

Early versus Late Periprosthetic Femur Fractures After Total Hip Arthroplasty: A Comparative Analysis of Infection and Reoperation Outcomes

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BACKGROUND

- Periprosthetic femur fractures (PFFs) after total hip arthroplasty (THA) represent a growing burden with substantial morbidity, mortality, and economic costs to healthcare systems and patients
- Whether fracture timing impacts postoperative complications, specifically periprosthetic joint infection (PJI), remains unclear

OBJECTIVES

- Compare PJI and septic reoperation rates of early (<90 days) versus late (>90 days) PFFs following THA

METHODS

- Retrospective review of 133 surgically repaired PFFs following primary THA (2011 – 2025)
- Exclusion criteria: fractures not involving the femoral stem, pathologic fractures, active PJI at time of fracture, prior revision before PFF surgery, and <1-year follow-up
- Patients were stratified into early (<90 days, n=103) and late (>90 days, n=30) PFF cohorts relative to the index THA
- Primary outcomes: overall PJI incidence, septic reoperations, and PJI-specific 90-day readmissions; Kaplan-Meier analysis was used to estimate septic reoperation-free survivorship

RESULTS

- Incidence of PJI was similar between early and late PFFs; time to septic reoperation also did not significantly differ between early and late PFFs (P=0.483)
- Overall 90-day readmissions did not differ between groups; readmissions for PJI were also similar (P=0.865)
- Late PFFs were associated with longer operative times (P=0.004)
- Kaplan-Meier analysis demonstrated no differences in survivorship free from septic reoperation up to three years postoperatively

CONCLUSIONS

- Timing of PFF following THA did not significantly impact rates of PJI, septic reoperation, or infectious survivorship
- Overall infectious complication profiles remained similar between early and late PFF populations
- These findings suggest fracture timing alone should not guide the infectious prognosis or management of early PFFs

Table 1: Complications and Outcomes

Variables	Early (< 90 Days) N = 103	Late (> 90 Days) N = 30	P-value
Overall PJI, %	6.8	10.0	0.693
Septic Reoperations, %			0.083
DAIR with Head and Liner Exchange	4.9	0.0	
DAIR without Head and Liner Exchange	1.0	6.7	
One-Stage Revision	0.0	3.3	
Two-Stage Revision	1.0	0.0	
Time to Septic Reoperation (months), mean	2.8	8.9	0.483
90-Day Readmissions, %	12.6	6.7	0.364
PJI	5.8	6.7	0.865
Dislocation	1.9	0.0	
Periprosthetic Fracture	1.9	0.0	
Stem Subsidence	1.0	0.0	
Medical Indication	1.9	0.0	
PJI, periprosthetic joint infection; DAIR, debridement, antibiotics, and implant retention.			

Figure 1: Kaplan-Meier Analysis of Septic Reoperation-Free Survival in Early versus Late Periprosthetic Femur Fractures

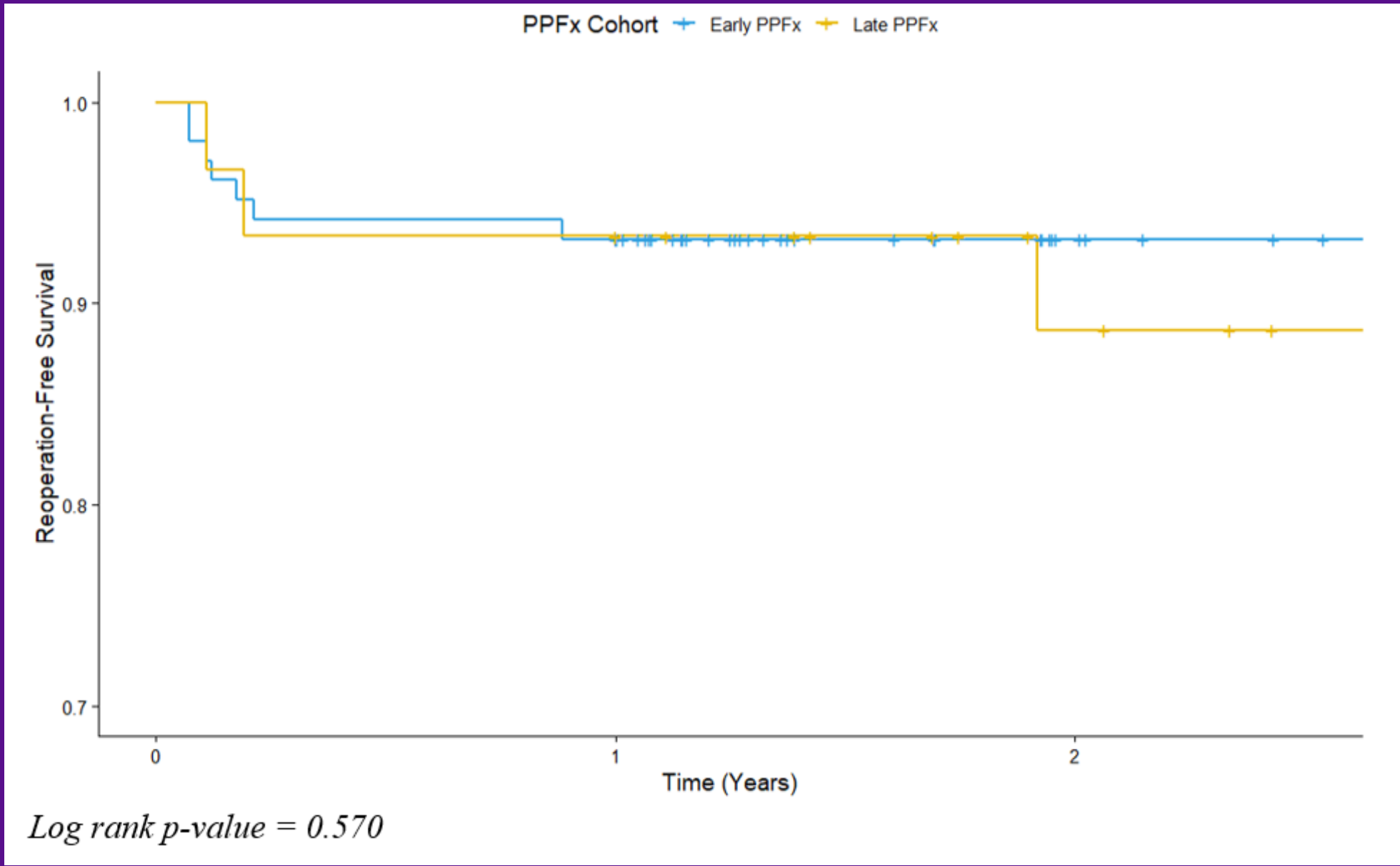


Table 2: Perioperative Variables

Variables	Early (< 90 Days) N = 103	Late (> 90 Days) N = 30	P-value
Laterality, %			0.666
Left	46.6	40.0	
Right	53.4	60.0	
Vancouver Class, %			0.058
AG	9.7	0.0	
AL	8.7	3.3	
B1	2.9	3.3	
B2	77.7	83.3	
B3	1.0	6.7	
C and B2	0.0	3.3	
Approach, %			0.231
Anterior	7.8	0.0	
Lateral	13.6	10.0	
Posterior	78.6	90.0	
Revision Surgery, %			0.342
ORIF with Revision of the Femoral Stem	97.1	93.3	
ORIF only	2.9	6.7	
Anesthesia Type %			0.703
General	57.3	63.3	
Spinal	42.7	36.7	
Procedure Time (min), mean	131.9	167.0	0.004
LOS (days), mean	6.1	5.6	0.395
Discharge Disposition, %			0.132
Acute Rehab	14.6	6.7	
Home	48.5	36.7	
SNF	36.9	56.7	
ORIF, open reduction and internal fixation; LOS, length of stay; SNF, skilled nursing facility.			

Table 3: Kaplan-Meier Estimates of Septic Reoperation-Free Survival in Early versus Late Periprosthetic Femur Fractures

Time	Early			Late		
	n at Risk	Events	Survival %	n at Risk	Events	Survival %
0	103	0	100.0	30	0	100.0
1 Month	101	2	98.1	30	0	100.0
3 Months	97	4	94.2	28	2	93.3
6 Months	97	0	94.2	28	0	93.3
1 Year	96	1	93.2	28	0	93.3
2 Years	68	0	93.2	19	1	88.7
3 Years	57	0	93.2	14	0	88.7