# Clinical Topics

# Regional survey of femoral neck fractures

S C GALLANNAUGH, ANTHONY MARTIN, PETER H MILLARD

*British Medical Journal*, 1976, **2**, 1496-1497


## Summary

**In the South-west Thames Region 2619 patients (2105 women and 514 men) were discharged with a diagnosis of femoral neck fracture in 1974. The equivalent of a 250-bedded hospital was occupied throughout the year. The incidence, average length of stay, and mortality rate rose with increasing age and there were differences in these indices in the five health areas.**

**These results confirm the enormous burden placed on the hospital service by patients with fracture of the femoral neck but suggest that differences in practice in the five areas may contribute to the size of the problem.**


## Introduction

Femoral neck fractures are common and an important cause of morbidity and mortality.[1-4] No detailed regional study of the number of these fractures and the use of hospital beds by patients with them has been published recently. Our purpose was to investigate the incidence of fractures of the femoral neck and to evaluate the hospital resources used in managing this injury.

**St George's Hospital, London SW17**
S C GALLANNAUGH, MS, FRCS, consultant orthopaedic surgeon
**Department of Geriatric Medicine, Crawley Hospital, Sussex**
ANTHONY MARTIN, MD, consultant physician
**Department of Geriatric Medicine, St George's Hospital, London SW17**
PETER H MILLARD, MB, FRCP, consultant physician

## Method

The Hospital Activity Analysis (HAA) returns for the South-west Thames Region in 1974 were studied. The age, sex, length of stay, and outcome of all patients with a discharge diagnosis of fracture of the femoral neck were obtained.

The incidence was calculated using the population profile of the region. Patients aged 59 years and under were studied as a single group, and, since femoral neck fractures are uncommon under the age of 45,[5 6] we assumed that all were aged 45-59 years. The remaining patients were analysed in five-year age groups.

## Results

A diagnosis of fracture of the femoral neck was recorded in 2619 patients discharged from hospitals in the South-west Thames Region in 1974. Four times as many women as men were treated for this condition (table I). Because the population aged 45 years and over in the region contained just over 1·3 women to every man, the overall sex difference in the number of cases of femoral neck fracture was 3·17 women to every man.

There was a sharp increase in the number of fractures of the femoral neck with age, and this was more pronounced in women than in men (table I). In women aged 60-64 years the incidence was 1·08 per 1000 population. The incidence had risen to 3·54 at 70-74 years, 13·03 at 80-84 years, and 32·76 at 90-94 years. In men the increased incidence started about five to 10 years later and never reached the same magnitude, but, even so, by the age of 95 years and over it was 20·00 per 1000.

The average length of stay of all patients increased with age from less than 24 days in those aged 59 years and under to over 35 days in those aged 75 years and over. The men's average length of stay was

TABLE I—*Number of patients with femoral neck fractures. Incidence of femoral neck fractures per 1000 population in South-west Thames Region is shown in parentheses*

| Age (years): | <60 | -64 | -69 | -74 | -79 | -84 | -89 | -94 | ≥95 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Men | 108 (0·42) | 46 (0·52) | 48 (0·70) | 66 (1·31) | 57 (2·34) | 81 (5·13) | 63 (8·08) | 35 (14·00) | 10 (20·00) | 514 (1·0) |
| Women | 124 (0·44) | 105 (1·08) | 149 (1·58) | 248 (3·54) | 358 (6·30) | 482 (13·03) | 415 (22·93) | 190 (32·76) | 34 (26·15) | 2105 (3·17) |
| Total | 232 (0·43) | 151 (0·82) | 197 (1·21) | 314 (2·61) | 415 (5·11) | 563 (10·66) | 478 (18·46) | 225 (27·11) | 44 (24·44) | 2619 (2·22) |

TABLE II—*Average length of stay in hospital in days according to age and sex (all patients, dead and alive)*

| Age (years): | <60 | -64 | -69 | -74 | -79 | -84 | -89 | -94 | ≥95 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Men | 22·3 | 23·7 | 35·6 | 40·2 | 39·6 | 38·5 | 31·5 | 25·1 | 15·3 | 31·6 |
| Women | 24·1 | 27·4 | 31·1 | 28·9 | 35·0 | 39·4 | 38·0 | 36·2 | 43·5 | 34·8 |
| Total | 23·3 | 26·3 | 32·2 | 31·2 | 35·7 | 39·3 | 37·2 | 34·5 | 37·1 | 34·2 |

TABLE III—*Mortality rate (%) of patients with femoral neck fractures*

| Age (years): | <60 | -64 | -69 | -74 | -79 | -84 | -89 | -94 | ≥95 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Men .. .. .. | 0·0 | 2·2 | 10·4 | 19·7 | 31·6 | 30·9 | 39·7 | 45·7 | 80·0 | 21·6 |
| Women .. .. | 0·8 | 7·6 | 4·7 | 12·5 | 15·4 | 22·4 | 28·0 | 35·3 | 55·9 | 19·6 |
| Total | 0·4 | 6·0 | 6·1 | 14·0 | 17·6 | 23·6 | 29·5 | 36·9 | 61·4 | 20·0 |

longer than that of the women in the age range 65-79 years but then fell dramatically to become shorter than that of the women from 85 years onwards (table II).

Five hundred and twenty-three (20%) of the patients died. The mortality rate in both sexes increased greatly with age, and over the age of 65 years more men than women died in all age groups (table III). The overall mortality rate was 21·6% for men and 19·6% for women. The average length of stay in hospital of those who died was similar to that of those who left hospital alive in the age range 75-84 years, but below these ages the average length of stay of those who died was much longer, and above much shorter. For example, the 12 people who died at the age of 65-69 years occupied hospital beds for an average of 84·6 days.

The figures were analysed for each area health authority within the region. In the five health areas the number of patients with fracture of the femoral neck ranged from 2·15 to 2·61 (regional average (RA) = 2·22) per 1000 of the population aged 45 years and over. The incidence for men ranged from 0·73 to 1·10 (RA = 1·00) and for women from 2·98 to 3·79 (RA = 3·17) per 1000 of the population at risk. The mean length of stay of those patients with femoral neck fractures who left hospital alive in the five different health areas ranged from 28·3 to 44·9 days (RA = 35·2 days) for all patients; from 24·7 to 42·0 days (RA = 30·3) for men; and from 28·3 to 46·5 days (RA = 34·2) for women. The health area mortality rate for all patients varied from 16·2% to 22·2% (RA = 20·0%). It varied from 16·7% to 28·3% (RA = 21·6%) in men and from 15·2% to 22·2% (RA = 19·6%) in women.

## Discussion

The results of the HAA returns on patients with fracture of the femoral neck in the South-west Thames Region show that the problem is enormous: a total of 2619 people were treated during one year (1974). The average length of hospital inpatient stay was over one month, which meant that for the South-west Thames Region alone the equivalent of a hospital with 250 beds was needed to cope with the problem in one year.

Knowelden *et al*[1] and Alffram[5] have shown that the incidence of fractured neck of femur rises with age. The present study, covering more patients, shows this dramatically: by the age of 90 years 3 in every 100 women fractured their femoral neck in one year. The present figures are slightly higher than those of Knowelden *et al*[1] for all age groups, and especially for those aged over 85. A few patients may have been counted twice because of interhospital transfer in the older age groups. The female preponderance of this injury was 3·17:1, greater than that shown by Alffram in 1964 (2·5:1).[5]

Men were more likely to die in hospital than women, and older patients were more likely to die than younger ones. Among those aged over 95, 80% of the men died compared with 56% of the women. The overall mortality rate was 21·6% for men and 19·6% for women.

There were considerable differences among the five health areas in the incidence of patients with femoral neck fracture discharged. Without further study it is impossible to say whether this was because of different admission policies, different surgical and management policies, or differences in the age structure of the community.

The average length of stay of the patients who left hospital alive in the five health areas varied considerably from 28·3 to 44·9 days. This difference is unlikely to be explained by variations either in ages of patients on admission or in admission policies, but is more likely to be due to differences in surgical and management policies. That such a wide variation should exist is a matter of great concern, and this aspect warrants further study. Facilities and staffing vary throughout the region, and systems of rehabilitation and management may well differ.

In 1969 Devas and Irvine[7] stated that because of the major demands that patients with this injury make on already overstretched hospital resources, and the high mortality rate, it is vital to rationalise the treatment and management of this condition. From our study we cannot assess the factors that might reduce the mortality rate and speed the patient's discharge from hospital, but it seems reasonable to assume that if more attention, perhaps in special departments, was focused on management and treatment before and after operation then the outcome might be improved. A more detailed study is urgently needed, for with an ever-increasing elderly population the number of hospital beds occupied by patients with femoral neck fractures will probably rise. The only way of preventing this increasing occupancy is either to prevent the femoral neck fracture itself or improve management when it occurs.

## References


1 Knowelden, J, Buhr, A J, and Dunbar, O, *British Journal of Preventive and Social Medicine*, 1964, **18**, 130.
2 Lucht, U, *Acta Sociomedica Scandinavica*, 1971, **2**, 105.
3 Keith, S, *Health Trends*, 1973, **5**, 13.
4 *British Medical Journal*, 1976, **1**, 1237.
5 Alffram, P A, *Acta Orthopaedica Scandinavica*, 1964, Suppl No 65, p 1.
6 Gallannaugh, S C, *Guy's Hospital Reports*, 1972, **182**, 211.
7 Devas, M B, and Irvine, R E, *British Journal of Geriatric Practice*, 1969, **6**, 19.


*Is Naudicelle of value in treating multiple sclerosis?*

Naudicelle is a gamma lino*lenic* acid and is found in primrose oil. Research work in multiple sclerosis suggested that acute attacks may be accompanied by lowering of the lino*leic* acid content of the serum, and particularly of the cholesterol ester. Subsequent trials of sunflower oil containing lino*leic* acid suggested that patients may have fewer and less severe relapses when it was taken for two years.[1] As lino*lenic* acid is somewhat related, a trial of its long-term use was started, but the results are not yet complete. In a short-term trial of large doses of Naudicelle, there was no apparent improvement in three patients.


1 Millar, J H D, *et al*, *British Medical Journal*, 1973, **1**, 765.


*Can women become pregnant despite prolonged uninterrupted contraceptive treatment?*

Yes. There is a failure rate with every contraceptive method. The exact reasons for this will vary with the formulation of the contraceptive steroids that are used. To be effective they must suppress cyclic secretions of gonadotrophins from the pituitary and so prevent the cyclic hormonal and ovulatory phenomena in the ovary. In turn these alter the muscular activity of the genital tract, the pattern of endometrial histology, and the cervical secretions. Some or all of these may be important in preventing pregnancy. The steroid's metabolism may vary quantitatively from person to person, and in the same person from time to time. Other drugs given with the contraceptive pill may affect steroidal metabolism too, making them less effective. This may be caused by induction of liver enzymes acting at various points in the steroid breakdown chain.