

## Supplementary Materials

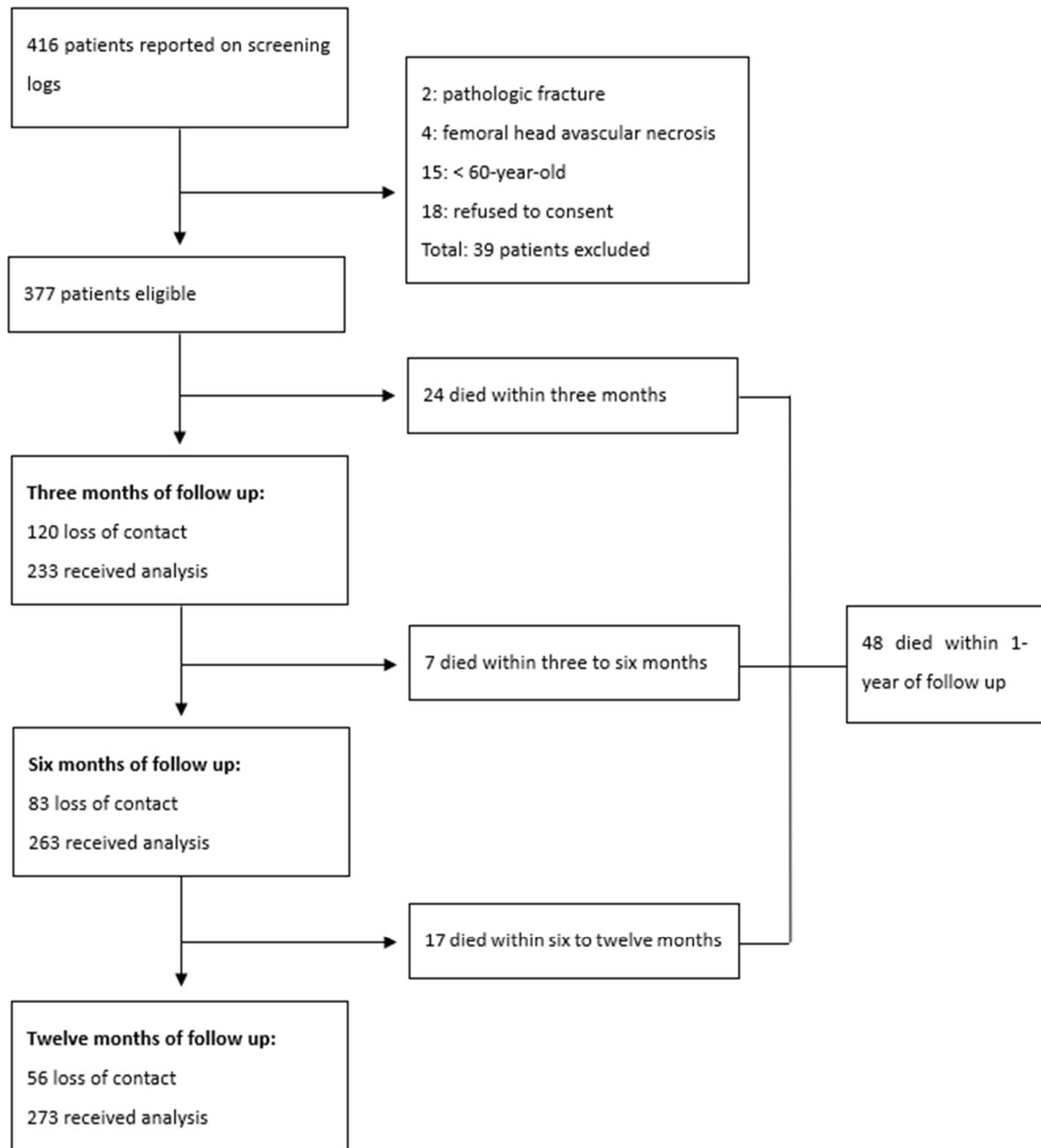


Figure S1. Study profile.

**Table S1:** Univariate analysis of potential clinical risk factors for postoperative 1-year mortality in older adults with hip fracture.

Clinical Characteristics (n = 377)	Survival Group (n = 329)	Mortality Group (n = 48)	p-value
<b>Age</b>	80 ± 9.3	87 ± 9.2	<0.001
<b>Gender</b>			
Male	88 (84%)	17 (16%)	0.2
Female	241 (89%)	31 (11%)	
<b>BMI</b>	22 ± 3.6	21 ± 3.9	0.07
<b>CCI</b>	4.7 ± 1.6	6.0 ± 2.4	<0.001
<b>Types of fracture</b>			
FNF	182 (90%)	21 (10%)	0.1
PTF	147 (85%)	27 (15%)	
<b>ASA grading</b>	2.6 ± 0.5	3.0 ± 0.3	<0.001
<b>SPMSQ score</b>	3.2 ± 3.6	5.8 ± 3.8	<0.001
<b>Handgrip strength (kg)</b>	13 ± 9.8	8.0 ± 4.1	<0.001
<b>BMD T-score</b>	- 3.8 ± 1.2	- 4.0 ± 0.83	0.17
<b>Pre-operation laboratory data</b>			
Hb (g/dl)	12 ± 2.2	11 ± 2.4	0.001
Na (mmol/L)	137 ± 4.1	137 ± 3.9	1.0
Creatinine (ml/min/1.73m <sup>2</sup> )	1.1 ± 1.2	1.5 ± 1.6	0.07
Vitamin D3 (ng/mL)	20 ± 16	20 ± 13	0.9
Parathyroid hormone (pg/mL)	55 ± 65	59 ± 36	0.7
Albumin (g/dL)	3.1 ± 0.4	3.0 ± 0.4	0.022
<b>Surgical record</b>			
Surgical delay (hour)	76 ± 245	89 ± 142	0.7
Operation time (min)	80 ± 42	70 ± 31	0.1
Blood loss (cc)	113 ± 113	97 ± 73	0.4
<b>Surgical classification</b>			
ORIF	204 (86%)	32 (14%)	0.5
Joint replacement	125 (89%)	16 (11%)	

Abbreviations: ASA, American Society of Anesthesiologists; BMD, bone mineral density; BMI, body mass index; CCI, Charlson Comorbidity Index; Hb, hemoglobin; ORIF, open reduction and internal fixation; SD, standard deviation; SPMSQ, Short Portable Mental Status Questionnaire.

**Table S2.** Univariate analysis of GEE model with multiple imputation: potential risk factors affecting postoperative EQ-5D in older adults with hip fracture.

Variables	$\beta$	<i>p</i> -value	95% CI Ratio	
			Lower	Upper
EQ-5D				
Postoperative 3 months v.s. preinjury status	−0.12	< 0.001	−0.14	− 0.10
Postoperative 6 months v.s. preinjury status	−0.08	< 0.001	− 0.11	− 0.05
Postoperative 12 months v.s. preinjury status	− 0.08	< 0.001	− 0.11	− 0.05
Age	− 0.007	< 0.001	− 0.01	− 0.005
Gender (Female vs. Male)	− 0.002	0.92	− 0.04	0.04
BMI	0.003	0.28	−0.002	0.01
CCI	− 0.034	< 0.001	− 0.04	− 0.03
BMD T-score	0.04	< 0.001	0.03	0.06
Pre-operation Hb (g/dl)	0.016	< 0.001	0.007	0.02
Creatinine (mg/dL)	− 0.006	0.42	− 0.02	0.008
Na (mmol/L)	0.002	0.27	− 0.002	0.007
Vitamin D (ng/mL)	0.0002	0.82	−0.001	0.001
PTH	< −0.001	0.22	− 0.001	0.0001
Albumin (g/dL)	0.14	< 0.001	0.09	0.19
SPMSQ	−0.026	< 0.001	− 0.03	− 0.02
ASA grading	− 0.12	< 0.001	− 0.15	− 0.09
Handgrip strength (kg)	0.007	< 0.001	0.005	0.009
Types of fracture (PTF vs. FNF)	−0.05	0.003	− 0.09	− 0.02
Surgical delay (hour)	< −0.001	0.94	− 0.0001	0.0001
Surgical classification (Joint replacement vs. ORIF)	< 0.001	0.99	− 0.04	0.04
Time (min)	< −0.001	0.97	− 0.0004	0.0004
Blood loss (cc)	< −0.001	0.56	− 0.0002	0.0001

Abbreviations: ASA, American Society of Anesthesiologists; BMD, bone mineral density; BMI, body mass index; CCI, Charlson Comorbidity Index; FNF, femoral neck fracture; Hb, hemoglobin; PTF, pertrochanteric fracture; ORIF, open reduction and internal fixation; SD, standard deviation.

**Table S3: Univariate analysis of the GEE model with multiple imputation: factors affecting postoperative BI in older adults with hip fracture.**

Variables	$\beta$	<i>p</i> -value	95% CI Ratio	
			Lower	Upper
BI				
Postoperative 3 months v.s. preinjury status	- 16.5	< 0.001	- 18.7	- 14.3
Postoperative 6 months v.s. preinjury status	- 13.9	< 0.001	- 16.6	- 11.1
Postoperative 12 months v.s. preinjury status	- 14.3	< 0.001	-17.5	- 11.2
Age	- 0.7	< 0.001	- 0.98	- 0.46
Gender (Female vs. Male)	- 0.84	0.77	- 6.5	4.8
BMI	0.57	0.10	- 0.12	1.3
CCI	- 4.5	< 0.001	- 5.9	- 3.2
BMD T-score	4.5	< 0.001	2.3	6.8
Pre-operation Hb (g/dl)	1.9	0.001	0.77	3.06
Creatinine (mg/dL)	- 0.34	0.74	- 2.4	1.7
Na (mmol/L)	0.37	0.24	- 0.24	1.0
Vitamin D (ng/mL)	0.009	0.93	- 0.18	0.19
PTH	- 0.03	0.13	- 0.08	0.01
Albumin (g/dL)	19.4	< 0.001	13.0	25.8
SPMSQ	- 3.8	< 0.001	- 4.4	- 3.2
ASA grading	- 15.6	< 0.001	- 20.2	- 11.0
Handgrip strength (kg)	0.94	< 0.001	0.68	1.2
Types of fracture (PTF vs. FNF)	- 7.0	0.006	- 12.0	- 2.0
Surgical delay (hour)	- 0.001	0.81	- 0.01	0.009
Surgical classification (Joint replacement vs. ORIF)	0.29	0.91	- 4.9	5.5
Time (min)	0.001	0.97	- 0.06	0.06
Blood loss (cc)	- 0.002	0.012	- 0.024	0.02

Abbreviations: ASA, American Society of Anesthesiologists; BMD, bone mineral density; BMI, body mass index; CCI, Charlson Comorbidity Index; FNF, femoral neck fracture; Hb, hemoglobin; PTF, pertrochanteric fracture; ORIF, open reduction and internal fixation; SD, standard deviation.