

# Journal of Vascular Surgery Venous and Lymphatic Disorders

The Premier International Journal of Medical, Endovascular, and  
Surgical Care of Venous and Lymphatic Disorders

CONTENTS

Volume 7, Number 5, September 2019

## CLINICAL RESEARCH STUDIES

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### ACUTE VENOUS THROMBOEMBOLISM

**623 Catheter-directed thrombolysis versus suction thrombectomy in the management of acute pulmonary embolism**

Efthymios D. Avgerinos, MD, Adham Abou Ali, MD, Catalin Toma, MD, Bryan Wu, MD, Zein Saadeddin, MD, Barry McDaniel, BS, George Al-Khoury, MD, and Rabih A. Chaer, MD, MSc, *Pittsburgh, Pa*

This retrospective study analyzed the clinical outcomes of 54 patients treated with catheter-directed thrombolysis (CDT) matched with 18 who received suction thrombectomy (ST) for acute pulmonary embolism and found equivalent clinical success, suggesting that ST is a potential alternative for patients with contraindications to CDT.

**629 Posterior tibial vein approach to catheter-directed thrombolysis for iliofemoral deep vein thrombosis**

Scott D. Bendix, MD, Ryan Nolan, BS, Simpledeep Banipal, MD, and William F. Oppat, MD, *Southfield and Detroit, Mich*

This retrospective study of 51 patients undergoing catheter-directed thrombolysis (CDT) for iliofemoral deep vein thrombosis showed similar rates of post-thrombotic syndrome after CDT done via posterior tibial vein compared to femoral/popliteal vein.

**635 The role of serum bilirubin levels in determining venous thromboembolism**

Hakan Duman, MD, Songül Özyurt, MD, Turan Erdoğan, MD, Bilge Yılmaz Kara, MD, and Murtaza Emre Durakoğlugil, MD, *Rize, Turkey*

This cross-sectional case-control study demonstrated lower bilirubin in 103 patients with venous thromboembolism compared to 50 control subjects. Lower bilirubin levels may be associated with venous thromboembolism.

**640 Virchow's triad in "silent" deep vein thrombosis**

Jacob Michael Lurie, MPH, C. Y. Maximilian Png, BA, Sneha Subramaniam, BA, Sida Chen, BA, Emily Chapman, BA, Aiya Aboubakr, BA, Michael Marin, MD, Peter Faries, MD, and Windsor Ting, MD, *New York, NY*

In this retrospective study, 152 patients underwent iliac vein stent placement and 51 (33.6%) had intraoperative findings of deep vein thrombosis without a history. Increased rates of intraoperative post-thrombotic changes in patients with one or more positive hypercoagulation markers (67% vs 42%;  $P < .01$ ) were found.

**Cover Image:** See Clinical Research Studies, page 660

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### INFERIOR VENA CAVA FILTERS

#### 646 **Editors' Choice**

#### **Long-term computed tomography follow-up results of strut penetration of inferior vena cava filters**

Shin Seok Yang, MD, and Woo-Sung Yun, MD, *Daegu, Korea*

This retrospective study of 66 patients who did not have the filter retrieved showed that the incidence of organ-involving inferior vena cava penetration was high (35%) and filter indwelling time  $\geq 30$  months was a risk factor of organ penetration.

#### 653 **Costs and complications of endovascular inferior vena cava filter retrieval**

Anand Brahmandam, MD, Laura Skrip, MPH, PhD, Hamid Mojibian, MD, John Aruny, MD, Bauer Sumpio, MD, PhD, Alan Dardik, MD, PhD, Timur Sarac, MD, and Cassius Iyad Ochoa Charar, MD, MS, *New Haven, Conn; Monrovia, Liberia; and Columbus, Ohio*

In this retrospective single-center study of 191 inferior vena cava filters, advanced endovascular techniques were effective for retrieval of challenging configuration filters, but they were associated with higher cost and more complications compared to standard techniques.

### VENOUS THORACIC OUTLET SYNDROME

#### 660 **Outcomes of venous bypass combined with thoracic outlet decompression for treatment of upper extremity central venous occlusion**

Jeffrey B. Edwards, MD, James D. Brooks, MD, Mathew D. Wooster, MD, Blake Fernandez, MD, Kelli Summers, MD, and Karl A. Illig, MD, *Tampa, Fla; Charleston and Orangeburg, SC; and New Orleans, La*

Central venous bypass combined with thoracic outlet decompression relieved symptoms related to upper extremity central venous occlusion in 90% of 14 patients. The authors suggest this is a suitable option for patients who have failed or are poor candidates for endovenous therapy.

### ILIOFEMORAL VENOUS OBSTRUCTION

#### 665 **Efficacy of balloon venoplasty alone in the correction of nonthrombotic iliac vein lesions**

Afsha Aurshina, MBBS, Jesse Chait, BS, Pavel Kibrik, DO, Yuriy Ostrozhynskyy, BS, Sareh Rajaei, MD, Natalie Marks, MD, Anil Hingorani, MD, and Enrico Ascher, MD, *Brooklyn, New York*

This retrospective single-center study investigated the effect of balloon dilatation of the iliac veins alone for treatment of nonthrombotic iliac vein lesions in 713 patients. Results suggest outcomes of balloon venoplasty alone are unpredictable and stents should be used in these patients for effective treatment.

#### 670 **Secondary interventions after iliac vein stenting for chronic proximal venous outflow obstruction**

Aiya Aboubakr, BA, Jesse Chait, BS, Jacob Lurie, BS, Harry R. Schanzer, MD, Michael L. Marin, MD, Peter L. Faries, MD, and Windsor Ting, MD, *New York, NY*

This retrospective study analyzed causes of failure and outcome in 50 patients who underwent reintervention following iliac vein stenting. Most had reintervention due to recurrence of symptoms caused by an additional native vein stenosis not observed during the primary intervention. Symptoms improved in 90%.

### UNUSUAL VENOUS DISEASES

#### 677 **Increased vein wall thickness in Behçet disease**

Emire Seyahi, MD, Migena Gjoni, MD, Emine Şebnem Durmaz, MD, Serkan Akbaş, MD, Necdet Sut, PhD, Atilla Süleyman Dikici, MD, Ismail Mihmanli, MD, and Hasan Yazici, MD, *Istanbul and Edirne, Turkey*

In this case control study, mean vein wall thickness (VWT) of proximal lower extremity veins in 50 Behçet disease (BD) patients with unilateral deep vein thrombosis (DVT) was significantly increased on the affected side compared to the unaffected side ( $P < .001$ ), while VWT on the unaffected side was similar to those measured in 50 BD patients without vascular involvement ( $P > .05$ ) but was larger than in 50 healthy controls ( $P < .001$ ). Venous wall inflammation appears to be a feature of BD with or without clinically overt vascular disease.

## CONTENTS (continued)

### SUPERFICIAL VENOUS DISEASE

#### 685 Safety and efficacy of venous ablation in octogenarians

Afsha Aurshina, MBBS, Yawei Zhang, MD, PhD, MPH, Haoran Zhuo, MPH, Jonathan Cardella, MD, Kristine Orion, MD, Bauer Sumpio, MD, PhD, Timur Sarac, MD, and Cassius Iyad Ochoa Char, MD, MS, *New Haven, Conn; and Columbus, Ohio*

In a retrospective study of 627 vein ablations performed in three age groups, no significant difference in clinical technical efficacy or recurrence rate was noted. The study underscores safety and efficacy of venous ablation in octogenarians.

#### 693 Gravity force is not a sole explanation of reflux flow in incompetent great saphenous vein

Roman A. Tauraginskii, MD, Fedor Lurie, MD, PhD, RPVI, RVT, FSVS, Sergei Simakov, PhD, Denis Borsuk, MD, PhD, and Konstantin Mazayshvili, MD, PhD, *Surgut, Moscow, and Chelyabinsk, Russia; Toledo, Ohio; and Ann Arbor, Mich*

In 61 lower limbs with the primary incompetence of a great saphenous vein, reflux was observed in 91.8% of cases in the horizontal position. Gravity appears to be not the only explanation for venous reflux flow.

#### 699 Mechanochemical ablation as an alternative to venous ulcer healing compared with thermal ablation

Sung Yup Kim, MD, Scott R. Safir, MD, C. Y. Maximilian Png, BS, Peter L. Faries, MD, Windsor Ting, MD, Ageliki G. Vouyouka, MD, Michael L. Marin, MD, and Rami O. Tadros, MD, *New York, NY*

Mechanochemical ablation (MOCA) in 53 patients healed more ulcers with a shorter healing time compared to thermal ablation in 29 patients. MOCA appears to be safe and effective in treating venous ulcers.

### VENOUS LABORATORY

#### 706 Peripheral venous hypertension in chronic venous disease

Seshadri Raju, MD, FACS, Alexander Knight, BS, Lara Lamanilao, BS, Nicholas Pace, MS, and Tamekia Jones, PhD, *Jackson, Miss*

The patterns of peripheral venous hypertension were analyzed in this retrospective study of 4132 chronic venous disease limbs, of which 158 had intravascular ultrasound-proven obstruction. Supine venous pressure did not worsen with reflux but erect resting and ambulatory venous pressures did. Ambulatory venous hypertension was predominantly associated with reflux, not obstruction.

#### 715 Role of ultrasound in diagnosis and differential diagnosis of deep infantile hemangioma and venous malformation

AngAng Ding, MD, Xia Gong, MD, Jia Li, MD, and Ping Xiong, PhD, MD, *Shanghai, China*

This retrospective single-center study analyzed the gray scale, color Doppler, and elastic ultrasound (US) manifestations of 135 patients (140 lesions) with deep infantile hemangioma and venous malformation and found that US is suitable for differential diagnosis between the two conditions and is able to diagnose each.

### LYMPHEDEMA

#### 724 Lymphedema-associated comorbidities and treatment gap

Andrew Son, MD, Thomas F. O'Donnell Jr, MD, Jessica Izhakoff, BS, Julia A. Gaebler, PhD, Timothy Niecko, MS, and Mark A. Iafrati, MD, *Boston and Weston, Mass; and Tierra Verde, Fla*

This retrospective analysis of an administrative prospectively collected database that describes lymphedema comorbidities and treatment rates suggests a large treatment gap between different comorbidities. Lymphedema associated with breast cancer was treated more frequently than lymphedema associated with venous leg ulcers.

#### 731 Invited Commentary — Phlebolymphe­dema is the ultimate comorbidity/outcome of lymphedema

B. B. (Byung-Boong) Lee, MD, PhD, FACS, *Washington, D.C.; and Bethesda, Md*

### EDUCATION CORNER

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**732 Vascular training does matter in the outcomes of saphenous high ligation and stripping**

Ricardo Castro-Ferreira, MD, Maria João Quelhas, MD, Alberto Freitas, PhD, José Vidoedo, MD, Emanuel Alves Silva, MD, André Marinho, MD, Rodolfo Abreu, MD, Andreia Coelho, MD, Paulo Gonçalves Dias, MD, and Sérgio Moreira Sampaio, MD, PhD, *Porto, Penafiel, Lisboa, Coimbra, and Espinho, Portugal*

This retrospective study from Portugal analyzed outcomes of 153,382 varicose vein procedures performed over 13 years, with further assessment of 315 subjects. Varicose vein surgery had significant advantages when performed by surgeons with formal vascular training.

### CASE REPORT OF THE MONTH

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**739 Renal autotransplantation results in pain resolution after left renal vein transposition**

Natalie M. Bath, MD, Talal Al-Qaoud, MD, FRCSC, Daniel H. Williams, MD, Hans W. Sollinger, MD, PhD, DrHC, and Robert R. Redfield III, MD, *Madison, Wisc; and Baltimore, Md*

### REVIEW ARTICLES

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**742 Duplication and transposition of inferior vena cava: A meta-analysis of prevalence**

Sorin Hostiuc, PhD, Costin Minoiu, PhD, Ionut Negoii, PhD, Mugurel Constantin Rusu, Dr Habil, and Mihaela Hostiuc, PhD, *Bucharest, Romania*

**756 Overview of venous pathology related to repetitive vascular trauma in athletes**

Deepak Menon, BSc, MBBS, Sarah Onida, BSc, MBBS, MRCS, PhD, and Alun H. Davies, MA, DM, DSc, FRCS, FHEA, FEBVS, FACPh, FFST(Ed), *London, United Kingdom*

### VENOUS VANTAGE POINT

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**763 Review and commentary of key non-JVS-VL articles**

### BOOK REVIEW

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**766 Lymphedema: A concise compendium of theory and practice, 2nd ed, Byung-Boong Lee, Stanley G Rockson, John Bergan, editors; 2018; New York: Springer**

Lori L. Pounds, MD, FACS, RPVI, RVT, *San Antonio, Tex*

### LETTERS TO THE EDITOR

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**768 On site selection for saphenous diameter measurement and access**

Cemal Kocaaslan, MD, Mehmet Senel Bademci, MD, Ahmet Oztekin, MD, Emine Seyma Denli Yalvac, MD, and Ebuzer Aydin, MD, *Istanbul, Turkey*

**768 Reply**

Jin Ho Hwang, MD, PhD, Ki Hyun Kim, MD, Woo Young Yang, MD, Sang Woo Park, MD, PhD, Jae Joon Hwang, MD, PhD, and Song Am Lee, MD, PhD, *Seoul, Republic of Korea*

JOURNAL OF VASCULAR SURGERY: VENOUS AND LYMPHATIC DISORDERS –  
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