Geriatric hip fracture - a geriatrician’s perspective

Dr Chan Tak Yeung
Convener, Fall and Bone Health SIG, HKGS
Consultant Geriatrician
Kwong Wah Hospital
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Epidemiology

- Operated hip fracture in Hong Kong
  - 4000 in 2006
  - 4500 in 2009 (68% operated within 48 hours)

- Worldwide
  - 1.66 million hip fracture in 1990
  - 6.26 million in 2050

Osteoporosis Int 2010, 21 (Suppl 4): S627-636
Bone 1996;18:57S
• ¾ of all fractures occur in women
• Adults aged 85 years older 10 X risks in those aged 65 to 69
• Osteoporosis and fall are major risk factors
• Approximately 13.5% died within 6 months and 24% in 1 year


• Among survivors at 6 months, only 50% recover their pre-fracture ability to perform ADL
• Only 25% recover their ability to perform instrumental ADL
• Older adults with hip fracture are 5 times more likely to be institutionalized at 1 year


Geriatric hip fracture
• Significant morbidities, mortality and costs
• Atypical presentation of geriatric syndromes
• Associated with multiple co-morbidities (known or unrecognized)
• Multidisciplinary care including social support
• Secondary prevention: Osteoporosis and fall prevention

Prevalence of common medical comorbidities

<table>
<thead>
<tr>
<th>Medical diseases</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>16.27%</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>14.54%</td>
</tr>
<tr>
<td>Previous cardiovascular accidents</td>
<td>11.5%</td>
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<tr>
<td>Ischemic heart disease</td>
<td>8.17%</td>
</tr>
<tr>
<td>Chronic obstructive airway disease</td>
<td>7.97%</td>
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<tr>
<td>Hearing or visual impairment</td>
<td>5.38%</td>
</tr>
</tbody>
</table>

63.9% had one to two co-morbidities, 5.3% had three
Ho ST, Chau YS and Wong WC. Hong Kong Journal of Orthopedic Surgery, 1997; 1:7-12
Dementia and hip fracture

- Hip fracture can be an atypical presentation of cognitive impairment
- Associated with peri-operative delirium
- Detection and management of complications are delayed
- Barrier but not CI to rehabilitation
- Poor physical and functional outcome

Medical Assessment

- A comprehensive history including event leading to fall and fracture
  - Circumstances and symptoms
  - Indoor or outdoor fall
  - Low trauma injury
- Systemic diseases (comorbidities)
- Review of medications
- Baseline functional and cognitive state
- Social history

Examination

- Postural hypotension
- Mental state examination
- Focus of signs of decompensated chronic diseases
- Nutrition

Hip fracture patient journey at KWH

- Emergency Department
  - Orthopedic ward
  - Ortho-geriatric: Pre-op assessment and Post-op management
  - Geriatrician led Multidisciplinary round (weekly): rehabilitation, discharge planning, communication, teaching
  - Convalescent hospitals ➔ Nursing homes
  - Integrated Care Model (Case manager, home visit, Home Care Team)
  - Geriatric Day Hospital ➔ Community Geriatric Assessment Team ➔ Home ➔ Community rehabilitation: DCU, IHCS, EHCCS, CCS voucher
**Hip fracture syndrome**

- Surgical site infection control
- Venous thrombo-embolism prophylaxis
- Delirium prevention
- Pressure ulcer prevention
- Nutritional support
- Urinary tract management
- Rehabilitation

**Recommendations for proactive geriatric assessment**

1. Adequate oxygen delivery to the central nervous system (CNS)
2. Fluid/electrolyte balance
3. Treatment of severe pain
4. Elimination of unnecessary medications
5. Regulation of bowel/bladder function
6. Adequate nutritional intake
7. Early mobilization and rehabilitation
8. Prevention, early detection, and treatment of major postoperative complications
9. Appropriate environmental stimuli
10. Treatment of agitated delirium


**Rehabilitation consideration**

- Premorbid functional and mobility level
- Patient’s capacity
- Cognition
- Motivation
- Availability of social support
- (Availability and accessibility of service)
Rehabilitation

<table>
<thead>
<tr>
<th>Rehabilitation</th>
<th>Outcome</th>
<th>Level of Evidence</th>
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<tbody>
<tr>
<td>A coordinated multidisciplinary rehabilitation program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early multidisciplinary daily geriatric care</td>
<td>Reduces mortality and medical complications</td>
<td>B</td>
</tr>
<tr>
<td>Accelerated discharge and home based rehabilitation</td>
<td>Improves function, confidence, QoL and caregiver burden</td>
<td>B</td>
</tr>
<tr>
<td>MD program: IP occupational therapy, rehab and discharge planning (home visit)</td>
<td>Improves physical, QoL, self care, reduces readmission rates</td>
<td>B</td>
</tr>
<tr>
<td>Extended outpatient rehabilitation (resistant training) vs. home exercise</td>
<td>Improves physical function and QoL</td>
<td>B</td>
</tr>
</tbody>
</table>

Mak CS et al. Evidence-based guidelines for the management of hip fractures in older people: an update MJA 2010; 192:37-41

Challenges of rehabilitation in older people

- A combination of disease associated impairment superimposed on normal ageing changes
- Cardiac, pulmonary and weight bearing precaution on normal age-related changes
- Progress in small increments and goals prolonged to achieve
- Fragmented social support systems, ageing caregivers, limited finance or access to transportation

Management of osteoporosis

- Assessment and work up
- Non-pharmacological: smoking, drinking, sunlight, exercise, nutrition
- Pharmacological: bisphosphonates (oral, IV), denusomab, parathyroid hormone etc.
- Monitoring
- Fall prevention

Guidelines for prevention of falls in older persons

| Exercise                        | Community dwelling patients  
|                                | Tai Chi, balance, gait, strength / resistance (endurance, flexibility)  
|                                | Group or home based  
| Medical assessment             | Postural hypotension  
|                                | Dual chamber PM in cardio-inhibitory carotid sinus hypersensitivity  
| Medication review              | All patients (vs. polypharmacy)  
|                                | Reducing psychotropic and polypharmacy, ? SSRI  
| Environmental                  | Home modifications  
|                                | Promote safe performances (ADL)  
| Foot and footwear              | Bunion, toe deformity, ulcers and deformed nails  
|                                | Low heel shoes with high contact surface area (anti-slip)  
| Vitamin D                      | Vitamin D (800 IU/day) supplementation in high risk patients or deficiency  
| Vision                         | Early cataract surgery for first eye (with indication)  
| Education                      | Patient and care-givers (behavior, skill and devices etc)  

Summary of the updated AGS/BGS clinical practice guideline for prevention of falls in older persons: J Am Geriatr Soc 2010

Transition care: HA to community

• Limited time and capacity of HA rehabilitation services e.g. Geriatric Day Hospitals or Integrated Care Model  
• Frail older people may need a more prolonged course of rehabilitation-trajectory recovery  
• Availability and accessibility of services

Community rehabilitation

• Day Care Centre / Unit  
• Home care service  
  • Enhanced Home Care Community Service  
  • Integrated Home Care Service  
• Community Care Service Voucher for the Elderly -Pilot Scheme (since 2013)  
• Home Help Service (social support)
Community Care Service Voucher for the Elderly

- Commenced in September 2013
- Eight districts
- Target participants of First phase:
  - Standardized Care Need Assessment Mechanism for Elderly Service (SCNAMES): moderately impaired
  - Waiting for subsidized community care service and/or
  - Residential care service in the long term care services delivery system and
  - Living in community

Mixed mode: day care (part-time) and home care (services to used in different days)
Single mode: day care (part-time)
Scope of services is similar to Day Care Centre and Enhanced Home and Community Care Services.
Additional payable services including transport fee of cross district day care services

Transport services
- Included in Day Care Services for clients living in same district
- An additional fee for transport service for cross district client (or may not be available)
- Specialized services for demented elders

CCS voucher services

- Centre based or home based
- Weight bearing exercise, strengthening and endurance exercise
- Fall prevention: MDT approach, balance exercise
- Dementia friendly environment

Community rehabilitation

Specialized services for demented elders
Conclusion

- Ageing population associated with “hip fracture” epidemic
- Recovery in older people with hip fractures can be slow
- Need to continue rehabilitation in community e.g. DCE/U or home care services
- Improvement in availability, accessibility, affordability (e.g. CCS voucher scheme)

Thank you