

Scanning through the snow: A case of subcutaneous emphysema following spontaneous pulmonary bleb rupture

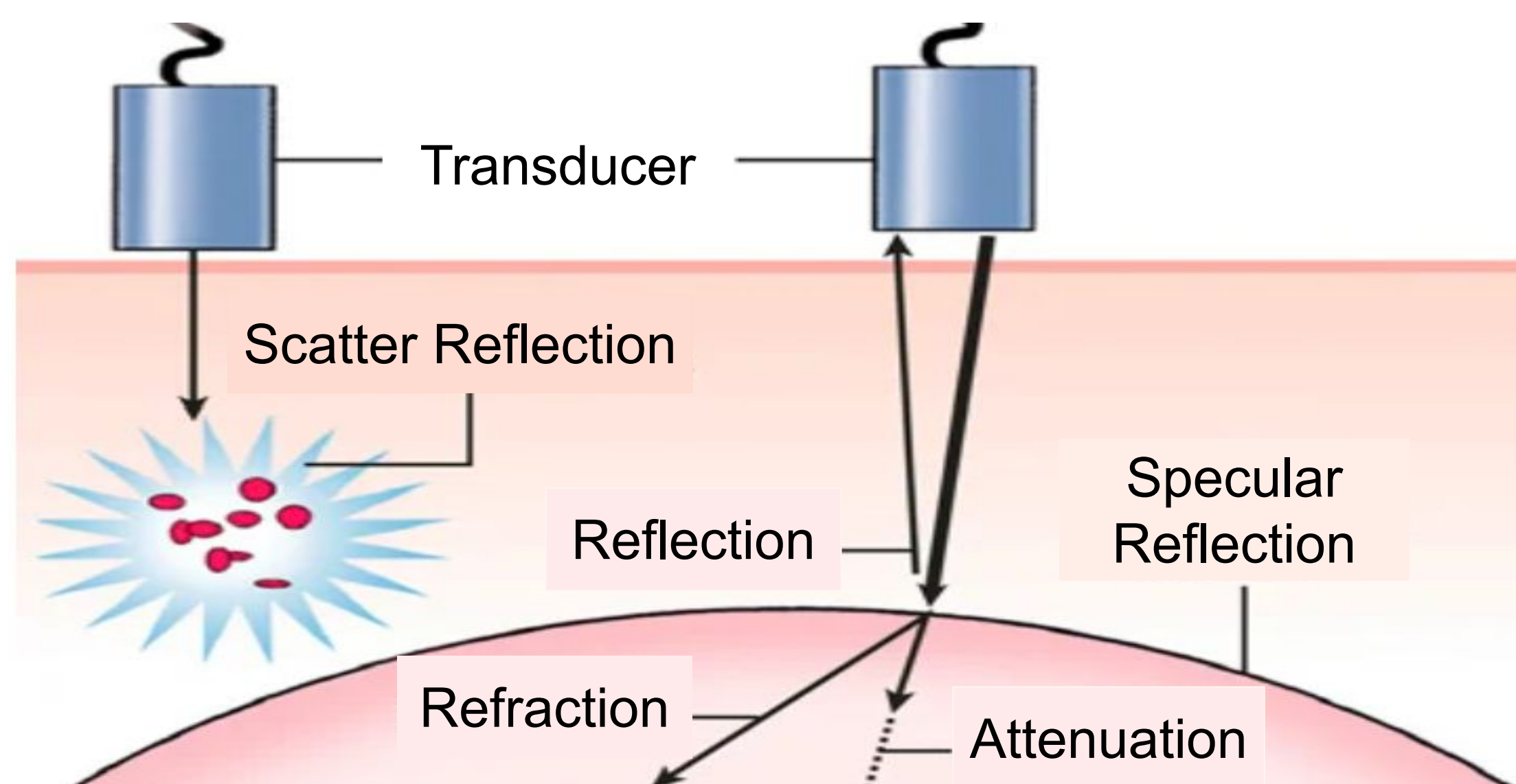
Alexander Novak, MD; Mel Toeller, MD; Adeeb Oweidat, MD

Department of Anesthesia, Iowa Healthcare, Iowa City, Iowa, USA

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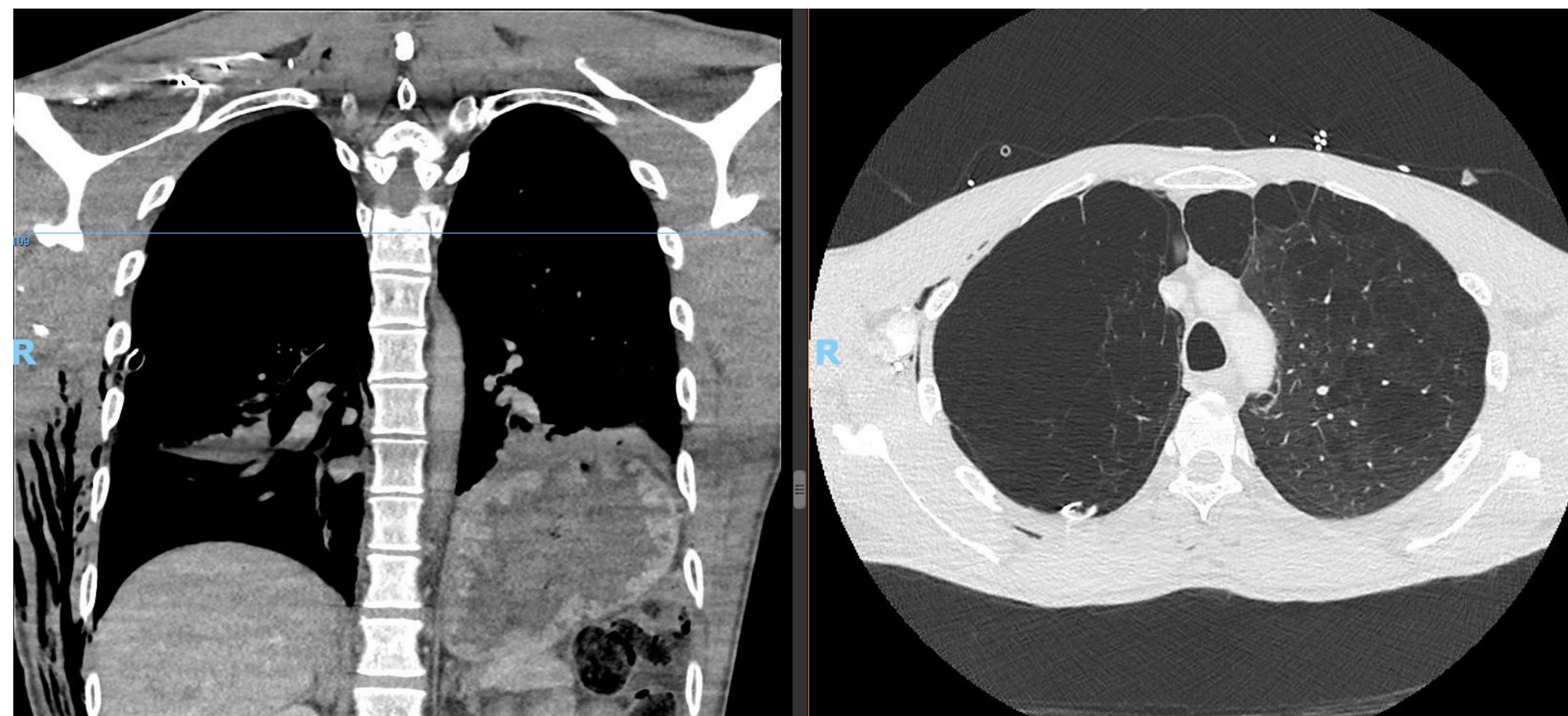
Background

- Subcutaneous emphysema is the infiltration of gas below the dermis (1)
 - Incidence <2.5% to upwards of 77% after laparoscopic surgery (2)
- Etiologies:
 - Iatrogenic
 - Infectious
 - Traumatic
 - Spontaneous
- Ultrasound wave responses while traveling through different tissues (3)

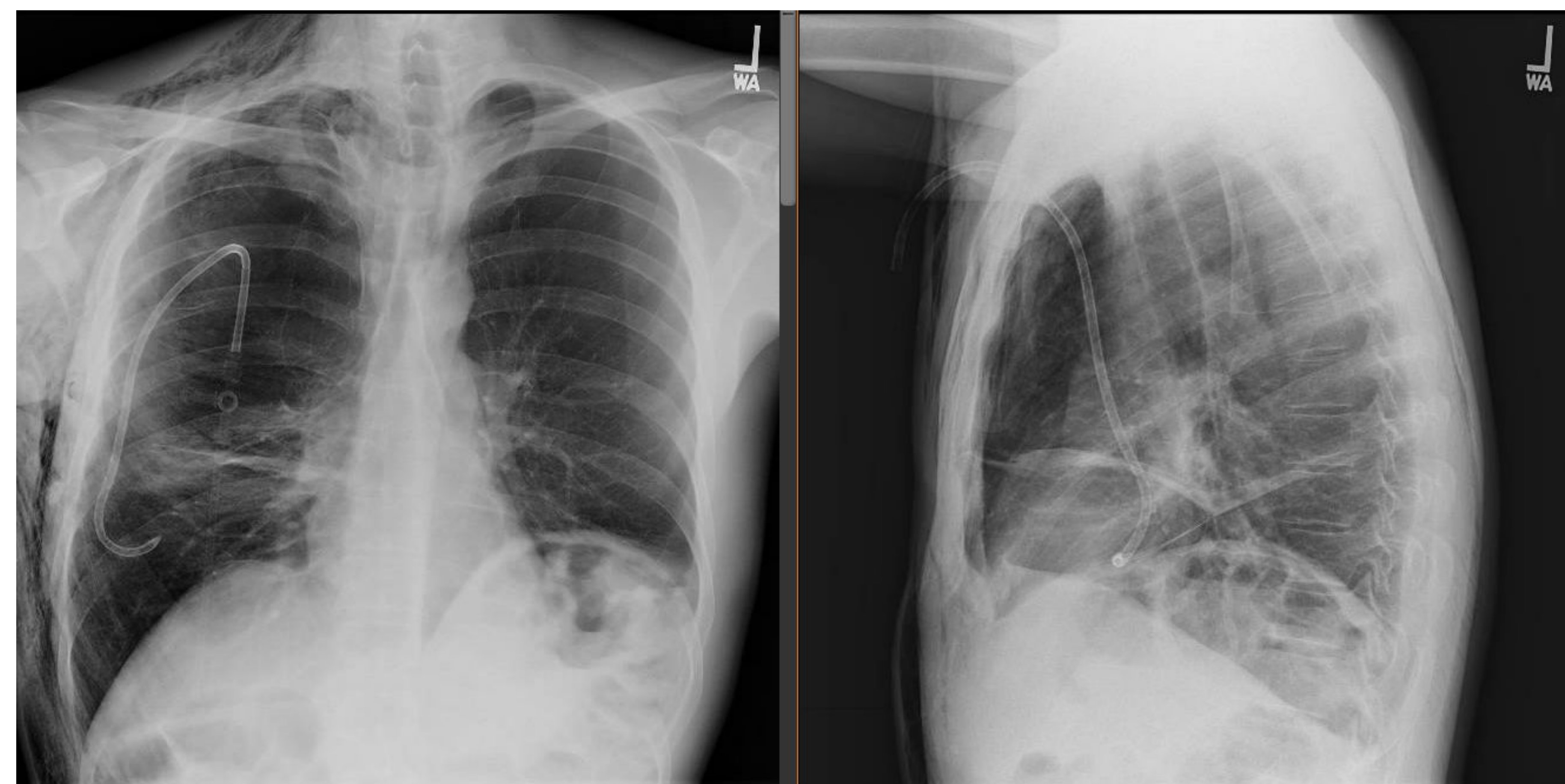


Case

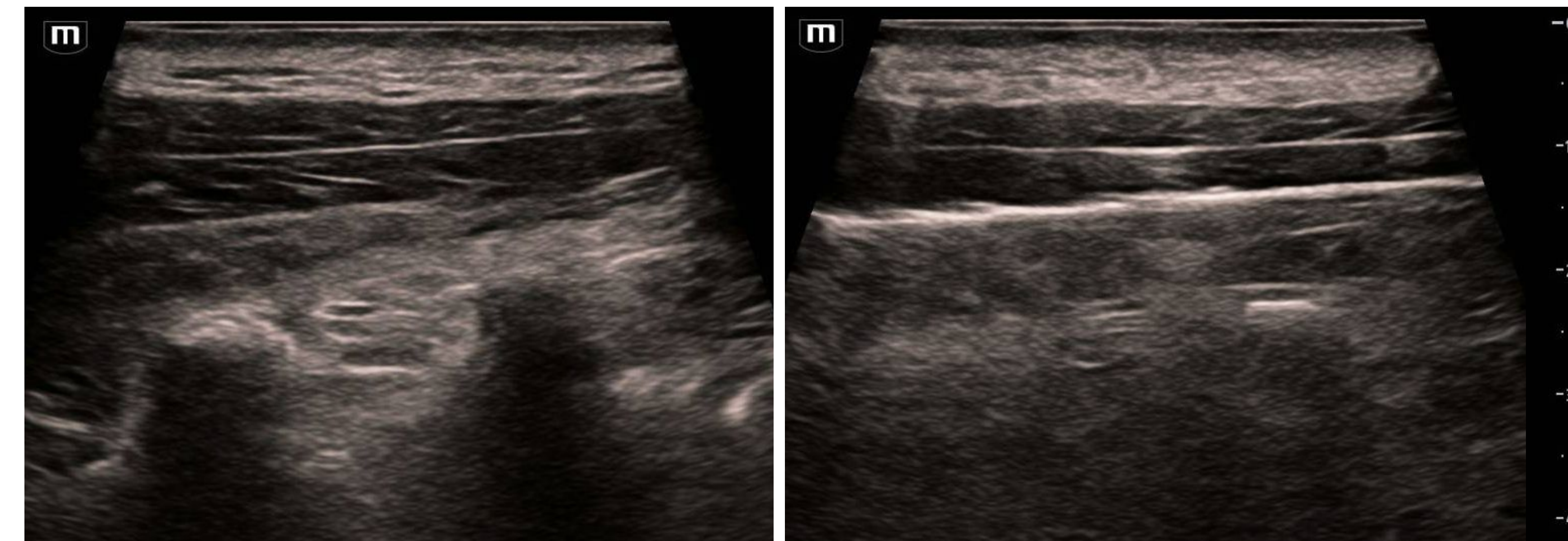
- 41M with PMHx of current tobacco-use disorder and bullous emphysema
- Presented locally with dyspnea and imaging revealed large right-sided pneumothorax status post chest tube placement x2
- Transferred for right VATS lung volume reduction surgery and pleurodesis



Computed tomography scan of chest imaged 7 days prior to right VATS demonstrating subcutaneous emphysema. Transverse CT image at the level of T5



Chest x-ray imaged day of right VATS demonstrating extensive subcutaneous air present on the right-side of the body



Point-of-care ultrasound comparing left vs. right (respectively) sagittal paraspinous image at the level T4-5. Probe marker oriented cephalad.

Discussion

- The significant difference between air and erector spinae acoustic impedance and attenuation contributed to loss of image quality (3)
- Location of air did not allow trial of mechanical improvement of ultrasound image
- Evaluation of alternative truncal blocks resulted in similar imaging quality
- Risks of landmark techniques likely outweighed the benefits (e.g. false loss of resistance) for VATS in this patient

Conclusion

- Despite prior radiographic imaging, point-of-care ultrasound imaging did not reveal a practical approach to offer a truncal regional block
- Current ultrasound imaging technology remains limited in its ability to produce meaningful images when the medium is air (4)

References

1. Osaka Y, Morita Y. "Subcutaneous emphysema" is not always actually in the subcutaneous plane. A case of subfascial emphysema after laparoscopy. J Clin Anesth 2018;46:10-11.
2. Kukuruz A, Aboed A. Subcutaneous Emphysema. [Updated 2023 Jul 17]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-.
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4. Verniquet A, Kakel R. Subcutaneous emphysema: ultrasound barrier. Can J Anesth 2011;58:336-337.