

INTRODUCTION

- Ultrasound-guided paravertebral blocks are effective for intraoperative and postoperative analgesia for patients undergoing surgeries involving mini thoracotomies.¹
- Paravertebral blocks are some of the most challenging regional anesthetic techniques given the block's anatomical parameters.¹
- Placing these blocks on awake patients adds a level of complexity.

CASE SERIES

Both patients consented to have their cases used for educational and research purposes. As these cases have no unique patient identifiable information, it is exempt from Cedars-Sinai IRB review requirements as per the Determining If Activities Meet "Not Regulated" Status policy.

Case 1

- **61M, BMI 26.3** with nonrheumatic mitral valve regurgitation presenting for **robotic mitral valve repair (MVR) surgery via right-sided mini thoracotomy**.
- In the OR, **pre-induction**, an **ultrasound-guided** right-sided **T5-T6 paravertebral catheter (PVC)** was placed.
- Intraoperatively, **PVC noted to be intrapleural** by surgery team.
- PVC left in place since patient was fully **heparinized intraoperatively**.
- After **normalization of patient's INR** on POD0, the malpositioned PVC was removed and replaced at the same level.

Case 2

- **67M, BMI 24.4** with severe mitral valve prolapse, regurgitation, and patent foramen ovale (PFO) presenting for **robotic MVR surgery via right-sided mini thoracotomy**, left atrial appendage closure, and PFO closure.
- In the OR, **pre-induction**, an **ultrasound-guided** right-sided **T3-T4 PVC** was placed.
- Intraoperatively, **PVC noted to be intrapleural** by surgery team.
- PVC left in place since patient was fully **heparinized intraoperatively**.
- After **normalization of patient's INR** on POD0, the malpositioned PVC was removed and **replaced at a lower level, T5-T6**.

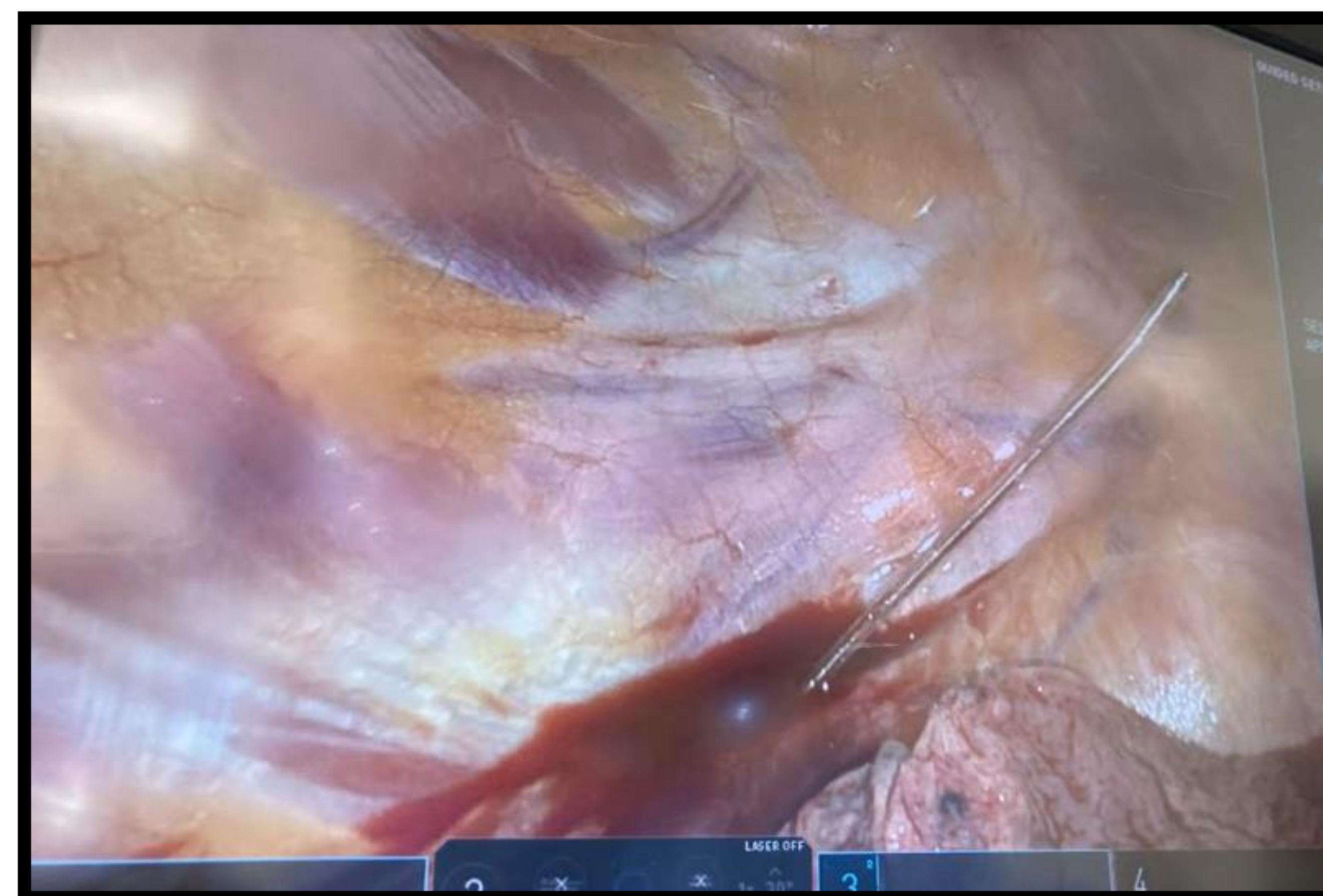


Figure 1. Intraoperative image of malpositioned paravertebral catheter in thoracic cavity while lungs were deflated (Case 2).



Figure 2. Ultrasound image obtained when replacing PVC post-operatively.

DISCUSSION

- Paravertebral blocks are becoming increasingly popular adjuncts for post-operative pain control regimens for patients undergoing minimally invasive cardiac surgeries involving mini thoracotomies.
- Studies have demonstrated that PVCs provide superior analgesia compared to IV analgesia and are comparable to thoracic epidural analgesia with a slightly improved safety profile.¹⁻²
- Complications associated with PVCs include pneumothorax, vascular injury, nerve injury, and catheter migration.³⁻⁴
- Incidence of PVC pleural puncture is 0.8-1.1%.³
- Factors to consider when performing these blocks include patient positioning, timing in relation to surgery, image optimization, type of catheter used, and best method(s) to verify catheter placement during the procedure.

CONCLUSION

- Anesthesiologists should be extremely vigilant and consider unintentional intrapleural placement of PVCs if there is any issue with placement, even if ultrasound-guidance is used.
- If imaging proves to be challenging, anesthesiologists should have a low threshold to place an alternative block, such as an erector spinae place catheter.
- Should a PVC need to be removed or replaced perioperatively, anticoagulation status should be assessed and relevant labs confirmed in accordance with ASRA guidelines.

REFERENCES

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