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The role of ultrasonography in the diagnosis of occult scaphoid fracture

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Background: Ultrasound (US) is widely utilised by emergency physicians and radiologist to diagnose many orthopaedics diseases, including fractures. We aimed to derive a definitive estimate of the diagnostic accuracy of US for clinically suspected scaphoid fracture.

Methods: We undertook a systematic review and meta-analysis of diagnostic cohort studies that discussed the use of US in the diagnosis of occult scaphoid fracture. We searched NICE healthcare database advanced search (HDAS) via Athens (PubMed, MEDLINE, CINAHL, Embase and AMED databases). Studies were included if they discuss the use of ultrasound to diagnose scaphoid fractures based on cortical interruption (CI), radio-carpal effusion (RCE) and scapho-trapezium-trapezoid effusion (STTE). Quality assessment was performed using the MINORS scoring system.

Results: Six non-RCT studies met the inclusion criteria. These included 236 patients, with a mean age ranging from 18 to 41.2 years. The quality of these articles ranged between moderate and high based on the MINORS score. The mean sensitivity was 88.95% (SD 10.03) and mean specificity was 89.50% (SD 12.21).

Conclusion: The current literature has revealed that ultrasound has high sensitivity and specificity however the use of numerous machines, transducers and confirmatory tests has created a challenge in determining how reliable it is. Considering these factors and limitations in these studies, large-sample and high-quality clinical trials are needed in the future to adequately assess the role of ultrasound in the diagnosis of scaphoid fracture.