time compared with corresponding claims data evidence on traditional therapeutic interventions—showed that Varithena was a cost-effective alternative to laser and radiofrequency ablation modalities. Compared to surgical modalities, Varithena was less costly and less effective in terms of retreatment rates but more cost-effective in terms of ulcer prevention and overall quality-adjusted life years. | <http://www.amcp.org/WorkArea/DownloadAsset.aspx?id=18543> |