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Variability in determining the point of needle insertion for sciatic nerve blocks: a comparison of experienced and inexperienced anesthesiologists

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Introduction: Sciatic nerve blockade is frequently performed for anesthesia and analgesia of the lower limb. Accurate identification of the appropriate skin surface landmarks and determination of the point of needle insertion is essential for the successful performance of this procedure. We hypothesized that there is a learning curve to successfully identifying skin surface markings. The aim of this study was to assess the degree of variability between experienced and inexperienced anesthesiologists in determining the point of needle insertion when performing a classic sciatic nerve block.

Methods: A male volunteer (90 kg, 178 cm, Body Mass Index=28) was placed in the left lateral position. A clear adhesive dressing was placed over his buttock. All trainee and attending anesthesiologists working in the operating suite on a random day were giving a textbook description and photograph of how to perform a classic (Labat) sciatic nerve block.¹ When the anesthesiologists were satisfied that they understood the description they were asked to identify the point of needle insertion by identifying the landmarks as described in the textbook. 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 anesthesiologist. In addition the level of experience in performing regional anesthesia was ascertained for each anesthesiologist. Those who had performed more than 20 classic sciatic nerve blocks in the past year were classified as experienced. The data were analyzed using unpaired t tests with Welch's correction and the F test for equality of variance.

Results: 37 anesthesiologists (15 experienced, 22 inexperienced) took part in the study. The mean (SD) and [Range] values for the X coordinate in millimeters in the experienced group were: 77 (10) [62-99], and 68 (21) [29-116] in the inexperienced group. The Y coordinates for the experienced group were: 70 (11) [49-89] and 62 (18) [26-93] in the inexperienced group. (figure 1) While the mean X and Y coordinates were not significantly different ($p=0.08$) the variance between the 2 groups differed significantly ($p<0.01$).

Discussion: There was considerably more variability in the point of needle insertion in the inexperienced group (Figure 1). While accurate identification of the point of needle insertion is only one of several factors that may influence successful blockade of the sciatic nerve, inability to identify this point may help explain the difficulty experience by some anesthesiologists in performing such nerve blocks. We conclude that with increasing experience there is reduced variability in determining the point of needle insertion using skin surface landmarks.

References:

1. Raj P.P. *Textbook of Regional Anesthesia* 2002; p 365-7.

Figure 1. Scattergram of point of needle insertion for sciatic nerve block.

