

Postoperative Pneumothorax Following Latissimus Dorsi Flap Surgery With Thoracic Paravertebral Block



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INTRODUCTION

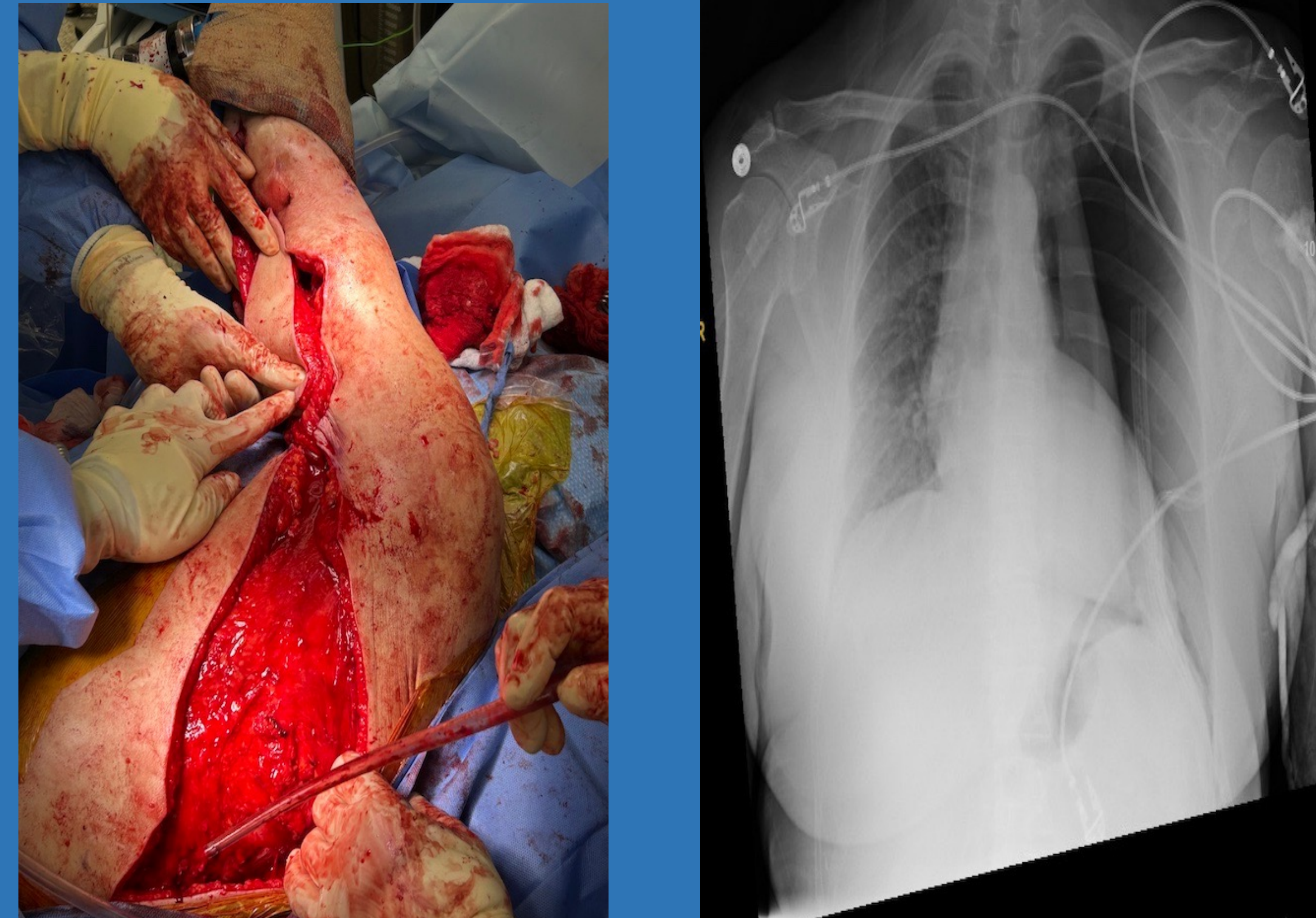
- Thoracic paravertebral block (TPVB) provides effective analgesia for thoracic surgery.
- Paravertebral space is bordered:
 - Anteriorly – pleura
 - Posteriorly – superior costotransverse ligament
 - Medially – vertebral body
 - Laterally – ribs
- Proximity to pleura places risk for pneumothorax.
- Latissimus dorsi flap surgery requires extensive posterior chest wall dissection and carries independent risk of pleural violation.
- We present a case of **postoperative pneumothorax** following **preoperative TPVB** for latissimus dorsi flap reconstruction.

METHOD

- Per University of Illinois Chicago Office for the Protection of Research Subjects policy, a single de-identified case report does not constitute human subjects research and did not require IRB review.
- Clinical data was obtained from retrospective chart review.

RESULTS

- **59-year-old female** with history of **hypertension, rheumatoid arthritis, GERD, and prior breast cancer** (status post chemotherapy and multiple surgeries)
- Had chronic infection following left elbow I&D and triceps tendon repair
- Underwent latissimus dorsi transfer to triceps, skin graft, I&D, and total elbow revision with antibiotic spacer placement.



RESULTS (CONT.)

Regional Anesthetic Technique

- Single-shot ultrasound-guided TPVB
- **10 mL of 0.25% bupivacaine at T3**
- **No immediate** complications or respiratory changes

Intraoperative Course

- Uneventful
- **Nitrous oxide** used for **~20 minutes** during emergence
- Extubated **without** difficulty

Postoperative Course

- **Five hours** post-extubation with increasing oxygen requirement (up to 6 L nasal cannula)
- Chest radiograph demonstrated **large ipsilateral pneumothorax**
- Managed with **chest tube placement**

DISCUSSION

Case presents multiple potential etiologies for postoperative pneumothorax:

1. Thoracic paravertebral block (TPVB):

- Reported pneumothorax incidence **~0.5%**
- No immediate respiratory symptoms following block placement

2. Rheumatoid arthritis:

- Pulmonary involvement occurs in **60–80%** of patients
- May predispose to pleural fragility or subclinical lung disease

3. Nitrous oxide exposure:

- Can expand closed air spaces
- May exacerbate an unrecognized pleural defect

4. Latissimus dorsi flap surgery:

- Reported pneumothorax incidence **~0.4%**
- Risk related to donor-site dissection, chest wall manipulation, or local anesthetic infiltration

REFERENCES

- 1.Ardon AE, Lee J, Franco CD, et al. Paravertebral block: anatomy and relevant safety issues. *Korean J Anesthesiol.*2020;73(5):394-400. doi:10.4097/kja.20065
- 2.Reekie T, McGill D, Marshall E. Diagnosing intraoperative pneumothorax in patients undergoing autologous breast reconstruction: a useful clinical sign. *Case Rep Surg.* 2014;2014:308485. doi:10.1155/2014/308485.
- 3.Tait IS, Rogers CA. Pneumothorax: a rare or underreported complication following latissimus dorsi muscle flap. *Ann R Coll Surg Engl.* 2018;100(6):e123-e125. doi:10.1308/