11-2019

Preoperative Factors Related to Delayed Discharge after Total Knee Arthroplasty Removal from Inpatient-Only List

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Background

- The Centers for Medicare & Medicaid Services removed total knee arthroplasty (TKA) from the inpatient-only (IPO) list effective January of 2018
- Consequently, all TKAs were scheduled as outpatient (23-hour observation) without workflow modifications
- While previous studies have identified specific factors associated with successful outpatient TKAs, none have been described under these mandatory, non-selective circumstances[1-5]
- Specific aim: to examine the preoperative factors associated with delayed discharge following this policy change among a non-selected cohort, as published data in this area are lacking

Methods

- TKA patients admitted to any Baptist Health South Florida facility between January 01, 2018 and August 01, 2018 were retrospectively analyzed
- Patients were stratified into two groups based on hospital night stay:
  - ≤ 1 night (non-delayed discharge)
  - > 1 night (delayed discharge)
- The association between the following preoperative factors and delayed discharge were examined using 2-tailed *t*-tests for continuous data, and Pearson's chi-square or Fischer exact tests for categorical data
  - Age; gender; race/ethnicity; insurance type; preoperative education class attendance; anesthesia type; smoking; body mass index (BMI); diabetes; hypertension; cardiovascular diseases; chronic obstructive pulmonary disease (COPD); and kidney disease
- All analyses were conducted using SPSS (IBM, version 23.0)

Results

- 447 TKA patients were identified during the study period
  - 279 (62.4%) had a non-delayed discharge
  - 168 (37.6%) had a delayed discharge
- The following table presents the association between preoperative factors and delayed discharge among TKA patients originally scheduled as outpatient following TKA removal from IPO list

Variable	Nights ≤ 1 N = 279	Nights > 1 N = 168	P value
Age (years)	**69.9 (8.6)**	**71.5 (8.0)**	**0.033**
Gender			
Male	**124 (44.4%)**	**39 (23.2%)**	**<0.001**
Female	**155 (55.6%)**	**129 (76.8%)**	
Race/ethnicity			
Non-Hispanic White	107 (38.4%)	53 (31.5%)	0.348
Hispanic White	157 (56.3%)	105 (62.5%)	
Other or unknown	15 (5.4%)	10 (6.0%)	
Insurance type			0.185
Medicare HMO	97 (34.8%)	75 (44.6%)	
Medicare HCFA	107 (38.4%)	62 (36.9%)	
HMO	41 (14.7%)	15 (8.9%)	
PPO	20 (7.2%)	9 (5.4%)	
Other	14 (5.0%)	7 (4.2%)	
Preoperative education			0.782
Yes	61 (87.1%)	36 (83.7%)	
No	9 (12.9%)	7 (16.3%)	
Anesthesia type			0.111
General	60 (21.5%)	46 (27.4%)	
Spinal	79 (28.3%)	55 (32.7%)	
Spinal with MAC	135 (48.4%)	62 (36.9%)	
Other	5 (1.8%)	5 (3.0%)	
Smoking	29 (10.4%)	23 (13.7%)	0.291
BMI (kg/m^2)	30.8	31.2	0.464
Diabetes	33 (11.8%)	27 (16.1)	0.252
Hypertension	**109 (39.1%)**	**82 (48.8%)**	**0.049**
Cardiac disease	4 (1.4%)	3 (1.8%)	1.000
CHF	1 (0.4%)	1 (0.6%)	1.000
Stroke	2 (0.7%)	1 (0.6%)	1.000
COPD	**0 (0%)**	**4 (2.4%)**	**0.020**
Kidney disease (creatinine > 1.5)	2 (0.7%)	0 (0%)	

Main Findings:

- Delayed discharge was related to:
  - Older age
  - Female sex
  - Hypertension
  - COPD
- Post-hoc analyses revealed that patients with delayed discharge were more likely to be discharged to an institution (26.8% vs. 5.8%, p <0.001) than home (73.2% vs. 94.2%, p <0.001), suggesting social support may also play an important role

Conclusions

- Almost 40% of our population had a ≥ 2 night hospital stay despite being scheduled as outpatient
- Preoperative factors associated with delayed discharge included older age, female sex, hypertension, and COPD
- With the numbers of available for study, delayed discharge was not related to race/ethnicity, insurance type, preoperative education, anesthesia type, smoking, body mass index, diabetes, cardiovascular disease, or kidney disease
- The influence of social support warrants further investigation since discharge to an institution was prevalent in the delayed group
- **Limitations:**
  - Small sample size, with limited prevalence of certain conditions
  - Missing data on preoperative education class attendance

References

1. Arshi, A., Leong, N. L., D'Oro, A., Wang, C., Buser, Z., et al. (2017). Outpatient total knee arthroplasty is associated with higher risk of preoperative complications. *The Journal of Bone and Joint Surgery, 99*, 1978-1986.
2. Courtney,P. M., Friomson, M. I., Michael Meneghini, R. M., Lee, G., Della Valle, C. J., (2018). Can total knee arthroplasty be performed safely as an outpatient in the medicare population? *The Journal of Arthroplasty*, 1-4.
3. Gauthier-Kwan, O. Y., Dobranksy, J. S., Dervin, G.F., (2018). Quality of recovery, postdischarge hospital utilization, and 2-year functional outcomes after an outpatient total knee arthroplasty program. *The Journal of Arthroplasty,* 1-6.
4. Hoffmann, J. D., Kusnezov, N. A., Dunn, J. C. Zarkadis, N. J., Goodman, G. P., et al. (2018). The shift to same-day outpatient joint arthroplasty: a systemic review. *The Journal of Arthroplasty, 33,* 1265-1274.
5. Lovett-Carter, D., Sayeed, Z., Abaab, L., Pallekonda, V., Mihalko, W., et al. (2018). Impact of outpatient total joint replacement on postoperative replacement in postoperative outcomes. *Ortthop Clin Am, 49,* 35-44.

Acknowledgements

- We'd like to thank Beth Willmitch, Zenia Reyes-Bardelas, Alicia d'Empaire, and their Information Technology teams for their data support