

Supplementary Online Content

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eAppendix 1. Predictors of hip fracture revision

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eTable 2. Characteristics of hip fracture cohort after matching

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This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix 1: Predictors of hip fracture revision

We performed a multivariate proportional hazards regression in hip fracture patients, after accounting for clustering by surgeon, for revision within a year of surgery.

eTable 1: Predictors of revision of hip fractures within 1 y of surgery

	Revision	
	Adjusted HR	p-value
Concurrent procedure	1.46 (1.06-2.00)	0.019
Age (y)	0.96 (0.95-0.97)	<0.0001
Male	0.88 (0.79-0.98)	0.018
Income Quintile		
Lowest	0.93 (0.79-1.10)	0.412
2	0.98 (0.82-1.17)	0.805
3	0.93 (0.79-1.08)	0.327
4	1.13 (0.96-1.32)	0.140
Highest	REF	REF
Nursing Home	0.62 (0.50-0.79)	<0.0001
Previous myocardial infarction	0.96 (0.78-1.18)	0.680
Congestive heart failure	0.99 (0.87-1.14)	0.932
Cerebrovascular Disease		
COPD	1.06 (0.93-1.20)	0.399
Dementia	0.68 (0.58-0.79)	<0.0001
Diabetes	0.90 (0.80-1.00)	0.047
Chronic Renal Failure	0.97 (0.83-1.14)	0.735
Frail	0.87 (0.75-1.01)	0.063
Charlson Score		
0	REF	REF
1	0.95 (0.82-1.10)	0.509
2	1.00 (0.84-1.18)	0.952
3 or more	0.95 (0.81-1.12)	0.546
Hours from ED to surgery	1.01 (1.01-1.01)	<0.0001
Teaching hospital	1.20 (0.89-1.61)	0.230
Surgical assistant		
None	REF	REF
Family doctor	1.69 (1.30-2.20)	<0.0001
Non-orthopaedic surgeon	0.99 (0.72-1.34)	0.925
Orthopaedic surgeon	1.10 (0.85-1.41)	0.474
Years in practice	1.00 (0.99-1.00)	0.265
Surgeon volume	0.99 (0.99-0.99)	0.004
Hospital volume	1.00 (1.00-1.00)	0.662

eAppendix 2: Adding type of assistant to the matched variables

We repeated the matching of overlapping and non-overlapping hip fracture procedures by patient age, patient sex, procedure, surgeon, hospital and type of assistant (eTable 2). All variables were balanced between groups, except for prior myocardial infarction that was slightly more prevalent in non-overlapping procedures (7.8% versus 5.3%, standardized difference of 11%).

We then determined the risk for a complication in the overlapping group, controlling for prior MI (eTable 3).

eTable 2: Characteristics of hip fracture cohort after matching

	Overlapping	Non-overlapping	Standardized Difference
Number of patients	N=748	N=748	
Demographics			
Age (y) [Median (IQR)]	84 (78-89)	84 (78-89)	0.01
Female [N (%)]	559 (74.7%)	559 (74.7%)	0
Income Quintile [N (%)]			
Lowest	164 (21.9%)	170 (22.7%)	0.02
2	144 (19.3%)	150 (20.1%)	0.02
3	131 (17.5%)	124 (16.6%)	0.02
4	127 (17.0%)	134 (17.9%)	0.02
Highest	173 (23.1%)	161 (21.5%)	0.04
Nursing Home [N (%)]	70 (9.4%)	78 (10.4%)	0.04
Co-morbidities [N (%)]			
Previous myocardial infarction	40 (5.3%)	58 (7.8%)	0.11
Congestive heart failure	178 (23.8%)	174 (23.3%)	0.01
Cerebrovascular Disease	52 (7.0%)	60 (8.0%)	0.04
COPD	135 (18.0%)	131 (17.5%)	0.01
Dementia	238 (31.8%)	247 (33.0%)	0.03
Diabetes	226 (30.2%)	204 (27.3%)	0.07
Chronic Renal Failure	88 (11.8%)	85 (11.4%)	0.01
Frail	129 (17.2%)	148 (19.8%)	0.07
Charlson Score			
No prior admission	317 (42.4%)	323 (43.2%)	0.02
0	133 (17.8%)	138 (18.4%)	0.02
1	110 (14.7%)	104 (13.9%)	0.02
2	81 (10.8%)	73 (9.8%)	0.04
3 or more	107 (14.3%)	110 (14.7%)	0.01
Fracture characteristics			
Fracture type			
Femoral neck	413 (55.2%)	406 (54.3%)	0.02
Intertrochanteric	317 (42.4%)	318 (42.5%)	0
Subtrochanteric	18 (2.4%)	24 (3.2%)	0.05
Fixation			
Hemiarthroplasty	344 (46.0%)	344 (46.0%)	0
Screw	310 (41.4%)	310 (41.4%)	0
Intramedullary Nail	94 (12.6%)	94 (12.6%)	0
Admission characteristics			
Hours from ED to OR [Median (IQR)]	36 (22-51)	36 (23-52)	0.02
Teaching hospital [N (%)]	517 (69.1%)	517 (69.1%)	0
Surgical assistant [N (%)]			
Family doctor	149 (19.9%)	149 (19.9%)	0
Non-orthopaedic surgeon	14 (1.9%)	14 (1.9%)	0
Orthopaedic surgeon	225 (30.1%)	225 (30.1%)	0
Years in practice [Median (IQR)]	0 (0-4)	0 (0-5)	0.01
Surgeon volume [Median (IQR)]	41 (29-58)	41 (29-56)	0.01
Hospital volume [Median (IQR)]	268 (193-338)	262 (195-341)	0.01
	Overlapping	Non-overlapping	p-value
Surgical complication	71 (9.5%)	46 (6.1%)	0.011
Dislocation	n/a	n/a	0.71
Infection	43 (5.7%)	31 (4.1%)	0.019
Revision	49 (6.6%)	27 (3.6%)	0.005
Duration of surgery (min) [Median (IQR)]	116 (92-139)	109 (88-130)	0.002
Death within 90 days	115 (15.4%)	90 (12.0%)	0.08

eTable 3: Outcomes (hazards ratio) for postoperative complications in matched hip fracture patients

Hip fracture	Hazard Ratio (95%CI)	p-value
Composite complication	1.83 (1.22-2.75)	0.004
Dislocation	0.50 (0.09-2.73)	0.424
Superficial infection	1.81 (1.08-3.05)	0.026
Revision	2.34 (1.37-4.01)	0.002