**A One-Step Catheter Over Needle System Compared to a Single Shot Nerve Block for Shoulder Surgery**

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**Background**
- Continuous peripheral nerve blockade (CPNB):
  - Single shot technique (SSNB)
  - Fast, but repeated may be necessary
  - Catheters:
    - Prolonged analgesia, lower doses
    - Additional time slows surgery start → limited use
  - Catheters: Through-the-needle (CTN), Over-the-needle (CON)
  - CTN: Common, slower, leak, dislodge
  - CON: Newer, faster, don’t require needle movement to fix, less leak.
  - A one-step catheter over needle system potentially reduces catheter placement procedural time and therefore could expand access to continuous peripheral nerve blockade.
  - Comparison: SSNB vs CON placement

**Methods**
- Elective shoulder surgeries with interscalene peripheral nerve blocks
- Comparison: SSNB vs CON placement time
  - Single trainee (JL) PGY 4
  - Multiple regional anesthesiologists.
- Needle to skin
- Comparison: SSNB vs CON placement time
  - A one-step catheter over needle system potentially reduces catheter placement procedural time and therefore could expand access to continuous peripheral nerve blockade.
  - Comparison: SSNB vs CON placement

**Statistical Analysis:** JMP Pro 14 software

- Chi square analysis for categorical variables
- Welch’s t test for continuous variables
- Linear mixed model to determine the association between procedure time and block type while controlling for variability due to sex and block type (catheter or single shot), block order, patient BMI, and age.

**Results**

- **Comparative Analysis:** SSNB and CON Groups comparable, except pulmonary circulation disease difference statistically significant.
  - Block time statistically significantly longer in CON group vs SSNB (2.1 ± 0.6 minutes versus 1.4 ± 0.4 minutes, p <0.001, figure 1).
  - Longer time not clinically significant as did not double procedure time.
  - Catheter identified via ultrasound, echogenicity similar for both techniques (figure 2).
  - Linear mixed model demonstrated a significant association between procedure time and block type while controlling for variability due to sex and considering block order, patient BMI, and patient age (table 2).
  - Efficacy of blocks was comparable between groups.

**Conclusions**
- CON vs SSNB comparable time to place, can expand access to CPNB without disrupting workflow.
- CON requires a statistically significant increase in procedure time compared to a SSNB; however, the increased time was below our proposed threshold for a clinically significant difference.
- CON carries further intra- and post-op benefits that may outweigh the slight increase in placement time over SSNB.

**Implications/Limitations**
- CON placement may be faster over the course of practiced placement.
- Pain management intra- and post-op is possible with GPNB, with lower doses than SSNB.
- First case start times may not be impacted with clinical significance, but more varied trainee placement may be needed to further assess.

**Disclosures**
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