

Iatrogenic Iliac Vein Perforation in Transcatheter Tricuspid Valve Repair: A Case Report

Nathan Taber, MD¹, Gaetano Florio, MD², Chung-Jen Chen, MD^{1,2}

¹Montefiore Medical Center Department of Anesthesiology, ²Montefiore Medical Center Department of Anesthesiology: Division of Cardiothoracic Anesthesiology



Introduction

- Tricuspid Regurgitation is a clinically important lesion
- Causes of TR divided into primary valve damage or secondary to left heart failure or pulmonary hypertension
- Open TR repair is rarely performed, unless coupled with other valvular repair, given high rate of complications
- TTVR has emerged as a favorable alternative given lower rate of complications and reduction in healthcare utilization

Learning Objective

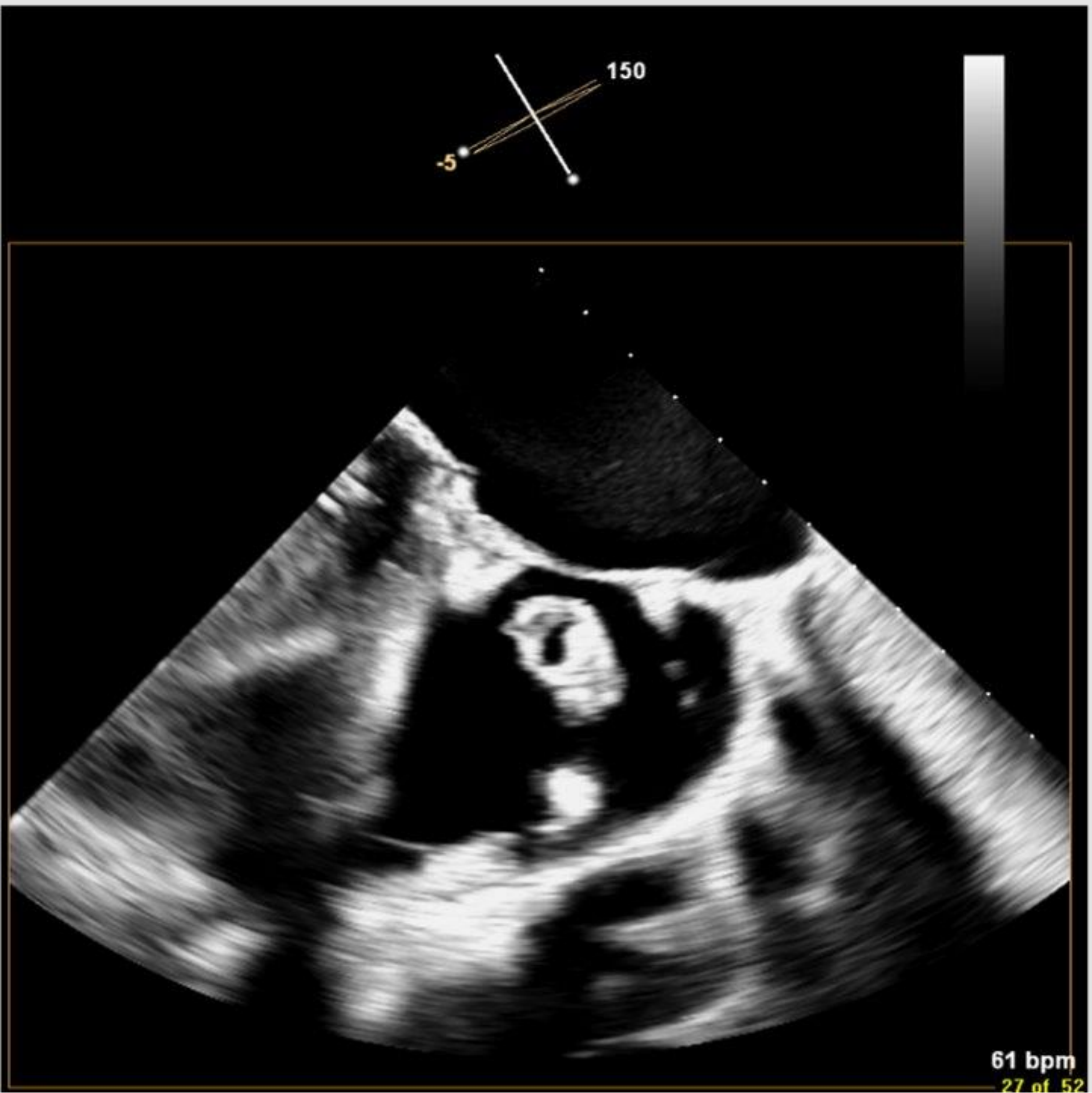
Transcatheter valve replacements are associated with fewer complications, however major adverse events can still compromise patient outcomes and intraoperative stability. Anesthesiologists must be prepared to address these complications.

Case Description

72-year-old female with a history of rheumatic heart disease and subsequent heart failure requiring mechanical aortic and mitral valve replacements, and sinus node dysfunction with pacemaker placement, who presented to the cardiac catheterization lab for transcatheter tricuspid valve repair in the setting of severe tricuspid regurgitation.

- Uneventful induction of anesthesia and placement of TEE probe
- Femoral vein dilated to accept venous sheath to deploy valve
- Patient developed refractory hypotension immediately on insertion of sheath into the femoral vein
- Contrast study showed retroperitoneal extravasation and likely avulsion of the left iliac vein
- The case was immediately aborted and vascular surgery was called for assistance
- Hemodynamics were supported with vasopressors, crystalloids and blood products
- On TEE, a tubular structure was noted in the right atrium, which was presumed to be a portion of the iliac vein

TTE Image



The above image shows a modified bicaval view with a piece of iliac vein in the center of the right atrium

Case Description Continued

- Vascular surgery repaired with endograft with two bare metal stents to prevent dynamic occlusion of right iliac vein
- Upon completion of the procedure, the patient was transferred intubated and sedated to the cardiac care unit for further management

Discussion

- Anesthesiologists are working more and more in out-of-operative room settings
- These are generally less invasive procedures with fewer risks
- However, complications can still arise requiring high level intervention
- Our case highlights the importance of having well-equipped out of operating room suites
- TEE provided a vital information on both the hemodynamic status of the patient as well as the piece of embolized vein
- As anesthesiologists, we must all be prepared to manage the hemodynamics associated with these complications

Acknowledgments

We would like to thank the operating room team during this difficult case, their dedication to patient safety was critical. Additionally, we would like to thank the Montefiore Medical Center Department of Anesthesiology for their commitment to clinical research and improving patient outcomes.

References

1. Vahanian A, Beyersdorf F, Praz F, et al. 2021 ESC/EACTS Guidelines for the management of valvular heart disease: Developed by the Task Force for the management of valvular heart disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2022;43(7):561-632. doi:10.1093/eurheartj/ehab395
2. Wang X, Ma Y, Liu Z, et al. Comparison of outcomes between transcatheter tricuspid valve repair and surgical tricuspid valve replacement or repair in patients with tricuspid insufficiency. *J Cardiothorac Surg*. 2023;18(1):170. doi:10.1186/s13019-023-02271-9
3. Otto CM, Nishimura RA, Bonow RO, et al. 2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2021;143(5):e72-e227. doi:10.1161/CIR.0000000000000923