

**PATIENT PERCEPTIONS REGARDING
OUTPATIENT HIP AND KNEE ARTHROPLASTY**

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3
4 **Abstract**

5 **Introduction:** There has been increasing interest in outpatient total joint arthroplasty (TJA) in
6 the orthopedic community, but how patients feel about outpatient TJA is unknown. The purpose
7 of this study was to understand patient perspectives on hip and knee replacements performed in
8 an outpatient setting rather than an inpatient hospital.

9 **Methods:** We surveyed 110 consecutive patients scheduled for primary TJA in an academic
10 suburban arthroplasty practice regarding their existing knowledge and perceptions of outpatient
11 TJA. Questionnaires were administered during preoperative clinic visits prior to any discussion
12 of surgery location or length of stay and prior to the preoperative joint replacement education
13 class. No mention of outpatient surgery or same day discharge occurred prior to completion of
14 the questionnaire.

15 **Results:** Fifty-seven percent of respondents were female, and 42.7% were age 65 or older.
16 Ninety-one percent of respondents had not previously had hip or knee replacement surgery.
17 Very few patients expected same-day discharge ($n = 3$) or even a one night stay in the hospital (n
18 $= 17$). 54% expected to stay in the hospital two or more nights. Only 54.5% of patients were
19 aware that outpatient TJA is an option, with 55.3% of men and 31.7% of women reporting they
20 were comfortable or very comfortable with outpatient TJA under circumstances in which
21 someone was available to assist them at home ($p = 0.030$). Conversely, 61% and 72.8%,
22 respectively, believed that faster recovery and decreased likelihood of hospital acquired infection
23 are likely to be advantages of outpatient TJA. Interestingly, 51.9% of respondents felt
24 ambulatory surgery centers are as safe as hospitals and 62.6% believed that home is the best
25 place to recovery from TJA.

26 **Conclusion:** These observations suggest there is both opportunity and need for patient
27 education regarding outpatient TJA. As outpatient hip and knee replacement becomes more
28 common, it is essential that patients understand the ambulatory surgery process, the benefits and
29 risks of same day discharge, and their role in a successful outpatient experience.

30 **Keywords:** outpatient knee arthroplasty, outpatient knee replacement, outpatient hip
31 arthroplasty, outpatient hip replacement, patient perspectives

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33

34 **Introduction**

35 There has been increasing interest in outpatient primary total hip (THA) and knee (TKA)
36 arthroplasty.[1-10] The interest in outpatient arthroplasty has been fueled by financial
37 considerations including the ability to reduce costs within the episode of care, surgeon ownership
38 in ambulatory surgery centers (ASC), and the ability to more easily control the surgical care
39 environment in an ASC.[1, 5, 8, 11]

40 Rapid recovery protocols have created a natural evolution from the inpatient to the
41 outpatient setting.[2, 3, 6, 10, 12-14] Outpatient total joint arthroplasty (TJA) has been
42 successfully performed during the past decade [4, 13, 15-20], albeit for the most part by highly
43 experienced surgeons with carefully selected patients. Success has been attributed to
44 multidisciplinary care coordination, standardized perioperative protocols, discharge planning,
45 and careful patient selection.[2-4, 7, 13, 15, 16] Although the feasibility and safety of outpatient
46 TJA has been studied from the vantage point of the surgeon, to the best of our knowledge, no
47 studies have investigated patient perspectives on outpatient TJA. The purpose of the study was
48 to understand patient thoughts and perspectives on hip and knee replacements performed in an
49 outpatient setting.

50 **Methods**

51 With institutional review board approval, all patients of the primary author scheduled for
52 primary THA or TKA in an academic suburban arthroplasty practice that performs outpatient
53 TJA were offered a 16-question survey regarding their existing knowledge and perceptions of
54 outpatient TJA (Appendix A). Questionnaires were administered during the first preoperative
55 clinic visits occurring between 11/01/2015 and 04/31/2016 prior to any discussion of surgery
56 location or length of stay expectations and prior to the preoperative joint replacement education

57 class. No mention of outpatient surgery or same day discharge occurred prior to completion of
58 the questionnaire and the medical office did not contain any promotional material or information
59 regarding outpatient, same-day, or rapid discharge total joint replacement. Patients were
60 instructed not to put their names on the questionnaire to reduce potential bias associated with
61 surgeon knowledge of their responses.

62 *Statistical Analysis*

63 Minitab 17 (State College, PA) was used for data analysis. Pearson's Chi-Square (X^2) test
64 was used to test independence among categorical variables with Fisher's p reported for 2 x 2
65 tables. Content analysis was used to categorize open-ended, qualitative responses to survey
66 questions 8 and 9.

67 **Results**

68 One hundred twelve patients were available for the study. Two declined the survey—one
69 due to visual impairment and inability to read the questionnaire and one due to inability to read
70 English. The final sample of 110 consecutive patient questionnaires represented a 98% response
71 rate. Fifty-seven percent of respondents were female, and 11.8% were age 50 or younger ($n =$
72 13), 45.5% were age 51 to 64 ($n = 50$), and 42.7% were age 65 or older ($n = 47$). Respondents
73 were scheduled for primary THA (32.7%), TKA (60.9%) or both (6.4%). Ninety-one percent of
74 respondents (98/108) had not previously had hip or knee replacement surgery. Patients who had
75 previously undergone THA or TKA had done so in an inpatient setting. Ten of 44 respondents
76 (22.7%) had taken care of someone after hip or knee replacement surgery or assisted a patient
77 who had outpatient TJA.

78 As shown in Table 1, only three respondents reported that they would expect to be
79 discharged on the same day as TJA surgery. The majority (64.6%) expected to be discharged in

80 1 to 2 days, but one in five (20.2%) thought they would be in the hospital three or more days
81 following TJA. Expectations for discharge between less than 24 hours and 1 day did not differ
82 based on patient sex ($X^2 = 0.539$, $p = 0.696$) or type of scheduled joint replacement ($X^2 = 1.441$,
83 $p = 0.249$). (Age group could not be tested due to small cell counts.)

84 When asked “Have you ever heard of outpatient joint replacement where patients are
85 discharged home the day of surgery or within 23 hours of surgery?” 54.5% ($n = 60$) responded
86 yes. Awareness of outpatient joint replacement did not vary by sex ($X^2 = 1.479$, $p = 0.248$), age
87 group ($X^2 = 0.297$, $p = 0.862$), or type of scheduled surgery ($X^2 = 0.077$, $p = 0.962$). Of the 60
88 patients who had heard about outpatient TJA, 53.3% ($n = 32$) had heard about it from family and
89 friends, 18.3% ($n = 11$) from a primary care physician, 16.7% ($n = 10$) from an orthopedic
90 surgeon, 3.3% ($n = 2$) from another patient, 1.7% ($n = 1$) from the internet, and 1.7% ($n = 1$)
91 from television or radio. Five percent of respondents ($n = 3$) had heard about outpatient TJA
92 from another source such as at work.

93 Survey respondents were asked “Assuming you have someone to assist you, how
94 comfortable would you be being discharged the same day or within 23 hours of joint replacement
95 surgery?” Overall, 13.0% (14/108) reported that they would be very comfortable, 21.3%
96 (23/108) reported that they would be comfortable, 33.3% (36/108) said they were unsure, 12.0%
97 (13/108) said they would be uncomfortable, and 20.4% (22/108) replied that they would be very
98 uncomfortable with outpatient discharge following TJA. As shown in Figure 1, men were more
99 comfortable with outpatient TJA surgery ($X^2 = 10.685$, $p = 0.030$) than women. Comfort level
100 with outpatient surgery did not vary by age group ($X^2 = 6.538$, $p = 0.587$) or scheduled surgery
101 type ($X^2 = 5.934$, $p = 0.204$).

102 As shown in Table 2, 70% to 82% of respondents believed that potential perceived
103 limitations of outpatient TJA – including limited implant types, use of the direct anterior
104 approach to THA, increased complications, difficult pain control, challenges regaining mobility,
105 and challenging recovering from anesthesia – were unlikely. Sixty-one percent and 72.8%,
106 respectively, believed that faster recovery than expected and decreased likelihood of hospital
107 acquired infection were likely to be advantages of outpatient TJA (Table 2). Perceptions of
108 faster recovery did not vary by patient sex ($X^2 = 1.316, p = 0.303$) or scheduled surgery type ($X^2 =$
109 $2.868, p = 0.238$), but significantly more patients age 50 or younger (83.3%) vs. 50% of those
110 age 51 to 64 and 68.3% of those age 65 or older thought faster recovery was a likely advantage
111 of outpatient TJA ($X^2 = 5.889, p = 0.053$). Significantly more women (80.7%) than men (62.2%)
112 believed that outpatient surgery would reduce the likelihood of hospital acquired infection ($X^2 =$
113 $4.312, p = 0.046$). Perspectives on hospital acquired infection in general did not vary based on
114 age group ($X^2 = 0.106, p = 0.949$) or type of scheduled surgery ($X^2 = 1.393, p = 0.498$).

115 Overall, 36.8% (39/106) of respondents felt it was safer to have TJA surgery in a
116 hospital, 11.3% (12/106) felt that ASCs are safer, and 51.9% (55/106) felt that hospitals and
117 ASCs are equally safe (Figure 2). This observation did not vary by patient sex ($X^2 = 0.926, p =$
118 0.629) or scheduled surgery type ($X^2 = 0.719, p = 0.698$). Reflecting a statistical trend, 20% of
119 respondents between the ages of 51 and 64 compared to none of those age 50 or younger and
120 4.7% of those age 65 or older reported that ASCs are safer than hospitals ($X^2 = 8.132, p = 0.087$).

121 Most respondents (62.6%, 67/107) believed it would be better to recover from joint
122 replacement surgery at home. Twenty-three percent (25/107) believed recovering in the hospital
123 would be better, and 14% (15/107) did not think that recovery would be better in one place or the
124 other (Figure 3). Perceptions of recovery at home or in the hospital did not vary based on patient

125 sex ($X^2 = 1.279, p = 0.528$), age group ($X^2 = 5.488, p = 0.241$), or scheduled surgery type ($X^2 =$
126 $0.032, p = 0.984$).

127 Patients were asked about optimal conditions for outpatient TJA, including whether it is
128 appropriate for partial or total joint replacement and what makes someone a good or a poor
129 candidate for outpatient TJA. Thirty-nine percent of respondents (40/102) reported that
130 outpatient surgery is most appropriate for partial joint replacement, 5% (5/102) felt it was most
131 appropriate for total joint replacement, and 55.9% (57/102) felt it was appropriate for both partial
132 and total joint replacement. Table 3 presents responses to open-ended questions asking what
133 factors or characteristics would make someone a good or a poor candidate for outpatient joint
134 replacement surgery. Respondents uniformly identified the presence or absence of overall good
135 health, care support and/or a safe home environment, positive attitude/outlook/motivation, pain
136 management, obesity, and age as important contributing factors.

137 **Discussion**

138 Outpatient TJA is on the rise in the United States due to increasing emphasis on reducing
139 the cost of healthcare and the ability for surgeons to more readily control surgical care in ASCs.
140 The increase in outpatient TJA has been possible due to significant advances in the perioperative
141 management of joint replacement patients including multidisciplinary care coordination,
142 standardized perioperative protocols, discharge planning, and careful patient selection.[2-4, 7,
143 13, 15, 16] To date, however, patient knowledge of and opinions on outpatient hip and knee
144 replacement are unknown. This descriptive study was conducted to enhance understanding of
145 patient views on TJA performed in an outpatient setting rather than in an inpatient hospital.

146 In our convenience sample of consecutive patients scheduled for hip and/or knee
147 replacement, 54% expected to stay in the hospital two or more days following surgery, only three

148 respondents reported they would not expect to stay in the hospital overnight, and only 17
149 reported that they expected to be discharged after one night in the hospital, suggesting that same
150 day and early discharge were far from common patient expectations. Slightly more than half of
151 respondents had heard of outpatient joint replacement defined as being discharged the day of
152 surgery or within 23 hours of surgery. Awareness of outpatient joint replacement did not vary
153 based on patient sex, age group (50 or younger, 51 to 64, and 65 or older), or scheduled surgery
154 type (THA, TKA, or both). Most respondents had heard about outpatient TJA from family or
155 friends (53.3%). Thirty-five percent had heard about it from a primary care physician or
156 orthopedic surgeon.

157 Only 11.7% of women compared to 31.9% of men reported that they were very
158 comfortable being discharged the same day or within 23 hours of joint replacement surgery, a
159 statistically different observation ($p = 0.030$). Comfort level with outpatient TJA did not vary by
160 age group or type of scheduled TJA. The majority of patients reported that potential perceived
161 limitations of outpatient joint replacement – including limited implant types, use of the direct
162 anterior approach to THA, increased complications, difficult pain control, challenges regaining
163 mobility, and challenging recovering from anesthesia – were unlikely. Conversely, a majority
164 believed that faster recovery than expected – especially those age 50 or younger ($p = 0.053$) --
165 and decreased likelihood of hospital acquired infection – especially women ($p = 0.046$) -- were
166 likely to be advantages of outpatient TJA. Slightly more than half of all respondents felt that
167 total joint replacement was equally safe in hospitals and ASCs. Independent of sex, age group,
168 and type of scheduled surgery, two out of three respondents believed it would be better to
169 recover from joint replacement at home rather than in the hospital. Respondents identified the
170 presence or absence of overall good health, care support and/or a safe home environment,

171 positive attitude/outlook/motivation, pain management, obesity, and age as factors which would
172 determine whether someone is a good or a poor candidate for outpatient TJA.

173 Our study is limited by the use of a convenience sample of patients scheduled for total
174 hip and/or knee replacement with a single surgeon in a single arthroplasty practice.
175 Nevertheless, the study was conducted to acquire the first, initial insight into patient perspectives
176 on outpatient TJA. It is hoped that it will be instigate similar inquiries in diverse TJA settings,
177 especially those offering outpatient hip and knee replacement surgery. As outpatient hip and
178 knee replacement becomes more common, it will be important to ensure that patients understand
179 the ambulatory surgery process, the benefits and risks of same day discharge, and their role in a
180 successful outpatient experience. Fulfillment of these objectives should be predicated on solid
181 patient understanding of outpatient TJA. Hunt et al.[21] observed that patients may not overtly
182 state concerns about early discharge following THA due, in part, to their role as patients
183 dependent upon the expertise of healthcare providers. In addition, patient expectations regarding
184 length of hospital stay may reflect unstated needs and motivations such as concerns about
185 burdening family members with their care. These represent important additional areas for
186 research-based understanding and clinical communication.

187 Overall, our observations suggest that there is ample opportunity and need for patient
188 education on the topic of outpatient joint replacement. Prior to preoperative education, very few
189 patients scheduled for TJA expected zero nights, or even a one night stay, in the hospital. Two
190 or more nights in the hospital was the predominant expectation. One-half of patients were not
191 even aware that outpatient TJA is an option. Only 1 in two male patients and 3 in 10 female
192 patients reported being comfortable or very comfortable with outpatient joint replacement under
193 circumstances in which someone was available to assist them at home, despite the fact that most

194 patients felt ASCs were as safe as hospitals and that home is the best place to recovery from

195 TJA.

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251

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	n	%
Less than 24 hours	3	3.0
Less than 24 hours to 1 day	4	4.0
1 to 2 days	64	64.6
2 to 3 days	8	8.1
≥ 3 days	20	20.2
Total	99	100.0

Six respondents provided answers that could not be categorized (1 to 7 days, as few as possible, etc.). Four respondents did not answer the question.

Table 2: Patient Perspectives on Perceived Advantages and Disadvantages of Outpatient TJA

	N	% Responding Likely	% Responding Unlikely
Limit the type of implant I can receive	104	29.8	70.2
Keep my doctor from using the direct anterior approach	88	26.1	73.9
Result in a complication that I might not otherwise have had	102	29.4	70.6
Help me recover faster than expected	101	61.4	38.6
Make my pain harder to control	103	32.0	68.0
Interfere with my ability to regain mobility	103	21.4	78.6
Reduce the chance that I will get a hospital-acquired infection	103	72.8	27.2
Make recovering from anesthesia more difficult	101	17.8	82.2

Table 3: Patient Perspectives on Factors or Characteristics Making Someone a Good or Poor Candidate for Outpatient TJA

Characteristic	Good Candidate for Outpatient TJA		Poor Candidate for Outpatient TJA	
	No. Reporting Characteristic	% Reporting Characteristic	No. Reporting Characteristic	% Reporting Characteristic
Good/poor overall health	47	43.9%	48	46.2%
Presence/absence of care support and safe home environment	32	29.9%	30	28.8%
Managed/unmanaged pain	21	19.6%	23	22.1%
Presence/absence of positive attitude/outlook/motivation	20	18.7%	15	14.4%
Younger/older age	15	14.0%	12	11.5%
Not obese/obese	10	9.3%	11	10.6%

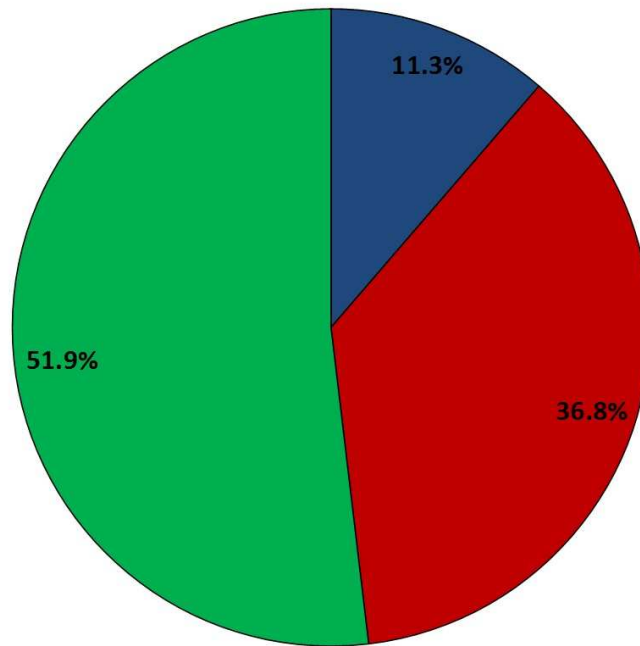
Note. Percentages represent the number of respondents reporting a characteristic divided by the number of respondents who answered the question. N = 107 and 104, respectively, for factors that make someone a good or a poor candidate for outpatient TJA.

Figure Legends

Figure 1: Same day discharge comfort level by sex

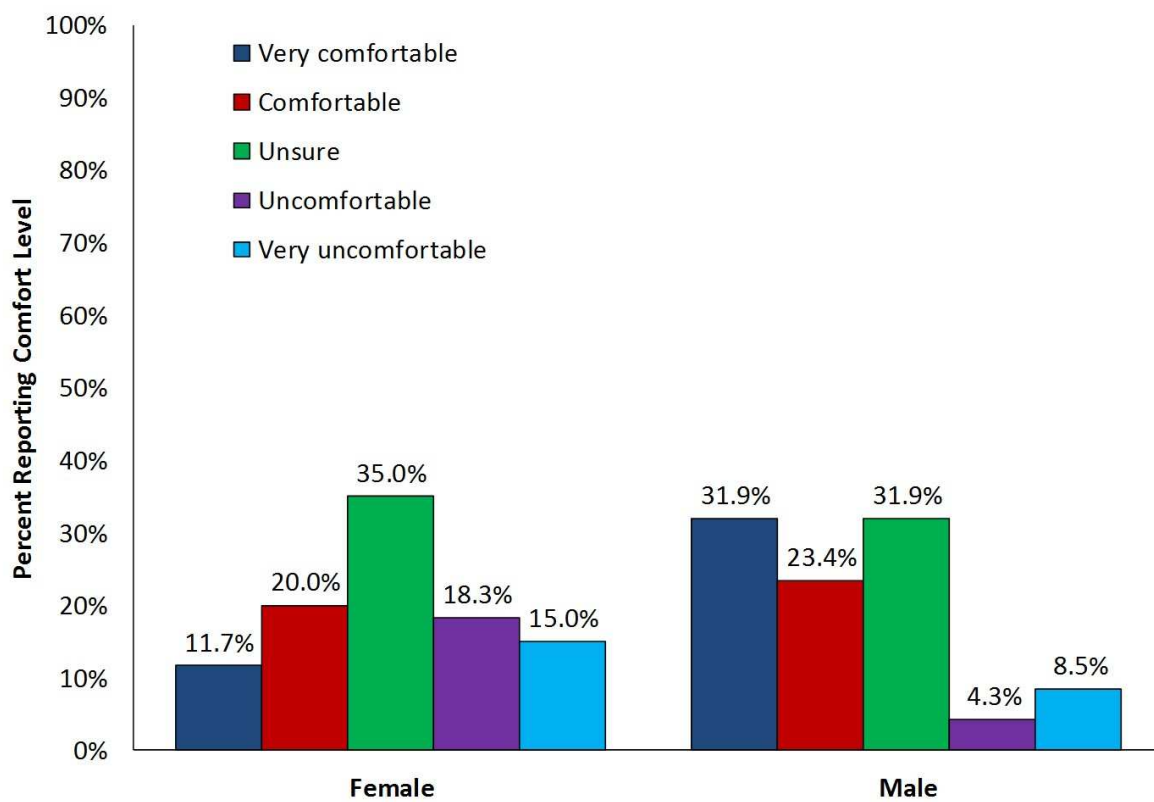
Figure 2: Distribution of survey responses on safest location for surgery.

Figure 3: Distribution of survey responses on optimal location to recover from joint replacement surgery

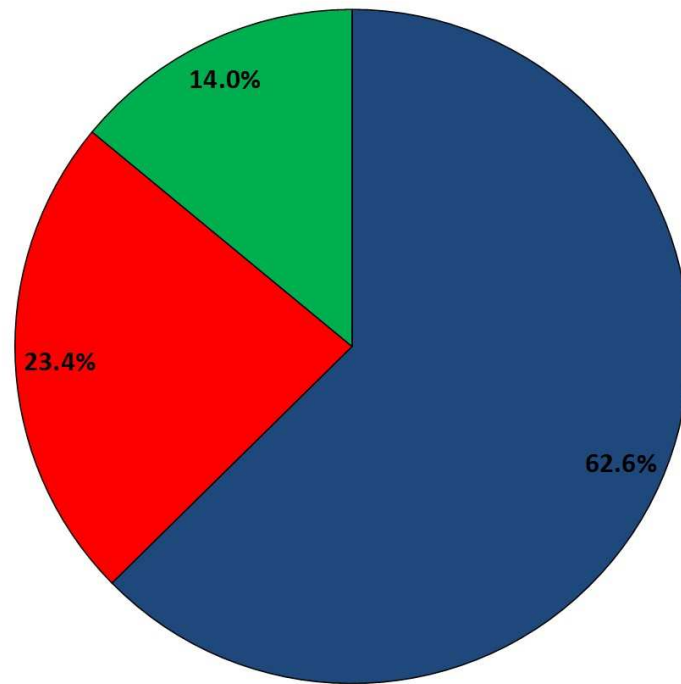


- Ambulatory Surgery Centers are Safer
- Hospitals are Safer
- ASCs and Hospitals are Equally Safe

ACCEPTED



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■ At Home ■ In the Hospital ■ No Difference

ACCEPTED

...Help me recover faster than expected	Likely	Unlikely
...Make my pain harder to control	Likely	Unlikely
...Interfere with my ability to regain mobility	Likely	Unlikely
...Reduce the chance that I will get a hospital-acquired infection	Likely	Unlikely
...Make recovering from anesthesia more difficult	Likely	Unlikely

11. Do you think that outpatient surgery would be appropriate for partial joint replacements, total joint replacements, or both (circle one answer)?

Partial joint replacements Total joint replacements Both

12. In your view, is it safer to have surgery in an ambulatory surgery center (ASC) or in a hospital?

ASC's are safer Hospitals are safer They are equally safe

13. In general, do you believe it would be better for you to recover from joint replacement at home or in the hospital?

At Home In the Hospital No difference

14. Have you had hip or knee replacement surgery (circle one answer)?

Yes – If yes, was it inpatient or outpatient surgery (circle answer)?
No

15. Have you taken care of someone after they had hip or knee replacement surgery (circle one answer)?

Yes – If yes, did they have outpatient surgery (circle answer)? Yes No
No

16. Please feel free to add any additional comments you may have here:

You are finished with the survey. Thank you for your time.