



Clinical Use of Needle Guides Improves Needle Visibility, Reduces Time and Increases Proceduralist Satisfaction when Performing TAP Block

Comparing the Use of a Needle Guidance Device vs. Free-hand Technique in Performing Ultrasound-guided TAP Blocks: A Prospective Randomised Trial

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Summary and Methods

In this publication, the authors report the process and outcome of a clinical study comparing the use of Infiniti™ needle guide (CIVCO, Kalona, IA) and the free-hand (FH) technique to perform ultrasound-guided Transversus Abdominis Plane (TAP) nerve blocks. In this prospective, randomized observer-blinded crossover study, 20 adult patients consented to participate prior to undergoing open abdominal surgery in Royal Melbourne Hospital. Computer-aided randomization divided the participants into two groups. A SonoSite M-Turbo® (Bothell, WA) with a 13-6 MHz linear transducer was used to guide a 21-gauge, 100mm Stimuplex® needle during the performance of each block.

Group 1 received a TAP block using the Infiniti needle guided technique on the first side and free-hand on the second side of the abdomen, both performed by the same physician. Group 2 received the first TAP block using the free-hand technique followed by the physician performing a needle guided technique on the opposite side. Video clips of all blocks were de-identified and reviewed by two blinded investigators to evaluate the results of the author's primary and secondary hypotheses.

Discussion and Results

This was the first published human study utilizing CIVCO's Infiniti needle guidance system to perform regional anesthesia. The primary outcome of the investigation was the length of time the needle tip was visualized as a percentage of the overall procedure time. The procedure time is defined as the time required from needle insertion to successful injection of local anesthetics into the correct plane.

Although patient post-operative pain scores and total opioid use were not within the scope of this study, the authors hypothesized the combination of improving needle visualization and reducing overall procedure time should improve patient comfort.

Conclusions

The authors conclude using CIVCO's Infiniti needle guidance system to perform a TAP block:

- Improved needle tip visualization by nearly 50% compared to the FH technique
- Reduced procedure time by 12.8% or 15.9 seconds (from 123.8 to 107.9 seconds)
- Improved physician satisfaction of performing the block compared to free-hand procedural technique.

Author Commentary

"In conclusion, this clinical study supports earlier simulation study which shows increased needle visibility, shorter procedural time and greater proceduralist satisfaction when using needle guidance device compared to free hand technique in ultrasound-guided in-plane procedure."

"Although statistically significant (improved procedure time), the clinical significance of this was debatable. However, the combination of improved needle visibility and reduction of procedural time should improve patient comfort during the procedure."

