Factors Associated with Discharge Timing After Total Knee Arthroplasty: A Single Institution Retrospective Review

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BACKGROUND: Facilitating safe same-day discharge on postoperative day 0 (POD0) has become a priority, given the increasing number of total knee arthroplasties (TKAs) and the shift towards outpatient care. While tools such as the Risk Assessment and Prediction Tool (RAPT) assess discharge readiness, the timing of discharge depends on several interconnected factors. This study examined clinical, social, and operational variables to identify predictors of POD0 discharge as compared to later-day discharge following primary TKA.

METHODS: This single-institution retrospective review examined the electronic medical records of 519 patients who had available RAPT scores and underwent primary TKA at an orthopaedic specialty hospital between 2022 and 2025. RAPT scores were then modified to exclude age and sex components, focusing instead on mobility and social factors. Patients were grouped by discharge timing (same-day versus later-day) and compared using univariate analyses. A multivariable logistic regression model was constructed to identify independent predictors of discharge timing. Additionally, a qualitative review of medical records was performed to capture social barriers not reflected in the quantitative analyses.

RESULTS: On average, patients who were discharged on a later day traveled longer distances to the hospital ($p<0.01$), had lower modified RAPT scores ($p=0.03$), and left the OR later in the day

(p=0.007). In the multivariable logistic regression model, a modified RAPT score ≤4 (OR 0.6, p <0.01) and a later time out of the OR (OR 0.83 per hour, p = 0.007) were associated with later-day discharge. The qualitative review identified unanticipated delays in 8 patients, related to limited caregiver availability or lack of transportation.

CONCLUSIONS: Achieving same-day discharge following TKA relies on a combination of clinical and operational factors, with functional readiness, as indicated by the modified RAPT score, acting as a key predictor. These findings may guide preoperative counseling and case scheduling tactics to enhance efficiency while ensuring safe outpatient care.

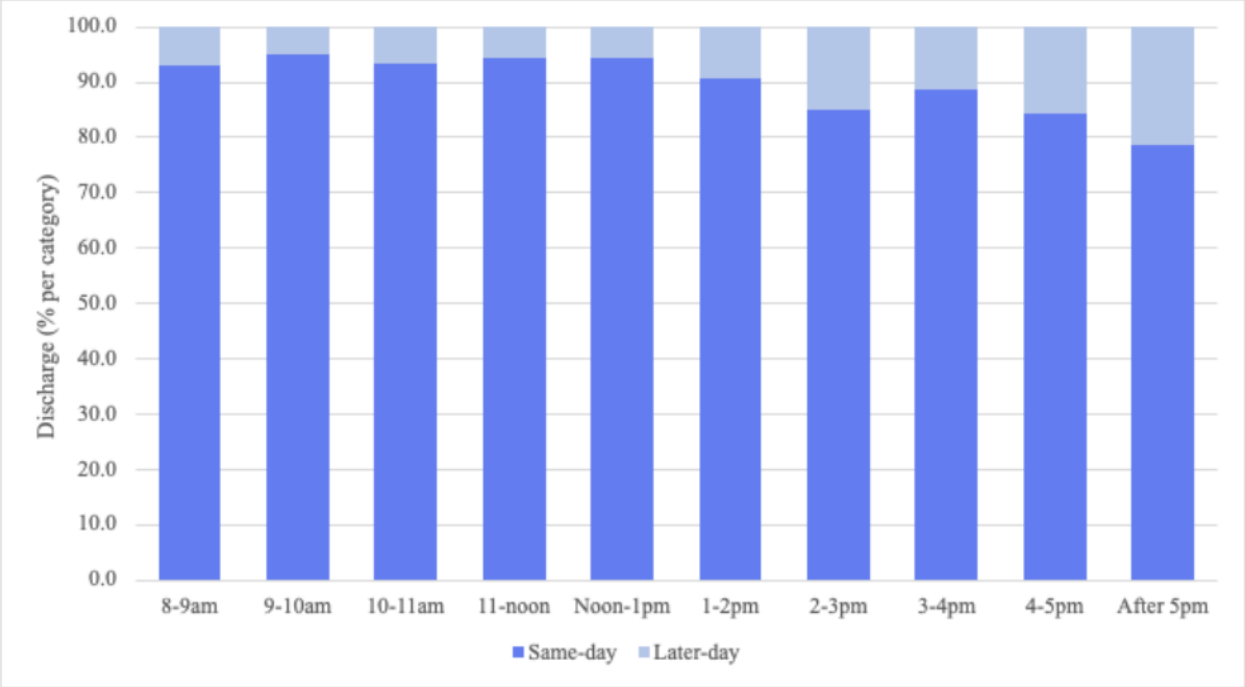

Figure 1. Discharge Timing Stratified by Time Out of the Operating Room. Percentage of patients discharged on the same day of surgery shown in dark blue; percentage of patients discharged on a later day shown in light blue. Same-day discharge rates decrease as procedures finish later in the day.

Table 1. Initial Patient Demographics: Same Day versus Later Day Discharge after Primary Total Knee Arthroplasty			
Characteristic	**Same Day**	**Later Day** [a]	**P-value**
Total (n, %)	474 (91.3)	45 (8.7)	
Age in Years (mean, SD)	67.5 (8.6)	66.2 (10.1)	0.501
Sex (n, %)			
F	309 (65.2)	29 (64.4)	1
M	165 (34.8)	16 (35.6)	
BMI (mean, SD)	31.3 (5.6)	30.1 (4.4)	0.345
CCI (mean, SD)	64.3 (31.8)	64.6 (32.7)	0.625
DCI Score (mean, SD)	38.5 (26.1)	46.7 (27.2)	0.052
Modified RAPT score [b]	6.4 (1.5)	5.5 (2.3)	**0.03***
Miles Traveled (mean, SD)	25.8 (52.7)	80.9 (83.8)	**<0.01***
OR duration (min)	123.9 (24.7)	122.2 (24.5)	0.615
Time out of OR (n, %)			
8-9am	13 (92.9)	1 (7.1)	**0.007***
9-10am	57 (95)	3 (5)	
10-11am	55 (93.2)	4 (6.8)	
11-noon	67 (94.4)	4 (5.6)	
Noon-1pm	100 (94.3)	6 (5.7)	
1-2pm	57 (90.5)	6 (9.5)	
2-3pm	51 (85)	9 (15)	
3-4pm	47 (88.7)	6 (11.3)	
4-5pm	16 (84.2)	3 (15.8)	
After 5pm	11 (78.6)	3 (21.4)	

a) Average length of stay for later day group was 2.4 days
b) Modified RAPT score excludes age and sex components
*Denotes significance