

Patient Satisfaction in Outpatient Total Shoulder Arthroplasty

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Abstract

There has been a recent trend toward performing joint replacement in the outpatient setting. The objective of this study was to retrospectively evaluate and report on our initial 29 patients that underwent outpatient total shoulder arthroplasty (TSA). There were no re-admissions or emergency room visits for any patients during the 90-day post-operative period. 86% of patients said their pain was very well controlled post-op

and 14% said their pain was moderately controlled. 89.6% of patients said they would prefer to go home the same day if they were to undergo TSA again. 96.5% of patients were satisfied with their TSA and outcome at a minimum of 6 months post-op. This initial report corroborates with previous studies that show outpatient TSA is safe. We also showed a high degree of patient satisfaction.

Keywords: Total Shoulder Arthroplasty; Outpatient.

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Background

Joint replacement has historically been a procedure requiring an inpatient stay post-operatively. Recent advances have allowed for outpatient hip and knee replacement with good outcomes (1,2). Benefits of outpatient joint replacement can include decreased costs and decreased risk of hospital acquired infection while maintaining similar outcomes and patient satisfaction. Several studies have shown similarly good outcomes for outpatient total hip and knee arthroplasty when compared to inpatient cohorts (3,4). Brolin and associates were the first to show that outpatient total shoulder arthroplasty (TSA) was a safe alternative to the procedure performed in an in-patient setting (5). They also concluded that further investigation is needed to evaluate the longer-term outcomes and cost-effectiveness of outpatient TSA. Dunn and associates looked at TSA in the outpatient vs in-patient setting and found that careful selection of patients that meet specific criteria is needed for decreased hospital stay and increased likelihood of a successful outcome (6). In our institution, outpatient hip and knee arthroplasty has been performed for over five years. We followed the program set in place and have been performing outpatient TSA for the last 3 years. Our purpose in this study was to evaluate the short-term outcomes and patient satisfaction of our first 29 patients. We hypothesized that we would have outcomes similar to those seen in the in-patient setting with high levels of patient satisfaction.

surgery details, and post-operative care protocol. All patients met with the surgeon or his physician assistant prior to surgery to answer any final questions. Patients underwent standard and routine medical evaluation by their medical doctors and were cleared for the proposed procedure. Patients were also evaluated by the anesthesia team at the facility and cleared as well. The average American Society of Anesthesia (ASA) classification was $1.93 \pm .53$ with all but three patients being classified as 1 or 2. Three patients had an ASA classification of 3. The mean BMI of the group was 28.0 ± 6 (range 19.6 – 47.5). The mean age of the group was 57.9 ± 7.4 (range 38-68) years. There was a total of 19 males and 10 females. (Table 1)

Table 1 Demographics of the outpatient total shoulder arthroplasty subjects.

Variable	
Number of patients	29
Number of shoulders	31
Percentage of males	66%
Average age (years)	57.9 ± 7.4
Age range (years)	38-68
Average BMI	28.0 ± 6
Average ASA class	$1.93 \pm .53$

Methods

We retrospectively reviewed the charts of 29 patients who underwent outpatient shoulder arthroplasty from December 2014 to January 2018. Institutional Review Board approval was obtained for the review. After review of the charts, all patients were contacted by one of the authors and underwent a brief 5-10 minute survey about their experience.

Patient Selection:

All patients were selected by the senior surgeons (SN, JL) based on health status and desire to go home after surgery and consented to outpatient TSA. All patients were given our standard total shoulder book detailing the procedure, pre-operative preparation, day of

Surgical Procedure

All patients underwent TSA in the standard beach chair position under general anaesthesia in the ambulatory surgery setting. 25 patients received a single shot interscalene block and 4 patients received the block with an additional in-dwelling interscalene catheter that was removed 3 days post-operatively by the patient's family. All patients had the option to rent an ice machine to help with post-operative pain. The patients were evaluated and managed in the recovery room and were discharged to home directly from the recovery room based upon standard discharge criteria. Length of time in the recovery room was noted. All patients were contacted the next day by the nursing team at the ambulatory surgery centre and any issues were noted and

passed on to the surgeon's office. All patients had narcotic medication available at home and were seen in the office by the surgeon at 10-14 days for initial follow-up. The patients were then started on physical therapy and maintained in the sling for a period of 6 weeks post-operatively. The patients were seen again at 6 weeks and 4 months post-operatively. Some patients were seen again at 6 months and one-year post-op, while others were seen again only at the one year mark.

Patient outcomes and satisfaction:

All patients followed a standard post-op protocol utilizing a sling with protected external rotation for 6 weeks post-operatively. Pain scores, range of motion, and strength were evaluated at each office visit along with post-operative radiographs of the operated shoulder. Progress with physical therapy was also evaluated and progression to a home program was done when appropriate. At the 6-week or 4-month visit the patients were asked by the surgeon if they could be contacted via telephone by an office staff member for a brief 5-10 minute survey regarding their outpatient TSA experience. All patients consented to this interview. The patients were then directly contacted via telephone by one of the authors for an interview regarding their satisfaction with the outpatient protocol. The survey consisted of 8 questions aimed at assessing initial outcomes and satisfaction. All patients were asked about their current level of satisfaction as well as their level of pain control after the surgery. Patients were also asked if they had to contact the on-call physician or visit the Emergency Department after the procedure. Finally, we asked if they would undergo outpatient TSA again or if they would prefer staying in the hospital overnight.

Patients that were 2 years out from surgery were contacted in July 2018 via telephone to answer follow-up survey questions. They were assessed using the SANE scoring system for shoulder function and asked about their current level of pain. They were also asked if they were still satisfied with their shoulder replacement.

Results

All of the 29 patients, who underwent outpatient TSA, responded to our initial survey. The average shoulder pain level was 0.68 ± 1.1 (0-10) and ranged from 0 to 3.5 at a minimum of 4 months post-op. We also assessed the function of the shoulder replacement utilizing the SANE score. The average SANE score was $91.5 \pm 9.7\%$ (0-100%) and the range was from 68-100%. One patient was excluded from this analysis as she suffered a fall resulting in a large rotator cuff tear 2 months post-operatively. She was doing well at the 6-week mark and was happy with her outpatient experience at that visit. She ultimately needed conversion to a reverse replacement.

Out of the 29 cases examined, 26 patients (89.6%) preferred same-day discharge and 3 patients (10.4%) preferred the option of one night inpatient stay. Average time to discharge was 6 hours and 10 minutes. We also evaluated the patients' overall satisfaction in terms of pain control from the surgery. All of the patients found the nerve block to be beneficial and would have the nerve block again for the same procedure. Sixteen patients (55%) used an ice machine and found it to be helpful in controlling swelling and pain. However, the patients who chose not to rent out the ice machine found effective alternative methods of applying cryogenic therapy such as using regular store-bought ice packs. 25 patients (86%) reported that their pain was very well controlled while the other 4 patients (14%) stated that their pain was only moderately controlled. 2 patients (6.8%) experienced the need to contact an on-call orthopaedic surgeon on the night following the surgery. The reasons for the calls involved questions regarding the prescribed medications for pain management. One patient needed additional instructions about how to take the pain medications and the other patient developed an adverse reaction to

the pain medication that was prescribed and requested an alternative medication. There were no reported cases of Emergency Department visits within the first week of surgery for pain control or any other issues. There were no re-admissions within the first 90 days from surgery in the group. 28 patients (96.5%) said they were satisfied with their shoulder replacement. The 1 patient that was not satisfied was the patient with the fall resulting in a torn rotator cuff. A revision to reverse replacement was performed at 4 months-postoperatively.

Patients that were at least two years out from their surgery were contacted via telephone in July 2018 to answer survey questions. Out of 24 patients contacted, 15 patients (16 shoulders) answered our 2-year follow-up questions. 100% said they were still satisfied with their shoulder replacement and happy with the outcome of their shoulder. The average shoulder pain level was $.35 \pm .63$ (range 0-2). The average SANE score to measure shoulder function was 93.1 ± 6.6 (range 85 – 100).

Discussion

There has been a definite trend towards shorter length of stay in joint replacement surgery over the past decade, which has led to the development of fast-track protocols that allow patients to be discharged quickly after their joint replacement (7,8). Outpatient joint replacement is attractive because of a shorter length of stay and reductions in hospital costs, which can be as significant as appx. \$6,000 per patient for THA (9). As this becomes more accepted, surgeons must prove that safety, efficacy, outcomes, and satisfaction with outpatient joint replacement surgery is equal to or better than inpatient joint replacement surgery. In a selection of 27 patients that underwent THA, the outcome of outpatient THA proved to be successful in 24 patients who did not have any complications after same day of discharge. Gromov and associates conducted a study with 557 unselected patients and showed that outpatient THA and TKA was viable in only 15% of the patients (10). Therefore, careful selection of patients must be done to ensure re-hospitalization does not occur.

A paucity of data exists in the literature regarding outpatient TSA. Broolin and associates reviewed a case matched series of 30 patients undergoing outpatient TSA compared to an age and co-morbidity matched series undergoing traditional in-patient TSA and found the two cohorts to be equal with regards to early outcomes including complications, hospital re-admissions, and re-operations (5). They recommended further investigation to evaluate the longer-term outcomes and cost effectiveness of outpatient TSA. Cancienne and associates reviewed data from 706 patients who underwent outpatient TSA and they found no increases in complication or re-admissions in ambulatory TSA compared to inpatient TSA (11). They also suggested that outpatient TSA represents a significant cost savings, appx. \$3,500 per patient, compared to in-patient TSA. Furthermore, Dunn and associates looked at length of stay after elective TSA and concluded that some criteria that predispose a patient to a longer stay are renal insufficiency, increased age, ASA class ≥ 3 , and being female. This reiterates the importance of screening and selecting patients that meet specific criteria before attempting outpatient TSA. In addition, motivation level and social support should also be considered.

The main reason TSA is routinely done in an in-patient setting is to manage pain post-operatively. Ilfed and associates conducted a study looking at the potential of outpatient TSA with the use of a nerve block and continuous infusion pump for analgesia (12). This method resulted in pain that was well controlled post operatively, and a significant number of patients were discharged to go home on the same day. This is a similar method that our institution uses for analgesia during outpatient joint replacement.

Our study represents a small series with 2-year outcomes, but also attempts to evaluate patient satisfaction. We found outpatient TSA to be safe with a low complication rate and promising early outcomes. We also found patient satisfaction with the entire episode of care to be extremely positive with a high percentage of patients stating they would undergo outpatient TSA again. There were three patients who responded that they would prefer inpatient TSA in the future. One patient had a history of generally not responding well to anaesthesia. Another developed adverse reactions to narcotics post-operatively as the patient had no prior narcotic history. The third patient felt she needed further clarification of instructions with taking pain medications. She did admit that she called the on-call doctor and her questions were answered to her satisfaction. All patients were satisfied with their shoulder replacement at a minimum of 6 months out except for 1. The 1 patient that was not satisfied with the outpatient TSA had a fall, which resulted in a rotator cuff tear 2 months after surgery. This required us to convert the anatomic shoulder replacement to a reverse. We feel that her dissatisfaction with her initial shoulder replacement was not due to it being done outpatient, but due to the fact she had an accident post-op. Also, the same patient did state initially that if she were to undergo TSA again she would do it as an outpatient procedure.

There are several factors that we feel were vital to the success of our series and will be helpful for surgeons considering outpatient TSA. First, there was a selection bias as the patients represented a healthy and motivated cohort of patients willing to be the first to undergo the procedure in an outpatient setting. During our collection period, there was no data in the literature on the safety and efficacy of outpatient TSA. As such, the senior authors were careful in selecting patients that felt to be at low risk of complication and highly motivated with a good social support system in place. We feel this was vital in our initial success and positive results. This represents an inherent limitation of this study.

Secondly, the senior surgeons (SN, JL) perform a high volume of shoulder replacements with both performing over 100 per year. Both have developed a shoulder replacement pathway that includes a standard and detailed pre-operative education program as well as standard post-operative pathway that we feel is critical to the success and satisfaction of patients. Utilizing such a program on a routine basis, in our opinion, was vital in the transition to outpatient TSA. Many surgeons may rely on the hospital to perform post-operative education and set up key post-operative elements such as PT and home health. In our institution, this is all covered before surgery. This is also reflected in that only two patients felt the need to call the on-call doctor with questions.

Finally, aggressive management of pain peri-operatively is routine for all joint replacements in our institution. Adapting this to our shoulder patients allowed us to shorten our length-of-stay to the point where we felt comfortable sending patients home directly from the recovery room. Ultimately, good pain management has allowed us to transition to the ambulatory surgery setting. This was corroborated by the high percentage of patients who felt their pain was very well controlled. There were no patients who felt their pain was not adequately controlled.

Another limitation is that our study is retrospective in nature. As such, the group was not randomized. The study is also limited by the short-term follow-up of the shoulder replacements. Similar to the prior study by Brolin and associates, we recommend longer term studies to assure that outpatient TSA is truly equal to inpatient TSA. Basques and associates analyzed the Medicare dataset from 2005-2012 to compare complications and re-admission rates between the outpatient TSA vs in-patient TSA (13). They found lower complication rates and lower re-admission rates for the outpatient cohort. Outpatient TSA

represented 2.8% of the entire population studied. This analysis shows promise for outpatient TSA. However, this is a retrospective database study and has inherent limitations.

We feel a true randomized study is needed with long-term follow-up. Despite these limitations, our purpose was to evaluate our initial group of patients and evaluate the success and satisfaction of this group. We feel this goal was achieved. Our study is the first to document patient satisfaction with regards to outpatient TSA. Our survey revealed a high percentage of patients who would undergo TSA as an outpatient again. As a result, we feel that outpatient TSA has significant promise to become standard for a large group of patients. At present, there are no guidelines for the selection of candidates for outpatient TSA. Our current group represented an ideal cohort with healthy and motivated patients who had good pre-operative counselling and social support. We recommend that surgeons, considering transition to outpatient TSA, develop strong protocols for peri-operative management of pain and patient expectations. If patients have no history of narcotic usage, we recommend giving patients their pain medication prescriptions pre-operatively and asking them to try a pill to assure no adverse reaction is noted. We recommend a strong pre-operative program to educate patients regarding limitations, wound care, and expectations. We also recommend implementing these protocols and educational pathways in the hospital setting prior to transitioning to the ambulatory surgical setting. Finally, we recommend selecting patients initially that are healthy, have no history of problems with anaesthesia, and are motivated to undergo outpatient TSA.

In conclusion, our study shows excellent 2-year patient satisfaction with outpatient shoulder replacement. Our initial outcomes and complication rates are similar to those noted with inpatient TSA and patient satisfaction was extremely high. Proper selection of patients as well as a streamlined pathway with proper peri-operative education and pain management are keys to success. Our study corroborates other studies that show promise for outpatient TSA. Further investigation should focus on evaluating long-term outcomes and cost effectiveness in a randomized multi-center trial.

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