Needle Guide Identifies Needle Tip, Reduces Time for Simulated Block

Improving Needle Visualization by Novice Residents During an In-Plane Ultrasound Nerve Block Simulation Using an In-Plane Multiangle Needle Guide
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Summary and Methods

The authors hypothesized the use of an in-plane multiangle needle guide would assist residents with novice ultrasound skills in performing a phantom simulated nerve block.

Volunteers from Vanderbilt University Anesthesiology Department postgraduate year PGY-1 (Intern) and PGY-2 (Clinical Anesthesia Year -1, CA-1) participated in this institutional IRB approved study. Each participant viewed a slide presentation on the basic use of ultrasound and the principals for needle placement while maintaining visualization of the needle under ultrasound guidance. Utilizing a Sonosite S-Nerve™, Blue Phantom™ Regional Anesthesia Ultrasound Training Block Model, Stimuplex® needle, and a CIVCO Infiniti™ needle guide, each volunteer performed 4 needle placements with the guide and 4 without the guide in 2 cycles. Each placement was ultrasound video recorded and the time was recorded from needle insertion until the volunteer felt the needle was properly placed.

Discussion and Results

Using a needle guide, the entire length of the needle or the tip was visualized 76% of the time on the first attempt. In contrast, those who did not use a needle guide, reported acceptable needle visualization 62% of the time.

During the second cycle of simulations, the trend continued with 63% needle visualization without a needle guide. Those who used the needle guide using during the second cycle, demonstrated an improvement to 87% with the first attempt and 100% by the last pass of the cycle.

Conclusions

The authors reported study limitations including the use of a phantom does not translate to in vivo results. Further studies will be needed to evaluate clinical efficacy.

Ultrasound-guided nerve blocks performed with the Infiniti needle guide offer many benefits to patients, physicians and clinics. The study’s findings suggest the Infiniti needle guide:

- reduces time to complete a simulated nerve targeting task by 27%
- increases the chance of an acceptable needle view (whole or tip) by 355%
- reduces the likelihood of having no needle visualized at all when compared with not using a needle guide.