

Local Anesthetic Systemic Toxicity After Peri-Capsular Nerve Group (PENG) Block

Blake Sowers MD, Walker Robison MD, Justin Mahaney MD

University of Mississippi Medical Center

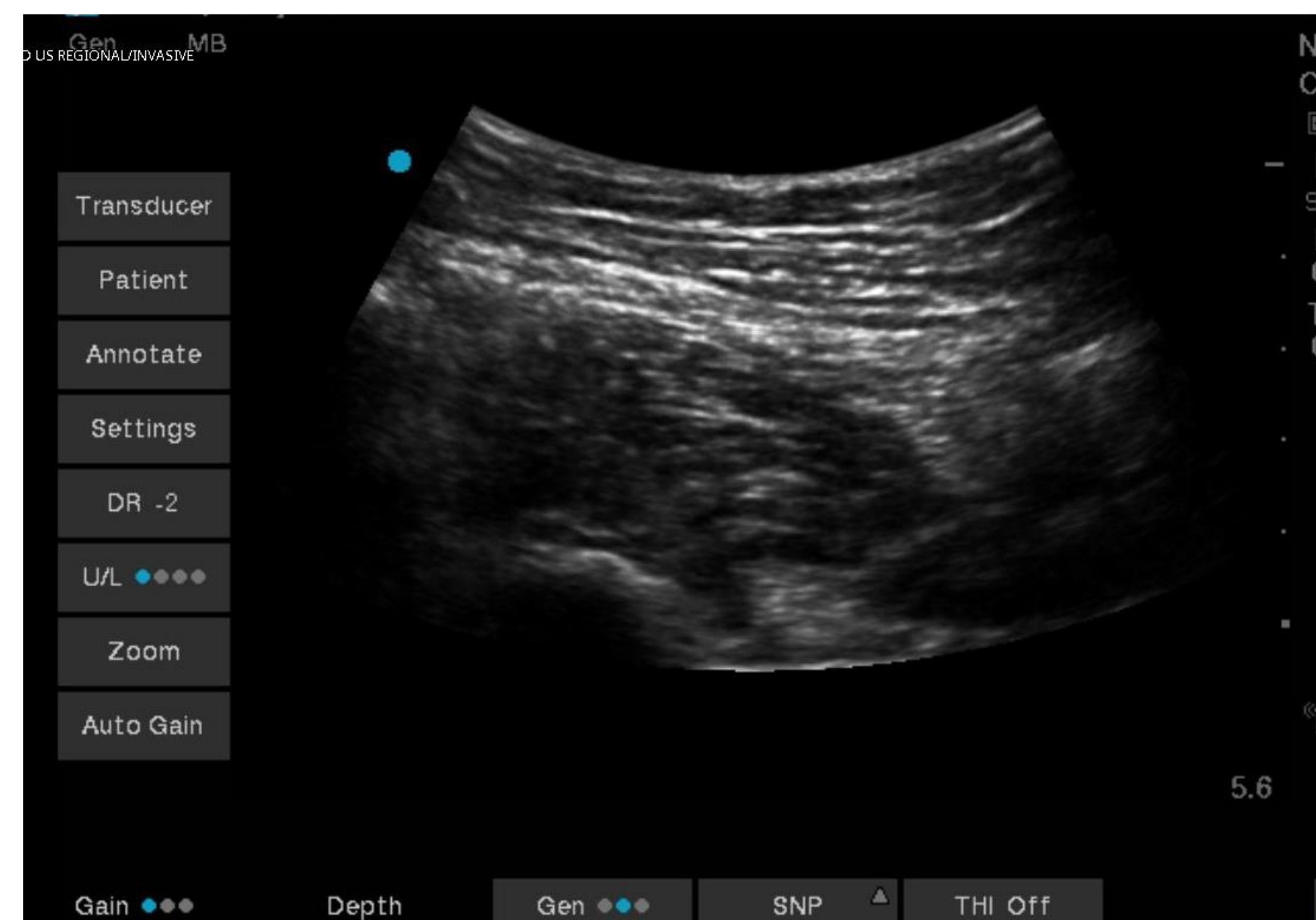


INTRODUCTION

- Peripheral nerve blocks like the PENG block are commonly used for analgesia following hip surgery.
- Generally safe, but local anesthetic systemic toxicity (LAST) can occur, presenting a critical challenge.

CASE REPORT

- 70-year-old male patient underwent elective total hip arthroplasty under spinal anesthesia.
- PENG block performed in the PACU with 22 mL of 0.5% ropivacaine, 5 mg dexamethasone, and 25 mcg dexmedetomidine.
- Ultrasound imaging showed proper placement; negative heme aspiration observed.
- Post-block, the patient experienced a complex partial seizure originating from the right arm.
- Symptoms indicated LAST, including seizures and altered mental status.
- Intralipid emulsion administered promptly; seizures resolved within minutes.
 - 375 mL as an intravenous bolus, followed by a continuous infusion of 0.25 mL/kg/min for 20 minutes
- Patient's neurological status improved, and he fully recovered without lasting sequelae.



DISCUSSION

- This case underscores the critical importance of awareness and preparedness for local anesthetic systemic toxicity (LAST) in patients receiving peripheral nerve blocks, especially newer and evolving techniques like the PENG block.
- Although peripheral nerve blocks are generally considered safe, the risk of systemic toxicity remains a concern, even when the block is performed under ultrasound guidance.
- Prompt recognition and treatment with intralipid therapy are essential for improving patient outcomes in cases of LAST.
- Intralipid emulsion works by binding to the local anesthetic, effectively reducing its availability to the central nervous system and mitigating its toxic effects.
- Clinicians should always be prepared for potential complications, ensuring that lipid rescue therapy and supportive care are readily available in all settings where nerve blocks are performed.
- Comprehensive patient monitoring during and after the procedure is crucial to detect any early signs of toxicity.
- Additionally, proper education on the signs and symptoms of LAST for both healthcare providers and patients can enhance early detection and timely intervention, ultimately improving safety in regional anesthesia practices.

REFERENCES

1. Pascarella G, Costa F, Del Buono R, et al. Impact of the pericapsular nerve group (PENG) block on postoperative analgesia and functional recovery following total hip arthroplasty: a randomised, observer-masked, controlled trial. *Anaesthesia* 2021;76(11):1492-98. <https://doi.org/10.1111/anae.15536>
2. Neal JM, Barrington MJ, Fettiplace MR, et al. The third American Society of Regional Anesthesia and Pain Medicine practice advisory on local anesthetic systemic toxicity: executive summary 2017. *Reg Anesth Pain Med*. 2018;43:113-123