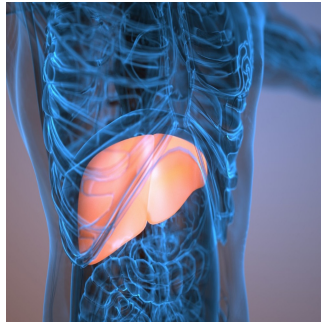

Right Hepatic Lobe UDFF Proves More Reliable



Metabolic dysfunction-associated steatotic liver disease is widespread and rising, increasing demand for non-invasive tools that quantify liver fat at scale. Liver biopsy is invasive and magnetic resonance proton density fat fraction (MRI-PDFF) is accurate but not universally accessible. Ultrasound-derived fat fraction (UDFF) offers a quantitative metric from routine ultrasound that could extend fat assessment to more settings. A multicentre evaluation across three hospitals assessed how consistently UDFF can be acquired by operators with different experience and how well it identifies hepatic steatosis when compared with MRI-PDFF. The work also explored where in the liver UDFF performs most reliably during everyday scanning.

Consistent Results in the Right Lobe

Operators measured UDFF in both the right and left hepatic lobes using a standardised approach. The right lobe proved easier to assess successfully, whereas left-lobe attempts were more likely to fail. When two radiologists with different experience measured the same participants, agreement in the right lobe was consistently high, indicating strong reproducibility between operators. Repeat measurements by the same operator in the right lobe were also stable, supporting routine use of at least two acquisitions, with more repetitions further improving stability. These findings remained steady across institutions, suggesting robustness in different clinical environments.

Several practical factors help to explain the difference between lobes. The left lobe sits closer to moving and air-filled structures, which can disrupt contact and degrade the acoustic window. Its smaller size and thinner parenchyma make probe handling and breath coordination more demanding. By contrast, the right lobe generally offers a clearer path for the ultrasound beam and more forgiving working space. In exploratory analyses, body habitus and skin-to-capsule distance were linked to left-lobe failures, while right-lobe measurements showed resilience across typical patient and operator variables. Overall, the right lobe emerged as the preferred site for dependable UDFF acquisition.

Must Read: [Ultrasound Fat Fraction Streamlines Steatosis Assessment](#)

Diagnostic Confidence Against MRI Reference

To benchmark diagnostic value, a subset of participants underwent both UDFF and MRI-PDFF within a short interval. Right-lobe UDFF aligned closely with MRI-based categorisation of hepatic fat, showing high accuracy for detecting steatosis and stronger performance than the left lobe. The right lobe also supported grading tendencies, with clearer separation across increasing fat burden than the left lobe. These patterns held across centres, reinforcing the recommendation to prioritise right-lobe measurements when UDFF is used to screen or monitor patients suspected of metabolic dysfunction-associated steatotic liver disease.

UDFF brings pragmatic advantages when set against other non-invasive options. Unlike serum indices that fluctuate with metabolic variables, UDFF directly reflects liver tissue characteristics. It avoids ionising radiation and is more widely available than advanced cross-sectional imaging, which can be costly or confined to major centres. Compared with transient elastography parameters that are semi-quantitative and affected by subcutaneous fat, UDFF provides direct, quantitative fat assessment alongside routine ultrasound imaging. Referencing MRI-PDFF as a quantitative yardstick also helps clinicians interpret UDFF values in familiar terms.

Practical Use and Known Constraints

The protocol used across the three hospitals was straightforward and suited to routine practice. After conventional ultrasound, a defined sampling box was positioned just below the liver capsule, aligned parallel to the surface, and images were captured during short breath-holds while avoiding vessels and focal lesions. Collecting multiple frames and using the median value improved stability. In this set-up, the right lobe

consistently delivered reliable results across senior and junior radiologists, supporting use in busy clinics and varied operator skill mixes.

There are, however, boundaries to keep in mind. Left-lobe assessment is more vulnerable to interference from adjacent organs and gas, and it demands finer probe control, which can reduce success rates and inter-observer agreement. The diagnostic analysis relied on a subgroup examined with MRI-PDFF, which limits precision for finer stratification. Histology was not included, inflammation and fibrosis were not assessed, and long-term repeatability beyond the acquisition session was not addressed. These constraints point to the value of larger multicentre efforts with broader disease spectra and longitudinal follow-up to refine thresholds, confirm durability over time and clarify use in more complex clinical scenarios.

Across three hospitals, UDFP proved most dependable in the right hepatic lobe, with strong agreement between operators and stable repeat measurements by the same operator. When matched against MRI-PDFF, right-lobe UDFP identified steatosis accurately and showed clearer gradation than left-lobe measurements. A simple, standard workflow and the wide availability of ultrasound make UDFP a practical option for screening and follow-up where rapid, noninvasive liver fat assessment is needed. Prioritising the right lobe, collecting at least two acquisitions and observing basic positioning and breath-hold steps can help teams integrate UDFP confidently into metabolic liver pathways while further evidence accumulates.

Source: [Insights into Imaging](#)

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