MIGRATION OF ILIAC AND RENAL VEIN STENTS: T-STENT MIGHT BE A SOLUTION TO THE PROBLEM

Peter Gloviczki, MD, PhD, FACS

Joe M. and Ruth Roberts Emeritus Professor of Surgery,
Chair, Emeritus, Division of Vascular and Endovascular Surgery
Mayo Clinic, Rochester, MN,

Disclosure

✓ I do not have any potential conflict of interest

IP277.

Systematic Review of Venous Stent Migration to the Heart

Dana Alameddine,[1] Sahar H. Ali,[2] Alexandria Brackett,[1] Robert Attaran,[1] Hamid Mojibian,[1] Britt H. Tonnessen,[1] Raul J. Guzman,[1] Cassius Iyad Ochoa Chaar[1]. [1]Yale University, New Haven, Conn; [2]Yale New Haven Hospital, New Haven, Conn; [3]Yale University School of Medicine, New Haven, Conn

Objective: Venous stent migration to the heart is a potentially life-threatening complication and has recently led to device withdrawal from the market. A review of the literature was conducted to better characterize factors associated with this serious complication and its management.

Methods: A systematic review of the literature using the term "venous stent migration" was performed. All articles describing patients with this complication were reviewed. Patient characteristics, indication, time to discovery of migration, and management were summarized. Venous stents that migrated from the lower body to the heart were compared with venous stents that migrated from the upper body.

Results: A total of 75 papers with 84 patients reported venous stent migration to the heart or through the heart to the pulmonary artery. The number of papers reporting this phenomenon increased from 6 in the period of 1991-1995 to 20 in the period of 2016-2020 (Fig). The incidence of venous stenting migration varied mostly between 0.4% and 4.5%. Patients with migration from lower body were significantly younger (49.1 vs 56.9. $P = .05$). There were significant differences in in

J Vasc Surg, 2022; 75: e231–e232.

VENOUS STENT MIGRATIONS TO THE HEART

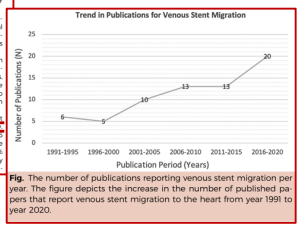
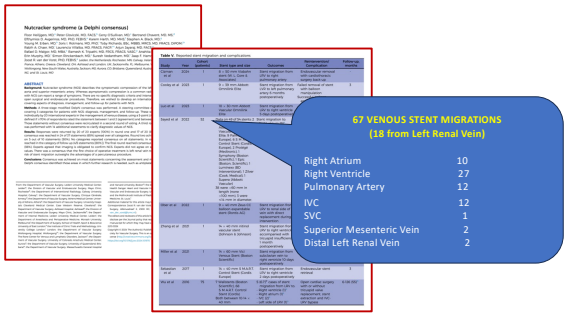


Fig. The number of publications reporting venous stent migration per year. The figure depicts the increase in the number of published papers that report venous stent migration to the heart from year 1991 to year 2020.



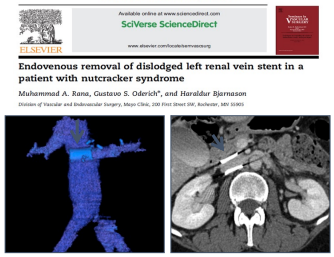
54 stent migrations

- 82.6% were short (< 6 cm in length)
- 96.4% were small (< 14 mm in diameter)
- Endovascular and open surgery used for stent retrieval
- 30-day procedure related mortality: 11%
- All-cause mortality: 16%

ENDOVASCULAR TREATMENT

VENOUS STENTS
7 series, 180 patients (175 from China)
Good clinical results at 6 -126 months
Stent migration : 0 to 6.6%

STENT MIGRATION

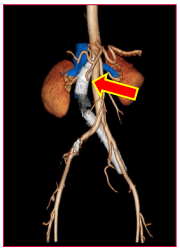


Endovenous removal of dislodged left renal vein stent in a patient with nutcracker syndrome

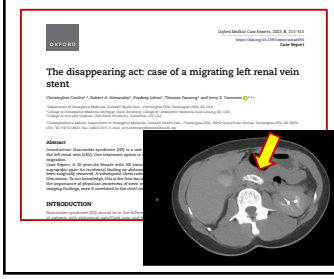
Muhammad A. Rana, Gustavo S. Oderich*, and Haraldur Bjarnason

Division of Vascular and Endovascular Surgery, Mayo Clinic, 200 First Street SW, Rochester, MN 55905

STENT MIGRATION AND PERFORATION

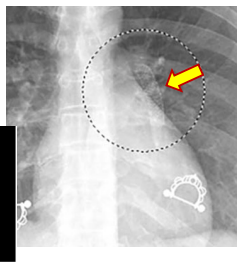


STENT MIGRATION

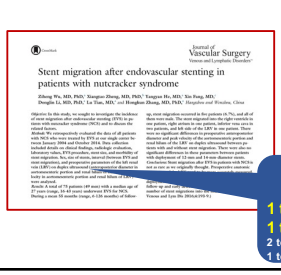


The disappearing act: case of a migrating left renal vein stent

Christopher Cooley* • Robert A. Alexander† • Pradeep Jalori† • Thomas Fanning† and Jerry Z. Cinnamon

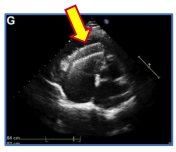


STENT MIGRATION



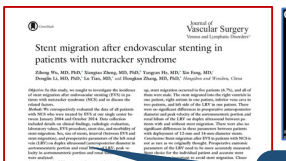
Stent migration after endovascular stenting in patients with nutcracker syndrome

Zihong Wu, MD, PhD,† Xiangtao Zheng, MD, PhD,† Yangyan Hu, MD,† Xin Fang, MD,† Dongdie Li, MD, PhD,† Le Tian, MD,† and Hongkun Zheng, MD, PhD†



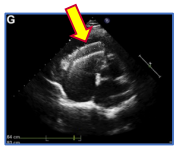
STENT MIGRATION
in 5 of 75 pts (6.7%)
1 to Right Atrium
1 to Right Ventricle
2 to IVC
1 to left side of LRV

STENT MIGRATION



Stent migration after endovascular stenting in patients with nutcracker syndrome

Zihong Wu, MD, PhD,† Xiangtao Zheng, MD, PhD,† Yangyan Hu, MD,† Xin Fang, MD,† Dongdie Li, MD, PhD,† Le Tian, MD,† and Hongkun Zheng, MD, PhD†



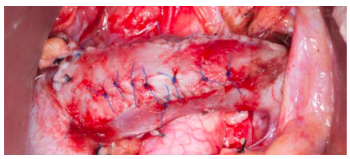
STENT MIGRATION
in 5 of 75 pts (6.7%)
1 to Right Atrium
1 to Right Ventricle
2 to IVC
1 to left side of LRV

Total of 11 stent migrations to the heart or pulmonary artery were reported in 9 papers

Hybrid intervention for treatment of the nutcracker syndrome

Arjun Jayaraj, MBBS, Peter Gloviczki, MD, Syed Peeran, MD, and Linda Canton, RN, *Rochester, Minn*

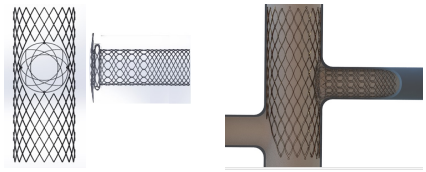
Nutcracker syndrome is a rare anomaly resulting from compression of the left renal vein between the aorta and the superior mesenteric artery. Open and endovascular interventions have both been performed to relieve the compression. Each of these interventions has strengths and weaknesses. We report two patients in whom a hybrid approach was adopted in the process combining the strengths of each intervention while reducing potential complications. (J Vasc Surg Cases 2015;1:268-71.)



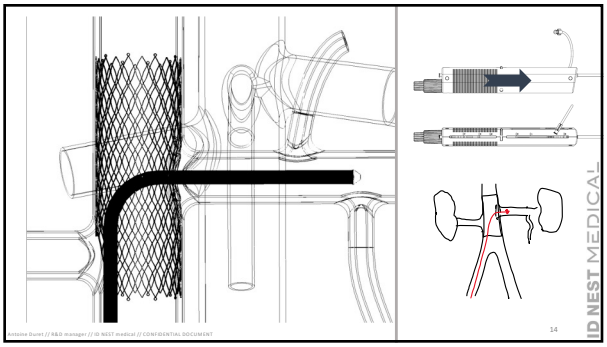
T- STENT

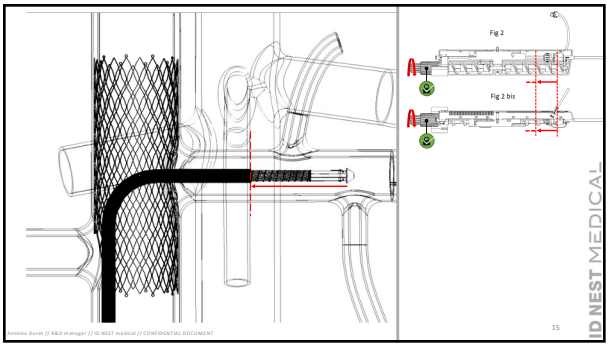
ID NEST MEDICAL

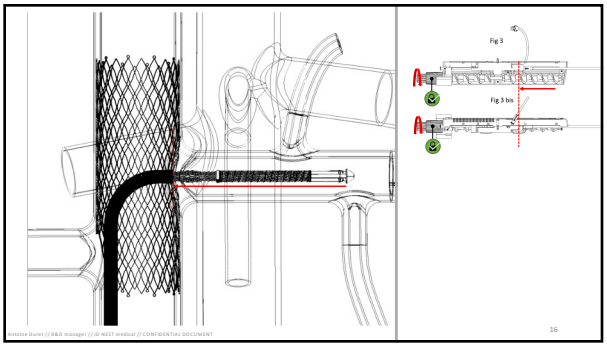
SHORT LRV STENT CONNECTS TO AN IVC STENT

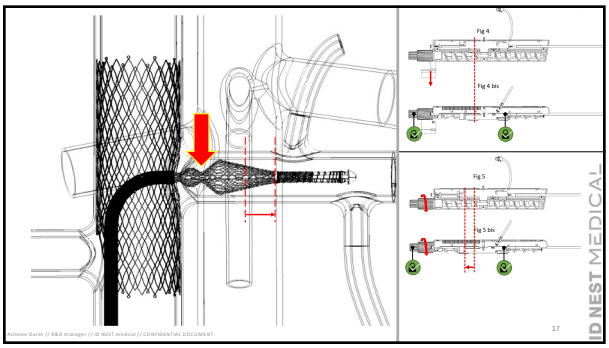


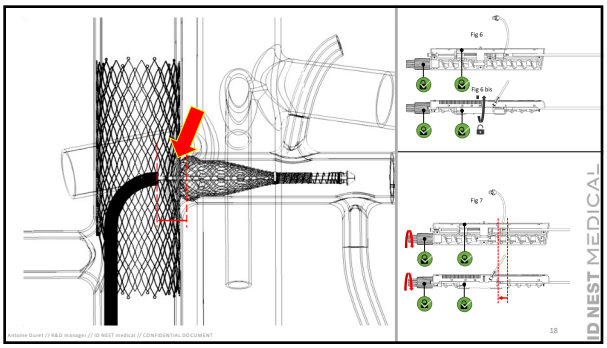
Courtesy of Dr. Philippe Nicolini

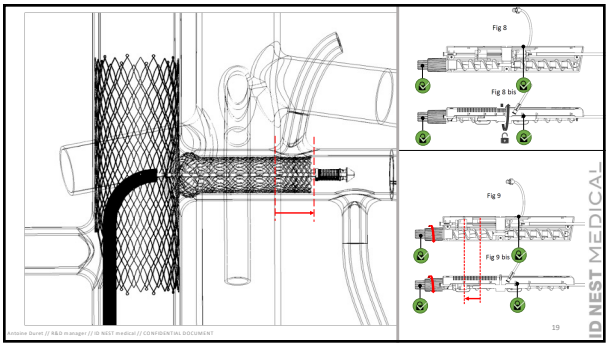


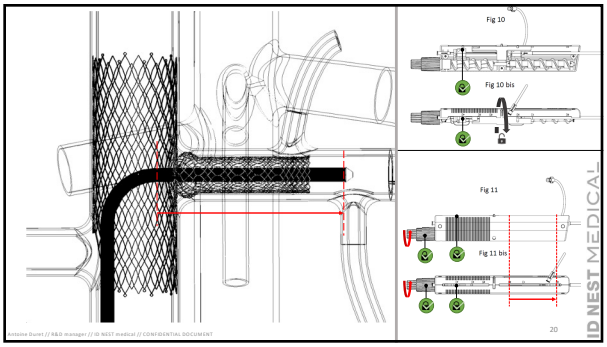


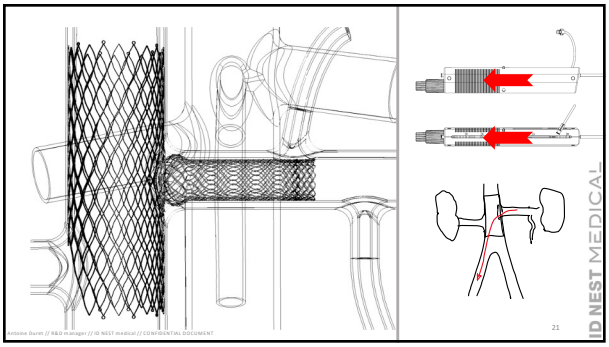












TAKE HOME MESSAGE

- Stent migration from the iliac or renal veins are very rare but may cause serious complications or even death
- In the iliac veins use large (>14 mm) and long stents, extending into the extremal iliac vein, to avoid migration
- Currently, stent migration from the LRV can only be prevented with a hybrid procedure

TAKE HOME MESSAGE

- Clinical trials with dedicated renal vein stents that are flexible, short, resist external compression, and **<u>can not migrate</u>** are urgently needed.
- T-STENT might be one solution!

THANK YOU !