

When Options Are Limited: Supraclavicular Block as the Sole Anesthetic for Upper Extremity I&D in a High-Risk Respiratory Patient

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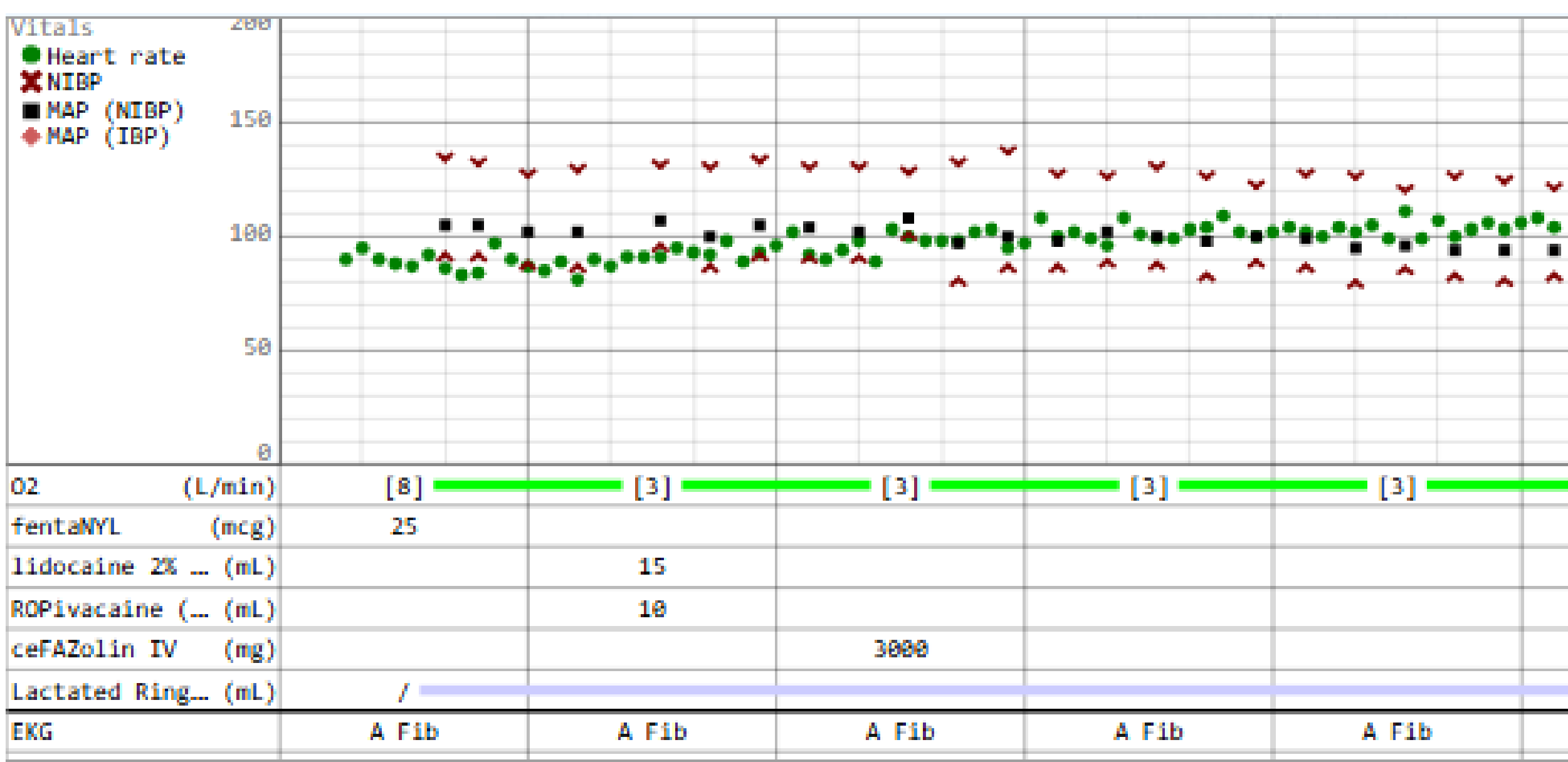
Background

Upper extremity blocks: provide surgical anesthesia, avoiding GA.^{1,5} There remains a risk of pulmonary decompensation in patients with underlying pulmonary conditions. 1,2,3,4,5

We present a case of the successful implementation of a brachial plexus block in a patient with pulmonary hypertension, recovering pneumonia, and COPD in the ICU, deemed high risk for GA.

Procedure conducted solely under regional anesthesia, with only 25 mcg of fentanyl given before the block.

Figure 1: Intra-operative record of Right I&D



Materials and Methods

As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per the University of Iowa Hospitals & Clinics policy. Patient-informed consent was obtained via a monitored phone call.

Supraclavicular block (SCB) under ultrasound guidance with:

- 15 mL of 2% lidocaine & 10 mL of 0.5% ropivacaine
- 1:400,000 Epinephrine in Saline (intravascular marker/hydro-dissection)
- Pt in semi-recumbent position, head turned to contralateral
- 80 mm Pajunk needle, aspiration every 3-5 mL.

Case Report

A 54-year-old male with a past medical history of HFpEF, obesity (BMI 40), COPD, OSA, and pulmonary HTN, presented to OSH with dyspnea and altered mental status, who was subsequently intubated for hypoxic respiratory failure and transferred to UIHC MICU for additional care.

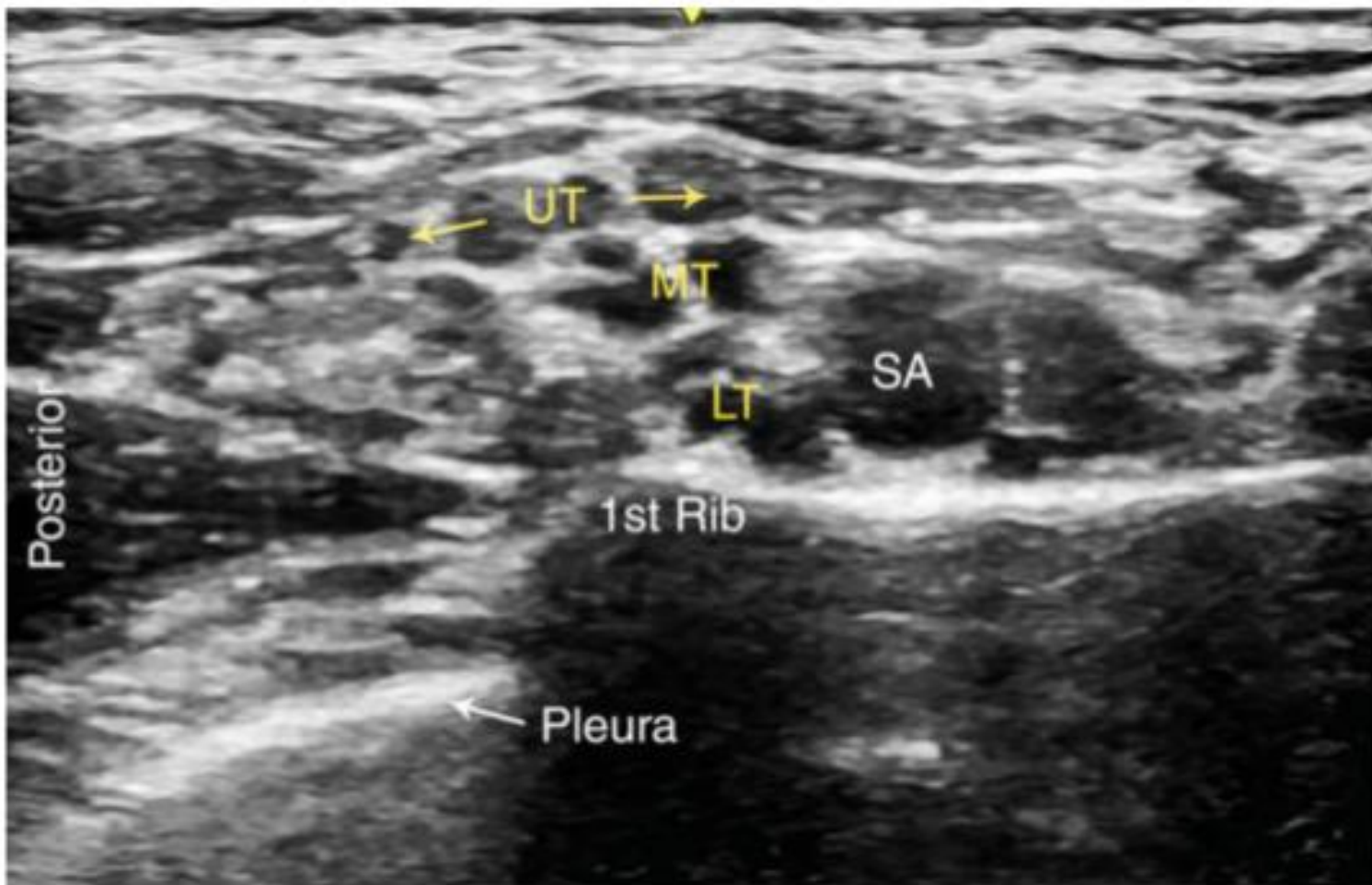
In the MICU, patient found to have a community-acquired pneumonia, heart failure exacerbation with anasarca and pulmonary effusions, cardiogenic and septic shock (gram-positive bacteremia), and pulmonary hypertension with RV strain. He required prone positioning for 48 hours, lung protective ventilation, treatment with broad-spectrum antibiotics, vasopressors, and stress dose steroids.

By HD10: extubated onto BiPAP, weaned off vasopressors, developed septic arthritis of his right wrist, requiring an emergent Incision and Drainage (I&D).

High risk for GA, with a plan for a SCB for the I&D: Reason: COPD, recent pneumonia, continued treatment for a heart failure exacerbation, pulmonary hypertension, continued requirement of BiPAP, rales on exam, and an ECHO with an EF of 35%.

The procedure was successfully performed using an SCB with a high-flow nasal cannula; the patient tolerated the procedure well and returned to the MICU.

Figure 2: Supraclavicular Block



Source: NYRSOA.COM

Discussion

Brachial plexus blocks are widely used to provide surgical anesthesia for upper extremity surgeries^{3,6,7}. Depending on the location of the block, and the proximity to the C3-C5 roots and the phrenic nerve, the block has the potential to cause phrenic nerve blockade.⁵

Block Type	Distribution	Pros	Cons
Infraclavicular	Arm, forearm, hand	Decreased risk of phrenic nerve palsy	Deeper block; less phrenic nerve palsy but still reported to be up to 26% (4,5)
Costoclavicular	Arm, Forearm, Hand	Decreased risk of phrenic nerve palsy	Limited long term data
Axillary	Elbow, Forearm, hand	No risk for respiratory decompensation (1,3)	Possible musculocutaneous sparing; requires multiple injections
Supraclavicular	Arm, forearm, hand	Higher success rate	Proximity to pleura, subclavian artery, need for multiple injections; higher risk of phrenic nerve palsy (up to 67%), Horner's & pneumothorax (2,5)

Infraclavicular and costoclavicular approaches: precluded by unfavorable anatomy as well as additional lines.

Axillary block: visualization was limited due to significant vascularity³.
Bier block: inappropriate, septic arthritis involving the wrist and forearm

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