This indicates a shift from purely distance-based definitions toward a more comprehensive assessment integrating structural width, tissue tension, and functional performance.

In clinical practice, the identification and quantification of DRA rely primarily on bedside examination and imaging techniques. Traditional finger-width palpation and curl-up-based assessments are simple and cost-effective, making them suitable for initial screening and primary care settings, but they are subjective and influenced by examiner experience, body habitus, and muscle contraction. Calipers and tape measures can improve objectivity to some extent, though reliability remains limited. In contrast, ultrasound imaging allows precise measurement of IRD at multiple sites both at rest and during contraction, while simultaneously visualizing linea alba morphology and muscle coordination, and is therefore widely regarded as the most practical and reliable tool. CT and MRI offer higher resolution but are mainly used for research purposes or complex cases (Figure 1) (Du et al., 2025). Recent advances, including AI-assisted ultrasound segmentation and elastography, further enable assessment of linea alba thickness, tissue stiffness, and quality, although these techniques are not yet widely adopted in routine clinical practice (Huang et al., 2025).

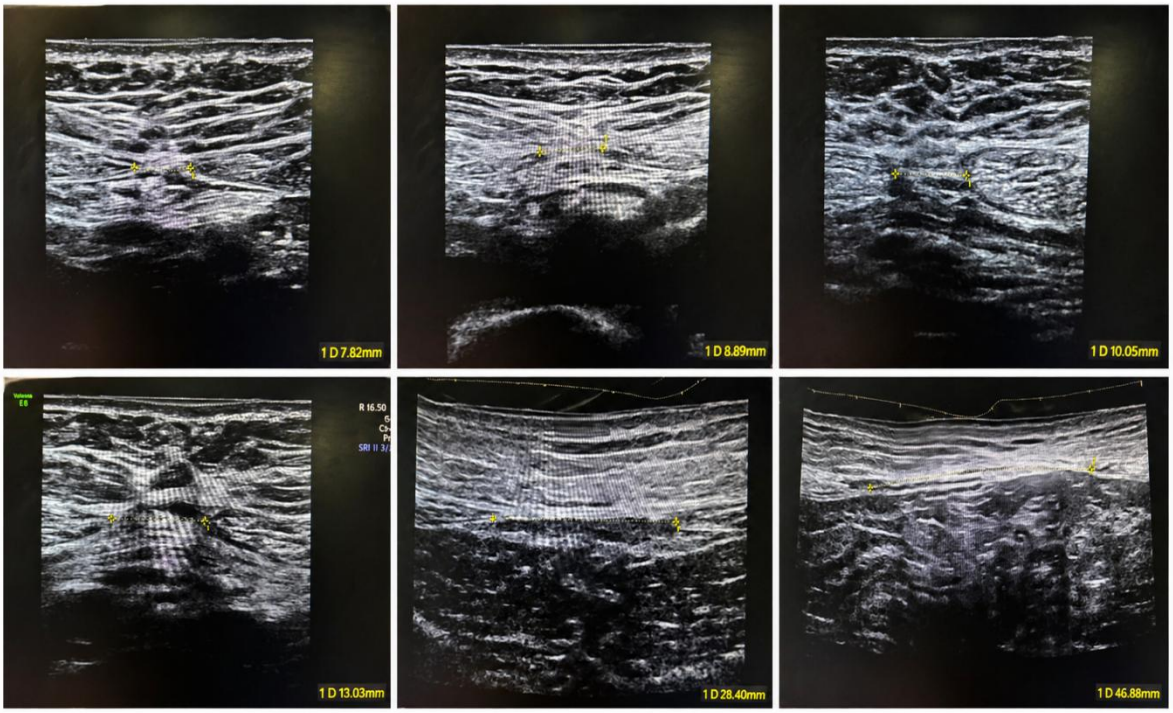

Figure 1 Ultrasound images of different degrees of rectus abdominis diastasis in females

Image caption: The figure shows six ultrasound images representing different degrees of rectus abdominis diastasis; The yellow markers indicate the distance between the medial borders of the rectus abdominis muscles (i.e., inter-rectus distance, IRD). The measurements displayed in the lower right corners are approximately 7.82 mm, 8.89 mm, 10.05 mm, 13.03 mm, 28.40 mm and 46.88 mm, respectively

2.2 Pathophysiological mechanisms

The development of DRA is multifactorial and can be understood as the interaction between increased mechanical loading, altered connective tissue properties, and impaired neuromuscular control. During pregnancy, progressive uterine enlargement, fetal growth, increased amniotic fluid, and maternal weight gain impose sustained and increasing mechanical stress on the anterior abdominal wall, leading to elevated intra-abdominal pressure and elongation and thinning of the linea alba. Chronic and progressive mechanical stretching induces plastic deformation and microstructural remodeling of the linea alba, resulting in gradual widening of IRD. Longitudinal ultrasound studies further demonstrate that IRD increases significantly from early to late pregnancy, accompanied by reduced rectus abdominis thickness and decreased tissue stiffness, with only partial recovery postpartum, suggesting that mechanical factors not only initiate DRA but also contribute to its persistence (Du et al., 2025).