



HIP FRACTURES IN THE ELDERLY: AN ACUTE CARE FOCUS

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Learning Objectives

- Recognize specific circumstances of falls which result in hip fractures
- Identify the predictors of one year mortality following a hip fracture
- Describe negative events after a hip fracture in the acute care setting which nursing and PTs should actively work to prevent
- List the four functional milestones which should be reached in the acute care setting following a hip fracture to allow the patient to be able to safely discharge home without 24-hour supervision.
- Vocalize the importance of early weight non-restricted weight bearing following surgery to repair a hip fracture

Fun Fracture Facts

- By 90 years old, 1 in 4 women and 1 in 8 men will probably sustain a hip fracture (CDC)
- Mortality post fracture is estimated between 10-20% (Marks et al, 2002)
- Estimated cost for a hip fracture \$31,310
 - Treatment of fracture and the complications associated with falls costs more than \$20 billion each year (Becker et al, 2010)



Femur

Pelvis

Review: Where Do Hip Fractures Typically Occur?

1 - Femoral neck region

2 - Intertrochanteric region

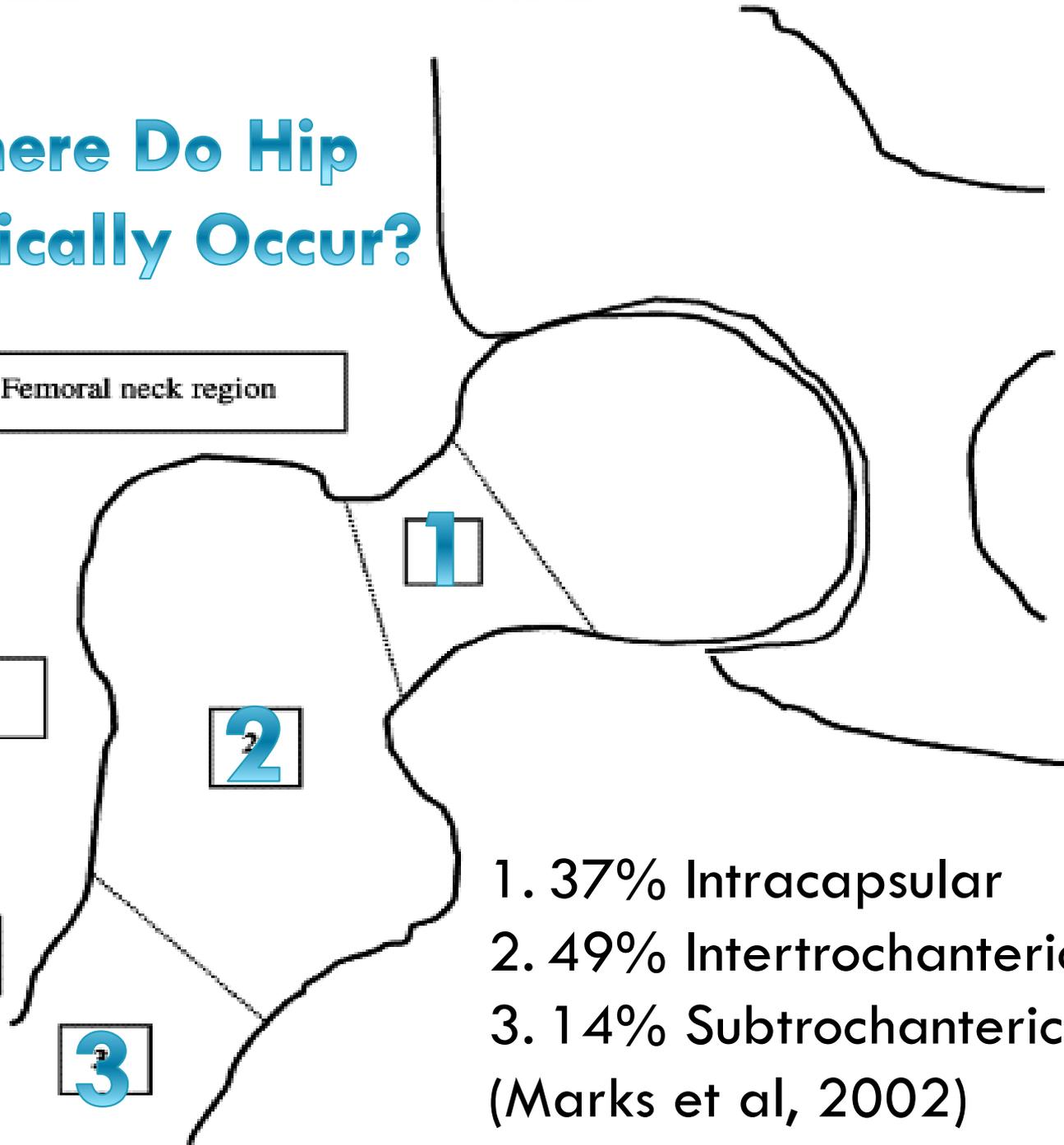
3 - Subtrochanteric region

1

2

3

- 1. 37% Intracapsular
 - 2. 49% Intertrochanteric
 - 3. 14% Subtrochanteric
- (Marks et al, 2002)

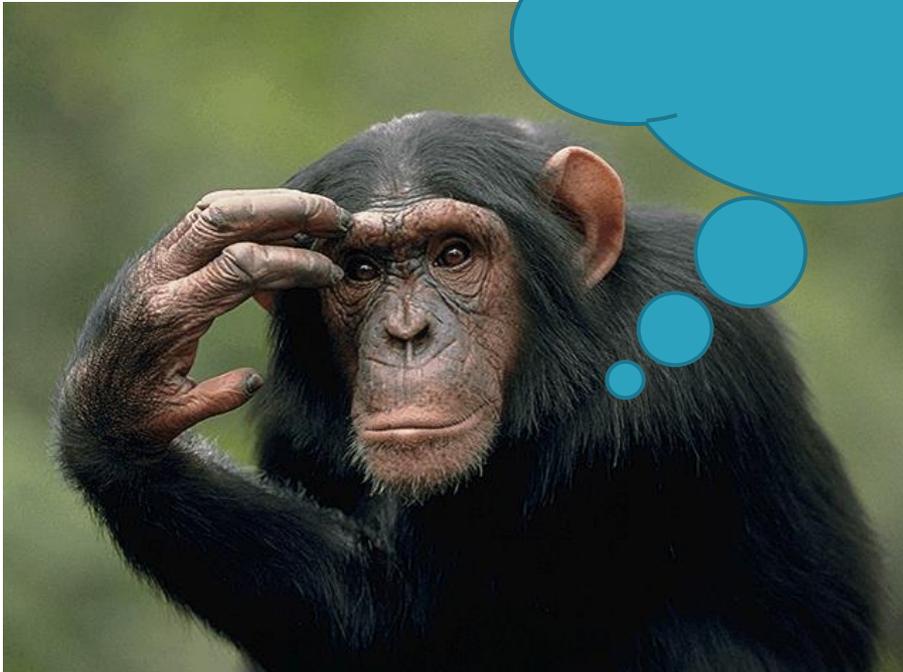


Circumstances



- 60% of falls occur in home; 30% in the community; 10% in institutions (i.e. nursing homes) (Cleveland Clinic)
- “Circumstances of Falls Causing Hip Fracture in the Elderly” (Aharonoff et al, 2003)
 - More hip fractures occur during the afternoon
 - Greater increase of incidence of falls in Winter for younger patients, but not older

Why is mortality
so high? What can
PTs do to decrease
this?



“Hip Fractures in the Elderly: Predictors of One Year Mortality” (Aharonof et al, 1997)

- ▣ 612 patients who were ambulatory, community dwelling, cognitively intact, older adults who sustained a hip fracture of non-pathological origin
 - 12.7% died within the first year
 - Factors predicting the increase in one year mortality were patient's age (>85), pre-injury dependency in basic ADLs, a history of malignancy other than skin cancer, American Society of Anesthesiology (ASA) rating of 3 or 4, and development of one or more inhospital postoperative complications (i.e. pneumonia, septicemia)

Ohh...So reducing
one year mortality
should be directed at
the prevention of
postoperative
complications!



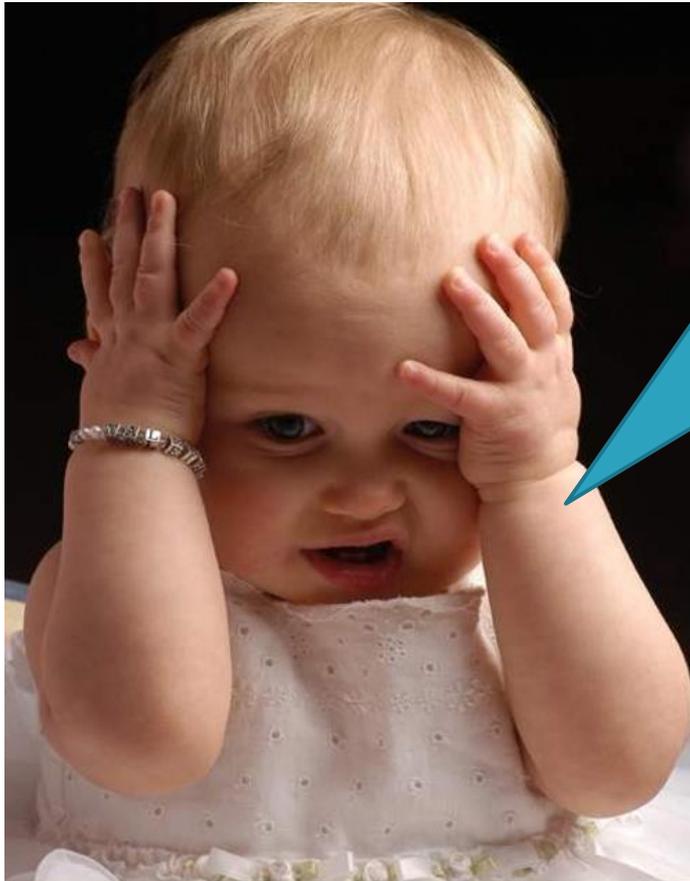
“Hip Fractures Among the Elderly: Causing, Consequences, and Control” (Marks et al, 2002)

- Short-term nursing and physical interventions designed to promote functional outcomes of the elderly hip fracture patient include the prevention of :

1. Dehydration and Electrolyte Imbalance
2. Thromboembolism
3. Pneumonia
4. Decubitus Ulcers
5. Voiding Dysfunctions
6. Confusion and Depression

“Early Ambulation After Hip Fracture: Effects on Function and Mortality” (Siu et al, 2006)

- Outcomes: (1) mortality at 6 months; (2) FIM locomotion at 2 and 6 months; (3) FIM self-care at 2 and 6 months; and (4) FIM transferring at 2 and 6 months.
- Pain, general anesthesia, transfusion, and indwelling catheters were all associated with longer duration of immobility
- Increased immobility was associated with higher mortality at 6 months and poorer function at 2 months.
 - The potentially adverse effect of immobility was strongest in patients more dependent in mobility at baseline.



But does early ambulation create adverse effects for the surgically treated fracture???

“Weight Bearing After Hip Fracture” (Koval et al, 1996)

- 596 patients
- Standard postoperative protocol: mobilization of patients OOB on day 1 with full, unrestricted weight bearing using a walker
- Follow-up data and hospital records were examined to identify patients who required additional hip surgery due to failure of fixation, nonunion, osteonecrosis, or prosthetic dislocation.



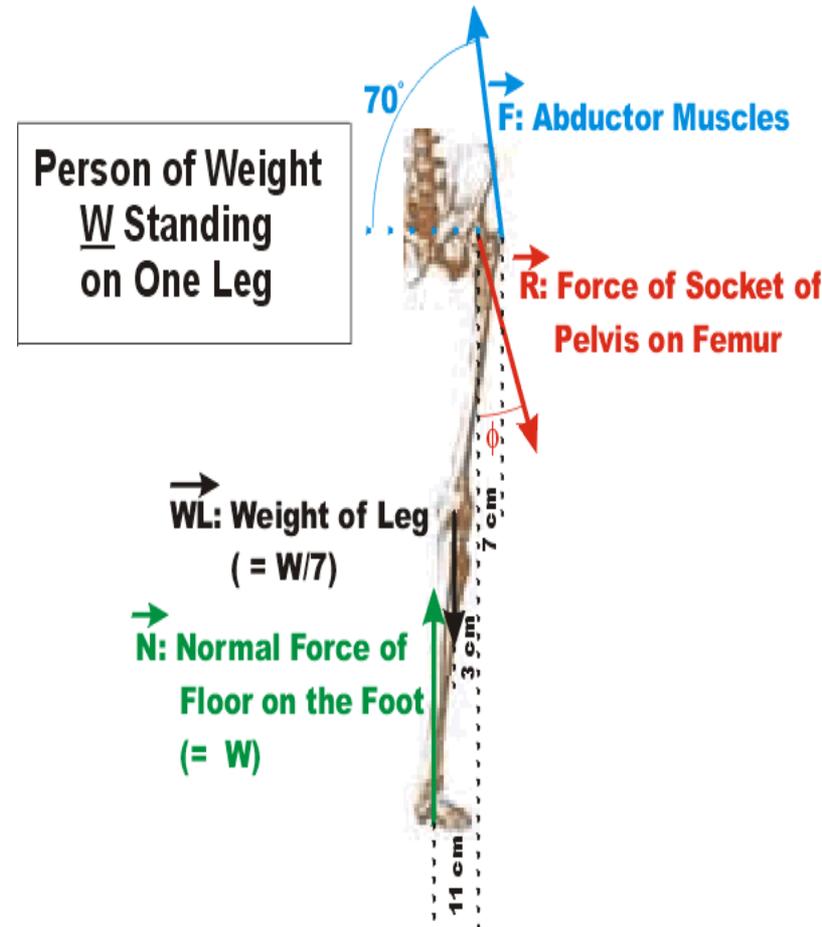
Results

- 473 patients available for follow-up
 - ▣ 16 patients (3.4%) required additional surgery
 - 8 due to loss of function
 - 4 due to avascular necrosis
 - 3 due to nonunion
 - 1 due to recurrent dislocation of prosthesis
 - ▣ These results compare favorably to those reported after hip fracture surgery regardless of postoperative weight-bearing status



Also...

- There is little biomechanical justification for restricted weight bearing after hip fracture
- Moving around in bed and using the bedpan generate forces across the hip approaching those resulting from unsupported ambulation



So we know what to prevent and how better reduce mortality in acute care after a hip fracture. But what are the functional milestones that we should be striving for?



“Regaining Functional Independence in the Acute Care Setting Following a Hip Fracture” (Guccione et al, 1996)

- Seven key functional milestones for patients after a hip fracture: supine-to-sit, sit-to-supine, sit-to-stand, independent ambulation on level surfaces with a walker, independent ambulation on level surfaces with crutches, independent ascent and descent of stairs with a railing and a crutch, and independent ascent and descent of stairs with crutches only.
- ▣ Independence in the first four milestones is essential if an elderly person is expected to be at home without 24-hr care.



Results

- Over 1/3 of subjects achieved sit-to-stand transfers independently (most frequently achieved functional milestone)
- Supine-to-sit: 36.4% achieved independence
- Sit-to-supine: 30.9% achieved independence
- Independent ambulation with a walker: 29% achieved independence
- Navigate stairs using HR and crutch: 8% achieved independence
- Predictors of d/c home: age, absence of postoperative complications, achieving independence in bed mobility and ambulation with a walker, and averaging more than one physical therapy treatment per day

In Addition...

- Longer LOS increases the odds of achieving independence in the 4 critical functional milestones
 - ▣ 1-2 extra days might be sufficient to help patients d/c directly to home or to enhance safety and function when d/c to home is mandated by reimbursement policy



“Physical Function and Fear of Falling after Hip Fracture Rehabilitation in the Elderly” (Petrella et al, 2003)

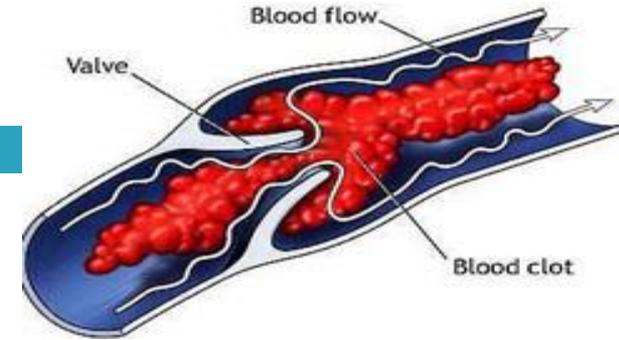
- Hypothesis: A standard rehabilitative program would improve physical function but would not change the fear of falling.
- To assess physical function: Functional Independence Measure (FIM)
- To assess falls self-efficacy: the Falls-Efficacy scale (FES), the Activities-Specific Balance Confidence scale (ABC), and the Vitality scale (for QOL)
- Hypothesis was supported, no correlation between change in FIM and fall self-efficacy scales was observed

So...What are the Consequences?

- ❑ The impact of the rehab program maybe limited once the patient returns home because fear may restrict physical activity, producing a further loss of physical function and an increase risk of future falls
- ❑ Clinical rehabilitation programs should aim to simultaneously improve both physical skills and confidence



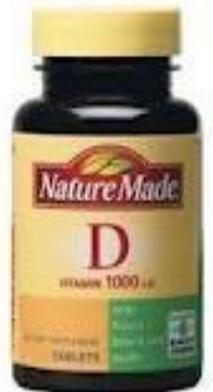
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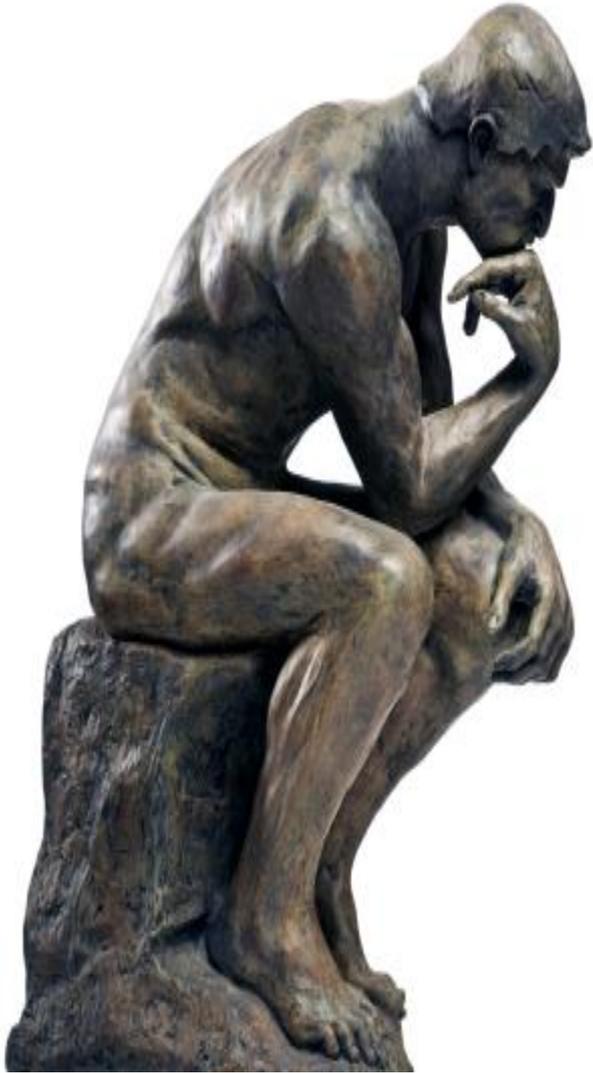


- Patients who experience a delay (>24 hrs) in surgical care for an acute hip or femur fracture are at a relatively high risk for development of DVT. (Smith et al, 2011)
- The TUG scores obtained at d/c from an acute orthopedic hip fracture unit with a cutoff point of 24 sec significantly predicted falls during a 6 month follow-up period. (Kristensen et al, 2007)

Fun Continued...

- Evidence has shown that older adults with cognitive impairment who receive intensive inpatient rehabilitation after surgical repair of a hip fracture may be able to gain comparable benefit in physical function as cognitively intact patients. (Muir et al, 2009)
- Potential relationship has been found between reduced mortality with post-fracture use of prescribed calcium plus vitamin D supplements as well as, in females, parallel use of anti-osteoporotic drugs. (Nurmi-Luthje et al, 2009)





**Disclaimer:
Questions are
guaranteed;
answers aren't!**

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