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Review Article

**COMPREHENSIVE GERIATRIC CARE FOR PATIENTS WITH
HIP FRACTURES: A REVIEW STUDY**¹Dr. Mahnoor Aslam,²Dr Shahzaib Haider,³Dr Bushra Sulaiman¹MBBS;Sargodha Medical College,Sargodha., ²MBBS;Nawaz Sharif Medical College,Gujrat.,³MBBS;Khawaja Muhammad Safdar Medical College,Sialkot.**Article Received:** August 2019**Accepted:** September 2019**Published:** October 2019**Abstract:**

Osteoporotic hip fractures lead to significant mortality and morbidity particularly in the vulnerable elderly population. Ortho-geriatric care, defined as collaborative care for older patients with orthopedic disorders involving orthopedic services and medical programs catering for older people, has been shown to improve outcomes. Osteoporosis and falls remain the most significant risk factors associated with hip fractures. Achieving an accurate diagnosis as soon as possible is very important when a hip fracture is being considered. The restoration of mobility and functional independence are perhaps the important goals of hip fracture surgery.

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INTRODUCTION:

Patients admitted with a hip fracture are usually elderly and they have clinical, cognitive and social problems, hence they benefit of involving a specialist geriatric team during their stay in the orthopedics wards. There have been several models of collaboration between orthopedic surgeons and geriatricians in the care of elderly hip fracture patients. The earliest were based on the transfer of more complex cases to “sub-acute” geriatric units after discharge from the orthopedic wards. This made it possible to prolong medical and rehabilitation treatment for patients while reducing the length of stay in orthopedic wards [1,2].

Consultant geriatric teams then began to treat patients with hip fractures in the orthopedic wards, in collaboration with the orthopedic surgeons³⁻¹¹. The main advantages of this collaboration are higher rates of preparation for surgery, reduced delay to surgery, fewer complications, lower mortality rate, better functional outcome, and access to rehabilitation. In recent years, some hospitals have gone further by setting up units where orthopedic surgeons and geriatricians share clinical responsibility for patients from the time of admission. Some units address only the acute phase of the process¹²⁻¹⁵, while others offer continuing hospital care for both the acute and sub-acute phases.

The advantages offered by acute ortho-geriatric units (OGUs) are not yet well known, but may include a reduction in hospital stay, earlier surgery and mobilization, fewer complications and increased referrals to rehabilitation units. Existing studies used a control group composed of historical controls, and did not evaluate patient function and mobility at discharge to allow comparisons between groups.

This clear benefit in the geriatrician’s involvement in the overall management of hip fractures has opened new opportunities for the subspecialty. Geriatrician involvement in the management of other fragility fractures particularly the vertebral, wrist, pelvis, sacrum and ankle has been endorsed¹⁶. Admittedly, the benefit is still not as established as the evidence for hip fractures in the scientific literature, but expert opinion and clinical experience have alluded to its utility. The practice of the comprehensive geriatric assessment is also thought to be beneficial and is increasing the geriatrician’s role in the management of older people involved in major trauma and preoperative care of patients undergoing elective joint replacement and spine surgery.

Orthogeriatric care:

The concept of orthogeriatric care, structured orthopedic-geriatric cooperation, is not new. In United Kingdom (UK), orthopedic surgeons and geriatricians have collaborated for many years on the treatment of older people with low-energy fractures. According to best practice reimbursement for patients with hip fractures in England, there is currently a requirement of an orthogeriatric approach including the assessment of osteoporosis to obtain the highest refund. This is also about to be established in several other countries, probably because such a “reward” delivers better outcomes.

Different models for organizing orthogeriatric care:

- I. The patient is admitted to an integrated unit with shared care. Specialists in orthopedics and geriatrics as well as all members of the interdisciplinary team are employed in the same unit and have shared responsibility.
- II. The patient is admitted to an orthopedic ward and specialists in orthopedic surgery have overall responsibility throughout the hospital stay.
 - a. Specialists in geriatrics and orthopedics have defined work areas with their own professional responsibility throughout the admission.
 - b. Specialist in orthopedics has overall professional responsibility while specialists in geriatrics are responsible for routine assessment of all patients.
- III. The patient is admitted to a geriatric ward and specialists in geriatric medicine have overall operational and professional responsibility throughout the hospital stay.
 - a. Specialists in geriatrics and orthopedics have defined work areas with their own professional responsibility throughout the admission.
 - b. Specialist in geriatrics has overall professional responsibility while specialists in orthopedics routinely are seeing all patients post-operatively.
- IV. The patient is first admitted to an orthopedic ward where specialists in orthopedics have both operational and overall professional responsibility. Postoperatively, the patient is transferred to a geriatric ward, where specialists in geriatrics take over both operational and overall professional responsibility. Specialists in orthopedics follow up the surgical treatment and complications to it. In all models, there should be a specified setup for collaboration and involvement of anesthesia service for pre-operative care, in terms of analgesia, anesthesia, and surveillance of patient physiology. Required professional competence [1]. An orthogeriatric unit has permanently associated geriatricians and orthopedic surgeons. Anesthesiologists should be readily available also beyond the perioperative

anesthesia. [2]

In addition, an interdisciplinary team is required with the following health professions and specialist skills:

- a. Nurses and nurse assistants, physiotherapists, and occupational therapists. It is also desirable to have affiliated nutritionists and clinical pharmacists.
- b. These professions should also have special competence in geriatrics and orthopedics

Osteoporosis:

Osteoporosis is a condition where the bones weaken and lose their structural integrity. It is the most common bone disease in humans, mostly affecting older females but also is represented in males. It is characterized by low bone mass, deterioration of bone tissue and disruption of bone architecture, compromised bone strength and an increase in the risk of fracture. A strong force is normally needed to cause a fracture in healthy individual. Our bodies should be able to sustain a fall from a standing height without a fracture. In the setting of osteoporosis, a less than significant event, like a fall from a standing height or less, can cause a fragility fracture. There are three fractures sites typical of a fragility fracture: Colles fracture of the wrist, vertebral crush fractures and hip fractures.

Hip fractures:

Femoral neck and intertrochanteric fractures account for 90% of hip fractures¹³. They occur at approximately the same frequency in patients between the ages of 65 and 99 years. The remaining 5–10% is accounted for by subtrochanteric fractures.

Risk Factors:

The major risk factors for hip fractures by far remain osteoporosis and falls. In an elderly individual, the combination of both, compounded by other environmental factors, leads to an injury with potential life-changing outcomes.

General Outcomes:

The incidence of death and major disability is substantially increased after a hip fracture. Previously considered a palliative procedure because of its high risk of mortality and morbidity, outcomes have improved in recent years mostly due to care improvement strategies that are spearheaded by the ortho-geriatric model of care. Despite the more recent reduction, hip fracture mortality remains a significant issue. Death from hip fractures can be immediate, stemming from the actual fall or even in association with the in-hospital stay when they develop acute complications.

Diagnosing Hip Fractures:

Achieving an accurate diagnosis as soon as possible is very important when a hip fracture is being considered. Without a diagnosis, it is impossible to come up with a proper management plan. Missing the diagnosis entirely can also expose an individual to significant consequence. Most hip fractures are readily diagnosed on the basis of a history, physical examination and standard radiographs. However, in the elderly, there are instances that more than the basic imaging is needed to confirm the diagnosis.

Ortho-geriatric Models of Care:

A fractured hip is typically considered a surgical problem. However, treating a patient with a hip fracture, collaborative work with a physician looking into the context of their medical background and susceptibilities has shown improved outcomes. There are four recognized models of ortho-geriatric care [6]. The reactive consultation model this is the conventional approach where older patients with a hip fracture are cared for by the orthopaedic surgeons and referred to a geriatrician on an as-needed basis.

This is not the recommended model of care anymore because this has led to higher inpatient mortality and increased length of stay. The ortho-geriatric liaison model in this model of care, patients with hip fractures are still admitted under the orthopedic surgeon. However there is regular geriatrician review in the orthopedic ward, and there is a multidisciplinary team meeting where care plans are discussed. This model compared to usual care has shown to reduce inpatient mortality and length of stay.

Continuity of care and ensuring regular review are still not perfect considering the liaison nature of the relationship of the two treating teams. The perioperative geriatric rehabilitation unit model this model involves shared care acutely with the orthopedic and anesthetic team that manages the patient with a hip fracture preoperatively. This is then followed by an early postoperative discharge to a geriatric rehabilitation unit for continuing care. This has led to reduced length of stay, but continuity of care was a major concern because of needing to transfer to another ward. There is also concern that the lack of geriatrician involvement in the acute setting may compromise care, and this is where the patient is considered most vulnerable.

The joint model of care this is where the care of a patient with a hip fracture is jointly shared between a geriatrician and an orthopedic surgeon in a dedicated

ortho-geriatric ward. This model ensures that from the time of admission, there is always medical support from a medical team well versed in the care of the elderly. This model has been shown to reduce inpatient mortality and reduced length of stay. This has also led to a reduction in time to surgery and fewer postoperative complication rates. This model of care is supported and is considered standard of care.

Perioperative Care:

In order to surgically address a hip fracture, it is necessary for a patient to receive some form of anesthesia for the procedure. Part of the assessment of operative risk is to determine the most appropriate form of anesthesia. This will include a careful consideration of the patient's comorbidities, patient's preference and local expertise. The choice of anesthesia is between a general anesthesia and a regional anesthesia.

Timing of surgery crucial; it is recommended that patients with hip fractures for early surgery if they are medically stable within the window of 48 h. Surgical site infection is an avoidable complication, and minimizing its risk is a marker of good care. Gram-positive organisms like *Staphylococcus aureus* are common organisms found on skin; it asymptotically colonizes 30% of the human population. It is also, however, the most common isolated organism in hip fracture patients with surgical site infections. It is recommended that prophylactic antibiotic be used to prevent wound infections after an orthopedic procedure.

Surgically addressing the hip fracture is the most effective way to address pain, and this is one of the main incentives to expedite surgery. Pain can be severe, however, while waiting for the operative procedure. By same token, pain after the surgery can be limiting for functional recovery. In patients with hip fractures, it is crucial therefore to ensure that patients have adequate analgesia.

Thromboembolic prophylaxis is a routine aspect of care for patients with hip fractures significantly reducing the incidence of venous thromboembolism. It is recommended that patients undergoing hip fracture surgery receive intervention to prevent a VTE rather for a minimum of 10–14 days.

Comprehensive geriatric assessment in the context of the ortho-geriatric model of care has been shown to reduce the risk of developing delirium in this at-risk population.

Surgical Intervention:

The type of surgery depends on generally two main things: the type of fracture and the inherent characteristic of the patient. Firstly, the type of the fracture is carefully considered. This will involve looking at the location of the fracture, the bone quality surrounding it and the level of displacement and comminution. Inherent patient characteristics that are considered include the patient's age, baseline mobility, pre-morbid function and ability to take part in postoperative rehabilitation. The two main surgical options for the treatment of a hip fracture are replacement arthroplasty and internal fixation. Replacement arthroplasty involves removing all of the damaged bone and replacing it with an orthopedic prosthesis.

Postoperative Care:

The restoration of mobility is perhaps one of the important goals of hip fracture surgery. Any delay in mobilizing after a hip fracture has been associated with poorer outcomes including development of delirium, postoperative pneumonia and increased length of stay. This is consistent with previous efforts to decrease delay in timing of surgery and minimize any restriction to weight-bearing status. Early mobilization with a physiotherapist has been shown to be safe and effective in promoting recovery and unrestricted weight bearing after surgery did not result in increased mechanical complications.

Continuing mobilization will depend on adequate pain relief, and this will enhance participation in any effort to promote recovery. Pain levels should be routinely reviewed, using pain scores wherever available to have an objective guide on whether it is being addressed appropriately. The reward for the overall investment in hip fracture surgery is bringing back patients to their former functional state living in their usual residence. Early supported discharge from hospital should be considered when patients on continuing review have been deemed medically stable. At the least, the patient should be able to transfer and mobilize for short distances. There should be a plan to continue to support in the community in keeping with the goals of the multidisciplinary team until the patient has achieved their full rehabilitation potential as discussed with the patient, carer and family.

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