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“DECIPHER: Determinants of Clinically Important Outcomes following Proximal Humerus Fractures in the Elder Population: A National Cohort”

Proximal humerus fractures (PHFs) are increasingly common in older adults, and result in considerable limitations in function and quality of life. Unfortunately, the best way to treat proximal humerus fractures is currently one of the most debated areas of orthopaedic trauma research. Multiple randomized controlled trials have compared various operative and non-operative treatment options. Unfortunately, the majority of these are methodologically flawed and the results are conflicting and difficult to compare.

DECIPHER will be the first nation-wide multicentre prospective study linking a large, fully characterized cohort of all types of PHFs and treatment methods with patient outcomes. This will allow us to answer questions of immediate relevance, while identifying key prognostic factors. With our target 650 patients, we will be powered to answer the following research questions

1. What patient factors, fracture characteristics, treatment and rehabilitation factors predict outcomes following PHFs?
2. Are predictors of outcomes modified by treatment type?
3. Are predictors of outcomes modified by length of immobilization following treatment?
4. What is the cost-effectiveness of operative vs. non-operative treatment of PHFs?

Patients aged ≥ 50 with a PHF will be enrolled from 11 Canadian sites. Potential prognostic factors will be recorded and standardized follow-up measurements will occur for 24 months. Our primary outcome will be the reliable and valid Disabilities of the Arm, Shoulder and Hand (DASH) score. Over 10 secondary outcomes, such as health-related quality of life, radiographic, range of motion, and psychological measures, have also been included. Various statistical models will be used to examine the relationship between the exposures of interest and the DASH while adjusting for meaningful variables. In addition, we will perform interaction term analyses to evaluate potential effect modifiers. We will also conduct economic evaluations to examine the cost-effectiveness of operative vs. non-operative treatment.