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Prehabilitation Before Primary Hip Replacement In Frail Patients: A Multicenter Randomized Controlled Trial With 12-Month Follow-Up.

Orthopaedics / Pelvis, Hip & Femur / Joint Replacement - Primary

Henryk Haffer[1], Luis Becker[1], Alison Agres[2], Sonia Alves[2], Sebastian Hardt[3], Matthias Pumberger[3], Georg Duda[4], Katrin Schmidt[5], Jörn Kiselev[6], Stefan Schaller[7], Carsten Perka[3], Claudia Spies[5], Tobias Winkler[8]

1. Charite-Universitätsmedizin Berlin, Berlin, Germany
2. Julius Wolff Institut, Berlin Institute of Health, Charité, Berlin, Germany
3. Centrum für Muskuloskeletale Chirurgie, Charité - Universitätsmedizin Berlin, Berlin, Germany
4. Julius Wolff Institut, Berlin Institute of Health, Charité – Universitätsmedizin Berlin, Berlin, Germany
5. Klinik für Anästhesiologie m.S. operative Intensivmedizin (CVK, CCM), Charité - Universitätsmedizin Berlin, Berlin, Germany
6. Hochschule Fulda University of Applied Sciences, Department of Health Sciences, Fulda, Fulda, Germany
7. Klinische Abteilung für Allgemeine Anästhesie und Intensivmedizin, Medizinische Universität Wien, Wien, Austria
8. BIH Center for Regenerative Therapies, Berlin Institute of Health, Charité - Universitätsmedizin Berlin, Berlin, Germany

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Background
The frailty syndrome can lead to increased postoperative morbidity and mortality (1). Prehabilitation measures have shown improved quality of life and muscle strength in non-frail patients undergoing total hip arthroplasty (THA) (2). However, no data from large randomized controlled trials (RCTs) are available for the particularly vulnerable patient population with frailty syndrome undergoing THA.

Objectives
The aim of our study was to evaluate the effect of a three-week multimodal prehabilitation on postoperative outcomes in THA patients with frailty syndrome.

Study Design & Methods
A multicenter randomized controlled trial (RCT) to evaluate prehabilitation in surgical patients with frailty syndrome was conducted within a nationwide multidisciplinary RCT coordinated by the Anesthesiology department of our institution. The orthopedic subcohort analyzed here included primary THA patients across five study centers. Frailty was determined according to the criteria defined by Fried et al. (3). Patients in the intervention group completed a multimodal three-week preoperative prehabilitation program. Follow-ups were conducted at three months (3M-FU) and twelve months (12M-FU) postoperatively. The patient-reported outcome, the Hip Disability and Osteoarthritis Outcome Score (HOOS), was defined as the primary endpoint at 12M-FU. Secondary endpoints included EQ-5D-5L, ABC-6 (fear of falling), IADL (instrumental activities of daily living), Timed Up & Go test, 2-Minute Step Test, stair-climbing speed, gait speed, load symmetry, and postoperative complications.

Results
A total of N=106 patients were included and randomized (n=51 intervention, n=55 control). At 12M-FU, 83 patients were analyzed (follow-up rate 78.3%; n=41 intervention; 68.9% female; 78.0 ± 5.6 years, range 70–90 years; BMI 27.9 kg/m²; n=42 control; 57.1% female; 78.5 ± 5.3 years, range 70–88 years; BMI 27.2

kg/m²). At the primary endpoint (12M-FU), no significantly superior results were observed in the HOOS subscales (symptoms, pain, activities of daily living, sports, quality of life) in the intervention group compared to the control group. Similarly, there were no significant differences in secondary endpoints between the groups at 12M-FU. Both groups showed significant improvements in all HOOS subscales from baseline to 12M-FU. These postoperative improvements reached the level of "substantial clinical benefit" in both groups (4).

Conclusions

This is, to our knowledge, the first and largest multicenter RCT with a 12-month follow-up evaluating a prehabilitation intervention in primary total hip arthroplasty among frail patients. The study did not demonstrate a significant improvement in HOOS subscales at 12M-FU after a three-week prehabilitation program. The significant improvements observed in all HOOS subscales in both the intervention and control groups highlight the beneficial effects of total hip arthroplasty even in frail patients.

References:
1. McIsaac et al. Association of Frailty and 1-Year Postoperative Mortality Following Major Elective Noncardiac Surgery: A Population-Based Cohort Study. JAMA Surg. 2016
2. Punnoose et al. Prehabilitation for Patients Undergoing Orthopedic Surgery: A Systematic Review and Meta-analysis. JAMA Netw Open. 2023
3. Fried et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001
4. Lyman et al. What Are the Minimal and Substantial Improvements in the HOOS and KOOS and JR Versions After Total Joint Replacement? Clin Orthop Relat Res. 2018

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