Scaphoid Waist Internal Fixation for Fractures Trial (SWIFFT): A Randomized Controlled Trial, Economic Evaluation, and Nested Qualitative Study of Cast Immobilization versus Surgical Fixation for the Treatment of Adult Patients with a Bicortical Fracture of the Scaphoid Waist

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Purpose: Scaphoid fractures account for 90% of carpal fractures, and despite insufficient evidence of its effectiveness, immediate surgical fixation of this fracture has been increasing. We set out to establish whether there was a clinically meaningful difference between early surgical fixation using standard CE marked headless compression screws compared with below-elbow cast treatment for 6 to 10 weeks (with early fixation of CT- confirmed nonunion) of these fractures in adults.

Methods: We compared clinical and cost-effectiveness of these 2vtreatment pathways in a multicenter, pragmatic, randomized controlled trial using remote randomization with an economic evaluation and nested qualitative study. Adults (≥16 years), presenting within 2 weeks of injury with a clear, bicortical fracture of the scaphoid waist seen on scaphoid series radiographs were recruited in 31 UK hospitals from July 2013 with final follow-up in September 2017. The primary outcome and end point was the Patient-Rated Wrist Evaluation (PRWE) total score at 52 weeks, with a clinically relevant difference of 6 points. Secondary outcomes included PRWE total scores at other time points (6, 12, and 26 weeks), PRWE pain and function subscales, Short Form (SF)-12 questionnaire, bone union, range of movement and grip strength, complications, and return to work.

Results: The mean age of the 439 participants was 32 years, 363 were men (83%), and 269 had an undisplaced fracture (61%). The primary analysis was on 408 participants (surgery n = 203 of 219, 93%; cast n = 205 of 220, 93%) using intention to treat. There was no clinically relevant difference in the total PRWE at 52 weeks: cast group mean 14.0 [95% confidence interval [CI] 11.3 to 16.6] and surgery group mean 11.9 (95% CI 9.2 to 14.5); adjusted mean difference of –2.1 in favor of surgery (95% CI –5.8 to 1.6, P = 0.27). Nonunion rate was very low in both groups. Eight participants in the surgery group had 11 reoperations, and 1 participant in the cast group required a reoperation for nonunion. The base-case economic analysis of a lifetime extrapolated model confirmed that the initial use of cast with immediate fixation of nonunions was the most cost-effective option. The nested qualitative study identified patients' desire to have a "sense of recovering," which surgeons should address at the outset.

Conclusion: Adult patients with an undisplaced or minimally displaced scaphoid waist fracture should have the wrist immobilized in cast and all suspected nonunions immediately investigated and those confirmed urgently fixed.