



Otorrhagia Following Robotic Pelvic Surgery in Trendelenburg: A Rare Presentation of Tympanic Membrane Perforation

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Learning Objective

Identify tympanic membrane perforation as an uncommon but clinically relevant postoperative complication in prolonged steep Trendelenburg during laparoscopic pelvic surgery.

Background

Steep Trendelenburg positioning is frequently required in robotic pelvic procedures but introduces several physiologic challenges, including reduced pulmonary compliance, increased intracranial and intraocular pressures, facial edema, and—rarely—middle-ear barotrauma.

The tympanic membrane forms the interface between the external auditory canal and the middle ear, transmitting sound vibrations toward the inner ear. Perforation can present with acute otalgia, bloody otorrhea, tinnitus, or hearing loss. Common causes include infection, foreign bodies, or sudden pressure changes. Most perforations heal without intervention, and treatment is typically supportive.

Case Description

A 77-year-old woman with hypertension, hyperlipidemia, and prior DVT underwent robotic hysterectomy, bilateral salpingo-oophorectomy, cystoscopy, and sacrocolpopexy. Total operative time was 4 hours, including 3 hours in lithotomy with steep Trendelenburg.

In PACU, dried blood was noted in her hair. Examination revealed right-sided otorrhagia. On further questioning, she disclosed remote childhood ear surgeries and long-term bilateral hearing-aid use—information not reported during the preoperative evaluation.

ENT examination demonstrated a right tympanic membrane perforation with mild contralateral hemotympanum. She remained asymptomatic and was discharged with ofloxacin ear drops and routine follow-up. At 4 weeks, bleeding had resolved, and her hearing had returned to baseline.

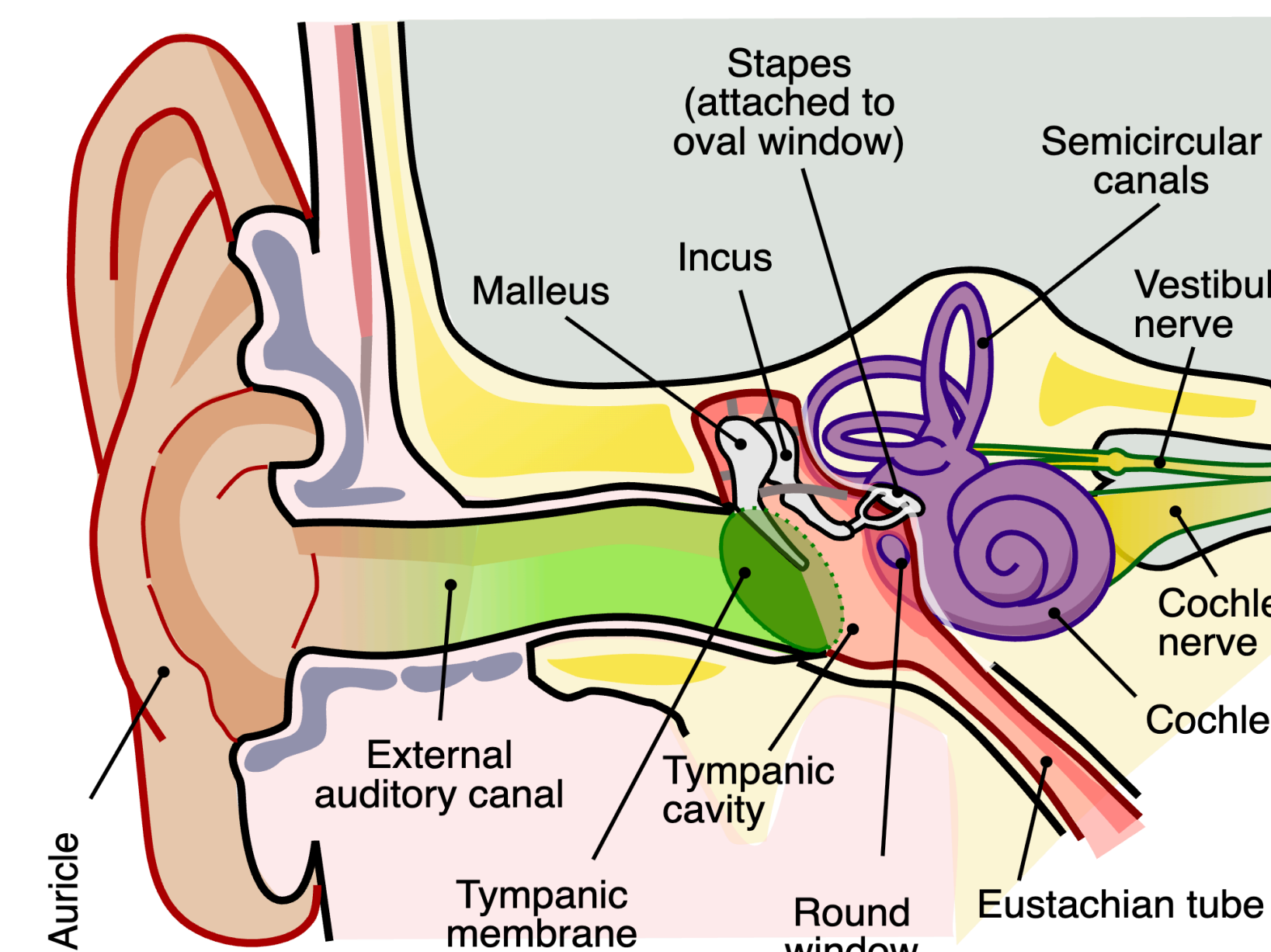


Image 1: Anatomy of the Ear (wikimedia commons)

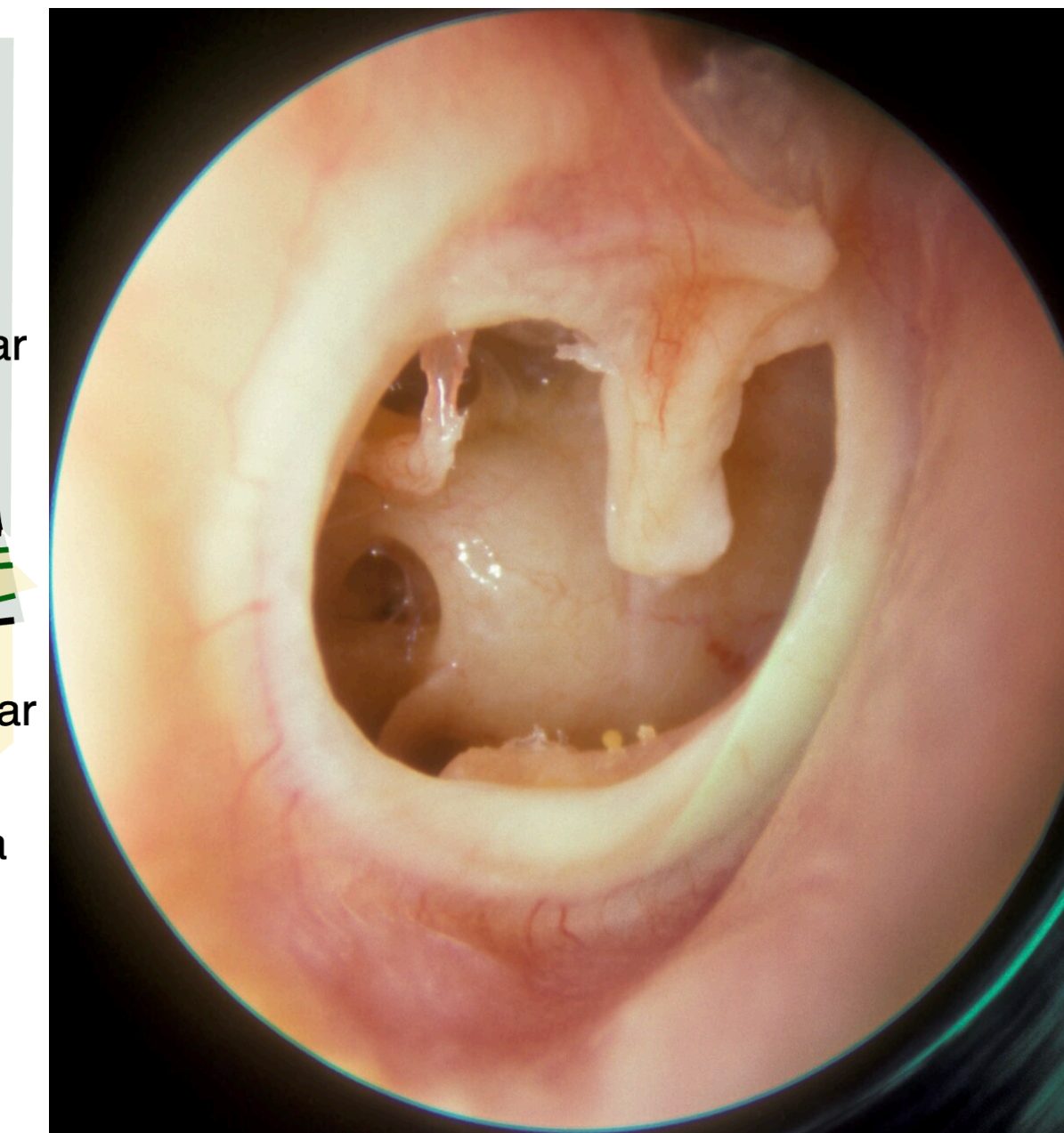


Image 2: Subtotal Perforation of the right tympanic membrane (Michael Hawke MD is licensed under CC BY-SA 4.0.)

Discussion

Tympanic membrane perforation associated with steep Trendelenburg is rare but documented. Proposed contributors include:

- Increased venous congestion from head-down positioning
- Pneumoperitoneum-related elevations in middle-ear pressure
- Impaired eustachian tube drainage
- Preexisting middle-ear pathology (as in this case)

Despite an entirely uneventful anesthetic and stable intraoperative physiology, silent barotrauma occurred. This highlights the importance of:

- Thorough otologic history—particularly prior ear surgery, chronic otologic conditions, or hearing-aid use
- Early recognition of unexplained otorrhagia
- Prompt ENT evaluation
- Conservative management in uncomplicated perforations

References

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