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The Impact of Total Joint Arthroplasty on Sexual Function in Young, Active Patients

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ABSTRACT

There is limited information regarding sexual function following total hip (THA) and knee arthroplasty (TKA). A multicenter study of 806 THA, 542 TKA, and 181 control patients less than 60 years of age was conducted using an independent survey center to question subjects about their sexual function. Only 1.3% of THA and 1.6% of TKA patients stated they were not sexually active due to their operation. No significant differences were noted in sexual function based on the bearing surface, femoral head size, or use of surface replacement arthroplasty in the hip cohort. Multivariate analysis revealed no difference in the percentage of patients sexually active following a THA or TKA (OR 1.19, P = 0.38). Most young active patients return to sexual activity after hip and knee arthroplasty.

Both total hip arthroplasty (THA) and total knee arthroplasty (TKA) have the primary goals of pain relief and restoration of essential functions [1–5]. In contrast to traditional surgeon-derived outcome measures such as the Harris Hip and Oxford Knee Scores [6,7], several recent questionnaires have placed greater emphasis on patient-oriented outcomes [3,8–14]. While these studies have demonstrated improved validity and reliability with respect to patient perceptions following total joint arthroplasty (TJA), few have incorporated focused questions regarding return to sexual function postoperatively.

Previous studies have demonstrated patients with hip and knee arthritis to have lower levels of sexual satisfaction and function [15–20], and return to sexual activity has been specifically identified as a high priority in patients undergoing total joint arthroplasty [2,15,16,21–23]. However, Dahm et al, in a survey of members of the American Association of Hip and Knee Surgeons, reported that 80% of surgeons reported they rarely or never discuss sexual activity with their patients following a hip arthroplasty [24]. In addition, there have been few published studies dedicated to investigating the ability of young, active TJA patients to return to sexual activity postoperatively, and they have been limited by small patient cohorts, inclusion of lower demand patients, and the depth and detail of questions assessed [15,25–27]. The purposes of this study were to evaluate young, active patients and their sexual activity following THA and TKA. Specifically, our goals were to (1) determine the frequency and quality of sexual function following total joint arthroplasty, (2) investigate any potential differences in sexual activity outcomes by comparing various modern implant types following hip arthroplasty, including the type of bearing surface, femoral head size, and surface replacement arthroplasty (SRA), 3) establish any potential differences in sexual activity outcomes between TKA and THA patients, and compare them to age- and activity-matched control patients without hip or knee disease, and (4) elucidate the effect of gender, age, ethnicity, and activity level on a patient's sexual activity following total joint arthroplasty.

Materials and Methods

Prior to initiation of this retrospective, multicenter study, institutional review board approval was obtained at each of the five participating institutions and an independent third-party telephone survey service to conduct the patient questionnaire. Each center was selected for their high volume of total joint arthroplasties performed by an experienced group of surgeons.

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Investigators at each of the five centers queried their total joint registries and compiled a list of consecutive patients who underwent primary hip arthroplasty surgery (THA or surface replacement arthroplasty—SRA) or primary TKA between January of 2005 and June of 2007. Inclusion criteria were (1) males or females 18–60 years old, (2) primary hip arthroplasty (THA or SRA) or TKA due to non-inflammatory arthritis (osteoarthritis, post-traumatic arthritis, avascular necrosis, or hip dysplasia), (3) a pre-symptomatic UCLA score ≥6, and (4) modern bearing surfaces were used for hip arthroplasty defined as (a) highly cross-linked polyethylene against metal, ceramic, or oxinium; (b) ceramic-on-ceramic; or (c) metal-on-metal (monoblock, modular, or SRA). An age maximum of 60 years old was instituted to focus the study on "younger" patients. Furthermore, a pre-symptomatic UCLA score of ≥6 was instituted as an inclusion criterion to specifically analyze patients with "higher" activity levels at baseline. Exclusion criteria were patients with a history of postoperative complications (deep infection, fracture, dislocation, or revision for any reason), as this would confound the potential impact that a well-functioning TJA has on sexual activity post-surgically. In addition, the telephone survey center contacted a cohort of "control" patients (using a random digit dial call method) who met the above age and activity inclusion criteria, but had no prior operations on either the hip or knee.

The University of Wisconsin Survey Center (UWSC) was selected to conduct the telephone questionnaire because of their substantial experience performing scientific telephone surveys, and because they were not affiliated with any of the surgeons or institutions involved in this study. The telephone questionnaire was designed by the coordinating center with the help of the UWSC to compare pre- and post-operative sexual function and patient derived outcomes (Appendix I). A pretest of the questionnaire was conducted by the UWSC using healthy volunteers from the coordinating center's research staff to ensure accuracy and reproducibility of the questions and responses prior to initiating full launch of the questionnaire.

Interviewers at the UWSC called each patient at the phone number (s) provided. If the patient was successfully contacted, the interviewer asked a series of screening questions to determine whether that person was eligible for the study. The full questionnaire was administered only to those patients that gave verbal consent to participate, and were determined to be eligible following their responses to the screening questions. The interview for this project was conducted using a computer-assisted telephone interviewing system (CATI) using skip logic, pre-programmed into the computer (CASES 4.3.7: Computer-Assisted Survey Methods Program at the University of California-Berkeley). The final data were sent from the UWSC to the coordinating center via a secure website in SPSS format (Version 16.0, SPSS Inc., Chicago, Illinois).

To compare patient characteristics, chi-square tests or Fisher's exact tests were performed on categorical variables, while non-parametric Kruskall–Wallis tests were used for continuous variables. Univariate logistic regression was conducted to explore the association between arthroplasties performed and the outcomes of interest, then multiple logistic regression was used to further confirm the association after adjusting for patient age, sex, ethnicity, and pre-symptomatic UCLA score (specifically the patient's activity level prior to the onset of symptomatic hip or knee arthritis). For statistical comparison, patients were categorized into the following age groups: (1) <40 years old, (2) 40–49 years old, (3) 50–55 years old, and (4) 56–60 years old. Patient racial groups were categorized as being "non-white" (African-American, Asian, American-Indian, other), or "white." Patients of Hispanic ethnicity were included in the non-white racial group for the purposes of this study. A post-hoc power analysis determined that a sample size of 200 patients in each cohort (hip arthroplasty and TKA) would provide appropriate power (beta level = 0.80, alpha level = 0.05) to detect a 10% difference in sexual participation post-surgically. All analyses were performed using SAS 9.2 (Cary, NC). *P*-values less than 0.05 were considered statistically significant.

Results

Eight hundred six hip arthroplasty patients (66% male, 34% female; 684 THA, 122 SRA) with a mean age at the time of surgery of 49.5 ± 7.2 years, 542 TKA patients (52% male, 48% female) with a mean age at the time of surgery of 54.2 ± 5.3 years, and 181 control patients (48% male, 52% female; mean age 48.1 ± 4.1 years) were eligible for analysis. Significant differences were found between the cohorts for all demographic variables, which were accounted for during subsequent multivariate regression analyses (Table 1).

Hip Arthroplasty

In the hip cohort, of the 791 patients responding to questions about sexual activity, 708 (89.5%) stated they had been sexually active since surgery. Only 10 patients (1.3%) indicated they were not sexually active due to their operative hip.

Of the 694 patients who responded to questions regarding sexual frequency, 302 (43.5%) stated that they were participating in sex "more frequently" after surgery. Of the these patients, 98.0% attributed this increase to "less pain" and 95.4% to "greater mobility."

As compared to 1 month prior to surgery, 487 (69.9%) of 697 respondents stated the quality of their sexual experience was "better" postoperatively with only 15 patients (2.2%) describing the quality as "worse." 98.8% attributed this improvement to "less pain," and 94.2% to "greater mobility." Of note, 22 (3.1%) of 704 responding patients stated that they had at least one episode where they felt hip "instability" or their hip "slip out" during sexual activity after surgery (Table 2).

There were no significant differences noted in preoperative and postoperative sexual function outcomes based on the bearing surface (metal on polyethylene, ceramic on polyethylene, ceramic on ceramic, metal on metal, or SRA). In addition, no significant differences were found between the following 5 groups: (1) standard head THA (head size ≤32 mm)—351 patients (44.4%); (2) large head THA (head size >32 mm)—115 patients (14.5%); (3) modular metal on metal THA with head size >32 mm—116 patients (14.7%,); (4) monoblock metal on metal THA with head size >32 mm—87 patients (11.0%); (5) surface replacement arthroplasty—122 patients (15.4%). To further investigate any outcome differences based solely on femoral head size, all large head THAs with a femoral head size >32 mm were combined together leaving only three groups: (1) standard THA (head size ≤32 mm)—351 patients, (2) big head THA (head size >32 mm)—318 patients, (3) SRA—122 patients. Again, no statistically significant differences were noted in any sexual function outcome categories based on this method of data stratification.

Table 1
Demographics of Patients in the Hip, Knee, and Control Cohorts.

	Hips	Knees	Controls	*P* value
n	806	542	181	
Gender				<0.0001
Male	531 (66%)	284 (52%)	86 (48%)	
Female	275 (34%)	258 (48%)	95 (52%)	
Age (years)				<0.0001
Mean age	49.5 ± 7.2	54.2 ± 5.3	48.1 ± 4.1	
<40	76	9	60	
40–49	279	112	57	
50–55	331	279	46	
56–60	120	142	18	
Race				0.0458
Non-white	38 (5%)	58 (11%)	15 (8%)	
White	736 (95%)	403 (89%)	166 (92%)	
Pre-symptomatic UCLA				
Median	9.0	8.0	9.0	0.0060[a]
Length of follow-up (years)				
Mean	2.3 ± 0.8	2.6 ± 0.8		<0.0001

[a] Kruskal-Wallis test.