Anatomical Illustration of Tensegrity and Dynamic Stability of the DRUJ

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Tensegrity—Dynamic Stability of the Distal Radioulnar Joint (DRUJ)

The images (►Fig. 1a, b) illustrate the components of dynamic joint stability, here visualized in an anatomical study of the volar DRUJ. Tensegrity—ultimate stability through a combination of compressive and tensile forces—is achieved through compression of normal joint surfaces, the passive tension achieved through ligaments stabilizing the joint, and dynamic control through periarticular muscles. All these components work intimately to maintain articular balance and control through proprioceptive feedback from receptors in the distal radioulnar ligaments, joint capsule, and muscle spindles. Joint instability may thus be the result of joint/skeletal incongruity, ligament injury, or disturbances in the neuromuscular control of the joint; a true understanding of the complex functional anatomy of the ulnar wrist is thus of essence to understand the complexities of ulnar wrist pain. The images show the intimate relationship between the articular surfaces of the distal radioulnar joint, the ulnocarpal ligaments, and periarticular muscles acting on the joint.

Figure 1 (a) The volar distal radioulnar joint (DRUJ) as seen in supination, illustrating the intimate relationship between joint surfaces, ligaments, and periarticular muscles. Note the close proximity of both the pronator quadratus (PQ) and the extensor carpi ulnaris (ECU), in particular, the ECU subsheath (SS). (b) Greater magnification of the volar DRUJ to focus on the compression of joint surfaces (arrows) and tension of the ulnotriquetral (UT) and volar radioulnar (VRU) ligaments in supination. *, fovea; P, pisiform.