Hip arthroplasty in Jutland, Denmark

Age and sex-specific incidences of primary operations

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During the 10-year period 1981–90, 1752 primary total hip arthroplasties were performed in the County of South Jutland, Denmark. The annual number increased to a steady state during 1988–90.

In this period, the incidence was highest in the age group 70–79 years for both women and men, with 485 and 410 arthroplasties per 100,000 inhabitants, respectively; the overall incidence was 82 per 100,000 inhabitants.

During the next 30 years, the demand for primary hip arthroplasties in Denmark is expected to increase because of demographic changes.

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Submitted 91-11-02. Accepted 92-02-23

We present the age and sex-specific incidences of primary total hip arthroplasty (THA) in the County of South Jutland, Denmark. From our incidences we estimate the need for primary THA in Denmark for the coming decades.

Patients and methods

From operation statistics at the two orthopedic departments in our County all primary THAs performed during the 10-year period 1981–90 were registered. In this period 1752 primary THAs and 46 revisions were done. In this study only the primary THAs were included. The records of all patients were checked. For this study the date of operation, sex, age, and diagnosis were recorded. In the case of a questionable diagnosis, the radiographs were reevaluated by the authors (Table 1). Although the annual number of operations increased during the first years of the period, the waiting list still increased. After a special effort in 1986–87 to reduce the waiting list (Jensen et al. 1988), the annual number of operations has stabilized between 193 and 213 and the waiting list has remained unchanged.

The age and sex-specific incidences of primary THA were calculated on the basis of the operations performed in the steady state situation from 1988–90. In this period 614 THAs were performed (female/male = 324/290) including 8 THAs in patients from the County operated on elsewhere.

To calculate the incidences, the actual age and sex distribution in the population of the County was used from the Statistical Yearbook 1989 (Statistisk Årbog 1989). The County of South Jutland has about 250,000 inhabitants, and almost exactly represents 5 percent of the Danish population.

The demand for primary THA in Denmark was estimated using the age and sex-specific incidences. The estimates were extrapolated to the Danish population for future decades to the year 2030 using a population forecast for different age groups (Danmarks Statistik 1991).

The chi-square-test was used for unpaired variables; the 5 percent level was considered as significant.

Results

The incidence of primary THAs increased from less than 1 per 100,000 inhabitants in men below 40 years to 485 per 100,000 inhabitants in women 70–79 years (Figure 1). The incidence for women was 86 THAs per 100,000 inhabitants, and for men 78.

Table 1. Diagnoses in 1752 primary total hip arthroplasties performed in the County of South Jutland, Denmark, during 1981–90.

	n	%
Primary arthrosis	1507	*86*
Fracture	111	*6*
Rheumatoid arthritis	53	*3*
Dysplasia, congenital hip dislocation	39	*2*
Others	42	*2*

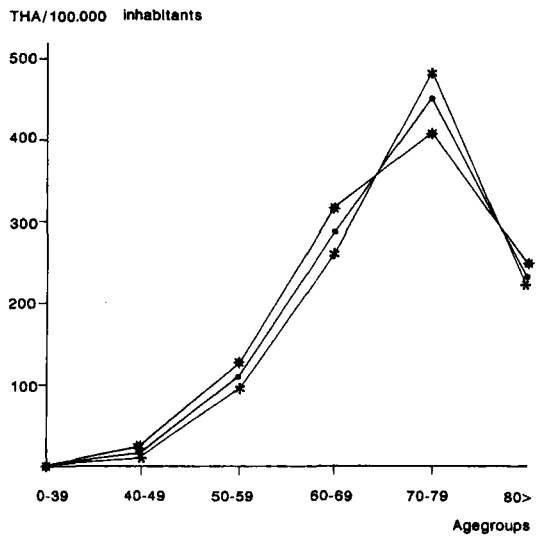

Figure 1. Age and sex-specific incidence of primary total hip arthroplasties.
● total population, * female, and * male.

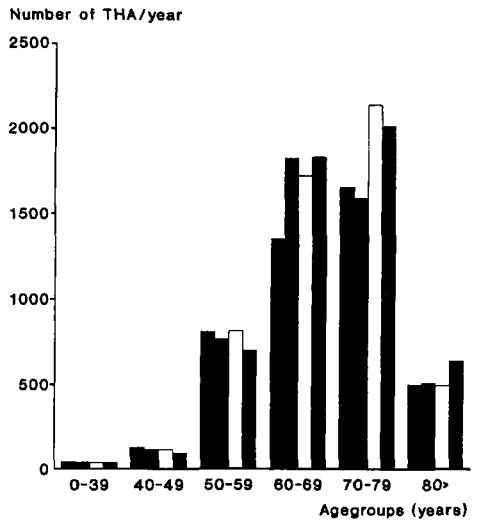

Figure 2. Estimated number of primary total hip arthroplasty in Denmark, year 2000 (black), 2010 (hatched), 2020 (white), and 2030 (cross-hatched), in different age groups. Estimated total number of THAs in the year 2000 was 4461, in 2010 4820, in 2020 5307, and in 2030 5297.

In future decades the total number of primary THA in Denmark can be expected to increase by 32 percent from 4013 in the year 1989 to 5307 in the year 2020 (Figure 2).

Discussion

In our material fractures accounted for only 6 percent of the THAs. Compared with other studies this frequency is low; Johnsson and Lidgren (1987) had 23 percent hip fractures. One reason for this could be that all displaced femoral neck fractures in patients older than 75 years are treated with a hemiarthroplasty at Sønderborg County Hospital (Overgaard et al. 1991).

In 1986, the number of primary THAs was 736 in the 8.3 million inhabitants in Sweden, i.e., an incidence of 91 per 100,000 (Ahnfelt et al. 1990). In Norway the incidence was 124 primary THAs per 100,000 inhabitants in 1989, and in Finland 56 per 100,000 in 1989 (Havelin 1991, Paavolainen 1991). We found a total incidence of 82 primary THAs per 100,000 inhabitants based on operations performed in 1988–90. In our study, the estimated number of primary THAs in Denmark in 1989 was calculated as 4208, which corresponds well to the observed number of 4013 in our country. The age-specific incidence has only been studied in a few investigations. We found the highest incidences in the age group 70–79 for both women and men (Figure 1). This corresponds well to Melton et al. (1982).

Goldie (1991) has estimated an increase in Sweden to about 15,000 primary and revision arthroplasties in the year 2000. This is an increase of 75 percent from the year 1986. We have only estimated an increase of 11 percent for primary THAs from 1989 to 2000. Our estimates of the demand for primary THAs in future decades are based only on demographic changes, with an increasing number of elderly people. As the prevalence of primary arthrosis has been unchanged during the last 20 years (Danielsson et al. 1984), we do not expect an increased number of operations for that reason.

However, the number of primary THAs for fractures may increase for other reasons. Several studies have shown an expected two-to-threefold increase in the number of hip fractures over a 20-year period (Zetterberg and Andersson 1982, Frandsen and Kruse 1983, Larsson et al. 1989, Martin et al. 1991). Some studies of femoral neck fractures have shown that THA can be considered for a selected group of patients as a primary procedure, or that THA is a safe procedure if osteosynthesis fails (Taine and Armour 1985, Nilsson et al. 1989, Franzén et al. 1990).

The frequency of revisions has to be taken into consideration as well. Ahnfelt et al. (1990) reported from a multicenter investigation a revision rate of 6 percent for loosening at 9 years, which agrees with other studies.

Acknowledgements

The study was supported by a grant from the Foundation "Lægevidenskabelig forskning med videre ved sygehusene i Ringkøbing, Ribe og Sønderjyllands amtskommuner". We wish to thank cand. stat. Knud Juel, The Danish Institute for Clinical Epidemiology, for statistical advice.

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