

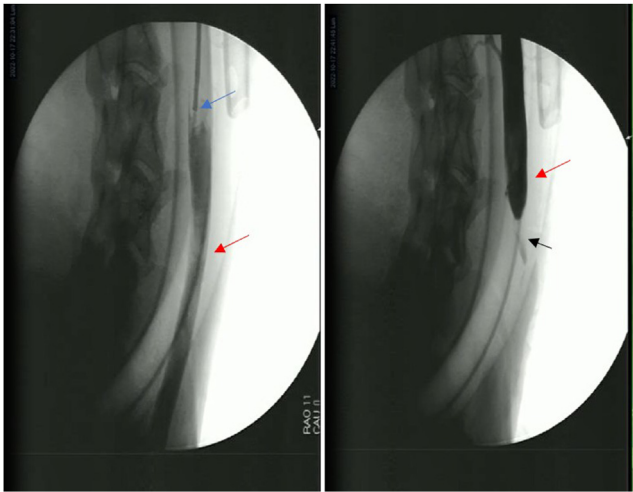


Fig. Sheep jugular vein (*left*), with introducer sheath positioned in antegrade approach (*blue arrow*) and flow from sheath downward (*red arrow*). Same jugular vein after clips deployment (*right*), with blood flow interrupted (*red arrow*) where clips are positioned (*black arrow*).

less than 1 minute per deployment. After sacrifice, treated vessels were excised and underwent histochemical and immunoistochemical analyses. Thrombus formation was detected in vessels treated with clips, showing closure effectiveness. The analysis of jugular vein treated with clip plus FS showed higher severity in endothelial injury respect to the control vein (ie, increased endothelial cells loss).

Conclusions: These preclinical studies showed feasibility of percutaneous selective closure of venous vessels with this novel device. The combined treatment algorithm of FS and vessel closure may be an option to effectively treat medium and big veins with a non-thermal approach in an outpatient office-based setting. This was shown both in the acute and in the chronic preclinical model, showing treatment consistency. Percutaneous closure may also prevent glue or clot embolization, which could be an effective way to minimize procedure risks related to glue acute and postoperative migration.

Author Disclosure: E. Cervi: Nothing to disclose; G. Bergamaschi: VCD Medical.

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CHIVA in China: Achievements and Challenges

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Objectives: The objective of this presentation is to provide an in-depth analysis of our extensive experience and remarkable achievements in the application of conservative and hemodynamic treatment of venous insufficiency in the office (CHIVA) treatment for the treatment of various venous diseases in China. We aim to highlight the effectiveness and potential of CHIVA treatment as an innovative and minimally invasive approach.

Methods: We conducted a retrospective analysis of a well-defined cohort of 500 patients who underwent CHIVA treatment at our vein centers between 2012 and 2022. The patients were carefully selected based on specific criteria, including anatomical suitability and disease severity. CHIVA is a minimally invasive approach by recorrecting hemodynamic changes, preserving the venous drainage network in lower extremity. The surgical strategy was based on detailed preoperative Doppler ultrasound hemodynamic assessment and mapping.

Results: Our analysis demonstrated promising outcomes following CHIVA treatment. Of the 500 patients, 90% showed significant improvement in venous symptoms, such as pain, swelling, and ulceration (Table I). Doppler ultrasound imaging revealed a complete closure of escape points in 95% of cases (Table I-IV). The overall success rate, defined as symptomatic relief and absence of venous reflux, reached 92% (Table

Table I. Demographic characteristics of patients (unpublished data)

Patient characteristics	Range
Patients, n	500
Limbs, n	575
Mean age, years (range)	59 (20-87)
Sex (male:female)	380:120
CEAP	
2	50
3 and 4	425
5 and 6	100
Shunt type	
1/1+2	230
2	70
3	150
4	100
5	20
6	5

Table II. Postoperative complications (unpublished data)

Complications	Limbs (n, %)
Neuritis	0 (0%)
Paresthesia	0 (0%)
Hematoma	0 (0%)
Bruising	3 (0.5%)
Wound infection	2 (0.3%)
Wound bleeding	1 (0.2%)
Phlebitis	15 (2.6%)
Deep vein thrombosis/pulmonary embolism	0 (0%)

Table III. Changes in Venous Clinical Severity Score (VCSS) (unpublished data)

Variable	Range
Preoperative	5.37 (2-10)
Post-6 month	0.6 (0-3)
Post-12 month	0.29 (0-2)

Table IV. Reflux sources in 575 limbs (unpublished data)

Reflux sources	Limbs (n, %)
GSV/AASV	402 (70.0%)
SSV	58 (10.1%)
PVs	70 (12.0%)
PLPs	40 (7.0%)
Others	5(0.9%)

AASV, Anterior accessory saphenous vein; GSV, great saphenous vein; PLP, pelvic leak point; PV, perforating vein; SSV, small saphenous vein.

III). Postoperative recovery was rapid, with patients resuming their daily activities within a few hours. Additionally, long-term follow-up assessments showed sustained improvement in venous disease management, with a low rate of recurrence (5%) and complication (3.6%) over a 10-year period (Table II).

Conclusions: Our extensive experience with CHIVA treatment in China demonstrates its effectiveness as a viable treatment option for venous

diseases. The high success rates, significant symptom relief, and low complication rates observed in our patient cohort highlight the potential of CHIVA treatment in improving the quality of life for individuals suffering from venous insufficiency. Accurate ultrasound assessment and a deeper understanding of venous hemodynamics appear to be crucial for achieving satisfactory outcomes; CHIVA treatment enables precise blockage of escape points, preservation of the great saphenous vein trunk, and a quick return to normal work and daily activities. Although challenges related to training and resource availability exist, our findings emphasize the need for further research, international collaboration, and continued advancements in CHIVA techniques to expand its application and benefit a larger patient population.

Author Disclosure: J. Deng: Nothing to disclose; S. Zhu: Nothing to disclose.

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VEIN STEP Mexico: A Prospective, Observational, International Study to Assess Effectiveness of Conservative Treatments in Chronic Venous Disease

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Objectives: VEIN STEP Global was conducted to collect international data on the management of chronic venous disease (CVD) and assess the effectiveness of conservative treatments for the relief of CVD symptoms. We aim to present the data gathered from the population in Mexico.

Methods: This international, observational, prospective study recruited adult outpatients consulting for symptomatic CVD. We are presenting

Table. Demographic data

Characteristic	Overall patients N = 804
Sex, n (%)	
Male	194 (24.2%)
Female	609 (75.8%)
Age, years (mean [SD])	52.0 (14.2)
18-35	97 (12.1%)
35-50	253 (31.5%)
50-65	297 (37.0%)
65-80	134 (16.7%)
≥80 years	22 (2.7%)
Body mass index, kg/m ² (mean [SD])	28.42 (4.84)
<18.5	5 (0.6)
18.5-25	197 (24.5)
25.0-30	325 (40.5)
≥30	276 (34.4)
Physical activity, n (%)	
Sedentary	391 (48.7)
Moderate	348 (43.3)
Active	64 (7.9)
Occupationally active, n(%)	
Normal task	278 (34.6)
Standing (>5 hours/day)	280 (34.9)
Sitting (>5 hours/day)	169 (21.0)
Other	76 (9.5)
Comorbidities	
Diabetes mellitus	138 (17.2)
Dysthyroidism	35 (4.4)
Hypertension	182 (22)

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Table. Continued.

Characteristic	Overall patients N = 804
Hemorrhoidal disease	112 (13.9)
CEAP stage	
C0	3 (0.4)
C1	244 (30.4)
C2	246 (30.6)
C3	154 (19.2)
C4a	78 (9.7)
C4b	43 (5.4)
C5	9 (1.1)
C6	26 (3.2)

data evaluated from a population recruited in Mexico. Patients underwent a clinical evaluation using the Clinical Etiology Anatomy Pathophysiology (CEAP) classification. Patients received initial treatment with venoactive drugs (VADs), compression, lifestyle change, etc, according to each physician's judgment. Candidates for immediate interventional treatment were excluded. Up to 8-week outcomes were evaluated using a 10-cm visual analog score (VAS) and quality of life (QoL) using the CIVIQ-14 questionnaire and the Venous Clinical Severity Score (VCSS). Clinical changes over time were analyzed using a Wilcoxon test, and between-group analysis using a ranked ANCOVA with baseline value as covariates adjusted on main baseline characteristics and relevant concomitant treatments.

Results: The analysis set comprised 803 subjects (78% female), with a mean age of 52 ± 14.2 years and body mass index (BMI) of 28.4 ± 4.9 kg/m² (Table). The most common CEAP classifications were C1 (30.4%), C2 (30.6%), and C3 (30.7%). Conservative therapy could be prescribed according to clinical practice, as monotherapy or in combination, and consisted of oral VADs (95.8% of subjects), including micronized purified flavonoid fraction (MPFF 75.5%) and diosmin (18.8%); compression (52.0%), and topicals (31.5%). Conservative therapy was associated with a significant decrease over time in mean: VAS, 5.7 (± 2.73) vs 3.2 (± 2), VCSS 6.3 (± 4.1) vs 4.4 (± 2.9), and CIVIQ-14 42.7 (± 21.8) vs 20.9 (± 16.3) ($P < .001$).

Conclusions: VEIN STEP Mexico provides large-scale data with follow-up from real-life settings including both patient-reported outcomes and physicians' assessments. The results show that conservative treatment, primarily venoactive medications, is associated with significant improvements in symptoms, signs, and quality of life in patients with CVD.

Author Disclosure: A. Gonzalez Ochoa: Alfaisigma, Servier.

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Evaluation of Varicose Vein-derived Blood Biomarkers for Venous Surveillance

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Objectives: Intervention for patients with symptomatic varicose veins is largely driven by a combination of symptoms, the magnitude of venous reflux, clinical severity scoring algorithms, and unresponsiveness to medical therapy. We evaluated the wall of superficial veins from patients with symptomatic varicose veins, comparing this with healthy veins, for biological insight into progression of superficial vein disease.

Methods: RNA was extracted from incompetent greater saphenous vein (GSV) at the time of phlebectomy and compared with residual healthy superficial veins following coronary artery bypass graft surgery. The venous transcriptome was interrogated by Nanostring. Panther and Gene Ontology identified biological pathways of interest, and, based on