

# Changing methods of hip fracture osteosynthesis in Sweden

## An epidemiological enquiry covering 46 900 cases

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An enquiry covering all hospitals in Sweden operating on hip fractures was conducted in 1990. The results were compared with enquiries from 1982 and 1985. In cervical hip fractures the use of single nail has almost disappeared in favor of 2 LIH hook pins and, lately,

the Uppsala subchondral screws. Primary hip prosthesis is the ultimate method of choice in Sweden. Among trochanteric hip fracture the Ender nail has almost totally been replaced by a sliding screw and plate device.

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We followed the change in methods of operating on hip fracture patients over a period of almost one decade.

### Material and methods

Questionnaires were sent to all 90 hospitals in Sweden operating on hip fractures. We asked about the methods used in the treatment of cervical and trochanteric fractures of the femur, the number of fractures and the size of the population served. Furthermore, we asked for the treatment of choice in cervical and trochanteric fractures. Written answers were obtained from 86 hospitals. The remaining 4 were interviewed by telephone. Departments serving more than 100 000 inhabitants were considered to be larger units.

Operating methods on cervical fractures were separated as follows:

1. Fixation with single nail (Rydell 1964).
2. Different types of multiple pins (Knowles 1936).
3. Fixation with screws (von Bahr et al. 1974).
4. Fixation with 2 LIH hook pins (Hansson 1982).
5. Subchondral fixation with 2 Uppsala screws (Rehnberg and Olerud 1989).
6. Other methods, such as primary arthroplasty or sliding screw and plate.

Operating methods in trochanteric fractures:

1. Intramedullary Ender nails (Ender and Simon-Weidner 1970).
2. Different types of sliding screw and plate (Clawson 1964).
3. Other methods, such as nail and plate (McLaughlin 1947) or angle nail and plate (Jewett 1941).

### Results

The preferred methods for fixation of cervical hip fractures have undergone a considerable change. The single Rydell nail has almost disappeared after 1982 when it was used in 1/3 of all fractures. The von Bahr screws have lost ground during recent years. The position of these methods has been taken by the LIH hook pins and, lately, the Uppsala screws (Table 1).

Regarding trochanteric fractures, the enquiry demonstrates a steadily-decreased use of Ender-nailing in favor of sliding screw and plate, which now is used in 92 percent of the operating departments; Ender-nailing is nowadays used in some of the larger units (Table 2).

### Discussion

In Sweden a number of prospective randomized studies comparing different operating methods in cervical hip fractures have been carried out. Fixation with 2 hook pins—LIH—was first reported in 1984 to be superior to the traditional single nail technique (Strömqvist et al. 1984). Moreover, the subchondral screw fixation—Uppsala—was demonstrated in 1988 to have less complications at 1-year follow-up than the previous von Bahr screw technique (Rehnberg and Olerud 1989). Both studies were carried out at departments that developed the new device. In trochanteric fractures, the selection of operating method has most probably been strongly influenced by negative reports of Ender-nailing in stable and unstable fractures (Sernbo et al. 1988).

Table 1. Operating methods in cervical hip fracture as first method in the 90 departments and in relation to the total number of fractures in Sweden (percent)

	1982		1985		1990	
	Dep. n	Fractures 7800	Dep. n	Fractures 9000	Dep. n	Fractures 9300
Single nail, Rydell	36	34	11	11	—	—
Multiple pins	23	18	27	23	20	16
Screw fixation, von Bahr	47	37	46	39	26	19
Hook pins, LIH	11	7	20	22	35	34
Subchondral screws, Uppsala	—	—	—	—	22	27
Others	2	4	3	5	1	4

Table 2. Operating methods in trochanteric hip fracture as first method in the 90 departments and in relation to the total number of fractures in Sweden (percent)

	1982		1985		1990	
	Dep. n	Fractures 6000	Dep. n	Fractures 7000	Dep. n	Fractures 7800
Ender-nailing	51	60	48	46	10	11
Sliding screw and plate	47	34	51	49	92	86
Others	3	6	2	5	1	4

It may be argued that a specific scientific interest in operating methods and in the results of treatment have yielded new and more sophisticated operating techniques, which, with time, have led to an increased use of these methods in Sweden. Hopefully, they will provide improved long-term results with less complications and less discomfort for the patients, which will reduce the over-all cost as well.

For non-Scandinavian readers the most notable fact in this survey must be the virtual disappearance of arthroplasty as a primary procedure for cervical hip fracture.

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