Fixing the Fractured: Key Issues in Post-Operative Hip Fracture Rehab Programs

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NEBGEC Annual Conference
Friday, July 17, 2009 from 9:45 to 10:45 a.m.

No commercial or financial conflicts of interest to disclose.
Objectives

• Upon completion, the learner will be able to:
  – Identify key issues in the acute phase of rehabilitation
  – Evaluate evidence-based treatment approaches for acute, subacute, home health, and outpatient therapy settings
  – Discuss expected functional recovery for patients with hip fractures
  – Develop intervention strategies for the prevention of hip fractures
Background

• Impact on society
  – Watters & Moran, 2006
    • 350,000 US hip fxs/year
    • 9/10 hip fx are 65+ y/o and have multiple medical problems
    • Hip fractures reduced life expectancy 25% when age- and sex-matched to general population

• Interdisciplinary coordination
• PT/OT
• Research
Evidence: Best Practices

- Best approach to rehabilitate
- Strategies for success
- Limitations
  - Critical Review: Toussant & Kohia, 2005
  - Research: High-functioning patients
Key Issues: Acute Phase of Rehabilitation

• Operative fixation
• Common problems that delay PT/OT
  – Pain
    • Severity is procedure-specific for hip fractures?
    • Foss et al., 2009
      – THA < parallel screws/pins < dynamic hip screws < intramedullary screws
      – Negative impact on rehab
  – Anemia
    • Foss, Kristensen, & Kehlet, 2008
      – Indep. risk factor for pts not being able to walk
  – Hypotension
  – Mental status
Key Issues: Acute Phase of Rehabilitation

- Early and frequent mobilization
  - DVT, PE, DU, UTI
  - If not an ambulation candidate...
    - Bed exercises
    - Dangle
    - Incentive spirometer
Key Issues: Acute Phase of Rehabilitation

• “Other factors”
  – Fall history/risk
    • Medications
  – Case management
    • Daily communication
  – Patient/family involvement
    • PLOF, goals, discharge plans
Evidence: Acute

• Support for early ambulation
  – Kamel et al., 2003
    • ↓ Pneumonia, delirium, length of stay
  – Oldmeadow et al., 2006
    • Early amb.: POD 1 or 2
    • Delayed amb.: POD 3 or 4
    • 1 wk: early amb. walked ~2x further, required ↓ assist to transfer, ½ LOS, more likely to d/c home, less likely to need higher level cares
Evidence: Subacute

• Toussant & Kohia, 2005
  – Critical review
  – Grade A Recommendation: PT is beneficial for pts w/ hip fx and dementia to help regain function

• Lacking research
Evidence: Home Health

- Mangione et al., 2005
  - N=33, ~78.6 y/o, 20 visits, 12 wks, 30-40 min.
  - Groups: moderate- or high-intensity exercises
    - Resistance training
    - Aerobic training
    - Control group
  - Intervention groups: ↑ isometric strength, ↓ depressive symptoms; high adherence
  - All groups ↑ distance amb., gait speed, force production; low power
Evidence: HH / Outpt

• Hauer et al., 2002
  – RCT, N=28, 6-8 wks post-op hip fx or THA 2° to fall
  – 3 mos. intervention (3x/wk, 25 min., 12 wks)
    • LE PRE, functional, balance training vs. control
  – Results
    • ↑ strength, functional motor performance, balance
    • ↓ fall-related behavioral & emotional problems
    • Control group: no changes in any variables
  – Recommendations: safe, effective, detraining effects
Evidence: Outpatient

• Portegijs et al., 2008
  – RCT, N=46, 60-85 y/o, community-dwelling
  – 12 wks PRE vs. no intervention
    • PRE 2x/wk, 1-1.5 hrs vs. no intervention
  – Results
    • High compliance to PRE
    • Self-reported outdoor mobility improved
    • Strength & power of weaker leg increased significantly
    • Study lacked power
Evidence: Outpatient

• Binder et al., 2004
  – RCT, N=90, >65 y/o, community dwelling, <16 wks post-op hip fx fixation
  – To ↑ physical function, ↓ disability
    • 6 mo. extended outpt PT program w/PRE
    • Low-intensity HEP
  – Control: HEP 3x/wk, 6 months
    • Mostly flexibility
Evidence: Outpatient

• Binder et al., 2004
  – Intervention: 2 3-month phases, 3x/wk
    • Phase 1: PT group format, 45-90 min.
      – Flexibility, balance, coordination, aerobic exercise, movement speed, strength of major muscle groups
    • Phase 2: ~90 min.
      – Shortened version of Phase 1 + PRE
        » 6 exercises bilat.
Evidence: Outpatient

• Binder et al., 2004
  – Results
    • Adherence: 131% control, 87% intervention
    • Extended PT significantly
      – ↑ muscle strength, walking speed, balance, perceived health, physical performance, self-reported quality of life
      – ↓ difficulty w/ ADLs & IADLs
      – ↓ need for assist. device, disability
    • Drawbacks
Evidence: Outpatient

• Host et al., 2007
  – Extension of Binder et al., 2004
    • 6 mos. ex program
    • Determine specificity of training in frail elderly
    • PRE intensity vs. improvements in strength & physical function
  – RCT, N=31, >65 y/o, community dwelling, <16 wks post-op hip fx
  – Control: Low intensity HEP, 3x/wk, 60 min.
Evidence: Outpatient

- Host et al., 2007
  - Intervention: 2 3-month phases, 3x/wk
    - Phase 1: PT group format, 45-90 min.
      - Flexibility, balance, coordination, aerobic exercise, movement speed, strength of major muscle groups
    - Phase 2: ~90 min.
      - Shortened version of Phase 1 + PRE
        » 3 exercises bilaterally
      - 65% (↑85-100%) 1-RM, 1-2 sets (3), 6-8 reps. (8-12)
Evidence: Outpatient

• Host et al., 2007
  – Results
    • Improved* knee ext & leg press strength
    • Specificity applied only to the non-fx limb
    • “Strong correlations” between intensity & strength gains, improvements in measures of function
  – Recommendations
    • Extend supervised rehab programs
    • Try higher intensities to maximize gains
Evidence: Overall

• Acute
  – Mobilize early

• Subacute
  – Need more research

• HHC/Outpatient PT
  – Progressive resistive exercises
    • Intensity, progressive, specificity
  – Functional exercises
    • Balance, walking
  – Duration
    • Extend programs
Expected Functional Recovery

• Zuckerman et al., 2000
  – Functional recovery of pts
    • N=603, community-dwelling, ambulatory
    • >65 y/o, s/p femoral neck or intertroch. fx fixation
    • All amb. POD #1, WBAT w/ walker
    • Admission interview, then 3-, 6-, 12-mo. f/u
  – Results
    • 11.6% died in one year
    • 74.2% completed all f/u interviews
Expected Functional Recovery

• Zuckerman et al., 2000
  – Results
    • Stratified pts based on pre-fx functional level
      – Highest functioning: 83% recovery
      – High functioning: 77% recovery
      – Mid-level functioning: 74% recovery
      – Lowest functioning: 100% recovery
    • Largest LOF 1st 3 mos; ↑ 3-, 6-, 12-mos. f/u
    • Highest functioning vs. non-fx population
      – Hip fx → 20% loss of function during 1st year
Expected Functional Recovery

• Shah et al., 2001
  – Outcomes after hip fx
    • 90+ y/o vs. same age/sex
    • 90+ y/o vs. 65-89 y/o s/p hip fx
  – Design
    • N=850, community dwelling, ambulatory, cognitively intact, operative fixation
      – WBAT, OOB POD #1
    • Multiple measures
Expected Functional Recovery

• Shah et al., 2001
  – Results, > 90 y/o
    • Longer hospital stay
    • ↑ death rate in hospital & within 1 yr of surgery
    • ↓ recovery of ADLs & amb.
    • Not predictive of
      – Post-op complications
      – Discharge to a SNF or residence at 1 yr. f/u
      – IADLs
Expected Functional Recovery

• Holt et al., 2006
  – Prospective study
    • 50 pts age 95+ who had hip fx repaired
    • 200 pts age <95 who had same procedure
  – Results
    • Higher mortality
    • No significant differences at 1 year
    • >95 were unlikely to recover their independence
Expected Functional Recovery

• Folden & Tappen, 2007
  – Evaluated the most commonly cited predictors of successful recovery in single convenience sample, regression analysis
  – N=73, admit to IP rehab & 3 mo. post-discharge
  – Best predictors of functional ability at 3 mos.
    • Balance & cognitive status
  – Best predictors of return to PLOF at 3 mos.
    • Balance, cognitive status, & prior level of function
  – 68% subjects not at pre-surg. LOF at 3 mos.
Expected Functional Recovery

• Beaupre et al., 2007
  – Functional recovery at 6 mos. s/p hip fx repair
    • Long-term care residents vs. comm. dwelling
    • Controlled for known prognastic factors
    • N=451, >65 y/o, change from pre-fx function
  – Results
    • LTC:
      – 22% returned to pre-fracture function
      – 33.9% lower level of function than pre-fracture
    • CD:
      – 71% returned to pre-fracture function
      – 11.6% lower level of function than pre-fracture
Prevention

• Shumway-Cook et al., 2005
  – Fall risk factors & incidence 6 mos. post-op hip fx
    • N=90, community-dwelling, >65 y/o
    • Interview & performance measures of balance & mobility
  – Results
    • Fallers
      – 53.3% had 1 fall; 62.5% had 2+ falls
      – Predicted by pre-fx hx of 1 fall & use of a gait device
      – Greater loss of indep. w/ ADLs, balance, mobility
      – 93% used assistive devices (23% pre-fx)
Prevention

• Kristensen, Foss, & Kehlet, 2007
  – Prospective study, N=59
  – TUG @ discharge from acute hip fx unit to home or ALF, f/u interview 6 mos. later
    • Predict falls
  – Results
    • 32% fell within 6 mos.; 4 subjects had a new hip fx
    • >24 sec. is sensitive cutoff for predicting new falls
Prevention

• Discharging from therapy
  – Home safety evaluation
  – Fall prevention
  – Devices
  – Patient and family education
  – Reinforcement by all healthcare providers
Prevention

• Teamwork and collaboration!
• During and after rehab…
• An ounce of prevention…
Conclusion

- Key issues for all phases of rehabilitation
- Appreciate the latest research
  - Use evidence to promote outcomes
  - Realize the limitations
- Realistic expectations
- Prevent fractures
- Better practitioner
Questions?

It's QUESTION TIME!!
References


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