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Hip Arthroplasty or Medical Management: A Challenging Treatment Decision for Younger Patients

Christine E. Stake, DHA [a,b], Patricia Y. Talbert, Ph.D., MPH, CPHA, CHES [b], William J. Hopkinson, M.D. [c], Robert J. Daley, M.D. [a], Kris J. Alden, M.D., Ph.D. [a], Benjamin G. Domb, M.D. [a,c]

[a] Hinsdale Orthopaedics, American Hip Institute in Westmont, Westmont, Illinois
[b] University of Phoenix, Phoenix, Arizona
[c] Loyola University Chicago Stritch School of Medicine, Maywood, Illinois

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ABSTRACT

The two main treatment options for total hip arthroplasty (THA), medical management and surgical intervention, have advantages and disadvantages, creating a challenging decision. Treatment decisions are further complicated in a younger population (≤50) as the potential need for revision surgery is probable. We examined the relationship of selected variables to the decision-making process for younger patients with symptomatic OA. Thirty-five participants chose surgical intervention and 36 selected medical management for their current treatment. Pain, activity restrictions, and total WOMAC scores were statistically significant ($P < .05$) for patients selecting surgical intervention. No difference in quality of life was shown between groups. Pain was the only predictor variable identified, however, activity restrictions were also influential variables as these were highly correlated with pain.

Osteoarthritis (OA) of the hip can cause symptomatic disability and can negatively affect an individual's physical and psychosocial health [1–3]. In most patients suffering from OA of the hip, pain and quality of life are the biggest indicators for total hip arthroplasty (THA) [2,4]. Based on the clinical course of OA and radiographic evidence, consensus does not exist on the appropriate time for performing THA [5]. Additionally, discrepancies exist between medical recommendations and patient preference for THA as a treatment option [1].

The decision-making process involves consideration of both external and internal factors, such as psychosocial considerations [2]. Because the two main treatment options, medical management and surgical intervention, have both disadvantages and advantages, the options present a challenging medical decision. Physicians often take a greater role in the decision-making process and patients experience feelings of helplessness and lack of control in the decision to treat hip OA [2].

Studies have demonstrated an increasing rate of surgical intervention, primarily THA, as a treatment option for patients suffering from symptomatic OA [6–8]. Increases for THA are present in all groups, with the younger age groups (20–49) growing with the greatest proportion. In the 20–49 age group, crude rate of THA procedures increased 30% from 2001 to 2007 [9]. Additionally, the rates for patients under the age of 60 choosing THA have steadily increased, accounting for almost 40% of THA procedures completed in the United States [10,11].

The CDC reported the OA prevalence increased significantly at age 45 [12]. Younger patients with OA potentially present with a more symptomatic and progressive form of the condition, often accompanied by poorer functionality. Age is the primary contraindication to THA for younger patients because they have the potential to undergo a second THA or revision surgery in their lifetime [13,14]. However, younger patients demonstrate increased interest in pursuing THA as a treatment option as the importance assigned to age as a contraindication decreases [10,15].

In a study by Martin et al physicians reported factors important to patients were symptoms, limitations, and negative effects on employment [16]. Research studying the decision-making process of hip OA patients is minimal, specifically in younger populations [17]. Increased knowledge of what factors are important for patients under the age of 50 with symptomatic OA may improve communication when discussing factors that may be assigned varying levels of importance between patients and physicians [16]. The purpose of the study was to examine the relationship of selected variables to the decision-making process for patients under the age of 50 with symptomatic OA.

Methods

Inclusion criteria included patients who had symptomatic hip OA, were under the age of 50 and candidates for surgical intervention. No gold standard of when THA should be recommended was discovered in the literature. Therefore, the guidelines from Gossec et al were used, which defined the gold standard for recommending surgical

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Reprint requests: Christine E. Stake, DHA, Hinsdale Orthopaedics, American Hip Institute, 1010 Executive Court, Suite 250, Westmont, IL 60559.

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intervention as when an individual surgeon recommends THA, often because of a patient's pain and loss of functionality [18]. Participating physicians contributed to the design and process to select patients to provide increased consistency for included patients.

Enrollment of patients occurred at a large orthopedic practice at an academic medical center and an orthopedic private practice clinic, both located in the Midwestern United States. Exclusion criteria included patients with traumatic injuries or those who were not able to read or understand the related documents because of language or cognitive barriers. The dependent variable was the rate of selection of surgical intervention as the primary treatment decision. Independent variables included pain levels, activity restrictions, and quality of life.

Collection of the independent variable data was collected using the WOMAC and SF-12, both validated survey instruments, consistently used in OA research studies [19–22]. Permission to use both surveys was secured before research began. Demographic information and patient choices of treatment plans collected included age, gender, insurance status, and level of education completed. Participants also answered questions about current treatments, pain levels, and plans related to pursuing surgical intervention at the 6 month and one-year time points. Survey instruments had a self-administered format and participants completed the instruments on paper. Involvement in the study was limited to completing the surveys, and no follow-up component or further participation was necessary. No personal health information or any unique identifiers linked the participant to the survey.

Use of a power analysis determined the number of participants necessary to achieve statistical significance. The SF-12 mental component score represented the effects of pain, physical function, and quality of life. From a previous research study, the mean and SD of the SF-12 mental component score of 54.40 ± 11.70 was representative of patients who choose surgery [23]. A higher mental component score of at least 15%, or the equivalent of a score of 62.56, was the predicted score for patients who did not choose surgery. With a two-tailed test, a significance level of 0.05 and 80% power, each group contained 34 to detect a mean difference of 8.16. Sample size calculations were conducted using nQuery software that calculated a sample size of 68.

All variables underwent evaluation for co-linearity and if variables were co-linear, the strongest relationship of the two variables was included in the regression model. Results were considered significant with a two-tailed test and P-value < .05. Statistical analysis was completed using Microsoft Excel and SPSS software version 22 (IBM, 2013).

Results

A total of 71 patients participated in the study, with 56 (79%) from the private practice and 15 (21%) from the academic medical center. Thirty-five participants chose surgical intervention and 36 selected medical management for their symptomatic OA. Within the total study sample of 71 patients, 45 (63%) were male and 26 were (37%) female. The majority of participants were in the 41–50 age group, 25 (35%) being in the category 41–45 and 25 (35%) in the 46– 50 category. For the other age categories, two (3%) were 26–30, seven (10%) 31–35 and 12 (17%) were 36–40. Demographic information is provided in Table 1.

The majority of patients reported an education level of some college or higher (Fig. 1). The majority of participants (80%) had private insurance provided by their employer. Fig. 2 shows a breakdown of insurance coverage by group. There were no significant differences between groups related to insurance or education status.

The participant information survey also queried participants on current treatments used to manage their symptomatic OA. Table 2 shows current treatments for each group. Use of aggregate numbers represents the selected treatment modalities because many participants used more than one. The three most common interventions for the surgical group were medication, physical therapy, and no current treatment, compared to exercise, medication, and no current treatment in the group selecting medical management.

Table 1
Patient Demographics.

	Total Sample ($N = 71$)		Surgical Patients ($n = 35$)		Medical Management Patients ($n = 36$)	
Variable	*n*	%	*n*	%	*n*	%
Gender						
Male	45	63	26	72	19	54
Female	26	37	10	28	16	46
Age group						
26–30	2	3	1	3	1	3
31–35	7	10	6	16.5	1	3
36–40	12	17	6	16.5	6	17
41–45	25	35	13	36	12	34
46–50	25	35	10	28	15	43

Twenty participants (28%) from the total study sample currently used no treatments to manage their symptomatic OA. Treatments in the "other" group included cortisone shots and acupuncture.

Fig. 3 shows the responses for the medical management group related to the likelihood of pursuing surgery in the next 6 months and in 1 year. Responses were similar at both ends of the spectrum, with 11 (30.5%) stating the likelihood of having surgery in the next 6 months was *not at all likely*, compared to 11 (30.5%) who selected *very likely* to pursue surgery in the next 6 months. However, when examining the same categories at the 1-year mark, the response rate for *very unlikely* dropped to eight (22%) compared to 13 (36%) for the *very likely* to pursue surgery response. For patients in the *undecided* category, responses remained similar between the 6-month and 1-year period, eight (22%) to seven (19%), respectively.

Group comparison took place using the scores from the pain subscale of the WOMAC. A significant difference between total WOMAC scores was present for patients selecting surgery compared to patients choosing medical management ($P = .012$).

The scores from the difficulty performing daily activities/physical function subscale of the WOMAC were used to compare groups. A significant difference emerged for the independent variable of activity restrictions for patients selecting surgery compared to patients choosing medical management ($P = .027$). The results were not statistically significant for stiffness between the two groups ($P = .15$).

The mental component score (MCS) and physical component score (PCS) scores from the SF-12 were used to compare groups to assess all three variables. The mean (standard deviation) for surgical patients and medical management patients for MCS scores was 46.7 (11.8) and 51 (10.1) respectively. The mean (standard deviation) for surgical patients and medical management patients for PCS scores was 36 (10.1) and 39.7 (10.9) respectively. No significant difference was present in MCS or PCS scores for patients selecting surgery compared to patients choosing medical management.

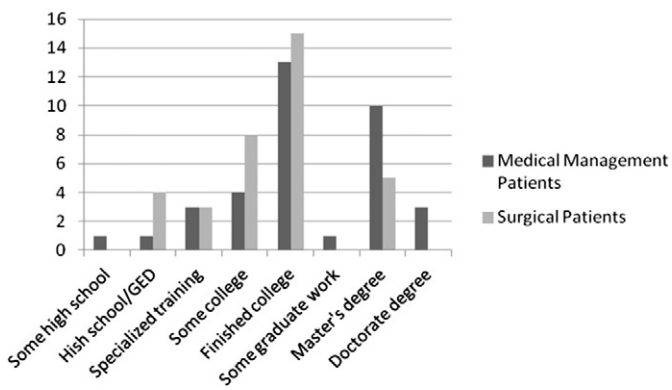

Fig. 1. Education levels by group.