



Australian Society for Geriatric Medicine

Position Statement No.5

Orthogeriatric Care

Revised 2005

Orthogeriatric care is medical care for older patients with orthopaedic disorders provided collaboratively by orthopaedic services and aged care services.

1. Orthogeriatric care is applicable to older patients with hip and other bone fragility fractures - pelvis, vertebra, ankle, humerus, and forearm. Some older patients with soft tissue injuries, and joint or back pain will also benefit.
2. The most effective treatment is provided through the cooperative efforts of a range of health professionals. One person should be identified as coordinator and have responsibility for monitoring the effectiveness of the treatment program. Key disciplines are geriatric medicine/rehabilitation medicine, nursing, physio-therapy, occupational therapy, social work, and orthopaedic surgery. Other disciplines should be available on a consultative basis.
3. Orthogeriatric care should commence on, or soon after, admission to hospital. Orthopaedic surgeons with suitable training and experience should supervise the surgical treatment of orthogeriatric patients.
4. Patients should stay for a minimum time in the emergency and X-ray departments. Definitive surgery, if required, should be arranged as soon as possible (within 24 hours). Few patients will have a medical contraindication to surgery.
5. Each patient should be offered treatment to enable him/her to rapidly return to physical independence. The aim should be discharge to home as soon as safe mobility is regained.
6. Periods of immobilisation, immobility and limited weight-bearing should be kept to a minimum. Patients with hip fracture should commence mobilisation within 48 hours of surgical treatment, bearing weight as desired. An exception is the patient with an unstable trochanteric fracture who requires a period of limited weight bearing.
7. Premorbid disability, cognitive function and social support should be carefully reviewed and documented as these affect management (including discharge planning) and are major predictors of long term outcome. Geriatricians have a key role in the assessment and management of medical comorbidities.
8. Patients should be assessed with reference to likelihood of recovery. According to recovery prognosis, a range of options for orthogeriatric care should be available and an individualised management plan formulated.
9. Patient, family or carer should be contacted to seek information and to ensure acceptability of the management plan. The patient (and family with the patient's consent) should be closely involved with the treatment process.
10. Functionally based nursing, as well as a therapy program with primary emphasis on independent mobility and self care, should be provided as a routine part of orthogeriatric care.
11. For some patients the injury is the result of severe disabling conditions without reversible elements. If recovery is not possible the priority is provision of appropriate surgical and medical treatment, accommodation and support. Included in this group are almost all patients previously resident in a nursing home.
12. Patients should be discharged from hospital as soon as function is adequate to permit support in an appropriate non-hospital setting.
13. Mobility aids and home equipment (particularly bathroom aids) will be required by many patients. Staff from the orthogeriatric service should prescribe these items and arrange for their supply. Community support services should be efficiently and appropriately arranged.
14. The patient's general practitioner should be contacted for consultation, to provide information and to expedite follow-up. There should be similar liaison with institutional care providers.
15. A period of ongoing rehabilitative treatment is required by some patients. This may be provided at home, at a treatment centre, as a hospital outpatient or in a day hospital. Domiciliary treatment should be available and is preferred by many patients. Treatment or follow-up should continue until disability stabilises.
16. Secondary prevention should be provided as a component of orthogeriatric care. Risk factors for falling should be minimised. Most people living in residential aged care facilities are calcium and Vitamin D deficient, and almost all frail older people with fractures have osteoporosis.

This Position Statement represents the views of the Australian Society for Geriatric Medicine. This Statement was approved by the Federal Council of the ASGM on 29 November 1996 and the revision was approved on 14 November 2004. The preparation of this paper was coordinated by Associate Professor Ian Cameron.

BACKGROUND PAPER

1. The Scope of Orthogeriatric Care

Orthogeriatric care was pioneered by Devas and colleagues in Hastings, UK in the late 1950s [1]. The term geriatric orthopaedics was used and was defined as "a combination of medicine and orthopaedics applied to the elderly" [1]. The originator of the term orthogeriatric care is harder to identify. It is however, synonymous with geriatric orthopaedics. The topic has been the subject of a comprehensive text [2]. For the purpose of this paper, orthogeriatric care is medical care for older patients with orthopaedic disorders that is provided collaboratively by orthopaedic services and programs catering for older people..

2. Development of Orthogeriatric Care

Devas and his colleagues developed a system of care that stressed the need for rapid definitive treatment of older people with trauma so that these patients could walk immediately. This group also stressed the need for team care, full and open communication with the patient and family and utilised the principles of geriatric assessment [1].

Recently the British Geriatrics Society has published a framework document on Orthogeriatric Services [3].

3. Key Research Studies

Hip fracture is the most important condition that is included in the ambit of orthogeriatric care and hence most of the research has been in this area.

The natural history of hip fracture is well understood. Without surgical treatment patients with hip fracture have a 70% one-year mortality and 80% of the survivors are severely disabled. With surgical treatment there is a 30% one year mortality and 40% of survivors are severely disabled [4].

Surgical treatment is applied differently according to the type of fracture. For an undisplaced subcapital fracture (about 10% of all patients) pins or a screw and plate are used. Treatment for displaced subcapital fractures (35% of all patients with hip fracture) is subject to some debate and geographic variation. In Australia (and the UK), older or more disabled patients with this fracture are offered hemiarthroplasty. Younger patients with displaced subcapital fractures (5% of all patients) are often provided with a total arthroplasty [5].

In trochanteric fractures, treatment is generally agreed. A screw and plate is used for both two part (20% of all patients) and multi-part (30% of all patients) trochanteric fractures. However, the multi-part fractures have a higher incidence of failed fixation and resultant malunion.

As surgical techniques improved, the opportunity for immediate postoperative weight-bearing was realised. This applied to both intra- and extracapsular fractures. The need for appropriate surgical technique has been stressed [6].

In the 1970s and 1980s the concepts of early mobilisation, home rehabilitation and support services after hip fracture were recognised as an alternative to transfer of patients to an orthogeriatric ward [7,8].

Since the mid 1980s a number of randomised trials of orthogeriatric care have been published. The Cochrane Collaboration Review of Coordinated Multidisciplinary Inpatient Rehabilitation after Hip Fracture has conducted a meta-analysis of these randomised trials [9]. In parallel with studies specifically dealing with orthogeriatric care, studies of geriatric assessment have been published. A review of the randomised trials in this area has concluded that comprehensive geriatric assessment with control over medical recommendations and extended follow-up were likely to be more effective than usual care[10]. Many of the principles of comprehensive geriatric assessment should be applied in orthogeriatric care.

4. An Australian Perspective

Australian authors were among the leaders in describing principles of orthogeriatric care. In 1980 Lefroy described a system of orthogeriatric care and emphasised the need for a combined effort between orthopaedic surgeons and members of the extended care service to effectively treat patients with hip fracture [11].

Gray, Dorevitch and others noted that there are 30 orthogeriatric services operating in Australia as part of a hospital geriatric service [12]. Only 11% of comprehensive hospital geriatric services in Australia report specific orthogeriatric services.

5. Details of Orthogeriatric Care

There are two evidence-based clinical practice guidelines that cover the scope of Orthogeriatric Care [13,14].

5.1 *Multidisciplinary team*

All authors stress the need for the skills available from a team of health professionals [29]. Key disciplines are also generally agreed as described in the introduction.

5.2 *The organisation of orthogeriatric care*

Orthogeriatric care can be provided as part of a general aged care service or as a specific program within an aged care service or within another department (for example an orthopaedic department).

5.3 *Admission and pre-operative care*

In almost all patients plain x-rays will confirm the diagnosis. Occasional patients will require bone or CT scanning to resolve uncertainty.

Current guidelines suggest surgery within 24 hours if the patient's medical condition permits [13]. If the patient was ambulant prior to hip fracture, most will require operation as long as there is no major anaesthetic contraindication. About 5% of patients may have no surgery for medical or surgical reasons. Orthogeriatric care should commence on, or soon after, admission to hospital. Attention to pressure area care, in particular, should begin in the emergency department.

A medical (including cognitive and nutritional), functional and social assessment should be performed. Most patients will have had significant past illnesses. Of relevance particularly is active ischaemic heart disease, chronic obstructive airways disease, congestive cardiac failure or recent symptomatic cerebrovascular disease. Many patients will have dementia. This is an adverse prognostic factor, frequently being complicated by delirium in the perioperative period [15]. Discussion with a third party may be required to distinguish the diagnoses of delirium and dementia. Geriatricians have a key role in the assessment and management of medical comorbidities.

The issue of the type of analgesia to use is the subject of discussion. Some investigators suggest that local or regional anaesthesia is appropriate and have demonstrated that it is effective. However, at present most patients receive parenteral narcotic analgesics.

Pressure areas are very common but can be prevented [16]. Predisposing factors are poor physical condition, impaired mental state, immobility, inactivity and incontinence. The heel on the fractured side is especially vulnerable. Pressure areas usually develop early in the hospital stay due to immobilisation for long periods on high-pressure surfaces. Pressure areas can be prevented by nursing patients on low pressure patient support systems (usually alternating pressure air mattresses) until mobility is restored.

Attention has been drawn to the effect that nutritional state has on prognosis in hip fracture. Nutritional assessment should be part of an orthogeriatric service. Protein and energy supplements may improve outcome for undernourished patients [17].

In some patients medical conditions require stabilisation. However the number for whom surgery should be delayed should be small. Stabilisation is better considered as the prevention of deterioration while awaiting surgery. Fluid balance, pressure area care, cognitive status, nutritional factors and continence require attention.

5.4 Peri-operative care

Issues concerning the choice of anaesthesia have been examined in detail. Two large randomised controlled

trials compared spinal or general anaesthesia for treatment of hip fracture and found no difference between the techniques with respect to mortality, ambulation or discharge destination [18,19]. There are some reports of hip fractures being fixed under local anaesthetic.

Less experienced surgeons who were still in training had a significantly higher rate of complications. Surgeons performing the surgery on patients with proximal femoral fracture should be proficient in the technique performed. Surgical complications have been shown to greatly increase the use of hospital resources after hip fracture [20].

As discussed above there is consensus regarding the treatment of trochanteric fractures. In contrast, there is no clear consensus for subcapital fractures. Displaced (Garden 3 and 4) fractures have a different prognosis to undisplaced (Garden 1 and 2) fractures. Displaced fractures can be either reduced and pinned or subjected to hemiarthroplasty (the majority outcome for Australian patients) or total joint arthroplasty (becoming more common for the younger patient) [5].

The geriatric medical literature suggests that urinary catheters should be avoided where possible, and, if not, removed post-operatively. Urinary retention should be avoided.

Anti-coagulants for prophylaxis of DVT and pulmonary embolism have mostly been studied in the context of total hip replacement. These data can be applied to hip fracture patients. Meta-analyses are consistent in finding that, compared to placebo, low dose heparin and low molecular weight heparin reduce the risk of DVT and pulmonary embolism [21]. It has also been shown that aspirin significantly reduces the incidence of thrombo-embolic complications [22]. All high risk hip fracture patients should receive low dose heparin or low molecular weight heparin at least until mobile.

A number of studies have shown the benefit of prophylactic intravenous antibiotics which should be given at the time of induction for surgery and continued for a total of 24 hours post-operatively [23]. The prevalence of deep infection after surgery for hip fracture should be low (<2%).

Local data suggests that about 50% of patients are transfused intra- or post-operatively. Transfusion is more common after trochanteric fractures or total arthroplasty. Indications for transfusion after proximal femoral fracture vary but can be summarised as a post-operative haemoglobin of less than 90 g/L or slightly higher if associated with a clinical problem (most commonly delirium). Iron supplementation is used almost routinely for several months after fracture but there are no controlled trials to support this.

5.5 Post-operative care

Analgesics in the post-operative period are essential. Simple analgesics (paracetamol) should be given regularly and supplemented, if required, by other agents. Care should be taken to provide adequate analgesia for patients with delirium or dementia as research has shown that these patients are undertreated. Those receiving opioids need particular attention to prevention of constipation.

Patients with hip fracture should commence mobilisation within 48 hours of surgical treatment, bearing weight as tolerated. An exception is the few patients with unstable trochanteric fractures who require a period of limited weight bearing. This recommendation is based on a large number of studies, for example [6, 24].

Patients should be assessed with reference to likelihood of recovery. According to recovery prognosis and the availability of social supports, a range of options for orthogeriatric care should be available and an individualised management plan should be formulated.

The nursing care offered should encourage the physical independence of the patient and provide emotional support. Key areas are feeding, continence and transfers (functionally based nursing). The signs of common complicating conditions are suspected early, monitored and managed appropriately - eg. delirium, pressure areas, urinary retention and constipation.

The major precaution to explain to patients and relatives is the need to avoid excessive adduction or flexion at the injured hip to reduce the risk of dislocation in patients with arthroplasty.

The presence of delirium is an adverse prognostic factor [15]. This is often related to an underlying dementing illness which has been exacerbated by the stress of the hip fracture. Relatives and carers can be warned this is likely. Some components underlying the delirium may be preventable and/or remediable [25].

Several studies have suggested that programs for the post-operative care of patients with hip fracture work best when one person is nominated as coordinator of the treatment program [13].

Patient, family or carer should be consulted to seek information and to ensure acceptability of the management plan. The patient (and family with the patient's consent) should be closely involved with the treatment process.

For some patients the injury is the result of severe disabling conditions without reversible elements. If recovery is not possible, the priority is provision of appropriate medical and surgical treatment, accommodation and support. Patients from a nursing home can be discharged back there when their medical condition is stable with mobility retraining to occur in the nursing home. The

nursing home should have the resources, expertise and back-up provided to do this.

Sub-types of orthogeriatric care have been recognised in the last five years. The NHS Health Technology Assessment Programme has commissioned a systematic review of the evidence in respect of Geriatric Rehabilitation Following Fractures in Older People [26]. The review is guarded in its conclusions about free standing Geriatric Orthopaedic Rehabilitation Units, because the additional cost of such units does not appear to be justified by improvements in patient outcome. In contrast, the review concludes that there is good evidence to support development of collaborative approaches in the acute setting such as the Geriatric Hip Fracture Program, as these do appear effective in improving outcome. It also suggests a benefit from the use of Early Supported Discharge schemes for selected less disabled patients, and perhaps of Care Pathways to expedite rehabilitation and discharge.

5.6 Rehabilitation

The priorities for the rehabilitation program are independent mobility, self-care and continence. Mobilisation is usually commenced with a forearm support frame. When mobility is possible using this aid and without the aid of another person there is progression to a pick-up frame or wheeled frame. The more active patient may use crutches. Bed exercises have some place but are no substitute for weight-bearing. No particular mobility training program can be recommended on the basis of randomised trial evidence [27].

Training to encourage physical independence (that is independence in activities of daily living) is essential. This will be part of functionally oriented nursing care. Assessment by the occupational therapist should be provided in the ward and a home visit will be required for most patients living in community settings. Adaptive equipment is usually supplied (a toilet surround, toilet raiser, and shower chair at a minimum).

Psychological support should be offered to all patients. This will be part of the usual nursing and team-based care. Depressive symptoms are common after hip fracture and have been shown to be an adverse prognostic indicator [15].

Discharge directly home from the acute care ward should be the aim if possible. There is likely to be a lengthening of total length of hospital stay if there is transfer to another ward [28]. However, in most hospitals a significant number of patients will need to be transferred to another ward. A decision as to whether this is required should be made within a few days of operation and, if transfer is needed, it should be arranged as soon as possible.

Other factors should be noted. Oedema of the lower limb with the hip fracture is very common. In the vast majority of cases it is not indicative of a clinically significant deep venous thrombosis and should be treated by elevation or elastic or pneumatic support. The diagnosis of a deep venous thrombosis should be investigated if oedema or pain related to the oedema worsens during the recovery period.

There is leg shortening in up to one third of patients with trochanteric fractures. If this is greater than 2 cms, a heel raise may assist. Persistent severe pain from the hip in the postoperative or rehabilitation phase raises the suspicion of a failure of fixation at the fracture site or wound infection.

5.7 Discharge

Hospital discharge can be arranged when the patient is ambulant with a walking aid and able to toilet without help. Timing of discharge is also dependent on the wishes of the patient, the family and, in some cases, the availability of community health services and residential care. Early discharge schemes have been reported and evaluated [29]. They appear to be effective.

Mobility aids and home equipment (particularly bathroom aids) will be required by many patients. Staff from the orthogeriatric service should prescribe these items and arrange for their supply. Community support services should be efficiently and appropriately arranged. The patient's general practitioner should be contacted for consultation, to provide information and to expedite follow-up. There should be similar liaison with institutional care providers.

Careful discharge planning can reduce the length of hospital stay and may contribute to improved long term outcome. If the patient's level of function is not improving over a period of one to two weeks, goals should be reviewed as institutional care or additional support services may be required.

5.8 Follow-up

Some rehabilitative treatment is required after hospital discharge. This is usually of short duration. It should be functionally oriented and there is a trend to provide it in the patient's home.

Follow-up should be arranged until the patient has regained the level of independence present prior to the fracture, or until it has stabilised at a lower level. This should be assessed in the patient's home and could be done by a health professional from any one of a range of disciplines (including the patient's general practitioner). Orthopaedic follow-up is required only if there is a specific indication (eg. concern re the fixation or chance of avascular necrosis) or continuing pain.

5.9 Secondary Prevention

All people presenting with a fragility fracture need assessment of their risk of future osteoporotic fracture. In frail, confused, or housebound older people this will generally require consideration of falls risk, with appropriate falls prevention advice given, including the use of hip protectors. The geriatric societies' guidelines describe falls risk assessment and intervention [30]. These guidelines, and those of the Scottish Intercollegiate Guidelines Network [13] support the consideration of calcium and vitamin D supplementation in frail, housebound or institutionalised people, and of bisphosphonate or other anti-resorptive osteoporosis therapies in appropriate individuals.

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