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A comparison of two methods of education for identifying the point of needle insertion for peripheral nerve blockade

Breslin DS, Hardman D, King K, Martin G, Grant SA, Macleod DB

Dept of Anesthesiology, Duke University Medical Center, Durham, NC USA

Introduction: Regional anesthesia and in particular peripheral nerve block techniques are frequently used to provide anesthesia and post operative analgesia for surgical procedures. Standard methods of education/instruction used to aid inexperienced anesthesiologists in performing these blocks include textbook descriptions and video demonstrations. The aim of this study was to compare the variability in the identification of the point of needle insertion for posterior lumbar plexus blockade when a standard textbook or video demonstration was used.

Method: A male volunteer (89 kg 178 cm) was placed in the left lateral knee chest position. His position was outlined on the operating table so that it could be maintained constant throughout the study. A clear adhesive dressing was placed over the volunteers back. Medical students who had never previously seen a posterior lumbar plexus block being performed were randomly given a standard textbook description and illustration¹ (textbook) or a video demonstration (video) of how to identify the point of needle insertion for a posterior lumbar plexus block. The video demonstration contained the identical text to that in the textbook description. When the medical students were satisfied that they understood the textbook or video they were asked to identify the point of needle insertion by using the landmarks as described in the textbook or video. X and Y coordinates were measured in millimeters for the point of needle insertion. All skin markings were erased from the dressing after each attempt to ensure no markings were visible to the next student. The data were analyzed using unpaired t tests with Welch's correction and the F test for equality of variance.

Results: Fifteen medical students took part in the study. The mean, (SD), and [Range] values for the X coordinate in millimeters in the textbook group were: 105 (31) [38-132], and 108 (10) [98-128] in the video group. The Y coordinates for the textbook group were: 71 (32) [35-126] and 67 (14) [54-98] in the video group. The mean X and Y coordinates of the point of needle insertion were not significantly different between the groups. However the variance was significant larger in the textbook group ($p < 0.01$). Fourteen of 15 medical students expressed a preference for the video method of instruction.

Conclusion: There was significantly less variability in the identification of the point of needle insertion when medical students followed the video description. This study highlights the potential benefits of video demonstrations in regional anesthesia when used as an educational tool to aid in the accurate identification of skin landmarks and point of needle insertion for peripheral nerve blocks.

References: 1. Raj PP. Textbook of regional anesthesia 2002; p 365-7

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Figure 1. Scattergram of point of needle insertion for lumbar plexus block.

