İstanbul Med J 2024; 25(1): 31-5
DOI: 10.4274/imj.galenos.2024.74484

Are Recommendations Followed after Total Hip Arthroplasty? A Questionnaire

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ABSTRACT

Introduction: Total hip arthroplasty (THA) is an operation that is successfully performed in patients with end-stage hip osteoarthritis. In this study, we aimed to evaluate the compliance level of primary THA patients with their doctor's post-operative advice on restricted hip movements and environment modifications to prevent dislocation.

Methods: A survey consisting of 14 questions was prepared, questioning 320 patients who underwent THA in our clinic between 2015 and 2021. One hundred and forty three patients agreed to participate in our study, and their answers regarding whether they followed the introductions recommended by the surgeon who performed the surgery were recorded.

Results: 99% of the 143 patients who participated in the survey stated that they were given some advice. 46% (n=66) of the patients stated that they were told that these introductions should be applied for life. 60% of the patients did not cross their legs, 74% did not squat, 86% did not sit cross-legged, 76% did not use toilet risers, and 89% do not do unrecommended sports.

Conclusion: Most patients complied with the surgeon's recommendations in the early period; however, we observed that compliance decreased over time.

Keywords: Arthroplasty, dislocation, exercise, hip, motion, prosthesis, postoperative recommendations, recommendations, restriction

Introduction

Total hip arthroplasty (THA) is a successful option for patients with end-stage hip osteoarthritis (1). Dislocation after arthroplasty is an important complication seen in 2-9% of patients (2). To prevent hip dislocation after THA, surgeons give some traditional recommendations. These recommendations include sitting high (with a cushion); avoiding sports such as running, jumping, cycling, and using a European toilet; and avoiding squatting and crossing legs while sitting (3,4).

In recent years, developments in hip prosthesis designs and surgical techniques, the use of larger heads, better definition and evaluation of hip-lumbar pathologies and their evaluation (5), and the introduction of modern implants aiming to reduce the risk of dislocation have reduced the risk of dislocation after THA (6). A clear consensus has not yet been made on whether conventional recommendations after THA are still necessary. The issue of whether patients comply with these recommendations has not been properly investigated (7). In addition, there is no clear data on the percentage of patients following these recommendations, whether the degree of compliance reduces the complication rates, or to what extent it affects the functions and quality of life of these patients.

In this study, we evaluated the compliance level of primary THA patients with their doctor's post-operative advice on restricted hip movements and environment modifications.

Methods

A survey consisting of 14 questions was prepared (Table 1), questioning 320 patients who underwent THA in our clinic between 2015 and 2021 by phone. Of the 143 patients who agreed to participate in our study, their answers regarding whether they followed the introductions recommended by the surgeon who performed the surgery were recorded. All questions were multiple-choice.

Patients who underwent primary THA for primary degenerative coxarthrosis, femoral neck fractures, and avascular necrosis of the femoral head with a follow-up period of at least one year were included in the study.

Patients who underwent revision surgery for THA, those diagnosed with a connective tissue disorder, and those with developmental hip dysplasia were excluded. The patients were informed about the questionnaire,

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Cite this article as: Demir B, Azboy N, Rakkad N, Ayasgil M, Çatal B, Azboy İ. Are Recommendations Followed after Total Hip Arthroplasty? A Questionnaire. İstanbul Med J 2024; 25(1): 31-5.

Received: 21.12.2023
Accepted: 23.01.2024

and their informed consent was obtained. Questions were asked to the patients by telephone interview. The responses were recorded.

The study protocol was approved by the İstanbul Medipol University Non-Interventional Clinical Research Ethics Committee (approval number: 18, date: 05.01.2023). This study was conducted in accordance with the principles of the Declaration of Helsinki.

Statistical Analysis

To measure whether the data were normally distributed or not was analyzed using the Kolmogorov-Smirnov test. Normally distributed continuous variables are given as mean ± standard deviation, and non-normally distributed as median (minimum-maximum). The chi-square test was used to compare the categorical data of the binary groups. A $p<0.05$ was considered statistically significant. The IBM SPSS version 25.0 (Chicago/Illinois, USA) data package program was used.

Results

99% of the 143 patients who participated in the survey stated that they were indeed given some recommendations after THA. 46% (n=66) of the patients stated that they were told that this recommendation should be applied lifelong, whereas 13% (n=19) stated that the recommendations were for three months. While 36% of the patients stated that they would apply the recommendations lifelong, we determined that 6% of the patients (n=9) never followed the recommendations. 73% of the patients in our study were women, and their mean age was 68.1±16.2 years (Table 2). The mean follow-up time of this study was 3,9 years, ranging from 1 to 7 years.

Two patients (nearly 1%) had a dislocation. One was due to acetabular aseptic loosening and polyethylene wear at the end of the second year postoperatively, and the other was a periprosthetic fracture dislocation due to falling accidentally one month after the operation. Both were operated on after a femoral neck fracture. They agreed that doctors gave them advice, and they stated advice was for 6 months and lifelong, respectively. In addition, the former took the advice accordingly and the latter one for 1 year only.

When asked about the activities, the most frequently avoided activity by the patients was cycling (91%), followed by unrecommended sports (89%) Crossing their legs (60%) and squatting (74%). It was observed that 9% of the patients continued to perform squats and 6% performed cross-legged movements contrary to recommendations. 76% of the patients did not use WC risers, whereas 14% continued to use oriental toilets.

It was found that 63% of women in our study never crossed their legs, whereas this rate was 54% in men (p=0.017) (Table 3). In addition, the percentage of women avoiding squatting (80%) was significantly higher than that of men (59%) (p=0.022). Furthermore, the frequency of women never driving was 11%, in contrast, this rate was 18% in men (p=0.001). Likewise, women were slightly more compatible compared to men about not running, 84% to 72%, respectively (p=0.007).

Discussion

This study demonstrated that almost all orthopedic surgeons (99%) give some recommendations to their patients to reduce the risk of dislocations after THA. Similarly, patients acknowledge that they have been given advice regarding physical activity restrictions. While most physicians made these recommendations for life-long implementation, only 39 (n=56) of patients adhered to them for relatively short periods, between 3 months and 1 year. It can be argued that patients tend to stop applying these recommendations.

The effect of recommendations to prevent dislocation is not adequately investigated. A review conducted in 2015 to investigate the effect of different patient restriction protocols on dislocation in primary THA stated that the follow-up period was between 6 months and 2 years. They analyzed studies including patients with a variable range of restriction protocols, stating that crossing legs and extreme hip flexion were the most common restrictions. They found a 1.5% dislocation rate in the restricted group and 1% in the unrestricted group. Their conclusion was that more liberal protocols would not increase dislocation rates (8). Accordingly, Peak et al. (9) studied the role of additional patient restrictions besides the range of hip motion (restriction of above 90 degrees flexion, adduction (crossing the legs), and internal and external rotation above 45 degrees, for all patients) on early dislocation following

Table 1. These questions designed to measure patients' compliance with the recommendations of their surgeon

Question 1. What was the reason for the surgery?
Question 2. What was the academic title of the physician who performed your surgery?
Question 3. Did your surgeon recommend you not to do some movements and activities?
Question 4. For what period did your surgeon recommend you not to perform some movements and activities to prevent prosthesis dislocation?
Question 5. How long did you apply the restrictions that your doctor recommended to you to prevent prosthesis dislocation?
Question 6. How often do you sit with your legs crossed?
Question 7. How often do you squat or bend over to pick up something on the floor?
Question 8. How often do you sit on the floor and walk cross-legged?
Question 9. Do you use a toilet lifter?
Question 10. Do you use a European toilet?
Question 11. When did you start driving a vehicle after surgery?
Question 12. How often do you cycle?
Question 13. How often do you run?
Question 14. How often do you participate in sports like football, basketball, or tennis?

Table 2. Demographic characteristics of the patients and questionnaire responses (n=143)

		n	%
Gender	Female	104	72.7
	Male	39	27.3
Reason for the operation	Osteoarthritis	111	77.6
	Avascular necrosis	3	2.1
	Fracture	29	20.3
Surgeon's title	Orthopedic Surgeon Dr.	16	11.2
	Associate. Prof. Dr.	77	53.8
	Prof. Dr.	50	35.0
Compliance with the recommendations	Yes	142	99.3
	No	1	0.7
Recommendation period	3 months	19	13.3
	6 months	23	16.1
	1 year	15	10.5
	3 years	20	14.0
	Lifelong	66	46.2
Application time for the recommendations	3 months	17	11.9
	6 months	20	14.0
	1 year	19	13.3
	3 years	27	18.9
	Lifelong	51	35.7
	Never applied	9	6.3
Crossing legs	Sometimes	30	21.0
	Usually	14	9.8
	Always	13	9.1
	Never	86	60.1
Squatting	Sometimes	18	12.6
	Usually	11	7.7
	Always	8	5.6
	Never	106	74.1
Sitting cross-legged	Sometimes	8	5.6
	Usually	8	5.6
	Always	4	2.8
	Never	123	86.0
Toilet lift	Sometimes	17	11.9
	Usually	6	4.2
	Always	11	7.7
	Never	109	76.2
European toilet	Sometimes	2	1.4
	Usually	6	4.2
	Always	123	86.0
	Never	12	8.4
Driving	Sometimes	111	77.6
	Usually	10	7.0
	Always	4	2.8
	Never	18	12.6
Cycling	Sometimes	7	4.9
	Usually	3	2.1
	Always	3	2.1
	Never	130	90.9
Running	Sometimes	22	15.4
	Usually	4	2.8
	Always	2	1.4
	Never	115	80.4
Sports	Sometimes	10	7.0
	Usually	6	4.2
	Never	127	88.8

THA in a randomized, prospective study with the same follow-up time. This study had only 1 (0.3%) dislocation case overall, which occurred when the patient was transferred from the operating table to the patient bed. The patient belonged to the restricted group and had no operation for instability afterward (9). Both studies reported that the dislocation rate did not increase in the unrestricted patient group. Additionally, the time to return to work and daily activities was shorter in unrestricted patients. However, while the latter study stated that the patients followed in a strict manner, the former study did not specify if the patients followed the restrictions imposed on them adequately. Future studies with longer observation periods, including patient groups with different protocols, would help to determine the role of physician's advice in long-term dislocation rates. Two patients (2%) experienced dislocation in our study, one after 3 weeks and the other 11 months after surgery. Both patients received recommendations from their surgeons and implemented the advice accordingly by 6 and 12 months. The dislocation rate in the present study was similar to previous studies in the literature (10,11). Nonetheless, more patients with hip dislocation were required to analyze the effect of recommendations given after THA.

Most patients followed the recommendations for squatting or sitting cross-legged less frequently, whereas more patients followed the modifications we recommend at home, such as using a seat cushion and a toilet lift. The fact that these movements are relatively simple and more necessary in daily life by patients can be considered as the reason for this situation. On the other hand, there are various studies showing that these recommendations are unnecessary in addition to fundamental restrictions such as adduction, hyperflexion, and rotation above 45 degrees (9,12-14).

Although dislocation remains a crucial complication after THA, there are several surgical precautions (12). Appropriate surgical technique and implant selection and proper placement of components have an critical role in preventing this complication (15). In addition, during the postoperative period, patients' compliance with exercise and recommendations also plays an important role (7,10,16). Furthermore, we argue that modified recommendations by surgeons according to the patients and explaining them clearly would improve patient satisfaction

Table 3. Comparison of gender and survey responses, n (%)					
Crossing legs					
	Sometimes	**Usually**	**Always**	**Never**	**p***
Female	25 (24)	9 (99)	5 (55)	65 (63)	**0.017**
Male	5 (13)	5 (13)	8 (21)	21 (54)	
Squatting					
Female	10 (9.6)	7 (6.7)	4 (3.8)	83 (79.8)	**0.022**
Male	8 (20.5)	4 (10.3)	4 (10.3)	23 (59.0)	
Driving					
Female	92 (88.5)	1 (1.0)	0 (0.0)	11 (10.6)	**0.001**
Male	19 (48.7)	9 (23.1)	4 (10.3)	7 (17.9)	
Running					
Female	15 (14.4)	0 (0.0)	2(1.9)	87 (83.7)	**0.007**
Male	7 (17.9)	4 (10.3)	0 (0.0)	28 (71.8)	
*Pearson's chi-squared analysis was used					

by increasing compliance with the recommendations and reducing the risk of complications.

It was determined that compliance with the recommendations related to sports was the highest. The probable reason for this was that most of the patients were individuals with a relatively high body mass index (the mean number was approximately 31 kg/m^2) and a sedentary lifestyle (stated by patients during the interview) before the operation belonged to the elderly population. Considering that these individuals are patients who had tried conservative treatment for a long time before surgery and did not benefit from it, persistent pain that reduces the quality of life can be counted as the reason for staying away from sports (17,18).

This study has shown that women's compliance rates with advice such as crossing legs, squatting, and driving were significantly higher than men's. They were similar in other aspects. A review of literature conducted by Rowan et al. (16) found no difference in the rate of dislocation between women and men. However, we realize that former studies about patient compliance to recommendations after surgery did not investigate the difference between genders (19-21). Nonetheless, as an example, different studies inspecting national data from the USA and Lithuania with numbers of 1,610,155 and 3403 primary THA patients showed that male gender can be a risk factor for dislocation, especially at earlier post-operative period (22,23). We argue that male inattentiveness could be a factor in this difference in genders.

Study Limitations

Among the limitations of this study, it has shown that a large proportion of the patients did not answer the phone call or did not accept to participate in the survey (55%) (n=177). Due to the nature of the questionnaire, the patients and their relatives may have problems remembering past times; therefore, patient-based bias may have affected the results of this study. The questions asked in the questionnaire were created on the basis of the recommendations of our own clinic. Although there are studies comparing the effect of different restriction protocols on dislocation rates, there is no consensus in the literature regarding the standardization of recommendations after arthroplasty. There is a need for an algorithm in which the results of similar studies can be compared as a reference. Moreover, studies with larger complicated patient series are needed to investigate the effects of recommendations on reducing the risk of dislocation and prosthesis survival.

Conclusion

This study showed that almost all surgeons give some recommendations to reduce the risk of dislocation after THA. Most patients complied with these recommendations in the early period; however, we observed that compliance decreased over time. Lifelong recommendations may be unnecessary. Moreover, women were more willing than men to comply with the recommendations.

Ethics Committee Approval: The study protocol was approved by the İstanbul Medipol University Non-Interventional Clinical Research Ethics Committee (approval number: 18, date: 05.01.2023).

Informed Consent: Their informed consent was obtained.

Authorship Contributions: Surgical and Medical Practices - B.Ç., İ.A.; Concept - B.D., N.R., İ.A.; Design - B.D., M.A., B.Ç.; Data Collection or Processing - N.A., N.R., M.A.; Analysis or Interpretation - B.D., N.A., B.Ç.; Literature Search - N.R., M.A.; Writing - B.D., N.A., İ.A.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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