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Low Rates of Adverse Events Following Ambulatory Outpatient Total Hip Arthroplasty at a Free-Standing Surgery Center

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ABSTRACT

Background: We proposed to determine the complication and hospital admission rates for patients with total hip arthroplasty (THA) done by a single surgeon in a stand-alone ambulatory surgical center with same-day discharge. Given the recent emphasis on bundled payments for a 90-day episode of care, this same time frame after surgery was chosen to determine patient outcomes.

Methods: The records of patients with THAs done through a direct anterior approach by a single surgeon at 2 separate ambulatory surgery centers were reviewed. To analyze the learning curve for outpatient THA, the procedures were arbitrarily divided into 2 groups depending on when they were done: early in our experience or later. Complications were recorded, as were hospital admissions and surgical interventions, length of surgery and blood loss, and time spent at the outpatient facility.

Results: Over a 3-year period, 145 outpatient THAs were done in 125 patients; 73 were considered to be initial procedures, and 72 were considered to be later procedures. Only one of the 145 procedures (0.7%) required transfer from the outpatient facility to the hospital for a blood transfusion. No other direct admissions to the hospital or transfers to the emergency department from the surgery center were necessary. Surgical interventions were required after 3 (2%) of the 145 arthroplasties in the global period (90 days).

Conclusion: This study demonstrated that same-day discharge to home following THA can be safely done without increased complications, readmissions, reoperations, or emergency room visits.

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Over the last 10 years, primary total joint arthroplasty has steadily transitioned from an inpatient to an outpatient procedure, and a multitude of studies have reported outcomes of “outpatient” total joint arthroplasty [1–8]. The definition of an outpatient experience, however, has been inconsistent. In some studies, an “outpatient” experience involves a shorter stay in a hospital facility (<24 hours) [3,4,6,9], while others describe same-day discharge to a rehabilitation or skilled nursing facility. Most authors, however,

use the purest meaning of “outpatient” to indicate that the patient’s surgery is conducted in an ambulatory setting and he or she is discharged to home on the same day [5,7,10].

Transitioning from an inpatient to a true outpatient total joint practice requires careful planning and consideration on multiple levels. We proposed to determine the complication and hospital admission rates for patients with total hip arthroplasty (THA) done by a single surgeon in a stand-alone ambulatory surgical center with same-day discharge. Given the recent emphasis on bundled payments for a 90-day episode of care, this same time frame after surgery was chosen to determine patient outcomes. Specifically, attention was directed to length of stay before discharge, complications that potentially limited success of same-day discharge, and hospital admissions during the 90-day postoperative period.

Materials and Methods

From June 2013 to July 2016, 145 THAs were done in 125 consecutive patients through a direct anterior approach by a single

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surgeon at 2 separate ambulatory surgery centers. After appropriate approval by our institutional review board, records for each patient were reviewed. To analyze the learning curve for outpatient THA, the procedures were arbitrarily divided into 2 groups depending on when they were done: early in our experience or later. The first 73 procedures were considered to be initial procedures carried out between June 2013 and November 2015, and the remaining 72 procedures were considered to be later procedures, carried out between November 2015 and July 2016. The increase in total procedures toward the end of this timeframe represents both an increase in efficiency on the part of the surgeon and of the facility in performing outpatient THA. Over the timeframe included in this study, a total of 420 primary arthroplasties were completed, with 275 (65%) performed in the hospital setting and 145 (35%) performed in the ambulatory surgery center (ASC).

Patient Selection

Patients in whom conservative management had failed, and who were deemed to be appropriate candidates for THA, were considered for surgery in an outpatient center. During the preoperative office visit, the surgeon conducted an initial screen of each patient's medical history, and additional appointments were made for (1) presurgical assessment by a representative from the anesthesia staff to assess for suitability of outpatient joint replacement at the surgery center and (2) an educational class ("prehab") with a physical therapist versed in outpatient joint replacement. Presurgical assessment involved a review of the medical history, blood work, electrocardiogram, and chest radiograph. Patients over the age of 70 were not considered to be candidates for THA in the outpatient setting. A body mass index (BMI) of 35, with few exceptions, was used as the cutoff for both inpatient and outpatient THA. Patients with preoperative anemia, identified as hematocrit <30 on preoperative workup, were not scheduled until further workup was completed. Those patients with cardiopulmonary issues must have been stable without stent placement or coronary artery bypass in the last 6 months. Patients with history of thromboembolic events such as deep vein thrombosis and pulmonary embolism were excluded. Patients who needed further risk stratification were evaluated and cleared by an internist and/or cardiologist. The cohort represents a consecutive series of patients selected by the primary author based on the criteria above. There were no other exclusion criteria.

Surgical Procedure

All operations were performed by a single board-certified orthopedic surgeon using the direct anterior approach. A typical surgical list at the ASC comprised 4-8 hip arthroplasties, with the first case starting at 7 am and the last case usually concluding by 2 pm. A variable number of nonarthroplasty cases (ie, knee arthroscopy) may be planned after any scheduled arthroplasties. THAs completed by early afternoon left ample time for recovery and physical therapy assessment prior to discharge.

Prostheses were uncemented on both the acetabular and femoral sides and were appropriately sized for each patient. With the patient on a standard operating room fluoroscopic table, a standard direct anterior approach was used, and a capsulectomy was performed. Intraoperative fluoroscopy was used at key points during the procedure to ensure proper implant sizing and position. The skin was closed in a subcuticular fashion with an absorbable monofilament suture, and a water-resistant antimicrobial dressing was applied. The dressing remained in place until the first outpatient appointment (2 weeks), and patients were allowed to shower immediately after surgery.

Perioperative Pain Management

Spinal anesthesia (132 procedures) was induced using bupivacaine (10.5-15 mg), and the target goal of blood pressure intraoperatively was 75% of mean arterial pressure. General endotracheal anesthesia was used in 13 patients because of previous spinal fusion, pre-existing neuropathy, or intraoperative conversion secondary to unsuccessful spinal anesthesia. Pain was managed using a multimodal approach that included medications provided preoperatively and postoperatively (Table 1), as well as a localized injection of bupivacaine in a liposomal carrier (Exparel; Pacira, Parsippany, NJ). The total injection was 60 mL, which contained 20 mL of liposomal bupivacaine (266 mg of free base bupivacaine) and 40 mL of saline. Decadron was provided intraoperatively to aid in control of pain and nausea. Tranexamic acid was administered in 2 separate doses, 1 at the time of incision and another at the time of wound closure, to minimize blood loss. A 500-cc bolus of 5% human albumin was administered intravenously during surgery for its benefit in minimizing episodes of postoperative orthostatic hypotension.

Postoperative Protocol

Patients were transferred to and evaluated in the recovery room after surgery. The multimodal pain regimen was continued postoperatively, and intravenous narcotic administration was minimized. Bethanechol was also provided orally because of its effect in stimulating the bladder. Once patients regained motor and sensory function from the spinal anesthesia, they were mobilized by a trained physical therapist with a goal of walking 100 feet. Functional therapy goals (such as stair mobility) are not addressed in the ASC setting unless access to a patient's home requires it; however, they are a part of the outpatient therapy that closely follows the procedure. Additional discharge criteria included (1) pain control with oral medications, (2) ability to tolerate a normal diet without nausea, (3) mobilization without orthostatic hypotension, (4) stable vital signs/asymptomatic acute blood loss anemia, and (5) a successful episode of controlled voiding. Specific discharge instructions were provided in a written format and were verbally reviewed with the patient to ensure understanding of the anticipated postoperative course. All patients were discharged to their homes, and the first outpatient physical therapy was scheduled within 2 days of surgery. Home health physical therapy was not used, and no patient was discharged to a skilled nursing or

Table 1
Multimodal Pain Protocol.

| Medications | Dose |
|---|---------------------------------|
| Preoperative | |
| Celebrex | 400 mg PO |
| Gabapentin | 300 mg PO |
| OxyContin | 10 mg or 20 mg (>200 lbs) PO |
| Acetaminophen | 1000 mg PO or IV |
| Intraoperative | |
| 0.75% bupivacaine with 8.25% dextrose (Spinal) | 10-15 mg |
| Liposomal bupivacaine | 266 mg into wound |
| Decadron | 4-8 mg IV |
| Postoperative | |
| Celebrex or Meloxicam | 200 mg PO Qday or 7.5 mg PO bid |
| Gabapentin | 300 mg PO bid |
| Tramadol | 50 mg PO Q6 hours |
| Acetaminophen | 1000 mg PO Q8 hours |
| Oxycodone | 5-10 mg PO Q 4-6 h PRN |

bid, twice a day; h, hour; IV, intravenous; mg, milligram; PO, by mouth; PRN, as needed; Q, every.

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