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Geriatric Hip Fractures: Physiological and Psychological Determinants of Recovery — A Narrative Review

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Abstract

Background: Hip fractures in older adults are sentinel events associated with substantial mortality and long-term functional loss. Recovery trajectories are shaped by an interplay of physiological factors (frailty, sarcopenia, multimorbidity, malnutrition) and psychological/cognitive factors (depression, anxiety, fear of falling, delirium, and baseline cognitive impairment). Objective: To synthesize evidence available up to June 2020 on determinants of recovery after geriatric hip fracture with an emphasis on psychological aspects and to outline pragmatic care strategies. Methods: Narrative review of meta-analyses, large cohorts, and guideline-level syntheses published on or before June 30, 2020. Results: Frailty and sarcopenia independently predict complications, prolonged hospitalization, institutionalization, and mortality; comorbidity burden and surgical delay further worsen outcomes. Depression and fear of falling are consistently linked to reduced rehabilitation participation and poorer functional recovery, while postoperative delirium is associated with prolonged stay, loss of independence, and higher mortality. Orthogeriatric co-management, early surgery, optimized multimodal analgesia, and nutrition support improve early mobilization and downstream outcomes. Conclusions: Recovery is biopsychosocial. Embedding mental-health screening and interventions alongside delirium prevention, nutrition optimization, early mobilization, and secondary fracture prevention within orthogeriatric pathways can meaningfully improve independence after hip fracture. [1,3,5,7,11,14,15,17,18,19,20,22,23]

Keywords: hip fracture; geriatrics; frailty; sarcopenia; delirium; depression; anxiety; fear of falling; rehabilitation; orthogeriatrics.

Introduction

Hip fractures remain a major cause of disability in older adults despite advances in anesthesia, fixation, and perioperative medicine. The traditional biomedical focus on bone and implant underestimates the central role of psychological and cognitive variables in driving post-fracture disability. Depression, anxiety, fear of falling, and delirium alter participation in therapy, confidence in ambulation, and the capacity to regain activities of daily living. In parallel, frailty and sarcopenia constrain physiological reserve, while multimorbidity raises the risk of medical complications that interrupt early mobilization. [1,3,5,7,11,14,15,17,18,19,20,22,23]

This review synthesizes pre-June-2020 evidence with a deliberate emphasis on psychological determinants, while situating these within an integrated orthogeriatric care framework. The aim is to provide a practical, psychiatry-aware roadmap for clinicians managing recovery after geriatric hip fracture.

Methods (Search Strategy and Study Selection)

We searched PubMed/MEDLINE and Google Scholar for cohort studies, randomized trials, systematic reviews, and meta-analyses published up to June 30, 2020. Search terms combined "hip fracture," "geriatric," "recovery," "depression," "anxiety," "delirium," "fear of falling," "frailty," "sarcopenia," "nutrition," and "orthogeriatric." We prioritized higher-level evidence and large prospective cohorts enrolling patients aged ≥65 years and reporting functional outcomes, complications, or mortality. Given heterogeneity in outcome measures, we performed a narrative synthesis rather than meta-analysis.

Physiological Determinants of Recovery

Frailty: Frailty is highly prevalent in hip-fracture cohorts and is associated with increased short-term mortality, complications, and institutionalization. Systematic reviews confirm frailty as a robust prognostic marker across settings. [1,5]

Sarcopenia: Sarcopenia frequently coexists with frailty and predicts slower rehabilitation, falls, and reduced independence following hip fracture. Prospective cohort data in hip-fracture populations reinforce its impact on mobility and length of stay. [3,4]

Comorbidities and perioperative risk: Cardiovascular disease, diabetes, renal dysfunction, and postoperative complications (e.g., myocardial infarction, pneumonia, thromboembolism) are consistently linked to early mortality and loss of function after hip fracture. [5,6]

Timing of surgery: Earlier surgery (within 24–48 hours when medically safe) is associated with reduced complications and mortality; delaying surgery generally worsens outcomes. [7,8]

Nutrition: Protein-energy malnutrition and hypoalbuminemia are common and predict poorer outcomes. Oral nutritional supplementation and coordinated nutritional care improve nutritional status and some clinical endpoints. [9,10,11,12]

Psychological and Cognitive Determinants of Recovery

Depression: Depressive symptoms are common after hip fracture and independently predict delayed functional recovery, reduced rehabilitation engagement, and persistent disability. Seminal cohort studies demonstrate that depression and cognitive impairment together have particularly adverse effects on therapy participation and outcomes. [14,15,16]

Anxiety and fear of falling (FoF): FoF persists beyond fracture healing and is associated with activity restriction, deconditioning, and social withdrawal. Validated measures and meta-analytic data underscore FoF as a mediator between psychological distress and poor functional recovery; targeted interventions include graded exposure, balance training, and confidence-building strategies. [17,18]

Delirium and cognitive impairment: Delirium is one of the most frequent complications after hip fracture and is linked to prolonged hospital stay, institutionalization, declines in activities of daily living, and increased mortality. Prevention bundles focusing on orientation, sleep hygiene, hydration, early mobilization, visual/hearing aids, and cautious use of psychoactive medications are recommended. [19,20,21]

How These Factors Shape Recovery Trajectories

Short-term (in-hospital to 30 days): Medical instability, uncontrolled pain, and delirium interrupt early mobilization, while depression and anxiety dampen participation in therapy. Orthogeriatric co-management, early surgery, regional analgesia where appropriate, nutrition support, and early psychological screening improve early trajectories. [7,9,11,13,20,22,23]

Intermediate to long-term (3–12 months): Persistent sarcopenia and frailty, together with depression, FoF, and cognitive deficits, predict failure to regain pre-fracture mobility and independence. Ongoing progressive resistance and balance training, stepped psychological care, caregiver engagement, and secondary fracture prevention sustain functional gains. [1,3,11,14,15,17,18,19,22,23]

Practical Integrated Care Pathway (Psychiatry-Aware Orthogeriatrics)

1) Triage and timing: Aim for surgery within 24–48 hours when medically safe; pre-op optimization in parallel rather than in sequence. [7,8]

2) Orthogeriatric co-management: Comprehensive geriatric assessment from admission; joint protocols for medical optimization, delirium prevention, analgesia, and discharge planning. [22,23]

3) Pain and mobilization: Multimodal, opioid-sparing analgesia (including regional techniques where appropriate) to enable early, safe mobilization and reduce delirium risk. [13,21]

4) Psychological screening and intervention: Screen within 72 hours for depression/anxiety (e.g., GDS-15, HADS) and FoF (FES-I); initiate stepped care (psychoeducation, CBT-based strategies, behavioral activation, motivational enhancement) and incorporate caregiver reinforcement. [14,15,17,18]

5) Nutrition: Screen for malnutrition; set protein/energy targets; provide oral nutritional supplements; coordinate dietitian-led follow-up. [9,10,11,12]

6) Secondary prevention: Initiate osteoporosis therapy and falls-clinic referrals; plan community-based resistance/balance programs with psychological support to sustain confidence. [11,17,18,22]

Research Gaps and Future Directions (≤ June 2020 Evidence)

High-quality trials that integrate psychological interventions with structured physical rehabilitation in hip-fracture cohorts are limited in the pre-2020 literature. Future studies should test combined packages (e.g., CBT for FoF plus progressive resistance training), stratify by frailty and cognitive status, and report patient-centered outcomes such as confidence in walking, community participation, and caregiver burden. [17,18,22]

Conclusion

Recovery after geriatric hip fracture is governed by biopsychosocial forces. Depression, anxiety, fear of falling, delirium, frailty, and sarcopenia each exert measurable and modifiable effects on function and survival. The most effective programs combine timely surgery and orthogeriatric co-management with early psychological screening and intervention, multimodal analgesia, nutrition optimization, progressive resistance and balance training, and secondary prevention. Health systems should adopt psychiatry-aware orthogeriatric pathways to improve the likelihood of a return to independence. [1,3,7,9,11,14,15,17,18,19,20,22,23]

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