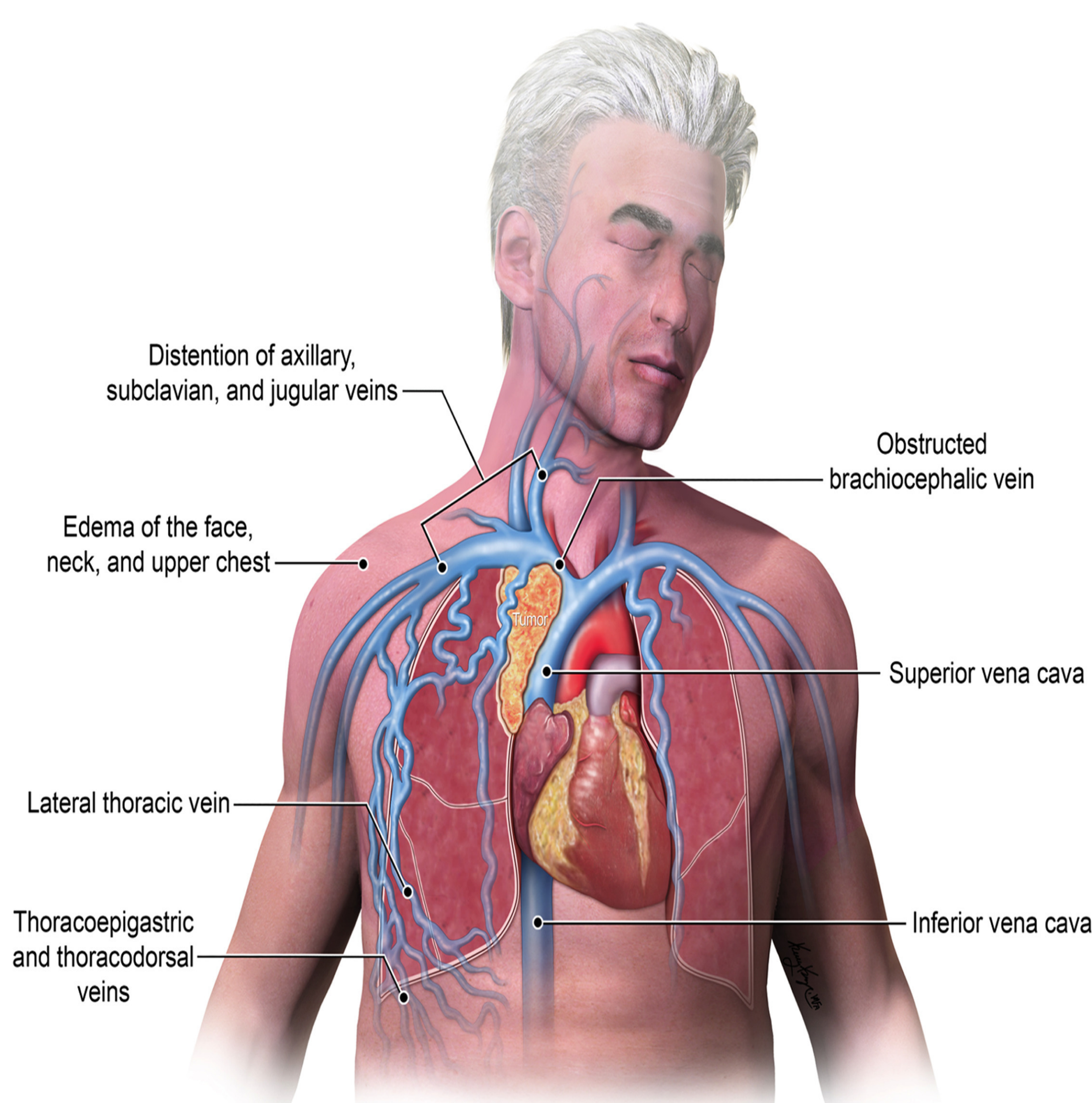


## Background

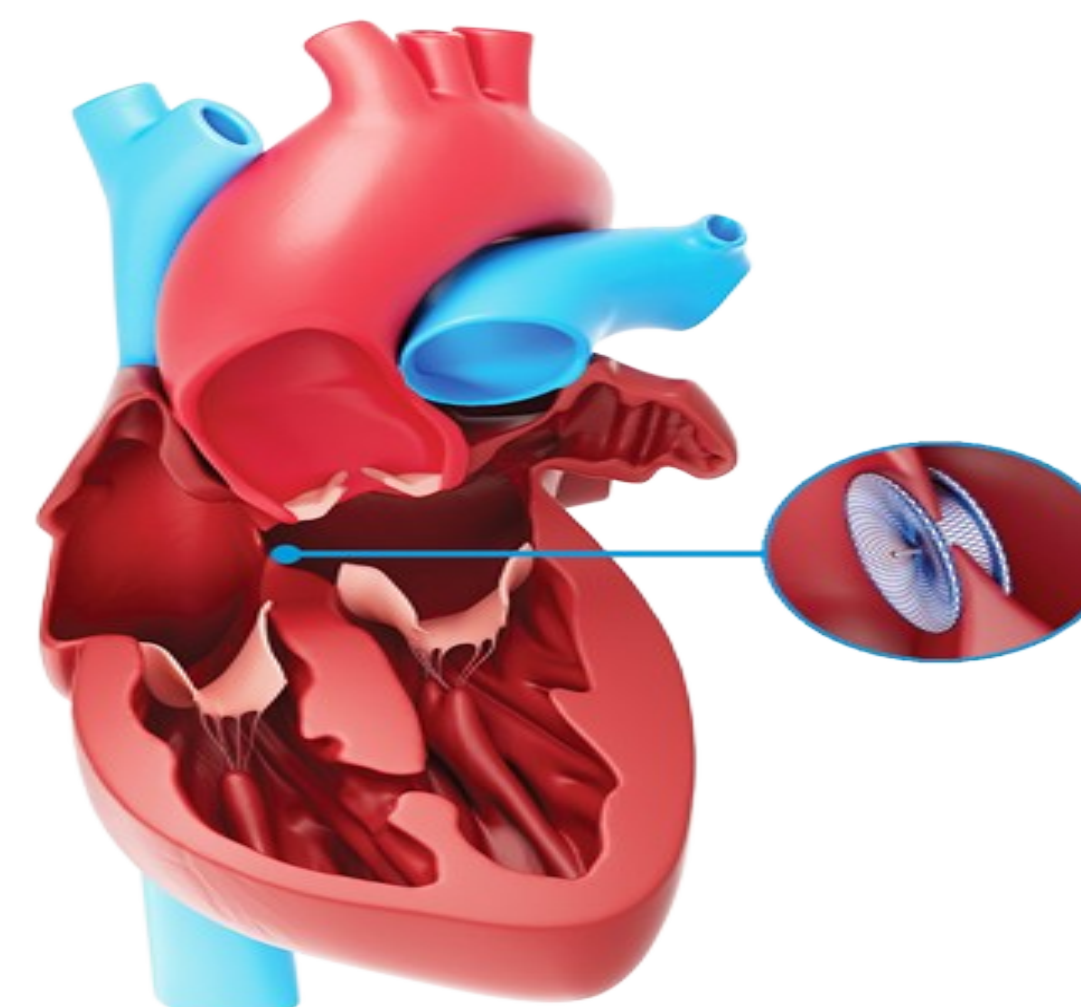
- Bilateral hemotympanum linked to non-otolaryngologic surgery is not currently well-documented in medical literature
- It is reported as a very rare side effect with elevated arterial and venous pressures within the head and neck perioperatively causing rupture of subcutaneous capillaries
- Perioperative hypertension, coagulopathies/anticoagulants, and advanced age have been associated with bilateral hemotympanum
- Three previous case reports discussing perioperative hemotympanum:
  - Bilateral hemotympanum in the Trendelenburg position and pneumoperitoneum during robotic gynecologic surgery<sup>1</sup>
  - Spontaneous ear bleeding with facial engorgement and conjunctival edema. It was thought to be due to displacement of the SVC cannula leading to SVC syndrome and repositioning led to rapid recovery with an uneventful post-op course<sup>2</sup>
  - Hemotympanum following a mitral valve replacement where prolonged elevated central venous pressure and poor cardiopulmonary bypass, attributed to SVC syndrome and anticoagulation<sup>3</sup>



**Figure 1. Superior Vena Cava syndrome.**

## Case Presentation

- 73-YO female presented for a tricuspid valve repair, atrial septal defect repair, MAZE procedure and left atrial appendage clip
  - PMH: Congestive heart failure, persistent atrial fibrillation, coronary artery disease, peripheral artery disease, carotid artery stenosis and hypertension
  - On Eliquis and Plavix, received her morning dose prior to surgery
- Intraoperatively
  - Cardiopulmonary bypass lasted 123 minutes with a 25-minute cross-clamp, and multiple recruitment maneuvers were performed
  - Patient received 16,000 units of heparin prior to cannulization to prevent thrombus formation during CBP
- Postoperatively:
  - Blood was observed in both ears. ENT evaluation revealed dried blood externally and bleeding in the ears, tympanic membranes were intact, with no lacerations, or perforations



**Figure 2. Repair of an atrial septal defect.**

## Procedure

1. Sternotomy was performed and a heparin loading dose was administered to achieve anticoagulation
2. ACT determined to be adequate for cardiopulmonary bypass
3. Aortic/venous cannula inserted and CBP initiation
4. Aortic clamp applied
5. First dose of cardioplegia given
6. Multiple Valsalva maneuvers during case with no leak or large changes in barometric pressure
7. Aortic Clamp removed
8. Bypass ended and aortic/venous cannula removed
9. Chest closed and transesophageal probe removed

## Complications and Clinical Course

- Post procedure:
  - Ecchymosis appreciated on tip of tongue after TEE and bite blocked removed
  - Dried blood seen in ears bilaterally
  - ENT evaluated the patient in the OR
  - Conservative treatment recommended
- POD 4
  - ENT evaluation for throat pain
  - Flex laryngoscopy revealed mild left vocal post ulceration
  - Otorrhagia resolved and hearing intact with no deficits
  - ENT concluded active management
- POD 9
  - Patient discharged in stable condition

## Discussion

- There is a paucity of literature on intraoperative otorrhagia
- Preventing an event like this can be very difficult due to a combination of patient specific risk and intraoperative risk factors that are not always modifiable
- Careful monitoring of venous pressure/ drainage, minimizing heparin use, and ensuring adequate heparin reversal are essential in reducing complications such as otorrhagia
- Central venous catheters can rarely cause SVC syndrome, elevating central pressure<sup>2</sup>
- Reverse Trendelenburg positioning is usually preventative, lowering central venous pressure in the head and neck.
- Most cases resolve spontaneously

## References

1. Aloisi A, Pesce JE, Paraghamian SE, Chi DS, Rieth EF. Bilateral Otorrhagia after Robotically Assisted Gynecologic Surgery in the Setting of a Reduced Trendelenburg Position and Low-Pressure Pneumoperitoneum: A Case Report and Review of the Literature. *Journal of minimally invasive gynecology*. 2017;24(7):1229-1233. doi:<https://doi.org/10.1016/j.jmig.2017.04.009>
2. Niazi AK, Reese AS, Minko P, O'Donoghue D, Ayad S. Superior Vena Cava Syndrome and Otorrhagia During Cardiac Surgery. *Cureus*. 2019;11(5):e4602. doi:<https://doi.org/10.7759/cureus.4602>
3. Singh KE, Cook DJ, Suri RM, Ren Z. Spontaneous ear hemorrhage during cardiac surgery. *The Annals of thoracic surgery*. 2012;93(3):982-984. doi:<https://doi.org/10.1016/j.athoracsur.2011.07.017>

