

Comparative Outcomes Following Treatment of Peri-implant, Periprosthetic, and Interprosthetic Femur Fractures: Which Factors Increase Mortality Risk?

Jay K. Shah¹, Jason I. Yang², David Keller¹, Luke G. Menken¹, Frank A. Liporace¹, Richard S. Yoon¹

¹Dept of Orthopedic Surgery, RWJ Barnabas –Jersey City Medical Center, Jersey City, NJ

²Robert Wood Johnson University Hospital, RWJ Barnabas Health, New Brunswick, NJ



Background

- The incidence of periprosthetic femur fractures is expected to continue to rise as the prevalence of hip and knee arthroplasty increases.
- There is a significant amount of data available on mortality and outcomes following native hip fractures, but data is still limited on periprosthetic femur fractures.
- The purpose of this study was to determine these variables in periprosthetic femur fractures
 - (1) Mortality rate and survivorship
 - (2) Risk factors affecting mortality

Methods

- We retrospectively reviewed 82 patients treated surgically for periprosthetic femur fracture between 2013-2019.
- Demographic and comorbidity variables, previous implant, fracture classification, and surgical treatment were collected.
- Discharge paperwork was reviewed to determine weight bearing and disposition.
- Primary outcome measures were:
 - 30 day, 6 month, 1 year, and 2 year mortality
 - Risk factors affecting mortality

Results

KM Survival Estimates	30 day	90 day	6 month	1 year	2 year
Total (n=82)	95.10%	91.20%	83.00%	78.30%	62.40%
THA (n=33)	93.90%	90.70%	81.10%	77.10%	56.00%
TKA (n=29)	96.40%	96.40%	92.30%	87.70%	72.50%
Peri-implant (n=13)	84.00%	75.60%	67.20%	58.80%	49.00%
Interprosthetic (n=7)	100%	100%	83.30%	83.30%	50.00%

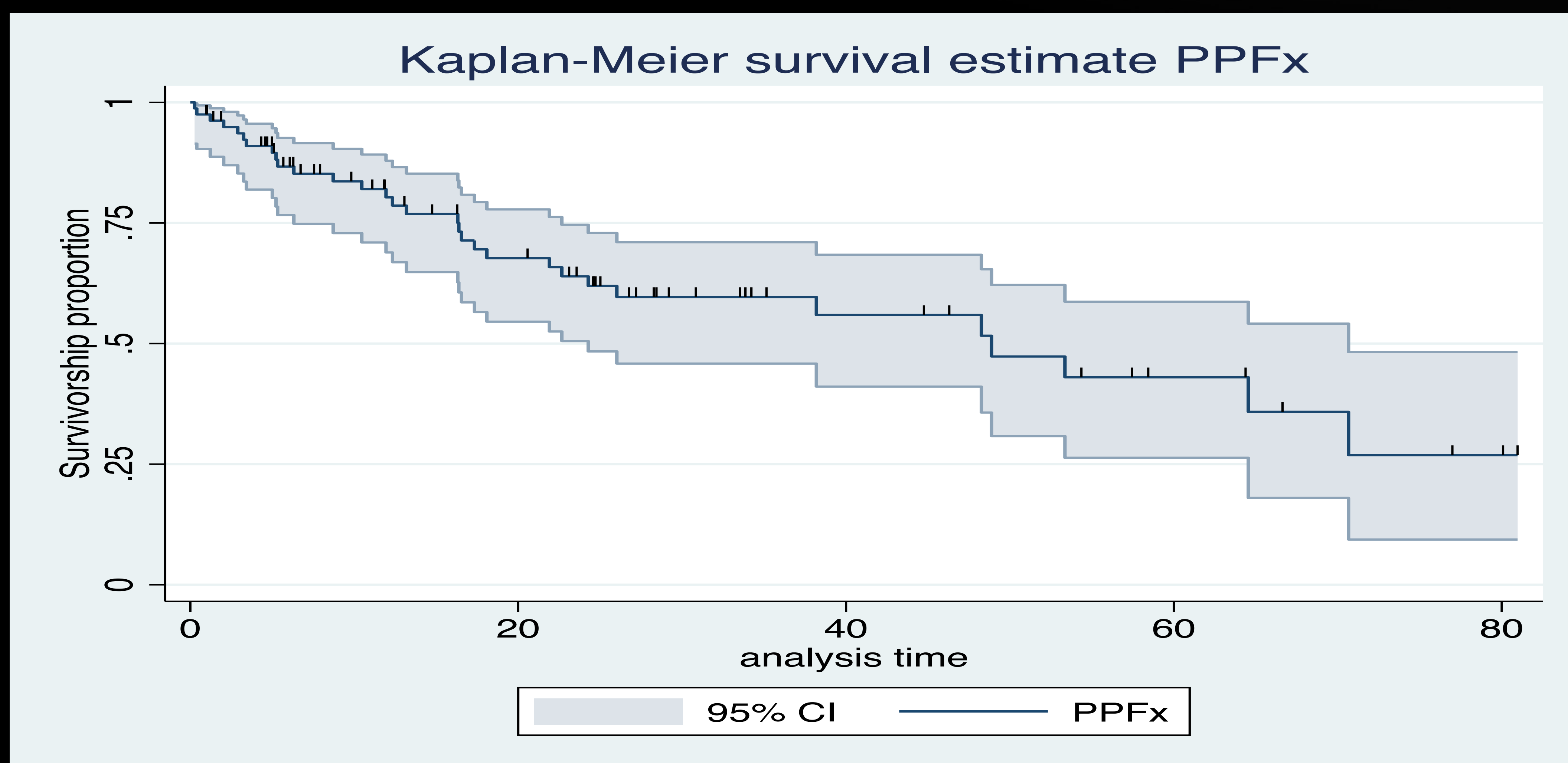


Figure 1 and 2: Kaplan-meier survival estimates at 30-days, 90-days, 6-months, 1-year, and 2-years.

Table 3: Effect of demographics, comorbidities, fixation strategy, and discharge variables on mortality.

Cox Proportional Hazard Model		Univariate HR	P-value	Multivariate HR	P-value	
Age		1.06	<0.001	1.08	0.04	
Gender (M to F)		0.90	0.80	-	-	
Length of Stay		1.01	0.66	-	-	
PPFx Type	THA	1.31	0.54	2.56	0.20	
	TKA	1.00	-	1.00	-	
	Peri-implant	1.81	0.27	0.59	0.77	
	Interprosthetic	1.96	0.32	1.00	1.00	
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Fixation Strategy	ORIF	1.60	0.36	1.44	0.76	
	Revision	1.38	0.56	1.74	0.63	
	Combined	1.00	-	1.00	-	
Comorbidities	HTN	1.06	0.89	-	-	
	CVA	1.18	0.74	-	-	
	CAD	1.66	0.29	2.02	0.30	
	CHF	1.72	0.47	-	-	
	COPD	1.52	0.37	-	-	
	DM	0.49	0.18	1.43	0.67	
	HLD	1.09	0.84	-	-	
	Hypothyroid	2.10	0.14	5.68	0.19	
	OA	0.91	0.82	-	-	
	Osteoporosis	1.90	0.24	3.59	0.28	
	ESRD	-	-	-	-	
	Dementia	2.34	0.04	0.95	0.96	
	Smoking Status	Never	1.00	-	-	-
		Current	0.90	0.83	-	-
Former		0.44	0.42	-	-	
Pre-surgery ambulatory status	Independent	1.00	-	1.00	-	
	Assisted	1.01	0.98	0.79	0.85	
	Dependent	0.30	0.27	0.29	0.33	
Assistive Device Use Post-operatively	None	1.00	-	-	-	
	Cane	0.65	0.65	-	-	
	Crutches	-	-	-	-	
	Walker	0.76	0.68	-	-	
Discharge Disposition	Wheelchair	-	-	-	-	
	Home	1.00	-	1.00	-	
	Rehab	8.97	0.03	7.07	0.09	
	SNF	22.49	0.01	18.39	0.04	
	Other hospital	4.37	0.30	12.22	0.19	
Weight-bearing (WB) on discharge	Dead	-	-	-	-	
	Non-WB	1.91	0.41	-	-	
	Partial WB	1.00	-	-	-	
Full WB	1.98	0.37	-	-		

Conclusions

- Periprosthetic femur fractures have similar mortality to native hip fractures in the short term, but over the long term tend to have better survivorship.
- No difference in mortality rate when comparing different implants
- Age, disposition to a rehab or skilled nursing facility, and dementia are associated with increased mortality.
- Fixation strategy did not affect mortality – surgeons should choose the surgical treatment they feel most comfortable with.