

Frailty is Associated with Increased Mortality and Re-admission in Geriatric Hip Fractures

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ABSTRACT

Introduction: The Frailty Index (FI) is one of the many diagnostic tools that can help clinicians determine how their patients will recover post-operatively. General frailty is thought to increase as people age; this increase in frailty coincides with a higher risk of hip fractures. We investigated the relationship between FI and both one-year mortality and re-admission in geriatric patients undergoing surgery for a hip fracture.

Methods: We identified patients who were ≥65 years old, underwent surgical repair of a femoral neck or intertrochanteric hip fracture, co-managed by the orthopedic trauma and geriatric services at BWH between May 2018 and August 2020. Demographic and clinical data were extracted from Mass General Brigham (MGB)’s Enterprise Data Warehouse and verified by chart review. FI scores were categorized as: Non-Frail/Pre-Frail (FI <0.21, n=62), Frail (0.21≤FI<0.45, n=185), and Severely Frail (FI > 0.45, n=69). One-year outcomes were calculated using Kaplan-Meier methods and compared using log-rank statistics. This study was approved by the MGB Institutional Review Board.

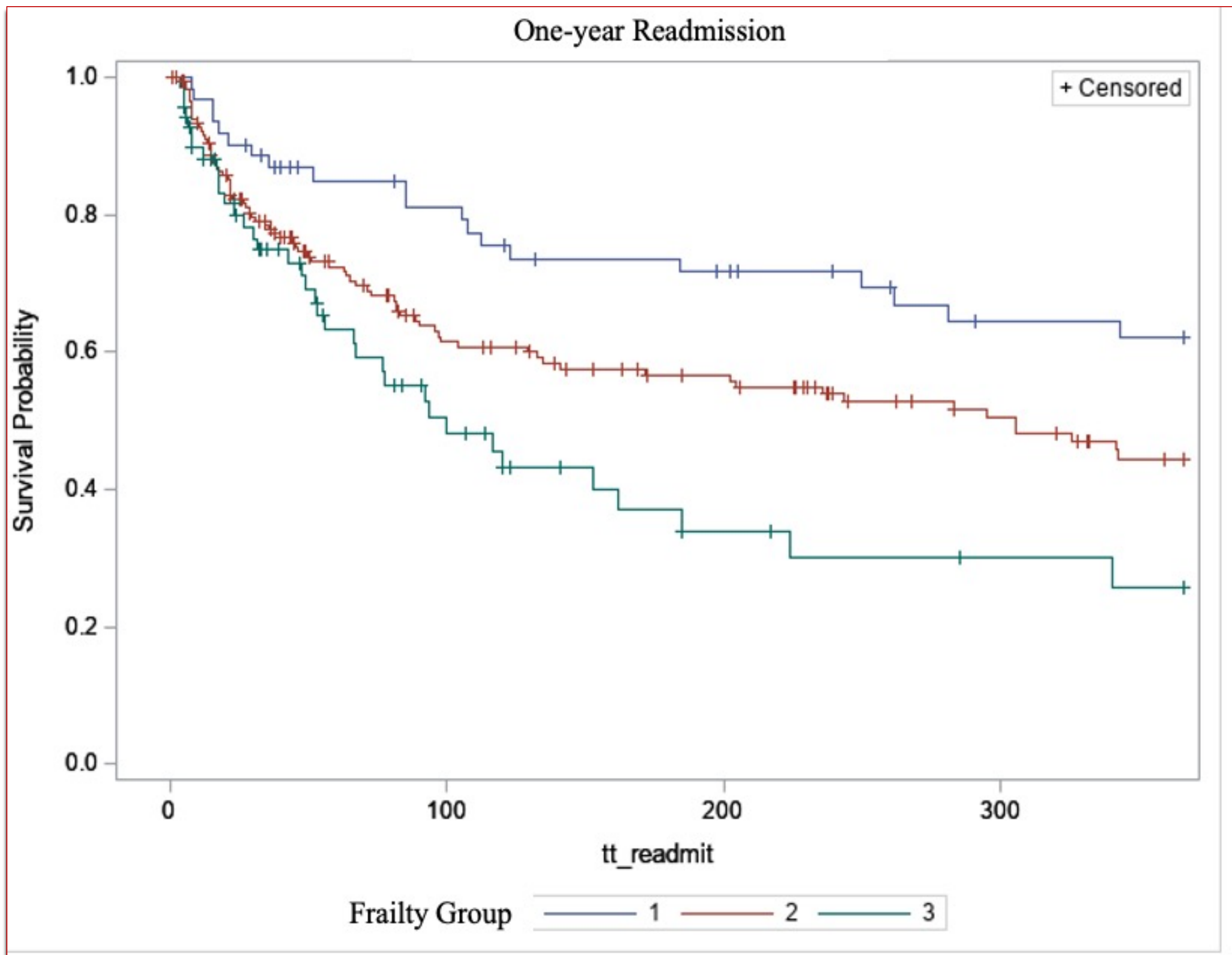
Results: 316 patients with hip fractures who underwent surgical repair and had a frailty index score assigned were identified. At baseline the mean age was 83.8 (SD 7.9) years and the mean FI was 0.33 (SD 0.14). Patients were predominantly white 278 (88.0%) and female 221 (69.9%). Femoral neck fractures accounted for 129 (40.8%) of cases and intertrochanteric fractures accounted for 187 (59.2%) of cases. By one-year (Figure 1), freedom from readmission was 62.0%, 44.4%, and 25.8% (p=0.001) in the non/pre-frail, frail, and severely frail groups, respectively. Similarly, one-year survival rates were 100%, 84.0%, and 51.2% (p<0.001) in the respective frailty groups.

Conclusion: In this analysis, we found that higher FI is associated with higher adverse outcomes at one-year. Specifically, freedom from hospital readmission and survival were associated with better frailty categories. Further analyses will evaluate the role of age itself in relation adverse outcomes following repair of hip fractures. Our findings suggest that FI has a role in identifying high risk surgical candidates and FI may help guide clinical decision making.

RESULTS

Table 2 Surgical Characteristics and outcomes by frailty index scores

	Frailty Index						
Characteristics	Not Frail/Pre-Frail ≤0.20 (N=62)		Frail 0.21-0.45 (N=185)		Severely Frail >0.45 (N=69)		p-value Overall Trend
	N	% or Mean (SD)	N	% or Mean (SD)	N	% or Mean (SD)	
Surgical Information							
Surgery Performed							
Femoral Neck Fracture	34	54.8	72	38.9	23	33.3	0.03
Intertrochanteric hip fracture	28	45.2	113	61.1	46	66.7	0.01
ASA Score							
Class 2	22	35.5	12	6.5	1	1.5	<0.001
Class 3	38	61.3	138	74.6	46	66.7	<0.001
Class 4/5	2	3.2	35	18.9	22	31.9	
Peripheral Nerve Block							
No	44	71.0	94	50.8	33	47.8	0.01
Yes	18	29.0	91	49.2	36	52.2	0.01
Transfusion							0.76
No	54	87.1	72	86.8	57	82.6	0.31
Yes	8	12.9	11	13.3	12	17.4	
Any ICU stay							0.45
No	58	93.6	167	90.3	60	87.0	0.21
Yes	4	6.5	18	9.7	9	13.0	
Estimated Blood loss (cc)	55	225 (181) Median: 200 Range: 3-1000 IQR: 100, 250	167	191 (170) Median: 150 Range: 15-1500 IQR: 100, 200	55	138 (132) Median: 100 Range: 5-700 IQR: 50, 155	<0.001 0.006
Discharge Disposition							<0.001
Skilled Nursing	28	45.2	109	58.9	46	66.7	0.02
Rehab	9	14.5	50	27.0	14	20.3	
Long term care	2	3.2	4	2.2	2	2.9	
Home health	23	37.1	16	8.7	3	4.4	
Died	0	0	3	1.6	0	0	
Custodial care	0	0	2	1.1	2	2.9	
Short term Hosp	0	0	1	0.5	1	1.5	
Hospice	0	0	0	0	1	1.5	



*Group 1: Non-frail/pre-frail, group 2: frail, group 3: severely frail

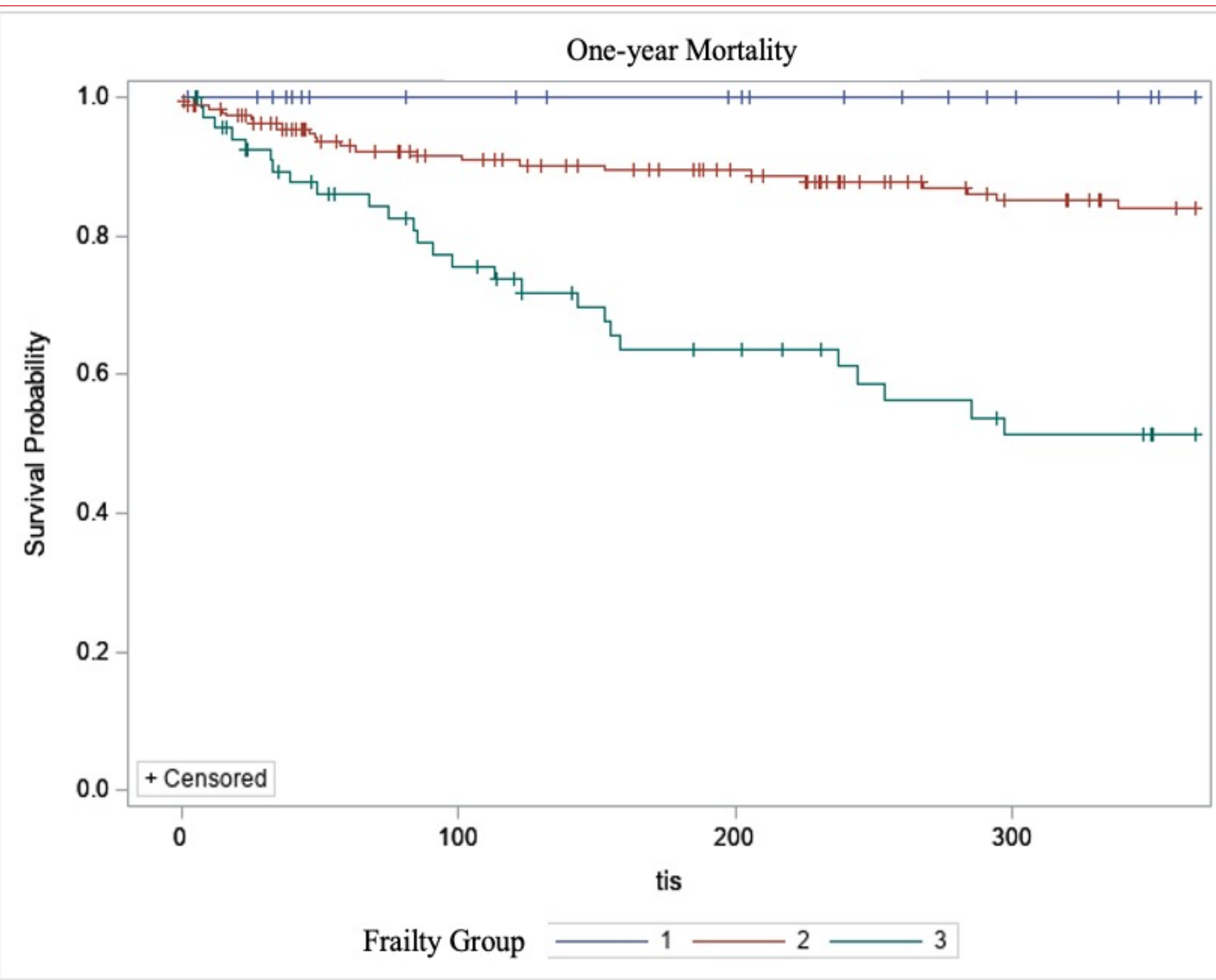
CONCLUSION

Frailty index (FI) is a tool used to help clinicians determine how well a patient may do after orthopedic trauma surgery. We looked at 316 patients who had a femoral neck fracture or an intertrochanteric hip fracture and their associated FI’s to assess both mortality rate after surgery and hospital readmission rate at one year postoperatively. Our data suggested that FI can help stratify patients with hip fractures and appears to be a much more powerful predictor of mortality than age alone.

DISCLOSURES

No funding was received in support of this project. The authors have no financial disclosures.

Ethical consideration: IRB approval was obtained for this study (Protocol # 2019P003034)



*Group 1: Non-frail/pre-frail, group 2: frail, group 3: severely frail