Hip fracture in the immobile patient

D. Hay, M. J. Parker

From the Peterborough District Hospital, England

Immobility has been used as an indication for conservative treatment of patients with fractures of the hip, although there is little in the literature to support this view. We conducted a prospective review of 3515 patients with hip fractures of whom 152 (4.3%) were immobile prior to the fracture. Nine patients were treated conservatively, the rest by operation. The mean age was 83 years (42 to 99); the mean length of hospital stay was 17.8 days; 19 patients (12.5%) died whilst still in hospital and 120 (79.0%) went back to their original residence. There were 38 post-operative complications.

At one year after injury, 73 patients were still alive. Of the survivors, 54 (74.0%) had none or minimal pain in the hip and 58 (79.5%) had the same residential status as before the fracture. Immobility in patients with hip fracture is uncommon and is not a valid reason for withholding surgical treatment.

J Bone Joint Surg [Br] 2003;85-B:1037-9.
Received 27 March 2003; Accepted 2 May 2003

Fracture of the hip is most commonly seen in elderly patients who are at significant risk of both morbidity and mortality from associated disabling conditions. Some clinicians use pre-existing immobility as an indication for conservative treatment; others argue that even for the immobile patient, surgery is of benefit to relieve pain, assist nursing care and to enable the patient to preserve the limited mobility that he or she may have. There is little documented evidence to support either argument. It has been the policy of our unit to treat the majority of hip fractures operatively, even in patients who were immobile. We report our results of this method of treatment.

D. Hay, FRCS, Specialist Registrar in Trauma and Orthopaedics
M. J. Parker, MD, FRCS, Orthopaedic Research Fellow
Orthopaedic Department, Peterborough District Hospital, Thorpe Road, Peterborough PE3 6DA, UK.

Correspondence should be sent to Mr M. J. Parker.

©2003 British Editorial Society of Bone and Joint Surgery
doi:10.1302/0301-620X.85B7.14372 \$2.00

Patients and Methods

The data were collected from the hip fracture database at the Peterborough District Hospital, England between March 1989 and September 2001. On admission a questionnaire was completed for each patient, documenting the degree of mobility, mental state, other medical conditions present, method of treatment used and the complications which followed. An immobile patient was defined as one who was unable to walk without the assistance of either another person or a wheelchair. Those able to walk with the use of some form of walking aid were not considered to be immobile. This definition also included those patients who were bed-to-chair bound and unable to walk even with assistance. Bed-bound patients were defined as those who were nursed all day in bed and could not sit out in a chair.

All surviving patients were reviewed regularly in a hip fracture clinic and later by telephone for a year after injury. At each consultation the patient's residential status and mobility were assessed. Pain was graded on a scale of one (no pain) to six (constant pain requiring frequent strong analgesia).¹ No patient was lost to follow-up.

Results

During the study period, a total of 3515 patients were admitted with fractures of the hip. Of these, 152 were said to be immobile before the fracture, using the criteria defined above. The mean age was 83 years (42 to 99); 29 were male; 23 lived in their own home, 51 in a residential home, 53 in a nursing home and 25 were hospital inpatients. Of the total (152), 86 could walk a short distance with the assistance of one or two people. Most of these also used a walking aid, which was usually a Zimmer walking frame; 59 were unable to walk any distance and required a wheelchair and seven were totally bed-bound.

The method of treatment varied with the type of fracture; 14 undisplaced intracapsular fractures were fixed with three, parallel, cancellous screws. There were 49 displaced intracapsular fractures, of which 32 were treated with an uncemented Austin Moore hemiarthroplasty, one by total hip replacement, eight were reduced and fixed with three screws and eight were treated conservatively. Trochanteric fractures were present in 83 patients, of whom 80 were

Table I. Residential status of patients before the fracture and at one year (%)

Before fracture		At one year from fracture				
		Own home	Residential	Nursing home	Hospital	Died
Own home	23	5 (22)	2 (9)	1 (4)	1 (4)	14 (61)
Residential	51	2 (4)	21 (41)	1 (2)	3 (6)	24 (47)
Nursing home	53	1 (2)	0	30 (57)	5 (9)	17 (32)
Hospital	25	0	0	0	1 (4)	24 (96)

Table II. Mobility of patients before the fracture and at one year (%)

Before fracture		At one year from fracture				
		Unaided	Assistance	Wheelchair	Bed-bound	Died
Assistance	86	5 (6)	14 (16)	18 (21)	6 (7)	43 (50)
Wheelchair	59	1 (2)	2 (3)	22 (37)	4 (7)	30 (51)
Bed-bound	7	0	0	0	1 (14)	6 (86)

Fig. 1

Percentage of surviving patients against time after hip fracture.

treated with a sliding hip screw (SHS), one had an intramedullary nail, one with three cancellous screws and one was managed conservatively. Six fractures were subtrochanteric, three of which were treated with an SHS and three with an intramedullary nail. For those treated operatively general anaesthesia was used in 91 cases, spinal in 42 and local nerve blocks in 10.

The management was conservative for nine patients, none of whom was included in the bedridden group described above. One had a trochanteric fracture and was considered too unwell for surgery; this patient died three days after injury. The other eight fractures were all intracapsular and displaced; two died within three days. The remaining six conservatively-treated patients had a mean hospital stay of 6.4 days; three died before one year and three were still alive at one year with pain scores of 1, 2 and 4.

Complications following surgery included one fracture below a hemiarthroplasty, which needed to be plated, one dislocation of a hemiarthroplasty and one nonunion of a displaced intracapsular fracture, treated by internal fixation. The trochanteric fracture which was fixed with screws required further fixation with an SHS; one of the SHS's cut out, but did not require further surgery and the patient with a

nonunion had a hemiarthroplasty. Deep wound infection occurred in one SHS and was treated by removal of the plate and debridement; two superficial wound infections occurred after hemiarthroplasty. Other post-operative complications included pneumonia (ten patients); pressure sores (ten); confusion (eight); congestive cardiac failure (five); deep-vein thrombosis (one); pulmonary embolism (one) and cerebrovascular accident (one).

The mean length of stay on the orthopaedic ward was 12.7 days and the total hospital stay, which included any time spent on other wards before discharge was 17.8 days. Discharge from hospital to their original residence was achieved by 120 (79.0%) but 19 patients (12.5%) died in hospital. A further seven (4.6%) who fractured their hip while already in hospital, were discharged home after the orthopaedic treatment; seven others were unable to return to their homes and required a change of residence to a residential or nursing home; two patients who were temporary residents, receiving respite care in a residential home, were able to go back to their own home.

At one year from injury, 79 patients had died (Fig. 1) leaving 73 to be assessed. Restoration of residential status for these survivors is shown in Table I. Only one patient of the seven bed-bound before the fracture was still alive at one year. In regard to pain, 45 stated they had no pain in the hip, nine had occasional slight pain, nine had mild pain requiring occasional analgesia and two had more frequent pain requiring regular analgesia; eight patients could not be assessed for pain due to mental impairment. Table II shows the mobility status of the patients; six had improved their mobility to the point at which they were able to walk without assistance.

Discussion

Patients are sometimes denied surgery for hip fractures because they were immobile prior to the fall. Operating on this group is thought to be very high risk and one could argue that there is little to be gained by subjecting them to an operative procedure. But successful operative treatment

would reduce the pain from the fracture and facilitate nursing care. Even for the patient who is immobile, weight is generally taken on the legs during transfers. A painless, controllable lower limb is important not only for walking but, in the less mobile, as an aid to transfer and to stabilise and balance while sitting in a chair. The inability to use a leg actively because of great pain, means that transferring the patient from bed to chair or commode may require two staff or a hoist and a degree of fortitude on behalf of the patient. This has great implications for the subsequent care of these patients.

Clinical decisions for this group of patients are made with little support from the literature. An extensive literature review has failed to reveal a paper specifically looking at the results after hip fracture in the previously immobile patient. Heim, Adunski and Chechick² reported that 18% of a series of 2776 hip fracture patients were treated conservatively, but the implications and outcome for those treated conservatively was not mentioned. Harper³ attempted a randomised trial of patients aged 80 years and over, with a displaced intracapsular fracture and severe dementia, comparing conservative with operative treatment. The trial was abandoned with only 21 patients recruited, because of grave concern with the results of conservative treatment. Within our series, nine patients were treated conservatively. No comparison could be made between non-operative and operative management in such a small group of patients. The reason for nonoperative management was severe medical comorbidity, not immobility.

Although all patients in our series needed assistance from another person to move, they were found to be a heterogeneous group in regard to independence. Only seven of all hip fracture patients were completely bedridden and there is therefore, the potential to return most patients to some degree of mobility and self-care. As expected, the mortality at one year was highest in those who were bedridden, but even for those patients, operative management assisted the control of pain. The mean interval between fracture and death for these six patients was 144 days. The mean length of inpatient stay, for the immobile group (18 days) was

slightly less than the 22 days for the average hip fracture patient in our unit.⁴ This is probably due to the decreased physical demands of these patients and because their domestic support is already in place.

The aim of management of hip fractures is to return patients to their level of independence before the fracture. The decline of a patient's independence and the transition from living in his or her own home to a nursing facility has huge cost implications for the family and the state. This study shows that 44% of the previously immobile, who were living in their own home before the fracture, will have lost their independence at one year. In the residential home group only 15% could not return to the same level of independence. Figure 1 shows the survivorship curve of the patients. At one year, 48% of the patients had died. Up to 100 days after fracture, there is a higher mortality rate of 1% per 2.6 days. This compares with 1% per 13.6 days after 100 days.

In conclusion, fractures of the hip occur rarely among the immobile; only 152 patients (4.3%) in the 12 years analysed were classed as immobile, and of these only seven (0.2%) were truly bedridden. The length of in-patient stay was slightly shorter than the average hip fracture patient. Surgical intervention was found to be effective in retaining the patient's relative independence. Complication rates were acceptable and were not felt to be a contraindication to surgery. We conclude that immobility is not a reason for withholding operative treatment.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References

1. Charnley J. The long-term results of low-friction arthroplasty of the hip performed as a primary intervention. *J Bone Joint Surg [Br]* 1972;54-B:61-76.
2. Heim M, Adunski A, Chechick A. Non-operative treatment on intracapsular fracture of the proximal femur. *Clin Orthop* 2002;399:35-41.
3. Harper WM. Treatment of intracapsular proximal femoral fractures. Thesis. Leicester University, Leicester 1994.
4. Parker MJ, Lewis SJ, Mountain J, Christie J, Currie CT. Hip fracture rehabilitation: a comparison of two centres. *Injury* 2002; 33:7-11.