



# Arthroplasty Tips and Tricks: Short-Stay Total Joint Arthroplasty—The Way Forward?

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## Introduction

Over the past several years there has been increased enthusiasm for performing short-stay (<23 hour stay) total joint arthroplasty (TJA). Inpatient length of stay (LOS) following total knee arthroplasty (TKA) has decreased from almost 8 days to 3 days over the past few decades<sup>1,2</sup>. The advent of dedicated TJA protocols and pathways has optimized peri-operative management and has enabled patients to be discharged home with adequate pain control and improved function. Short stay TJA, including both TKA and total hip arthroplasty (THA), has been found to be safe in observational studies when adhering to strict patient selection criteria<sup>3-5</sup>. As medical costs continue to rise and the concept of home rehabilitation after TJA becomes more commonplace, the future may hold a place for same day TJA in select patients.

## Costs and Benefits

The cost of healthcare continues to be a major focus among both the public and private healthcare sectors. According to the Centers for Medicare and Medicaid Services, the average Medicare costs for TJA, inclusive of surgery, hospitalization, and 90-day post-operative period, is between \$16,500 and \$33,000. One area of successful cost containment has been in the arena of decreasing inpatient LOS. Compared to patients that were discharged within 3-4 days following TKA, patients discharged within 2 days and 1 day had lower costs of \$1,967 and \$8,527, respectively. However, as rapid recovery protocols for short-stay TJA continue to improve, there is cost associated with increased ancillary staff required to ensure patient safety throughout the process<sup>6</sup>.

Another critical consideration is that short-stay TJA may result in improved patient satisfaction. After being educated on the procedure and post-operative rehabilitation, patients indicate a preference for recovery at home rather than in the hospital or rehab facility<sup>3</sup>. This preference has been validated post-operatively, as patient satisfaction has been recorded to be higher following same day discharge TJA<sup>5</sup>.

## Risks

Short-stay TJA programs should be approached with caution as there is a potential

for increased post-operative complications<sup>7,8</sup>. The trend of decreased LOS has been coupled with increased all cause 30-day readmission rates following TKA<sup>1</sup>. However, recent studies suggest that short-stay TJA is not associated with an increase readmission rate, acute office visits, emergency department visits, and complications when compared to inpatient TJA<sup>8-11</sup>.

One study suggests that Medicare patients (> 65 years of age) who underwent a short stay TJA (< 23 hours) had fewer complications (2%) when compared to same day discharge (8%) and inpatient stay (8%) TJA. This suggests that short stays may be ideal particularly for older patients<sup>12</sup>, regardless, patient selection is critical in determining which patients should be considered candidates.

## Risk Assessment and Patient Selection

The key to successful and safe short-stay TJA is the implementation of a systematic and structured pre-operative evaluation process which identifies appropriate patients. Several risk assessment tools have been used to reproducibly identify these patients<sup>13</sup>. Courtney et al. retrospectively identified complications that occurred in 1,012 consecutive patients who underwent TJA that stayed > 24 hours post-operatively. The study found that COPD (OR 4.16), CAD (OR 2.80), CHF (OR 9.71), and cirrhosis (OR 8.43) were significant risk factors for a post-operative complication, and having just one of these comorbidities led to a 10% risk of late complication, compared to 3.1% in the absence of one of these comorbidities. A point system was subsequently created to determine the risk of late complication in patients undergoing TJA (Table 1)<sup>14</sup>.

This demonstrates that a multi-disciplinary approach and pre-operative risk assessment are needed to properly screen and risk stratify patients that may safely benefit from short-stay TJA.

## Implementation

Strict pre, peri, and post-operative protocols should be in place and closely followed to ensure safety and provide patients with the ability to recover quickly in the hospital and rehabilitate at home. Multimodal pain protocols, preemptive anti-nausea treatment, physical

**Table 1: Short Stay TJA Risk Score**

Risk Factor	Score
CHF	2
Cirrhosis	2
COPD	1
CAD	1

therapy, education, and discharge planning have been observed to aid in reducing the LOS following TKA<sup>15</sup>. Prior to hospital discharge, patients must complete physical therapy and successfully transfer from bed to standing, rise from a chair to standing, walk 100 feet, and negotiate one flight of stairs. Patients must also have stable vital signs, tolerate a regular diet, receive adequate pain control with oral medications, and most importantly, feel comfortable going home<sup>5</sup>. Regardless, a short-stay TJA program must be based on a clearly defined and regimented process for patients to follow in order to assure the desired clinical outcome (Table 2).

## The Patient Perspective

Establishing a short-stay TJA practice is logistically complicated, and the patient is the most integral key to success. Patient expectations must be set pre-operatively and reinforced in the post-operative period. Through information, clearly defined expectations, and continued encouragement, patients feel more autonomous in their decision making and are better equipped to tackle the challenges encountered in the early post-operative period. Most importantly, patients must feel safe and comfortable to rehabilitate at home and have appropriate social support to be able to do so. It is imperative that interventions be in place in the pre-hospital setting, inpatient, and home following discharge to provide patient education and reassurance.

Providing an encouraging environment for the patient can be challenging when hospital staff are not familiar with short-stay TJA. Many nurses, pharmacists, social workers, and case managers are very familiar with standard inpatient TJA, and my inadvertently inform the patient that patients typically “need” at least 2 night in the hospital. This sends mixed messages to the patient who is now more likely stay in the

**Table 2. Peri-operative Protocol for Outpatient THA, Adapted from Berger et al.5**

	Planning	Safety	Pain/nausea	Rehabilitation
Pre-op	Meeting with hospital discharge planner	Internist evaluation, 2 units packed red blood cells donated for future autologous transfusion		Nurse taught class (reassurance and expectations), Physical therapy session
Morning prior to Surgery			400 mg celecoxib, 10 mg OxyContin, Epidural	
Intra-op		Prophylactic antibiotics, 1 unit autologous packed red blood cell transfusion	4 mg ondansetron, 10 mg metoclopramide	Propofol for minimal sedation, Foley catheter
Recovery		1 unit autologous packed red blood cell transfusion	Epidural continued until 4 hours post-op, 4 mg ondansetron	
Pre-op	Meeting with hospital discharge planner	Internist evaluation, 2 units packed red blood cells donated for future autologous transfusion		Nurse taught class (reassurance and expectations), Physical therapy session
Morning prior to Surgery			400 mg celecoxib, 10 mg OxyContin, Epidural	
Intra-op		Prophylactic antibiotics, 1 unit autologous packed red blood cell transfusion	4 mg ondansetron, 10 mg metoclopramide	Propofol for minimal sedation, Foley catheter
Recovery		1 unit autologous packed red blood cell transfusion	Epidural continued until 4 hours post-op, 4 mg ondansetron	
2 hours post-op			20 mg OxyContin, Norco for breakthrough pain	Foley discontinued
5-6 hours post-op		Prophylactic antibiotics		Physical therapy and occupational therapy evaluation
Discharge		325 mg aspirin twice daily for 3 weeks	200 mg celecoxib, OxyContin, Hydrocodone	Home physical therapy

hospital. When the entire medical team is familiar with the process of short-stay TJA, and “speak” the same language, the patient’s desire to move forward with rehabilitation at home is reinforced at every step of the episode of care. Experience with short-stay TJA and staff education are equally as important as patient education in standardizing patient expectations.

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