



Significant Time Savings Achieved Using an US Needle Guide

Sonographically Guided Biopsy of Focal Lesions: A Comparison of Freehand and Probe-Guided Techniques Using a Phantom

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Summary and Methods

An ultrasound comparison experiment between the freehand and probe-guide technique was performed using a custom gelatin and olive phantom to compare the time and quality of the biopsy sample. The participants included 3-novice, 3-intermediate and 4-experienced physicians with no prior experience using ultrasound needle guides.

Each participant was given two phantoms containing four olives to simulate lesions. On the first phantom, all targets were biopsied with an 18-gauge core device using the freehand technique. The second phantom was biopsied using the probe-guide technique. In both cases, the center of the olives were targeted and a sample taken and weighed to determine if the quality of the samples were different between the two techniques. Time was measured between placement of the needle in the participants hand and the firing of the device as the sample was taken.

Discussion and Results

The freehand technique allowed the probe and needle to be positioned independently. As the needle was advanced toward the target, small adjustments were made by re-directing the needle to be in-plane with the ultrasound beam and to maintain the appropriate angle to reach the targeted lesion.

The probe-guided technique enabled the needle and ultrasound probe to act as one unit and maintained the angle of approach to the target without re-direction to stay in the scan plane.

Conclusions

The mean biopsy time of the freehand method was 50 seconds and the mean biopsy time using the probe-guided technique was 30 seconds. The average time savings ranged between 5 and 35 seconds. The most experienced physician gained little time savings, while the novice operators gained in upwards of 35 seconds when using the needle guide. The quality of samples were consistent using both approaches. Limitations include: the design of the phantom, availability and familiarity with needle guides.

The study's findings suggest the Multi-Pro 2000™ needle guide:

- provided statistically significant time benefit which authors coorelated with reduced needle manipulation and tissue trauma
- increased needle visibility during simulated biopsies
- increased clinical confidence

Author Commentary

"We postulate that the reduced procedure time from guided biopsy will correlate with reduced needle manipulation and hence less tissue trauma and less patient discomfort. This may be greater motivation to use a probe-guide technique rather than the total time saved."

