

Precision Imaging: Advanced 2D Imaging

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1 Precision Imaging: Advanced 2D Imaging

Ultrasound offers a wide range of advanced technologies to help increase department productivity while improving patient care in diagnostic imaging. However, 2D image quality (B-mode) remains the single most important mainstay for ultrasound imaging. In most cases, tissue structures can only be differentiated confidently if they can be visualized and differentiated in 2D. Advanced technologies can then build off this strong foundation and be more reliable for a more confident diagnosis of the patient.

Today's powerful ultrasound technologies provide virtually artifact free images with enhancement of even the most minute of details as well as advanced spatial and contrast resolution.

Toshiba's Aplio™ ultrasound systems provide outstanding 2D technologies such as D-THI, and ApliPure™+ frequency and spatial compounding. Toshiba recently introduced Precision Imaging, it's newest 2D technology innovation. Precision Imaging improves the diagnostic value of ultrasound imaging by acquiring images of unprecedented clarity and resolution, enabling users to see more clinical detail than ever before. Precision Imaging allows for better characterization of anatomy with new anatomical assessment technology, therefore offering substantial diagnostic benefits.

Precision Imaging technology increases productivity and diagnostic confidence by providing more detailed ultrasound

images. As a multi-resolution signal processing technology, it not only evaluates images line-by-line, but also includes information from adjacent lines to enhance the amount of information obtained. Traditional ultrasound systems acquire images line-by-line only and do not consider information from adjacent lines. As Toshiba-exclusive technology, Precision Imaging's ability to capture information from multiple lines improves the definition of the structure, provides more detail, and minimizes noise and clutter. This approach enables clinicians to determine if the signal is part of a structure or an anomaly from one line.

Precision Imaging software shows greater definition of structures and reduces noise to produce high quality ultrasound images. Compared to other ultrasound imaging technologies, Precision Imaging shows better contrast and delineation of lesions and vessels. It enhances the ability to evaluate difficult to image areas

and improves the diagnostic value of ultrasound.

The value of defining the boundaries between tissue and lesions, visualizing the true lumen in vessel walls and enhancing true borders in difficult to image areas is extremely helpful.

Precision Imaging is beneficial for total body ultrasound scanning. It improves the ability to show subtle tissue differences and image small structures better than conventional imaging. In our experience, it improves the sonographic characterization of subtle lesions and enabled us to perform transcutaneous ultrasound guided intervention on lesions that were not seen on standard 2D ultrasound. The pathologic outcome of biopsy specimens supports the value of Precision Imaging.

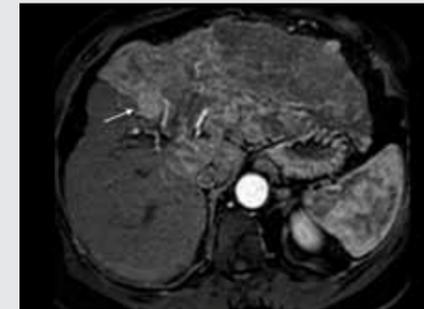


Figure 1: MRI of the Liver with gadolinium shows an enhancing mass in segment IV A of the liver in a cirrhotic patient.

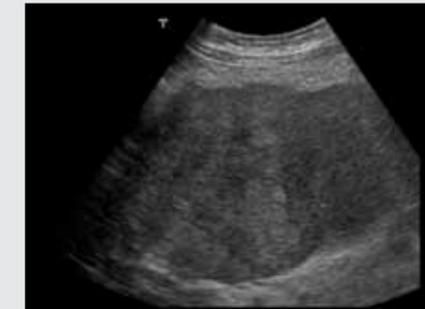


Figure 2: 2D ultrasound shows a heterogeneous, cirrhotic Liver, however, the mass is not seen.

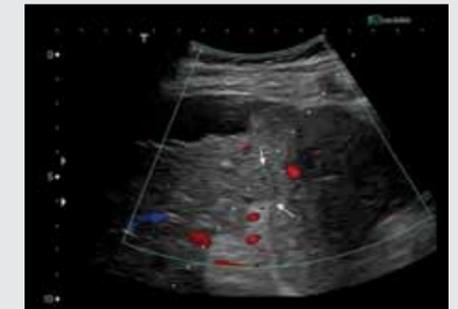


Figure 3: Precision Imaging with Color Doppler of the Liver delineates the mass which was biopsy proven hepatocellular carcinoma.

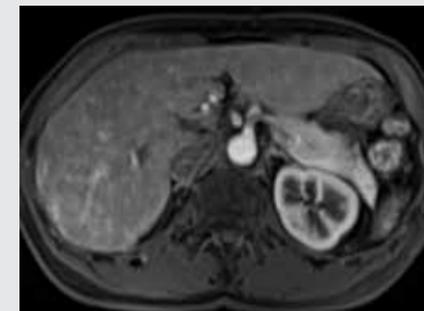


Figure 4: MRI images of the Liver with gadolinium show multiple enhancing hepatic lesions in the Liver that were not seen of the precontrast sequences.

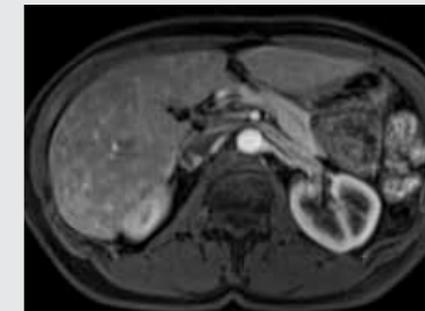


Figure 5: Ultrasound of the Liver was obtained, the lesions were not seen.



Figure 6: Ultrasound of the Liver using Precision Imaging delineates the lesions not seen in ultrasound image Figure 5.



Figure 7: An ultrasound guided biopsy was performed using Precision Imaging showing multiple areas of focal nodular hyperplasia.

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