

Hip fractures in the frail elderly: Is there enough evidence to guide management?

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“We’re taught in residency that if a patient does not get surgical repair of a fractured hip that they will remain bed bound and die in agony with a necrotic hip infested with maggots” **Staff orthopedic surgeon**

“If I admit a non-op hip fracture overnight I will get crucified by my staff in the morning. As a resident, I have 1 job...get consent for OR” **PGY2 orthopedic surgery**

Background

- Approximately 30,000 Canadians suffer a hip fracture each year¹
- 6-10% of hip fractures treated non-operatively in Canada.^{2,3}
- Hip fracture is a sentinel event, with 1 year mortality 15-30%.⁴⁻⁵
- High proportion of pre-operative frailty, cognitive impairment, and co-morbidities
- Current focus on timing of surgery.....but wait

What is the evidence supporting surgery for hip fractures in the frail elderly?

Methods

- Systematic literature search and review
 - 1 clinical reviewer
 - 1 clinical librarian
- Observational and randomized control trials were included if compared operative vs non-operative management of hip fractures
- No restriction on year of publication
- 733 articles, of which 718 were excluded after reviewing abstracts.
- In total, 15 articles were included in the systemic review

Randomized control trial evidence

- 2008 Cochrane review⁶ - **Conservative versus operative treatment for hip fractures in adults**
- 5 RCTs – Date of completion 1975, 1981, 1985, 1989, and 1994
 - 2 published as manuscripts
- Total 428 “elderly” patients
 - “The limited available evidence from randomized trials does not suggest major differences in outcome between non-operative and operative management”

Observational studies

	Country	Pop'n size (non-op %)	Mortality	Function	Quality of life
Jain <i>et al.</i>	Canada (ON)	50,235 (11%)	√		
Cram <i>et al.</i>	Canada (MB)	19,262 (7%)	√		
Tay E	Singapore	390 (29%)	√		
Gregory <i>et al.</i>	UK	102 (22%)	√	√	
Hossain <i>et al.</i> *	UK	47 (53%)	√	√	
Yoon <i>et al.</i>	South Korea	84 (33%)	√		
Ooi <i>et al.</i>	Singapore	84 (45%)	√	√	
Shabat <i>et al.</i>	Israel	23 (17%)	√		
Dedovic <i>et al.</i> *	Bosnia	66 (48%)	√		
Moulton <i>et al.</i> *	UK	62 (50%)	√	√	√
Kawaji <i>et al.</i>	Japan	230 (10%)	√		
Tan <i>et al.</i>	Singapore	2756 (26%)	√		
Berry <i>et al.</i>	USA	3083 (15%)	√	√	√

Mortality

- Non-operative 1-year mortality: 34-64%
- Operative 1-year mortality: 11-56%
- 9/13 studies identified statistically significant lower likelihood of mortality if underwent surgery at pre-specified endpoints
- Difference in mortality seen at 30 days -> 2 years

Function

- 3 retrospective studies of non-operative hip fractures: ⁹⁻¹¹
 - Approximately 50% mobilized independently after fracture
 - 55% were living in own home at last follow up
- Ooi *et al.* included only patient >90 years of age¹²
 - 10% of non-operative management mobilized independently (vs 38%)
- Berry *et al.* included only patients in NH with advanced dementia¹³
 - 5% of non-operative management mobilized independently (vs 10%)

Quality of life

- Moulton *et al.* 26 patients with hip fractures treated non-operatively
 - At time of discharge 89% (of those who survived) had no pain or pain well controlled with analgesia
- Berry *et al.* – Nursing home patients with advanced dementia
 - 70% had no pain at follow-up between 120-240 days
 - No statistically significant difference in pain, antipsychotic use, restraints use, or pressure ulcers compared to surgically treated

Conclusion

- Surgical intervention remains the gold standard for the majority of hip fractures
- Non-operative management of hip fracture does not guarantee patient will be bedbound, in NH, or in agony.
- Goals of care discussions with patients and family should focus on pre-fracture function and quality of life to guide management.

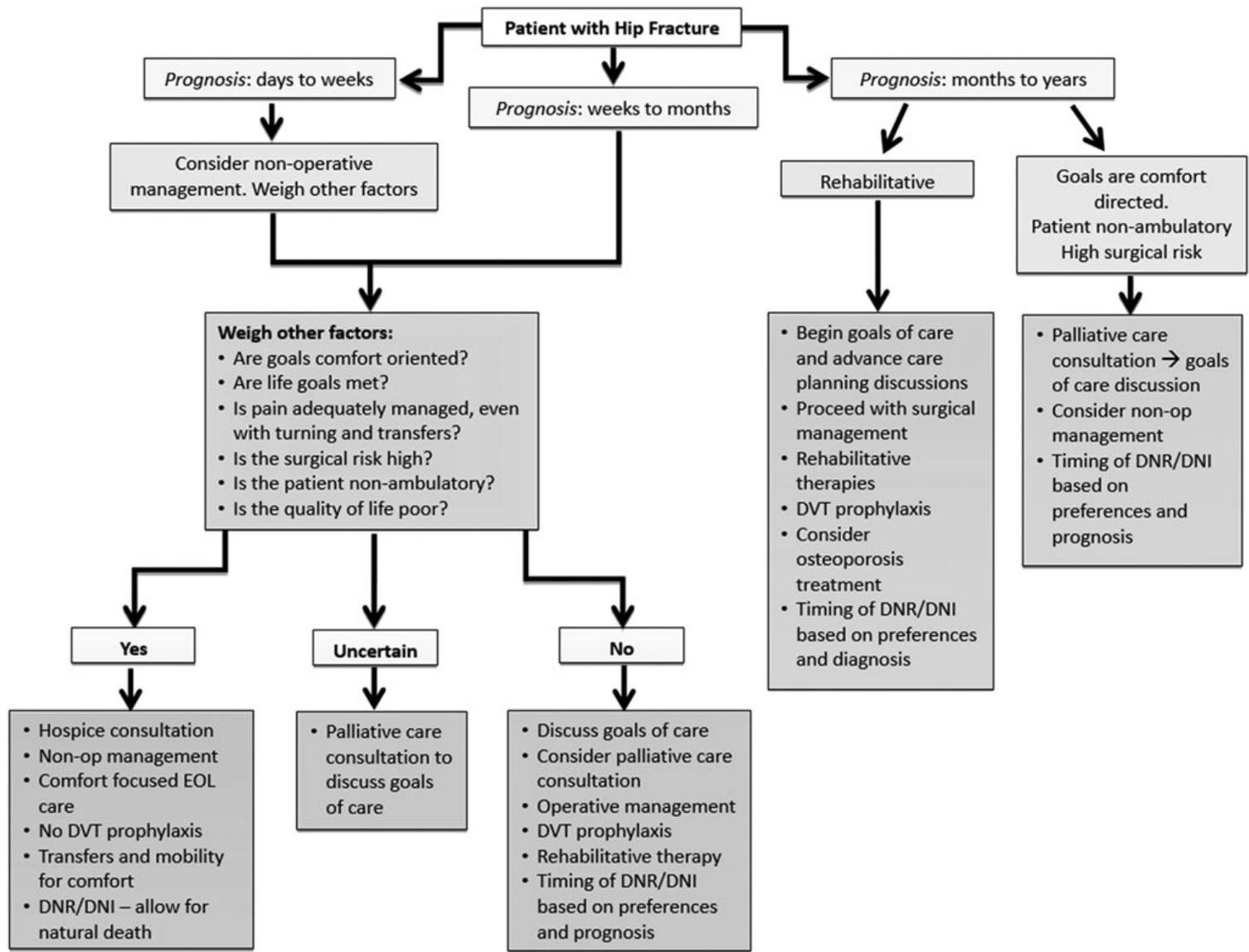
Questions?

Thanks

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Barriers and challenges to non-operative management

- Operative management of hip fractures deeply engrained in orthopedic dogma
- Orthopedic services too busy to fully explore goals of care
- Who owns non-operative hip fractures?



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Age, mean (SD), y	84.0 (7.1)	85.1 (7.5)	83.1 (6.9)	83.9 (7.1)	84.4 (7.1)	85.3 (7.5)
Race						
White	2345 (89.7)	385 (82.3)	753 (90.7)	45 (91.8)	1592 (89.3)	340 (81.1)
Black	178 (6.8)	63 (13.5)	48 (5.8)	2 (4.1)	129 (7.2)	61 (14.6)
Other	92 (3.5)	20 (4.3)	29 (3.5)	2 (4.1)	62 (3.5)	18 (4.3)
Female	2052 (78.5)	389 (83.1)	636 (76.6)	36 (73.5)	1414 (79.3)	353 (84.2)
ADEPT score, mean (SD) ^b	12.4 (2.9)	14.0 (3.3)	11.4 (2.6)	12.8 (3)	11.8(2.8)	14.3 (3.2)
Shortness of breath	76 (2.9)	22 (4.7)	12 (1.4)	1 (2.0)	64 (3.6)	21 (5.0)
Bedfast	20 (0.8)	26 (5.6)	2 (0.2)	0	18 (1.0)	26 (6.2)
Congestive heart failure	263 (10.1)	62 (13.2)	51 (6.1)	5 (10.2)	212 (11.9)	57 (13.6)
BMI <18.5	274 (10.5)	80 (17.1)	74 (8.9)	8 (16.3)	200 (11.2)	72 (17.2)
Bowel incontinence	1579 (60.4)	363 (77.6)	359 (43.3)	21 (42.9)	1220 (68.4)	342 (81.6)
Consumes <75% of meals	712 (27.2)	112 (23.9)	196 (23.6)	11 (22.4)	516 (28.9)	101 (24.1)
Pressure ulcer ^c	85 (3.3)	45 (9.6)	4 (0.5)	1 (2.0)	81 (4.6)	44 (10.5)
ADL score = 28 ^d	147 (5.6)	121 (25.9)	0	0	147 (8.2)	121 (28.9)
Transfer dependence ^e	1453 (55.6)	384 (82.1)	105 (12.7)	8 (16.3)	1348 (75.6)	376 (89.7)
CPS ^f						
5	2310 (88.3)	323 (69.0)	794 (95.7)	48 (98.0)	1514 (84.9)	275 (65.6)
6	305 (11.7)	145 (31.0)	36 (4.3)	1 (2.0)	269 (15.1)	144 (34.4)

Hornby *et al.* 1989⁷

- 106 patients randomized to surgery vs traction (non-op)
 - Average patient was female in early 80's, 40% living independently
- In hospital:
 - No difference in rates confusion, sedative use, or pressure ulcers
- At 6 months:
 - No difference in mortality (24% in operative vs 22% in non-operative) or pain
 - But... 2x rate of “loss of independence” for non-operative group