



Incidence and Risk Factors of Subsequent Hip Fractures in Korea: Multicenter study



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Introduction

This study analyzes the incidence of subsequent hip fractures and its risk factors in the northwestern region of Korea. We analyzed hip fracture patients who visited any of the 5 teaching hospitals in the Bucheon and Incheon area from January 2000 to December 2010.

Methods

* Study design

- January, 2000 ~ December, 2010
- 2546 Pts (female: 1770 Male:776)
- F/U : Mean 12 months (range: 1~130months)
- Mean age: 79.2 yrs old (range: 50-100 yrs)
- Data evaluation

SHF Osteoporosis treatment after fracture

Alcohol history BMI

Marital status BMD

Dementia Solitude habitation

Dizziness History of osteoporosis treatment

ASA score

- Statistical analysis : SPSS 18.0, Student's t-tests, chi-square test

Result

Table 1. Baseline characteristics of the patients

Number (%) or mean \pm SD*	Total (n=2,546)	UHF [‡] (n=2,313)	SHF [§] (n=233)	P value
Sex (female)	1,770 (69.5)	1,583 (68.4)	187 (80.3)	<0.001
Age (year)	79.2 \pm 10.2	78.8 \pm 10.3	83.0 \pm 8.9	0.024
Height (cm)	158.4 \pm 9.2	158.7 \pm 9.3	155.4 \pm 7.4	<0.001
Weight (kg)	55.2 \pm 10.7	55.5 \pm 10.7	51.2 \pm 9.5	<0.001
BMI (kg/m ²)	23.1 \pm 3.5	23.3 \pm 3.4	22.0 \pm 3.4	<0.001
ASA [†] score	2.3 \pm 0.5	2.3 \pm 0.5	2.3 \pm 0.5	0.671
Alcoholism	26 (1.0)	23 (1.0)	3 (1.3)	0.719
Unmarried	77 (3.0)	64 (2.8)	13 (5.6)	0.004
Live in solitude	63 (2.5)	60 (2.6)	3 (1.3)	0.506
Dementia	113 (4.4)	102 (4.4)	11 (4.7)	0.520

*standard deviation, †American Society of Anesthesiologists, ‡unilateral hip fracture, §subsequent hip fracture

Table 2. Bone mineral density results of patients

Timing and site	No. (%) or mean \pm SD*			P value
	Total (n=1,421)	UHF [‡] (n=1,283)	SHF [§] (n=138)	
First BMD[†] after First Fx[‡]				
neck, T score	-2.89 \pm 1.09	-2.89 \pm 1.05	-2.83 \pm 1.43	0.643
troch, T score	-2.42 \pm 1.16	-2.42 \pm 1.13	-2.37 \pm 1.43	0.730
hip, T score	-2.63 \pm 1.18	-2.63 \pm 1.15	-2.63 \pm 1.43	0.976
Treatment after first Fx[‡]	703 (49.5)	628 (48.9)	75 (54.3)	<0.001

* standard deviation, †; bone mineral density, ‡; fracture, §; unilateral hip fracture, ||; subsequent hip fracture

Table 3. Multivariate analysis of risk factors for subsequent fracture

Characteristics	Exp (B) [*]	95% CI [*] for Exp (B) [*]		P value
		lower	upper	
Sex, female (vs male)	2.361	1.540	3.618	<0.001
Age (y-o), \geq 83 (vs < 83)	1.130	0.806	1.583	0.479
BMI (kg/m ²), <22 (vs \geq 22)	1.844	1.324	2.569	<0.001
Marriage, no (vs yes)	2.537	1.254	5.136	0.010

*exponential function, †confidence interval

Conclusion

- * Overall incidence of subsequent hip fractures was 9.2%
- * Multivariate analysis of risk factors found
 - Female gender
 - BMI < 22 kg/m²
 - Being unmarried
 were statistically significant risk factors

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