

Epidemiology of distal radius fracture in Stockholm 1981-82

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During 1981 and 1982, 1,536 fractures of the distal radius were treated within the catchment area of Södersjukhuset (Southern Hospital), Stockholm. The age-specific incidence did not differ from that of three other Scandinavian investigations, except for women over 75 years of age, among whom the incidence decreased in Stockholm and Oslo and increased in Malmö and Hillerød. Using Frykman's (1967) classification, extraarticular fractures dominated.

Recent epidemiologic data of distal fractures of the radius, the most common of all fractures, have been published from Malmö, Sweden (Bengner and Johnell 1985), Oslo (Falch 1983), and Hillerød, Denmark (Solgaard and Petersen 1985). A comparable series from the Stockholm region is reported here.

Subjects and methods

Population

The study includes the years 1981 and 1982. At that time, Södersjukhuset (Southern Hospital) served a population of 210,400 persons over 15 years of age. Children up to 15 years and patients living outside the region were excluded. Primary care practitioners within the catchment area had no access to radiographic service at the time of the investigation. Their patients were therefore referred to Södersjukhuset. Private practitioners and orthopedic surgeons within the area were interviewed; their cases were estimated to be between 20 and 30 fractures annually.

Fractures and classification

The study is prospective and includes all the patients who attended the casualty department of Södersjukhuset with a distal radius fracture within 2.5 cm of the wrist joint. The first follow-up examination was always made by the author, who then determined the further treatment. In consultation with a radiologist, the

fractures were classified according to Frykman (1967). The age and sex incidence were calculated from the mean of the size of the population as of December 31 each year.

Altogether, 1,536 fractures were recorded in 1,528 patients: 1,495 Colles' (8 bilateral) and 41 Smith's fractures. Eighty-four percent of the patients were women. The mean age of the women was 66 (16-96) years and that of the men 49 (16-95) years.

The chi-square test was used; and when comparing the incidence figures, the number of patients was compared in relation to the populations of the relevant catchment areas. The resulting cross-product ratios were tested to find out whether they differed from unity (Bishop et al. 1975).

Results

Of Colles' fractures, 718 (48 percent) were treated by primary reduction, and 146 (20 percent) required rereduction. Among the women above aged 35 years, the proportion of reduced fractures increased sharply, with a peak around aged 65. Among the men, there was no similar peak.

The age-specific incidence among women increased rapidly above 45 years of age, reaching a maximum at 65 years, remaining unchanged up to 75, and then dropping slightly (Table 1, Figure 1). The incidence for men was lower.

Fracture types 1, 2, 5, 6, and 8 differed significantly ($P < 0.001$) from Frykman's (1967) series (Table 2). The 3 percent incidence of Smith's fractures did not differ from the 3 percent in Frykman's (1967) Gothenburg series or the 2 percent in the recent Hillerød study (Solgaard and Petersen 1985).

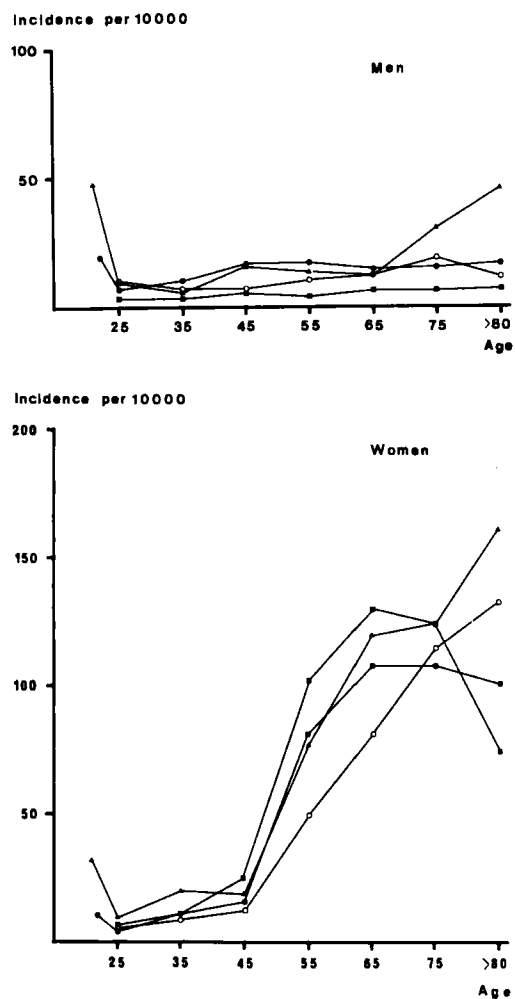


Figure 1. The age-specific annual incidence of fracture of the distal radius per 10,000 persons in Stockholm in 1981-82 (●), Malmö 1980-81 (2) ▲, Hillerød (6) ○, Oslo (4) ■.

Table 1. The number of fractures of the distal radius during 1981 and 1982 in relation to age and sex, and the age-specific annual incidence per 10,000 population in the Södersjukhuset catchment area

Age	Women		Men	
	n	Incidence	n	Incidence
15-19	12	10	20	18
20-29	19	5	28	7
30-39	36	11	36	10
40-49	36	16	37	16
50-59	271	81	45	16
60-69	428	108	47	14
70-79	341	108	28	15
>80	144	101	8	16
Total	1,287		249	

Table 2. Distribution of distal radius fracture, Stockholm 1981-82. Frykman's Classification (1967)

Type	n	Percent
1	592	40
2	403	27
3	150	10
4	195	13
5	27	2
6	42	3
7	28	2
8	58	4

Table 3. Sex distribution in Scandinavian series of distal radius fracture

	Percentage women	Percentage reduced	
		Primary	Secondary
Gothenburg (5)	78	69	
Malmö (2)	75		
Stockholm (present article)	84	48	20
Hillerød (6)	80	56	46
Oslo (4)	83		

Table 4. Monthly distribution of fractures of the distal radius in 1981 and 1982

Month	Women	Men
I	189	36
II	173	26
III	161	26
IV	92	14
V	66	15
VI	63	12
VII	75	14
VIII	73	19
IX	73	20
X	77	22
XI	86	20
XII	159	25
Total	1,287	249

The proportion of women, 84 percent, was higher than in other Scandinavian series (Table 3). Most fractures were sustained out-of-doors during the winter (Table 4).

Discussion

In the present series, 48 percent of the fractures were treated by primary reduction and 20 percent required rereduction. Frykman (1967) reported a primary reduction rate of 69 percent, and Solgaard and Petersen gave rates of 58 percent for women and 46 percent for men. Bengnér and Johnell (1985) examined the relationship reduced/unreduced fractures. They found a steady increase of fractures requiring reduction with age among women, whereas the figures for men varied slightly, reaching a peak at 70 years and then declining. The difference in rate of reduction between various series seems puzzling, but the explanation probably lies in the difference of opinion about how much and what type of displacement can be tolerated.

On classifying the differences according to Frykman's (1967) method, groups 1 and 2 predominate; this implies a smaller number of fractures that directly involve the distal radioulnar joint.

In their Malmö series, Bengnér and Johnell (1985) found a rise in the age-specific incidence as compared with Alffram and Bauer's (1962) 1953-1957 series among women over 19 years of age. In the men the increase appeared above the age of 70. If the recent reports from Malmö (Bengnér and Johnell 1985), Oslo

(Falch 1983), and Hillerød (Solgaard and Petersen 1985) are compared with the present findings (Figures 1 and 2), the pattern is found to be similar in women up to 65 years of age. Above this age the studies differ—the Oslo series showing a decline and the Danish and the Malmö studies an increase. The differences among patients over aged 80 years between Stockholm and Malmö, Oslo and Malmö, Stockholm and Hillerød, and Oslo and Hillerød are significant ($P < 0.001$). Among the men, too, the patterns are largely similar up to aged 65 years, with only an insignificant increase in the Oslo and Malmö series above this age.

There is apparently no important difference between the series, except with regard to the definition of fractures of the distal radius. The Malmö series included fractures within 3 cm of the radiocarpal joint; the Hillerød figure was 4 cm; and the Oslo study gave no definition. In the present study the limit was 2.5 cm; and this discrepancy could possibly explain some of the increase in incidence with increasing age. Climatic differences were probably important: Malmö and Hillerød with their milder winter climates, and thus more and longer periods of temperatures around the freezing point, have more periods of icy ground conditions than do Stockholm and Oslo.

References

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