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Institutionen för klinisk vetenskap, intervention och teknik
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**HIP FRACTURE IN YOUNG AND OLD
SUBJECTS - ASPECTS ON RISK FACTORS AND
OUTCOME**

AKADEMISK AVHANDLING

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ABSTRACT

Hip fractures, the most serious osteoporosis-related fractures, mainly affect older people. The functional outcome for many hip fracture patients remains to be improved. Hip fractures in young patients are uncommon, but lifelong disability may prevail. The aim of this thesis was to examine possibly modifiable factors correlated with functional outcome in older subjects with hip fracture. Furthermore, to study background data and trauma mechanism in young and middle-aged patients with femoral neck fracture. Finally, the frequency of osteoporosis and sarcopenia in younger patients with a hip fracture was examined.

Study I A total of 850 patients with hip fractures were included. Outcomes including return to independent living, pressure ulcer (PU), length of hospital stay (LOS), and mortality were considered in relation to time between admission and surgery. Patients operated upon later than 36 and 48 hours after admission were less likely to return to independent living while there was no significant difference when using the 24-hour cut-off limit. The incidence of PU and LOS in the groups operated on later was increased at all 3 cut-off limits. The mortality rate did not differ.

Study II A total of 246 patients with femoral neck fracture and cognitive impairment were included. All were able to walk before the fracture. Significant predictors of preserved walking ability and ADL function at 4- and 12-month follow-up were: discharge to rehabilitation unit, walking ability, and ADL function prior to fracture, whereas surgical method was not. Patients discharged to rehabilitation unit were less likely to be wheelchair bound at any follow-up occasion.

Study III Included were 27 young (20-49 years of age) and 158 middle-aged (50-69 years of age) patients with a femoral neck fracture. They were studied regarding trauma mechanisms and risk factors for osteoporosis and hip fracture. A minority of both the young and middle age group had a high-energy trauma as a cause for the hip fracture. Life style factors and other non-trauma related risk factors appeared to be main contributors to the occurrence of the hip fracture in both age groups

Study IV The study population was the same as in *Study III*. Bone mineral density (BMD) and fat-free mass (FFM) were determined by Dual X-ray Absorptiometry (DXA). FFM index (FFMI) was calculated as the ratio of FFM (kg) and height squared. One third of the study population had FFMI below the 10th percentile of a of an age- and gender-matched reference population, i.e. indicating sarcopenia. All young patients had a femoral neck BMD below the mean for age and 90% of the middle-aged patients had osteopenia (56%) or osteoporosis (34%).

In conclusion, the result of this thesis indicates that early operation of patients with hip fracture improves the ability to return to independent living, reduces the incidence of pressure ulcers and reduces the length of hospital stay. Discharge to rehabilitation unit, a factor we can influence, and previous function were both associated with preserved walking ability and ADL function in cognitively impaired patients with hip fracture. A minority, both in the young and middle-aged patients had a high-energy trauma as a cause for the hip fracture. And most of these patients have one or more risk factors for hip fracture and low BMD regardless of the trauma mechanism. One third has signs of sarcopenia i.e. low muscle mass.