

## Successful Liver Biopsy Using Toshiba's Aplio 500 and Smart Fusion

**History:** A 56-year-old female presented with a history of a liver lesion deep in the caudate lobe, previously identified by a CT exam. The decision was made to attempt the biopsy under ultrasound guidance using the Aplio™ 500 with Smart Fusion to avoid further CT exposure to the patient and physician.

**Technology:** Patient was imaged using Toshiba's Aplio 500 with a Curved Array (6-1 MHz) transducer, utilizing Smart Fusion technology.

**Findings:** The liver lesion measured approximately 3.0 x 6.0 cm, and its deep location in the caudate lobe posed biopsy challenges (Image 1). The physician needed to avoid the major vessels in proximity to the mass, including the aorta, inferior vena cava, portal vein and hepatic veins. The decision was made to advance the needle using an intercostal coronal approach through the right lobe of the liver.

The patient's CT data set was uploaded onto the Aplio 500 and synchronized with real-time ultrasound (Image 2). The

radiologist used the location of the mass on the CT image to select the appropriate rib space for the pathway of the needle. At this time, the lateral margin of the liver was non-visible sonographically due to rib shadow, and the radiologist relied on the fused CT image for guiding the biopsy needle. If the synchronization and fusion proved accurate, the needle would be clearly visualized with a 90-degree angle of insonation to the ultrasound beam. The needle was easily detected on real-time ultrasound approaching the mass (Image 3).

**Diagnosis:** The biopsy of a deep caudate lobe liver mass was made successful using Toshiba's Smart Fusion technology.

**Conclusion:** During the initial intercostal approach, where the needle was not visible due to rib shadowing, relying on the fused CT image with Smart Fusion ultrasound allowed for a successful liver biopsy and saved the patient from undergoing a more invasive and costly open surgical procedure.



Image 1: Liver in the lesion-caudate lobe, without Smart Fusion.

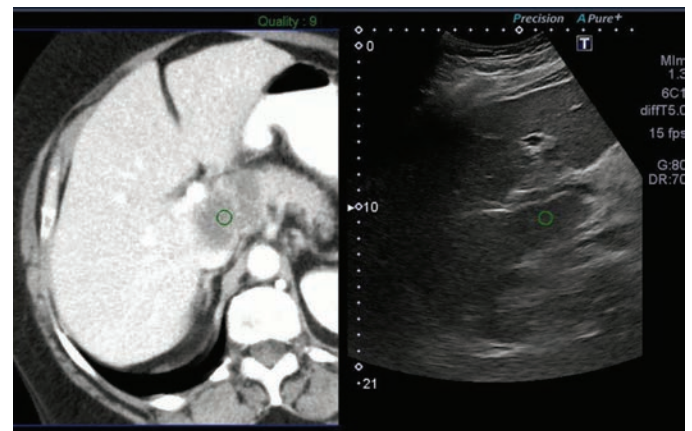


Image 2: Synchronized CT image (left) and live ultrasound image (right) using Smart Fusion.

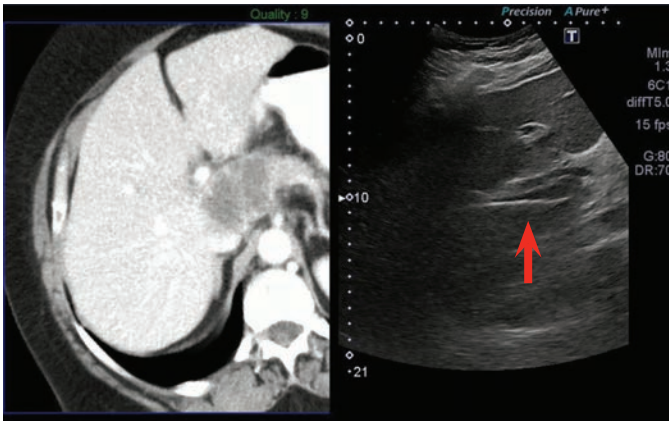


Image 3: Visualization of biopsy needle in live ultrasound image (right) using Smart Fusion.



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