



Comparing the Incidence and Clinical Data for Simultaneous Bilateral Versus Unilateral Total Hip Arthroplasty in New York State Between 1990 and 2010



Sergio A. Glait, MD, Omar N. Khatib, MD, Ankit Bansal, MD, Jason P. Hochfelder, MD, James D. Slover, MD

Department of Orthopaedic Surgery, NYU Langone Medical Center Hospital for Joint Diseases, New York, New York

ARTICLE INFO

Article history:
Received 14 May 2014
Accepted 21 May 2015

Keywords:
bilateral
hip
arthroplasty
incidence
complications
epidemiology

ABSTRACT

A New York State database reported information on all total hip arthroplasty cases between 1990 and 2010 comparing unilateral (242,588 cases) to simultaneous bilateral (4538 cases) procedures. Our data showed that the population incidence of this surgery increased 120.2% over twenty years, yet the proportionate number of simultaneous cases has decreased. Simultaneous procedures were found to occur more commonly in younger patients with private insurance. In addition, bilateral procedures showed an increase in PE, DVT, length of stay, and discharge to rehab facilities; whereas mortality and blood transfusions compared to unilateral procedures showed no difference.

© 2015 Elsevier Inc. All rights reserved.

In the United States, total hip arthroplasty has become an increasingly sought after operation to improve a patient's function from osteoarthritis of the hip. Projections have demonstrated that by the year 2030 the demand for primary total hip arthroplasty is estimated to grow to 572,000 cases per year [1]. Increases in life expectancy and a growing active elderly population from the baby-boom era will cause the demand for hip arthroplasty procedures to continue to rise over the coming years. For patients with bilateral disease, a decision about performing the procedures simultaneously or staged by some interval must be made by the surgeon and patient.

Simultaneous bilateral THA has been performed since the 1970s and it has been a repeated topic examined in the orthopaedic literature [2–4]. Many surgeons fear that performing a bilateral procedure puts the patient at increased risk of complications, and some studies have supported this idea [5]. However, other studies have shown that simultaneous bilateral THA is effective in relieving pain and improving function without significantly increasing perioperative complications [6–10]. In addition, it may be cost-effective to perform simultaneous procedures where appropriate in a single hospital admission.

It is estimated that 60% of hip arthroplasty procedures are paid by the government under the Centers for Medicare and Medicaid Services (CMS) [1]. In 1992, Medicare reimbursement for a second total joint

arthroplasty decreased 50% if performed within 90 days of the first procedure [11]. Physician reimbursement has decreased 39% between 1991 and 2006 [12]. In addition, the need to decrease healthcare spending, particularly on total joint arthroplasty procedures, has become an issue of paramount concern. The performance of simultaneous bilateral THA may be one way to do this through the elimination of an extra hospitalization by not staging the procedure. This study aims to compare the incidence and complications of simultaneous THA to unilateral THA over the past 20 years in New York State with the hypothesis that the incidence of simultaneous THA procedures has changed over time and that this procedure results in more complications compared to unilateral THA procedures.

Materials and Methods

The Statewide Planning and Research Cooperative System (SPARCS) database from the New York State Department of Health was established in 1979 to record all inpatient hospital admissions under Public Health Law. Since then, SPARCS has streamlined this collection process in accordance with the Universal Data Set specifications. Previously published studies have used the SPARCS database to report epidemiologic data for various diseases and operative procedures [13–15].

The de-identified patient database was utilized to review all unilateral and simultaneous bilateral total hip arthroplasty procedures performed between 1990 and 2010 during a single hospital admission. The SPARCS inpatient registry was queried for ICD-9-CM v3 code 81.51 “Total Hip Arthroplasty (THA)”. Hospital admissions with only one code 81.51 were recorded as unilateral procedures, and admissions with two codes

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to <http://dx.doi.org/10.1016/j.arth.2015.05.046>.

Reprint requests: Sergio A. Glait, MD, 301 E 17th street, 14 flr, New York, NY 10003.

of 81.51 were recorded as simultaneous bilateral THA. This methodology has been previously published in peer-reviewed journals [16].

To minimize the likelihood of attaining skewed demographical results, cases where patient age was not properly recorded were also excluded from analysis (346 cases, 0.001% of dataset). The obtained data were adjusted for differences in population size, as reported by the New York State Census database.

Trends in incidence and demographics of unilateral and simultaneous bilateral THA were reviewed along with insurance status, primary diagnoses, hospital length of stay, disposition (home vs. rehabilitation), blood transfusions, and complications including mortality, deep vein thrombosis (DVT) and pulmonary embolism (PE). Charlson comorbidity scores were calculated for every patient using methods described by Charlson et al with scoring based on ICD-9 codes as outlined by Deyon et al whereby points were assigned for various co-morbidities such as myocardial infarction, congestive heart failure, peripheral vascular disease [17,18]. Secondary analyses of the effect of surgical volume were performed based on a high and low volume group. The high volume group was defined as all surgeons who performed the upper 50% of all procedures (i.e. for all simultaneous bilateral THA procedures the high volume group is composed of all surgeons who performed 50% of all procedures). The low volume group was defined as the remaining group of surgeons not in the high volume group (i.e. lower 50% of procedures). The data were stratified into two time periods to analyze trends with respect to time, with time period 1 defined as 1990–1999 and time period 2 defined as 2000–2010. SAS v9.3 (SAS institute, Cary, NC) was used for all data processing and statistical analyses. A paired Student *t*-test was used to compare findings between group 1 (unilateral THA) and group 2 (simultaneous bilateral THA) for continuous variables. A chi-squared test was used to compare categorical analyses with statistical significance set a priori at the .05 level.

Results

Between 1990 and 2010 there was a total number of 4538 simultaneous bilateral total hip arthroplasty procedures performed compared to 242,588 unilateral total hip arthroplasty procedures in New York State. In 1990–1999, there were 1768 simultaneous bilateral procedures compared to 86,144 unilateral THA procedures. In 2000–2010, there were 2770 simultaneous bilateral procedures compared to 156,444 unilateral THA procedures. A summary of patient demographic data from the SPARCS database is shown in Table 1. Demographic data comparing these two procedures demonstrate that more males had a simultaneous bilateral THA procedure compared to females (51.2% versus 48.8%; $P < 0.05$) between the years 1990 and 2010. However, women did have this procedure performed more frequently than men between the years of 1990 and 1999 (52.1% versus 47.9%). The average age of patients receiving a simultaneous bilateral THA procedure was significantly younger than those receiving unilateral procedures (56.7 years versus 65.9 years; $P < 0.05$). Lastly, a statistically higher percentage of patients with simultaneous bilateral THA had private insurance (66.6%) compared to a federally based insurance plan (33.4%). This trend was consistently seen between the two time periods studied with an increase in the number of patients with private versus federal insurance (72.1% versus 27.9%) having a simultaneous THA procedure in the latter half of the study period (2000–2010).

Since 1990 the population-adjusted incidence (cases per 100,000) of total hip arthroplasty procedures has steadily increased 120.2% from 40.6 to 89.4 cases (Fig. 1). Fig. 2 shows the percent incidence of simultaneous bilateral THA, which decreased from 2.28% in 1990 to 1.51% in 2010.

Table 2 demonstrates a summary of clinical data collected from the SPARCS database. Between 1990 and 1999 the average length of stay for a simultaneous bilateral THA was 12.75 ± 5.15 days compared to 9.33 ± 3.22 days for a unilateral THA ($P < 0.05$). This was reduced significantly between 2000 and 2010 to 5.92 ± 0.56 and 4.53 ± 0.42 days respectively for bilateral and unilateral THA procedures

Table 1
Patient Demographic Data Between 1990 and 2010.

	Bilateral THA	Unilateral THA	P Value
Demographics			
Female Patients (%)	48.8	57.9	<0.00001
1990–1999	52.1	59.3	<0.00001
2000–2010	46.8	57.1	<0.00001
Male Patients (%)	51.2	42.1	<0.00001
1990–1999	47.9	40.7	<0.00001
2000–2010	53.2	42.9	<0.00001
Patient Age (mean)	56.7 ± 13.4	65.9 ± 13.0	<0.00001
1990–1999	59.5	70.4	<0.00001
2000–2010	56.3	65.6	<0.00001
Primary Diagnosis			
Osteoarthritis (%)	80	78.5	n/a
Femur Fracture (%)	0.8	5.4	n/a
Aseptic Necrosis (%)	7.4	4.4	n/a
RA, Infl Arthritis (%)	6.7	3.6	n/a
Hip Dysplasia (%)	0.5	0.2	n/a
Insurance			
Federal Insurance (%)	33.4	53.1	<0.00001
1990–1999	42.6	63.2	<0.00001
2000–2010	27.9	48	<0.00001
Private Insurance (%)	66.6	46.9	<0.00001
1990–1999	57.4	36.8	<0.00001
2000–2010	72.1	52	<0.00001

Percentages based on 4538 bilateral (1768 cases in 1990–99 and 2770 cases in 2000–2010) and 242,588 unilateral (86,144 cases in 1990–99 and 156,444 cases in 2000–2010) procedures. Federal insurance includes Medicare, Medicaid, CHAMPUS, and other federal programs. Private insurance includes workers compensation, self-pay, and other non-federal insurance programs.

($P < 0.05$). However, the cumulative length of stay between 2000 and 2010 shows a significantly reduced length of stay for simultaneous bilateral THA compared to unilateral procedures (5.92 vs. 9.06 days; $P < 0.05$).

Disposition of patients was analyzed as being discharged either to home or to a rehabilitation service. When comparing all years studied, significantly more unilateral THA procedures were discharged home (51.69%) compared with simultaneous bilateral THA procedures (34.51%). This trend remained consistent when looking at the two different time periods.

There was no statistically significant difference in non-cumulative mortality rates between simultaneous bilateral and unilateral THA procedures (0.2% and 0.4% respectively; $P > 0.05$). However, when examining the different time periods for mortality there was a significant increase in mortality with unilateral THA procedures (0.72%) compared to simultaneous bilateral THA (0.23%) between the years of 1990 and 1999. There is a statistically significant increase of non-cumulative rates of DVT (2.16% versus 0.84%; $P < 0.05$) and PE (0.79% versus 0.37%; $P < 0.05$) when comparing simultaneous bilateral THA procedures to unilateral THA. These increased trends are also consistent when looking at the two time periods as well. Cumulative rates of simultaneous bilateral THA and unilateral THA show similar but higher rates of DVT (2.16% and 1.68%; $P = 0.0099$) and PE (0.79% and 0.74%; $P = 0.66$) for the bilateral THA group in all years studied.

Charlson co-morbidity scores were grouped as being a score of either zero or greater than one. Simultaneous bilateral THA patients were healthier at baseline (score = 0; 77.5%) versus unilateral THA patients (score = 0; 69.8%) based on the Charlson co-morbidity index. In addition, looking at blood transfusion data between groups showed that overall 92% of unilateral THA and 95% of simultaneous bilateral procedures did not receive a blood transfusion. In those patients that did receive a blood transfusion there was no significant difference between the bilateral and unilateral THA groups (4.1 units versus 3 units respectively; $P = 0.24$).

Lastly, clinical data were grouped in terms of surgical volume as described in the materials and methods section (Table 3). For all years

Download English Version:

<https://daneshyari.com/en/article/4060208>

Download Persian Version:

<https://daneshyari.com/article/4060208>

[Daneshyari.com](https://daneshyari.com)