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Original Article

Improvements in Sexual Activity After Total Knee Arthroplasty

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ABSTRACT

Background: Sexual limitations in the setting of total knee arthroplasty (TKA) are poorly understood.
Methods: Surveys were designed to assess preoperative and postoperative sexual function, and limitations were retrospectively administered to 91 sexually active TKA patients at an average of 2.1 years (range, 0.5-4.0) after surgery. Preoperative and postoperative responses were compared using 1-tailed and 2-proportion z tests, with $P < .05$ as the threshold for significance.
Results: Before TKA, sexual quality and/or frequency was limited in 45% of patients because of their knee. Patients experienced an average 17.1 months (range, 0-60) of sexual limitations before surgery, resulting largely from pain (87%) and diminished range of motion or flexibility (44%). Fifty-five percent of patients reported the need to change their sexual positions to accommodate their knee, with 97% of these patients indicating the need to avoid kneeling during sex.
Postoperatively, fewer patients had to adjust their sexual positions to accommodate their knee (55% vs 28%, $P = .0005$), and avoid bearing weight on the afflicted knee during sex (97% vs 79%, $P = .0213$). Patients resumed sexual activity after an average of 2.4 months (range, 0-18).
Despite these general improvements, 25% of individuals had less sex in the first year after surgery. After 1 year of recovery, however, 60% indicated that they more easily engaged in sexual activity than in the previous year, with 84% of these patients experiencing less pain, and 30% experiencing greater mobility or range of motion.
Conclusion: TKA does not eliminate sexual limitations, but it significantly decreases kneeling dysfunction and gives patients more liberty in selecting their sexual positions.

Educating patients on the recovery process after total knee arthroplasty (TKA) is often difficult, as patient expectations need to be managed before surgery. Recovery timelines and final outcomes with respect to fundamental activities of daily living are well-understood and are easy to describe to patients [1-3], but only recently have studies focused on patient-oriented activity-specific outcomes [2-7] such as returning to sexual activity. Such studies have commonly investigated sexual function and limitations in the setting of total hip arthroplasty, describing its impact on sexual quality and frequency, assessing the impact of surgery on erectile function, characterizing the impact of implant size and patient demographics on postoperative sexual activity, and even analyzing the risk of implant stability and impingement during different sexual positions through motion capture studies and 3-dimensional modeling [4,8-11].

In comparison, the ability to resume sexual activity after TKA is poorly understood. Given the lack of evidence-based information regarding the impact of TKA on sexual function, decisions surrounding this topic are usually left to speculation or not discussed by medical professionals. Results from a study investigating sexual function after TKA suggest that this lack of education may lead patients to develop misguided postoperative expectations [7]. In this study, there was a large disconnect between preoperative expectations with respect to sexual function and actual postoperative experiences. Preoperatively, 21% of patients expected TKA to have a positive impact on their sex life, and only 7% expected it to have a negative impact. At 12-month follow-up, however, only 6% experienced a positive change and 36% experienced a negative change

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[7]. These findings highlighted the need for additional data regarding the return to sexual activity after TKA, and increased efforts on the part of the physician to share this information with patients.

Because of the lack of information in literature on this topic or because of the patients' desire to keep sexual matters confidential, sexual activity is rarely a topic of preoperative discussion before total joint arthroplasty (TJA) [10,12]. This lack of discussion surrounding sexual function after TKA, however, is not due to a lack of interest. Lavernia and Villa et al [13] have demonstrated that the ability to return to sexual activity is important among patients undergoing TJA, as have others [14-16]. Therefore, more information is needed to ensure that patients and physicians are well-informed regarding sexual function after TKA, so that physicians are capable of properly educating patients. The goals of the present study are to describe the sexual limitations imposed by the end-stage knee osteoarthritis (OA) and the short-term and long-term changes in sexual limitations after TKA.

Materials and Methods

Study Design

Following institutional review board's approval in July 2014, a retrospective study was performed on patients who had undergone primary unilateral or bilateral TKA under 1 of the 3 senior surgeons in urban hospitals between January 2010 and November 2014. Patients with >6 months follow-up after TKA were eligible for participation in the study; patients who were not sexually active at the time of the initial preoperative office presentation were excluded from the study. A specialized survey was designed to anonymously assess preoperative and postoperative sexual function after TKA *via* both open-ended and guided-response questions. Surveys were administered in the clinic, over the phone by research fellows at our institution, or were sent electronically *via* email. Questionnaires asked patients to describe their current sexual function, as well as recall details regarding preoperative sexual function. Surveys also collected selected demographics, including gender, date of birth, and treatment, but other demographics were not collected to ensure that surveys remained anonymous. Survey responses were used to evaluate the nature and duration of sexual limitations resulting from knee OA or an artificial joint. The complete questionnaire is shown in Table 1.

There were 750 patients who fit the eligibility criteria for this study from 3 senior surgeons. The study survey was distributed to 400 patients; we received responses from 146 patients and no response from 254 patients. Of the 146 patients who responded to our outreach, 91 were sexually active patients who completed and returned the survey, 43 declined participation, and 12 were not sexually active.

Data Normalization and Analysis

Because of the open-ended nature of some of the questions used in our study questionnaire, qualitative responses were standardized to allow data aggregation and quantitative analysis. Responses for each question were reviewed to identify common answers and themes. Prevalent answers were used to select defined response categories for each question, allowing us to sort a large number of heterogeneous open-ended responses into a small number of categorical answer options. Response categories were designed to minimize potential answer options without sacrificing relevant response details.

Table 1
Administered Patient Questionnaire.

Question	Normalized Response
1. Did you engage in sexual activity before your total knee arthroplasty? • No • Yes	NA
2. If you engaged in sexual activity before your total knee arthroplasty, did your knee interfere with your sexual activity (quality or frequency)? • No • Yes	NA
3. How long did your knee affect your sexual activities before your total knee arthroplasty? (*If yes to Question #2*)	NA
4. How did your knee affect your sexual activities before your total knee arthroplasty? (*If yes to Question #2*)	a. Caused pain b. Diminished motion/flexibility c. Could not kneel/place weight on knee d. Positions changed
5. Did you change your sexual positions because of your knee before surgery? • No • Yes	NA
6. Did you avoid kneeling? (*If yes to Question #5*) • No • Yes	NA
7. What sexual positions did you have to avoid? (*If yes to Question #5*)	a. Kneeling/placing weight on knee
8. What sexual positions could you comfortably engage in? (*If yes to Question #5*)	a. Being below sexual partner b. Laying on side c. Standing d. Being on top of sexual partner
9. Did your sexual activity change after your total knee arthroplasty? • Had more sex • Had less sex • Stopped having sex • No change	NA
10. If you stopped having sex after your total knee arthroplasty, what was the reason?	a. Too much pain b. Reasons unrelated to knee c. Fear of implant damage
11. How long after your total knee arthroplasty did you wait to start having sex again?	NA
12. Did you change your sexual positions to accommodate your knee after your total knee arthroplasty? • No • Yes	NA
13. How did you change your sexual positions? (*If yes to Question #12*)	a. Avoided kneeling/placing weight on knee b. Laying on nonoperative side
14. Did you have difficulty in kneeling during sex? (*If yes to Question #12*) • No • Yes	NA
15. Is it easier for you to engage in sexual activity greater than 1 y after your total knee arthroplasty? • No • Yes	NA
16. Why? (*If yes to Question #15*)	a. Less pain b. Better mobility/comfort

Our standardization strategy allowed a single open-ended response to fit into more than one standardized response. Any response that captured less than 10% of the response population was omitted. The full normalization strategy used in this study is detailed in Table 1.