CONTROVERSES ET ACTUALITES EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

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MARRIOTT RIVE GAUCHE & CONFERENCE CENTER | PARIS | FRANCE

VERNACULAR Trial 24 Month Data

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Disclosure

Bard: Research

Boston Sci: Research

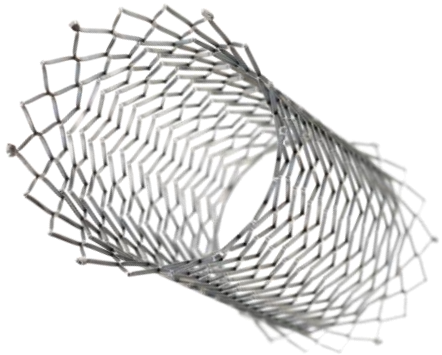
What You Need to Know

The VERNACULAR Trial at 1 Year:

- **Primary patency benefit compared to a historical control** ($p < 0.0001$)
- **Significant improvement in both VCSS pain scores and QoL (CIVIQ-20) compared to baseline ($p < 0.0001$)**

The VERNACULAR Trial at 2 Years:

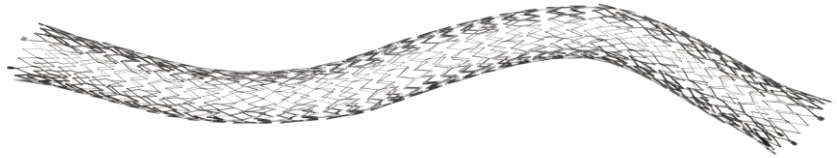
- **Primary Patency: 84.3% (Kaplan-Meier)**
- Freedom from TLR: 89.4%
- Freedom from TVR: 89.4%
- Stent Fractures (Core Lab Analyzed): 0%
- Follow up ongoing through 3 years



* FDA Approved For the treatment of symptomatic iliofemoral venous outflow obstruction

VENOVO® Venous Stent

FDA Approved March 13, 2019: For the treatment of symptomatic iliofemoral venous outflow obstruction



- Self-expanding nitinol stent designed for veins
- 3 mm flared ends designed for vein wall apposition
- 6 radiopaque tantalum markers (3 on each end)
- Tri-axial, 0.035” over-the-wire delivery system

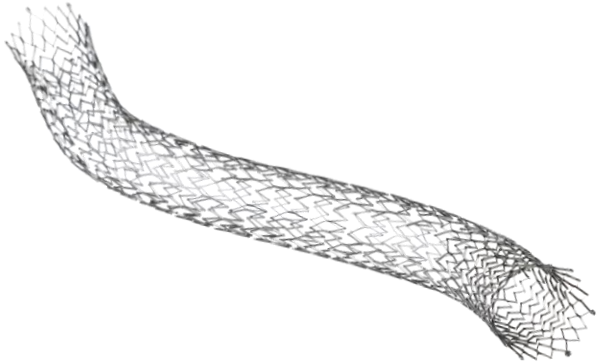
Stent Sizes

- Diameters: 10 – 20 mm (2 mm increments)
- Lengths: 40 – 160 mm (20 mm increments)
- 8 F – 10 F

VERNACULAR Pivotal IDE Study (N=170pts)

Study Design & Overview

- **Objective: Safety and Efficacy** of stenting iliofemoral vein outflow obstructions
- **Design:** Prospective, Multicenter, Non-Randomized, Single-Arm
- **Independent Analysis:**
  - Venographic & radiographic assessment: Yale Core Lab
  - Duplex Ultrasound (DUS) evaluation: VasCore
  - Clinical Events Committee (CEC): adjudicated serious adverse events
  - Data Safety Monitoring Board (DSMB): assessed overall patient safety



VERNACULAR Study Investigators

U.S. Sites

Investigator	Site Name	State
Jeffrey Apple	Cardiothoracic and Vascular Surgeons	TX
Robert Lookstein	Mount Sinai Medical Center	NY
John Mullins	Cox Medical Centers	MO
David Dexter	Sentara Norfolk General Hospital	VA
Nicolas Shammas	Midwest Cardiovascular Research Found.	IA
Shadi Abu-Halimah	CAMC Health Education & Res Institute	WV
Brian Ferris	Lake Washington Vascular	WA
Barbara Karenko	Metro Helath Hospital	MI
Robert Mendes	NC Heart and Vascular Research	NC
Khanjan Nagarsheth	Rutgers University	NJ
Robert Attaran	Yale University	CT
Ronald Morford	Centra Health	VA
Paul Gagne	The Vascular Experts	CT

22 Investigative Sites in the U.S., Europe, and Australia

OUS Sites

Investigator	Site Name	Country
Thomas Zeller	Universitäts-Herzzentrum Freiburg-Bad Krozingen	Germany
Michael Lichtenberg	Klinikum Arnsberg (Hochsauerland)	Germany
Gerard O'Sullivan	University Hospital Galway	Ireland
Steven Black	Guy's & St. Thomas' Hospital	United Kingdom
Michiel de Haan	MUMC Maastricht	The Netherlands
Luis Miguel Izquierdo Lamoca,	Findacion de investigación	Spain
Houman Jalaie	Uniklinik RWTH	Germany
Steven Dubenec	Royal Prince Alfred Hospital	Australia
Patrice Mwipatayi	JMLS Medical Services	Australia

Principal Investigator: Michael Dake

Co-Principal Investigator (Europe): Gerard O'Sullivan

VERNACULAR Study Criteria

Key Inclusion Criteria

- **Symptomatic venous outflow obstruction in the iliac & femoral veins ≥ 50% (contrast venography)**
- CEAP "C" (clinical score)[1] ≥ 3 or VCSS (pain score)[2] ≥ 2
- RVD[3]: 7 mm - 19 mm (visual estimate)

[1] Clinical Score from the Clinical-Etiology-Anatomy-Pathophysiology (CEAP) Classification

[2] Pain Score from the Venous Clinical Severity Score (VCSS)

[3] Reference Vessel Diameter

Key Exclusion Criteria

- Malignant obstruction
- Contralateral disease in the iliac & femoral veins
- Venous obstruction extending into the inferior vena cava or below the level of the lesser trochanter
- Prior stent placement at the site of the target lesion
- RVD < 7 mm or > 19 mm
- On dialysis or serum creatinine ≥ 2.5 mg/dl

Patient Demographics

ITT Population

Demographic Criteria	
Mean Age, years ± SD	52.1 ± 15.3
Male/Female, %/%	37.2/62.9
Mean BMI, kg/m^2 ± SD	28.8 ± 7.0
Co-Morbidities/Medical History, % (n)	
Varicosis	78.2 (133)
May-Thurner Syndrome	60.0 (102)
Smoker (Current & Former)	34.1 (58)
Hypertension	32.4 (55)
Dyslipidemia	27.6 (47)
Diabetes (Type 2)	10.6 (18)
Peripheral Artery Disease	10.6 (18)

Subgroups

PTS[1] (N=93)	NIVL[2] (N=77)
49.8 ± 15.0	55.0 ± 15.4
45.2/54.8	27.3/72.7
28.6 ± 6.4	29.1 ± 7.7
76.3 (71)	80.5 (62)
37.6 (35)	87.0 (67)
30.1 (28)	39.0 (30)
29.0 (27)	36.4 (28)
21.5 (29)	35.1 (27)
5.4 (5)	16.9 (13)
6.5 (6)	15.6 (12)

[1] Post-Thrombotic Syndrome [2] Non-Thrombotic Iliac Vein Lesion

Lesion Characteristics & Procedural Data

Lesion Criteria	Total (N=170)	PTS (N=93)	NIVL (N=77)
Lesion Location[1], %			
Common Iliac Vein	94.5	92.1	97.3
External Iliac Vein	40.5	58.4	18.9
Common Femoral Vein	9.2	14.6	2.7
Lesion Morphology			
Mean Lesion Length, mm ± SD	67.8 ± 40.0	80.5 ± 42.8	55.2 ± 32.0
Thrombus Present, % (n/N)	8.6 (14/162)	14.8 (13/88)	1.4 (1/74)
No Blood Flow (Occluded), % (n/N)	22.8 (37/162)	38.6 (34/88)	4.1 (3/74)
Number of Stents, N	219	134	85
Number of Stents per Patient	1.3	1.4	1.1
Mean Stented Length, mm ± SD	109.8 ± 52.7	130.2 ± 56.9	85.3 ± 33.7
Acute Technical Success[2], % (n/N)	100 (170/170)	100 (93/93)	100 (77/77)
Acute Procedure Success[3], % (n/N)	98.8 (168/170)	97.8 (91/93)	100 (77/77)

[1] Lesions could occur in more than one vein per patient [2] Successful stent deployment to the intended location [3] Technical success plus no MAEs through discharge

VERNACULAR Study: Primary Endpoints

Safety: Freedom from MAEs (30 Days)

	ITT (N=170)	90% CI	Performance Goal	p-value[1]
Freedom from MAEs % (n/N)	93.5% (159/170)	(89.5%, 96.3%)	89%	0.03

Freedom from MAEs with VENOVO was statistically significant when compared to the literature-derived performance goal

Efficacy: 12-Month Primary Patency*

	ITT (N=170)	90% CI	Performance Goal	p-value[2]
Primary Patency % (n/N)	88.3% (128/145)	(82.4%, 94.2%)	74%	<0.0001

*Freedom from target vessel revascularization (TVR) and thrombotic occlusion and stenosis > 50% measured by DUS Core Lab

[1] P-value computed compared with the performance goal (89%) using a one-sided exact binomial test

[2] One-sided p-value calculated from the weighted Z-statistics

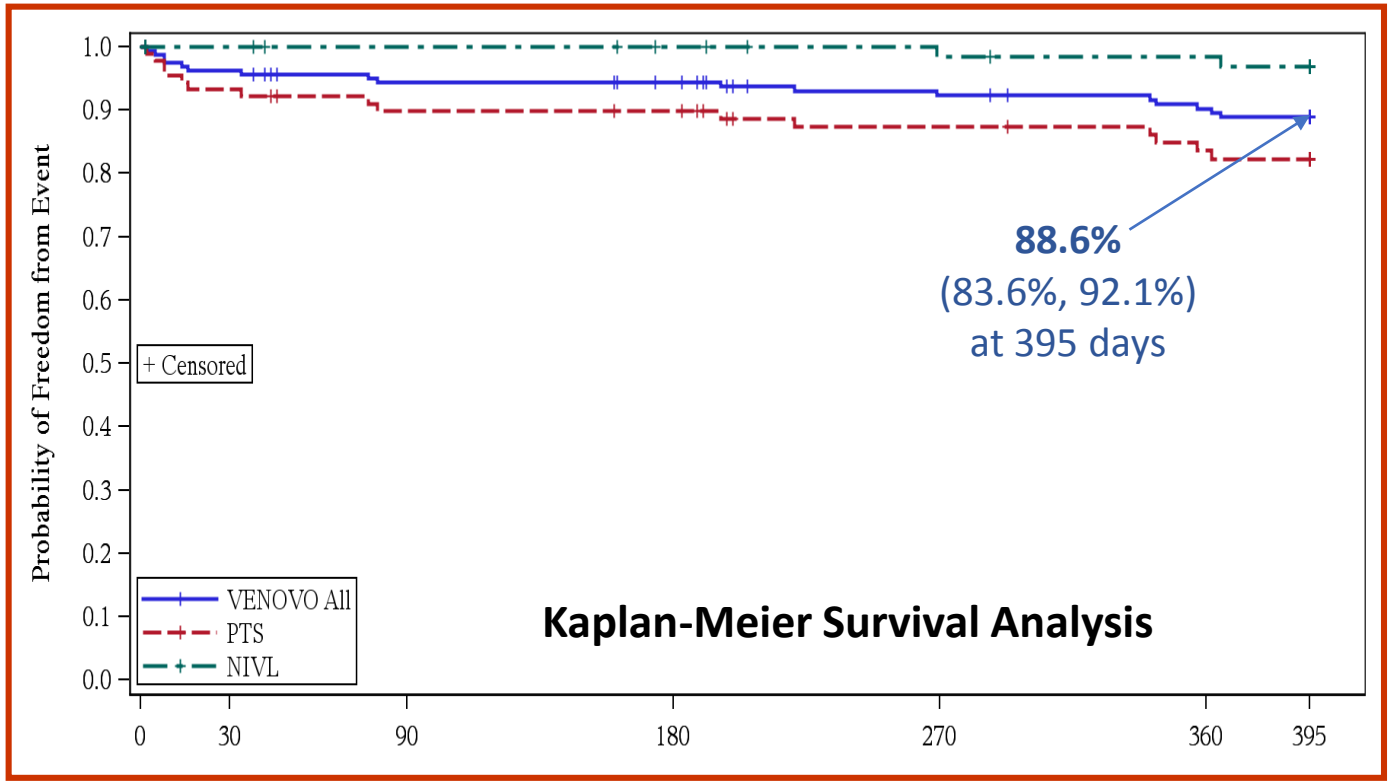
Primary Patency with VENOVO was statistically significant when compared to the literature-derived performance goal

12-Month Secondary Observations:

ITT Population

	12 Month
Freedom from TLR, (95% CI)	92.6% (87.5, 96.1)
Freedom from TVR, (95% CI)	92.6% (87.5, 96.1)
Stent Fractures, (n/N)	0% (0/137)

Descriptive Statistics. No formal hypothesis testing



Time-to-event survival analysis - 395 days is the end of the 12-month follow-up interval

[1] Kaplan-Meier Survival Analysis at 395 days (90% CI). End of the follow-up windows

[2] 128 patients had AP and lateral radiographs that could be evaluated by the Yale core lab at 24 months

VERNACULAR Study: 24-Months Results

Follow-up at two years: 86.4% (147/170 patients)

ITT Population

Observations	12 Month	24 Months
Freedom from TLR, (95% CI)	92.6% (87.5, 96.1)	89.4% (83.6, 93.7)
Freedom from TVR, (95% CI)	92.6% (87.5, 96.1)	89.4% (83.6, 93.7)
Primary Patency[1], (90% CI)	88.3% (82.4, 94.2)	83.2% (77.3, 89.1)
Stent Fractures, (n/N)	0% (0/137)	0% (0/128)[2]

Subgroups: 24 Months

PTS	NIVL
82.8%	97.3%
82.8%	97.3%
73.4%	95.2%
0%	0%

Descriptive Statistics - No formal hypothesis testing at 24 months

[1] Kaplan-Meier Survival Analysis at 395 & 760 days (90% CI). End of the follow-up windows

[2] 128 patients had AP and lateral radiographs that could be evaluated by the Yale core lab at 24 months

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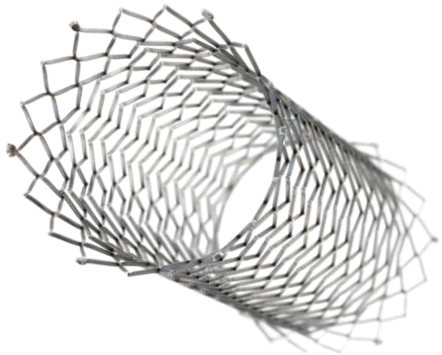

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Thank you

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