

Supraclavicular Nerve Infusion complicated by Dyspnea, Facial Flushing at Standard Dosing in a Poorly Controlled Diabetic

Christopher DePietro, DO; Brad Budde, MD; Jonathan Caine, MD
Department of Anesthesiology, University of Cincinnati

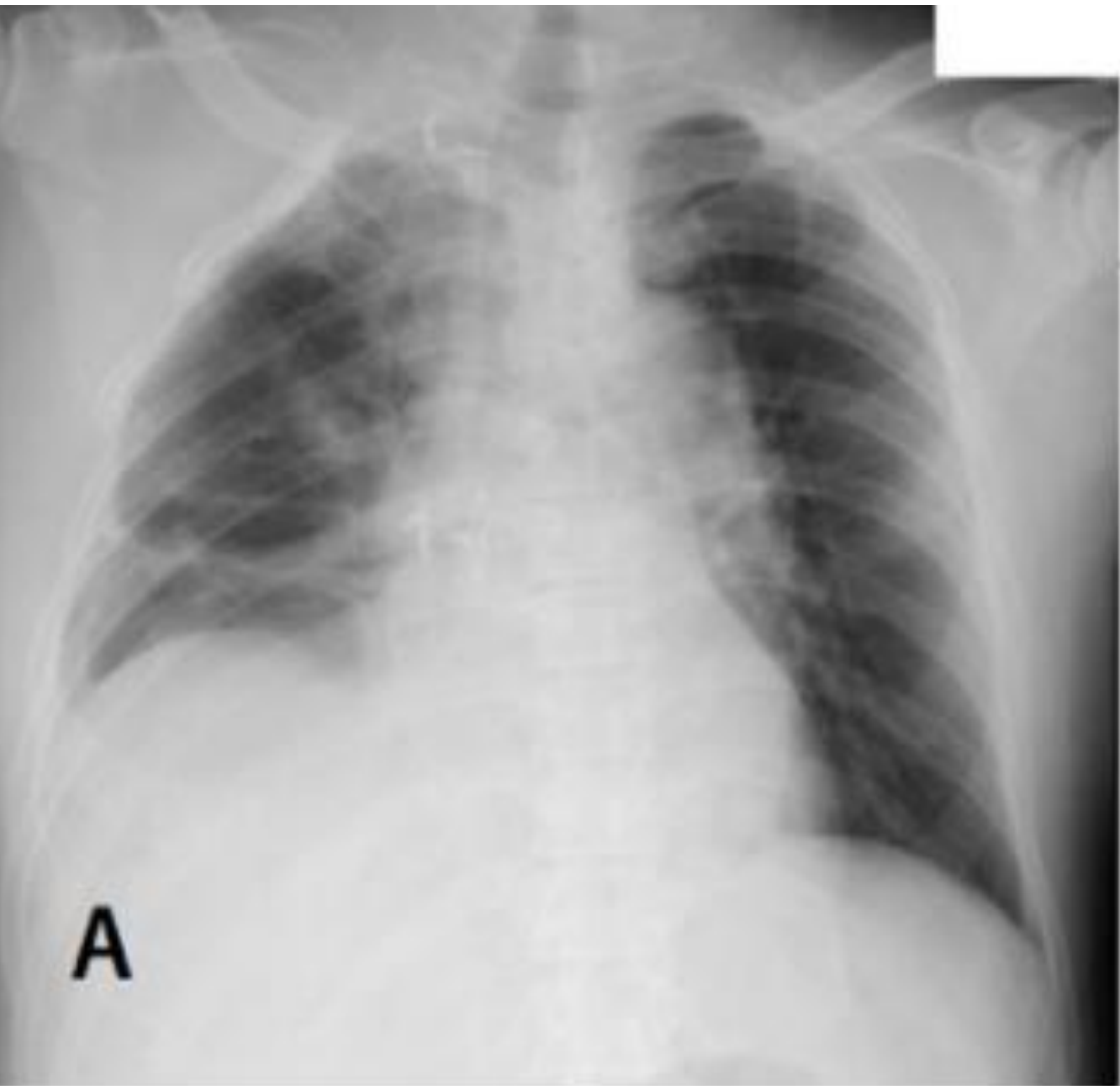


Introduction:

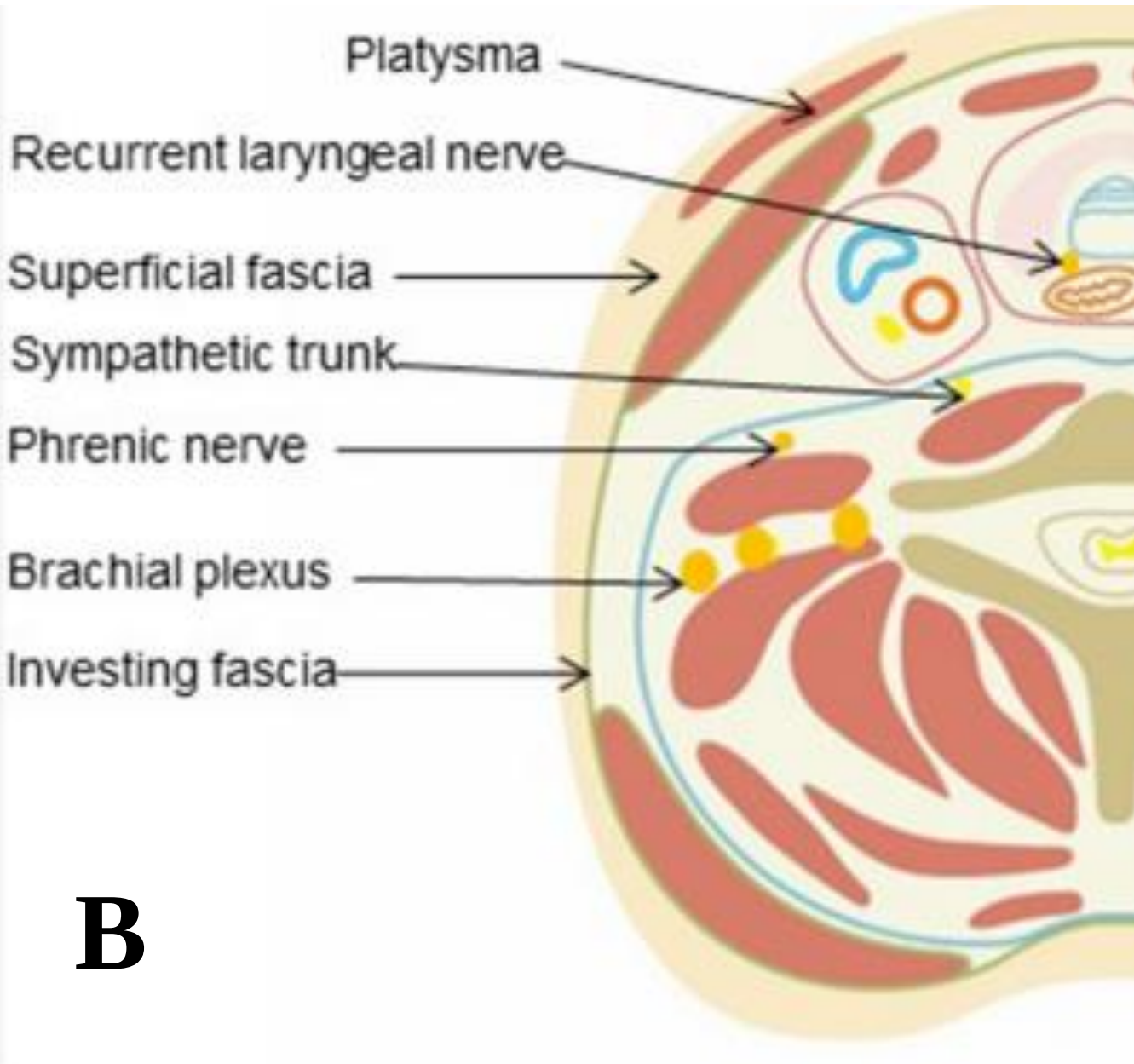
- Supraclavicular brachial plexus nerve block complications include intravascular injection and cardiovascular collapse (local anesthetic toxicity), pneumothorax, Horner’s syndrome, and phrenic nerve paralysis with possible diaphragmatic hemiparesis
- This case discusses a patient who underwent a supraclavicular nerve block and catheter insertion prior to surgery, who postoperatively reported subjective dyspnea and facial flushing, which resolved by lowering the continuous ropivacaine infusion dose

Methods:

- A retrospective single case report was completed. As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per the University of Cincinnati IRB.



A) Elevated right hemidiaphragm after brachial plexus nerve block (5)
B) Illustration revealing the close proximity of the brachial plexus to the phrenic nerve and sympathetic trunk (6)



Case:

- 81 year-old, 86.6 kg male with a past medical history significant for poorly-controlled type 2 diabetes (hemoglobin A1C 8.3), polyneuropathy of the lower extremities, moderate COPD, and poorly-controlled hypertension
- Mechanical fall resulting in an open right distal humerus fracture
- Right supraclavicular nerve block and catheter insertion prior to open reduction and internal fixation
 - 30cc of 0.5% bupivacaine perineurally
- Original catheter dosing: 0.2% ropivacaine infusion (8cc/hr continuous + patient-controlled option for additional 4cc bolus hourly)
- Several hours after surgery: acute onset of facial flushing, subjective dyspnea, non-productive cough, subjective fever, and generalized malaise
 - Initially attributed to lisinopril allergy
- POD1: continued subjective dyspnea and facial flushing
 - Ropivacaine infusion decreased to 6cc/hour continuous (+ PCA dose) with resolution of dyspnea, but worsening of RUE pain
- POD2: increased infusion rate to 7cc/hr and disabled PCA dose
 - Dyspnea and facial flushing returned
 - Catheter removed later that day due to patient discomfort from dyspnea

Discussion:

- Phrenic nerve palsy and Horner’s syndrome from supraclavicular nerve blocks have incidence rates as high as 67% (1) and 37.5% (2), respectively
- Poorly controlled diabetics (with neuropathy) may have higher sensitivities to local anesthetics from a nerve block (3).
 - May also be at a higher risk for phrenic nerve palsy, diaphragmatic paralysis, and Horner’s syndrome.
- 2022 RCT: interscalene blocks (bupivacaine + liposomal bupivacaine) resulted in statistically significant reductions in diaphragm excursion and FEV1 one day following nerve block, when compared to bupivacaine alone.
 - Could lead to clinically significant hypoxia and/or hypercarbia in certain patient populations
 - Reasonable alternative to liposomal bupivacaine: shorter acting, easily titratable infusion of local anesthetic via nerve catheter.

References:

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