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 year\textsuperscript{1}
• 6-10% of hip fractures treated non-operatively in Canada.\textsuperscript{2,3}
• Hip fracture is a sentinel event, with 1 year mortality 15-30%.\textsuperscript{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 review$^6$ - **Conservative versus operative treatment for hip fractures in adults**
    • 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

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

<table>
<thead>
<tr>
<th></th>
<th>Age, mean (SD), y</th>
<th>Race</th>
<th>ADEPT score, mean (SD)\textsuperscript{b}</th>
<th>Shortness of breath</th>
<th>Bedfast</th>
<th>Congestive heart failure</th>
<th>BMI &lt;18.5</th>
<th>Bowel incontinence</th>
<th>Consumes &lt;75% of meals</th>
<th>Pressure ulcer\textsuperscript{e}</th>
<th>ADL score = 28\textsuperscript{d}</th>
<th>Transfer dependence\textsuperscript{e}</th>
<th>CPS\textsuperscript{f}</th>
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<td>121 (28.9)</td>
<td>376 (89.7)</td>
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</tbody>
</table>
Hornby *et al*. 1989

- 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