



Total hip replacement for acute femoral neck fracture : A survey of National Joint Registries

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Joint registers audit the performance of different types of prosthesis. The data from these registers is invaluable, as the conclusions are evidence based and are not based on the results from a small clinical trial or a case series. The 3rd National Joint Registry Annual Clinical Report (2005) of England and Wales was compared with the latest available online report of other national joint registers, particularly with reference to the usage of total hip replacement performed for fracture of the neck of the femur. In Sweden, total hip replacement is performed for the management of a fracture of the neck of the femur six times more often than in England and Wales, four times more often than in Australia, twice more often than in Canada. Hip fracture registers could provide us with the much needed clinical evidence that could help us solve the last controversy of this unsolved fracture.

Keywords : femoral neck fracture ; total hip replacement ; national joint registries.

INTRODUCTION

Internal fixation, or hemiarthroplasty, or total hip replacement can be used to manage displaced fractures of the neck of the femur in active, 65 to 80-year-old individuals (4,5). Total hip replacement can be performed as a primary procedure following a fracture of the neck of the femur, or as a salvage procedure following failed internal fixation, or as a

revision following failed hemiarthroplasty. In the United Kingdom, a nation-wide survey reported that in 41% of the hospitals bipolar hemiarthroplasty is preferred in managing a displaced fracture of the neck of the femur in an active patient above 60 years of age and only 16% of the hospitals perform a total hip replacement (5).

The National Joint Registry in England and Wales published its 3rd Annual Clinical Report in December 2005, according to which 1% of the total hip replacements in England and Wales were performed for an acute fracture of the neck of the

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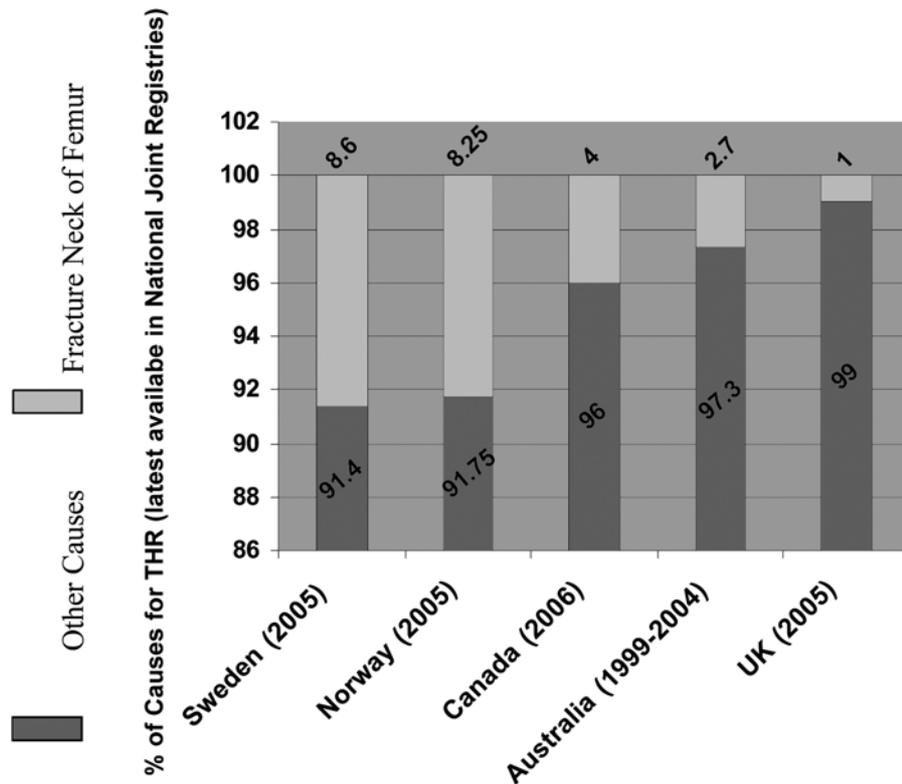


Fig. 1. — % of Total hip replacement for fracture of the neck of the femur in different National Joint Registries (latest available data)

femur (11). The National Joint Registries of other countries were compared in relation to the incidence of total hip replacement performed for fracture of the neck of the femur.

MATERIAL AND METHODS

The latest available online annual reports of Australia (1), Canada (3), Norway (17), Sweden (18) and England & Wales (11) National Joint Registries were used to ascertain the rate of use of total hip replacement for fracture of the neck of the femur. The data was collected from the indications for primary total hip replacement in the annual reports of individual registers. The Joint Registers from Finland and New Zealand had no detailed information on their websites regarding the indications for total hip replacement surgery.

RESULTS (fig 1)

- 11.7% of the total hip replacements performed in Sweden in 1992 were for fracture of the femoral

neck. The use of total hip replacement for fracture of the neck of the femur has dropped to 8.6% in 2005 (18). This may be as a result of decline in the number of total hip replacements performed for salvage of the failed internal fixation for fracture neck of femur in the recent years.

- 11.2% of the all the total hip replacements performed in Norway since 1987 were for fracture of the neck of the femur. The use of total hip replacement for this particular indication had dropped from 13.5% in 1987-90 to 8.25% in 2005 (17).
- 6.0% of the total hip replacements performed in Canada in 2002 were for fracture of the neck of the femur (5) and it has dropped to 4% in 2006 (3).
- 2.7% of total hip replacements performed in Australia between 1999 and 2004 were for fracture of the neck of the femur (1).
- 1.2% of the total hip replacements performed in England and Wales during the period between

April and December 2003 were for fracture of the neck of the femur and this decreased to 1% in the year 2005 (11).

DISCUSSION

By year 2050, it is projected that there will be 972,000 new fractures of the neck of the femur in Europe every year, an increase of 135% from the year 2000 (8). As the number of hip fractures increases, it is important to identify the various treatment options for different age groups that provide optimal results and avoid re-operations.

Internal fixation retains the femoral head and the natural hip joint, provided that the fracture unites and the head does not undergo avascular necrosis. The major complications include non-union and avascular necrosis, which would require a salvage procedure with either hemiarthroplasty or total hip replacement. Following fracture union, a second anaesthetic might still be required to remove screws that back out. In a study of 3,154 consecutive patients with fracture of the neck of the femur, 780 patients were treated by internal fixation; 18.6% required further surgery within one year of initial operation for avascular necrosis or non-union (12.8%), prominence of screws (5%), fracture around the screws (1%), and sepsis (0.4%) (12). A meta-analysis comparing internal fixation and arthroplasty reported a revision rate of 10% to 50% for the internal fixation group, depending on the patients (2). Also, there are significantly more superficial infections and dislocations in patients with salvage total hip replacement following failed internal fixation compared to primary total hip replacement for fracture of the femoral neck. Revision rate at one year, overall prosthetic survival and functional outcomes were worse in the salvage total hip replacement group (10).

Total hip replacement is an option to manage a fracture of the femoral neck (6). Total hip replacement is not indicated for Garden I and II fractures in any age group, a fracture of the femoral neck in a young individual presenting within hours of sustaining the fracture, and a fracture of the femoral neck in old, frail, demented individuals. On the contrary, a displaced fracture of the femoral neck

in an active individual in the age group of 65 to 80 years with some co-morbidity poses a surgical dilemma. Surgery should relieve pain and allow early mobilisation. Hemiarthroplasty would be an ideal choice in individuals with many co-morbidities and a shorter life expectancy. In the same study of 3,154 consecutive patients with fracture of the femoral neck, 908 patients were treated by hemiarthroplasty; 4.8% required revision surgery within the first year for dislocation (1.7%), periprosthetic fracture (1.2%), loosening (0.8%), and infection (1.2%) (12). Pain and mobility in patients who undergo hemiarthroplasty are inferior to total hip replacement in the short term and long term (14). Hip pain secondary to acetabular erosion and thigh pain in uncemented hemiarthroplasties are indications for salvage total hip replacement.

A fracture of the femoral neck in an arthritic hip is an undisputed indication for a total hip replacement (13). Complications following total hip replacement include dislocation, wound infection and loosening. A revision rate of 49% was reported following total hip replacement in 37 patients with an average age of 62.6 years following total hip replacement for fracture (7). Such worrying results were not duplicated in other studies although the average age was higher (6,14-19). A meta-analysis reported a mean dislocation rate of 6.9% following a total hip replacement for a fracture (2). The 6.6-year survival rate of total hip replacement for fracture of the femoral neck is 96.6% according to the Swedish Joint Registry (18) (fig 2).

In Sweden, internal fixation used to be the preferred choice to manage displaced fractures of the neck of the femur (9,19), although the trend may be changing, and more patients with acute fracture of the femoral neck are managed with primary total hip replacement. As primary total hip replacement is being used for acute fracture of the neck of the femur rather than internal fixation in Sweden during the last few years, the number of total hip replacements performed for failed internal fixation is waning (Karrholm, personal communication). There are a few possible explanations. In Sweden, epidemiological studies have revealed that there is a 28% lifetime risk of fracture of the neck of the femur in a 50-year-old lady. The life expectancy in

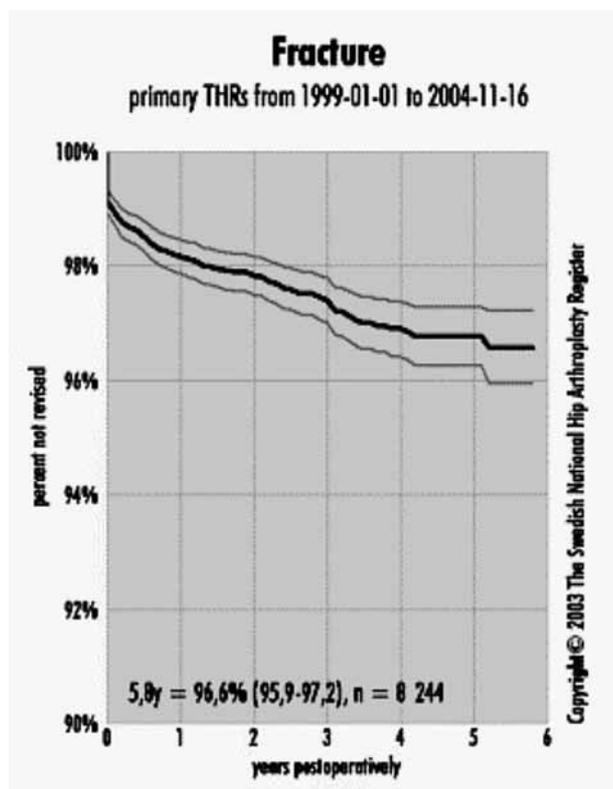


Fig. 2. — 6.6-year survival of the total hip replacement for fracture of the neck of the femur. (Courtesy : The Swedish National Hip Arthroplasty Register).

a 75-year-old Swedish lady is 14 years. In contrast, in the UK, the lifetime risk of fracture of the neck of the femur in a 50-year-old lady is 14%, and life expectancy at 75 years in women is 11 years (8). With a higher risk of hip fracture and longer life expectancy, it is logical to use a surgical option, i.e., total hip replacement that yields good long-term results.

Ideally, the provision of health care should not influence surgical options. The number of hospital beds per 1,000 populations in Sweden and UK in 1993 was 7 and 5.4 respectively. The percentage of Gross National Product (GNP) spent on health care was 6.2 and 5.9 respectively in 1993 (8). The Swedish health care system provides more beds per 1,000 populations and is better funded.

The number of hip fractures admitted to a hospital in the UK in 1996 was 69,600 (8). Further data

on the health status of these patients are not available. It is difficult to estimate the number of displaced fractures of the neck of the femur in active, lucid, ambulant patients. If all the eligible patients were to receive a total hip replacement, the hospital services would be stretched and waiting lists for elective total hip replacements would be affected.

Out of 55,812 total hip replacements recorded in the England and Wales National Joint Registry in the calendar year 2005, only 746 operations were for a fracture of the neck of the femur, i.e. 1.3% of the hip replacements (11). The data in the England and Wales National Joint Registry is estimated to account for 77% of the joint replacements performed in 2005. It is unlikely that the proportion of the unrecorded total hip replacements had a higher percentage of hip replacements for a fracture of the femoral neck. In Norway, 95% of the joint replacements are recorded in the joint registry. The incidence of hip fractures in Norway is approximately 10,000 per annum (17). A total of 654 total hip replacements were performed either for acute fracture of the femoral neck or failed internal fixation. If we extrapolate the percentage of total hip replacement performed for fracture of the femoral neck in Norway or Sweden on to the UK practice, then approximately 4,200 total hip replacements would be performed per year for femoral neck fracture in UK. This is more than 5-fold increase over the current practice of performing total hip replacements for femoral neck fracture in the UK.

Opinion regarding the use of total hip replacement for fracture of the femoral neck is divided. However, in Sweden and Norway, total hip replacement is more widely used in the management of fracture of the femoral neck. There is increasing evidence that total hip replacement is a superior surgical management option in 65-80 years old, active, lucid, ambulant patients with displaced fracture of the neck of the femur.

A National Hip Fracture Registry is currently collecting data in Norway and one is being planned in the UK. The evidence from such registries may be invaluable. If the orthopaedic communities in various countries could initiate and contribute the data to their respective national hip fracture registry in a comprehensive fashion, the last unsolved

question in the hip fracture puzzle i.e., the optimal treatment for displaced fracture of the neck of the femur in 65-80 years old, active, lucid, ambulant patients might be solved.

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