The Journal of Arthroplasty xxx (2016) 1–7

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

Original Article

Differences in Patient-Reported Outcomes Between Unicompartmental and Total Knee Arthroplasties: A Propensity Score-Matched Analysis

Man S. Kim, MD, In J. Koh, MD, PhD, Young J. Choi, MD, Jong Y. Lee, MD, Yong In, MD, PhD *

Department of Orthopaedic Surgery, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea

ARTICLE INFO

Article history:
Received 13 September 2016
Received in revised form
17 November 2016
Accepted 18 November 2016
Available online xxx

Keywords:
total knee arthroplasty
unicompartmental knee arthroplasty
patient-reported outcome measure
patient satisfaction
propensity score matching

ABSTRACT

Background: The purpose of this study was to compare the patient-reported outcomes regarding joint awareness, function, and satisfaction after unicompartmental knee arthroplasty (UKA) and total knee arthroplasty (TKA).

Methods: We identified all patients who underwent a UKA or TKA at our institution between September 2011 and March 2014, with a minimum follow-up of 2 years. Propensity score matching was performed for age, gender, body mass index, operation side, and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score. One hundred UKAs to 100 TKAs were matched. Each knee was evaluated according to the WOMAC score, Forgotten Joint Score (FJS), High Flexion Knee Score (HFKS) and patient's satisfaction at postoperative 2 years.

Results: There was no significant difference in WOMAC score at postoperative 2 years between UKA and TKA groups. However, the FJS of the UKA group was significantly higher than that of the TKA group (67.3 ± 19.8 and 60.6 ± 16.6, respectively; $P = .011$). The HFKS was also significantly higher in the UKA group compared with the TKA group (34.4 ± 6.4 and 31.3 ± 5.2, respectively; $P < .001$). Eighty-six percent of all patients who underwent UKA were satisfied compared with 71% of those who underwent TKA ($P = .027$).

Conclusion: Patients who underwent UKA had higher FJS, HFKS, and satisfaction rate when compared with patients who underwent TKA, indicating that UKA facilitated less knee awareness and better function and satisfaction than TKA.

Total knee arthroplasty (TKA) and unicompartmental knee arthroplasty (UKA) are established and are reliable treatment options for end-stage knee osteoarthritis (OA) [1]. UKA has several advantages over TKA including minimal invasiveness, quick recovery, less blood loss, preservation of bone stock because of a healthy condyle surface, superior range of motion (ROM), and nearly normal kinematics because of the preservation of cruciate ligaments [2,3]. Despite these strengths, TKA is considered the gold standard of operative treatment for OA of the knee, although it is limited to unicompartment [4]. This is due to the superior long-term survivorship, lower risk of revision rate, and easier surgical technique for TKA compared with UKA [5]. However, several studies have shown excellent long-term survivorship and similar revision rates for UKA compared with TKA [5,6]. Consequently, a controversy exists regarding the best treatment option between TKA and UKA for patients with end-stage unicompartmental knee OA [7].

The evaluation of outcome after knee arthroplasty has traditionally used physician-assessed objective clinical outcomes such as survival of implant and revision, complication rate, and radiological parameters [8,9]. Although these outcomes are essential and important to evaluate the success of arthroplasty, no information is obtained from the patients, who may be unsatisfied with joint arthroplasty without abnormal findings in the surgeon's assessment [10]. The ultimate goal of orthopedic operation for OA of the knee is the satisfaction of the patients, not the surgeon [11]. According to Bullens et al [10], approximately 30% of patients were not fully satisfied after joint arthroplasty. Therefore, patient-reported outcome measures (PROMs) including patient satisfaction or joint-specific parameters such as pain, function of activities in daily life, or joint awareness, are increasingly being accepted as an important part of postoperative outcome evaluation [12].

No author associated with this paper has disclosed any potential or pertinent conflicts which may be perceived to have impending conflict with this work. For full disclosure statements refer to http://dx.doi.org/10.1016/j.arth.2016.11.034.

* Reprint requests: Yong In, MD, PhD, Department of Orthopaedic Surgery, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, 222 Banpo-daero, Seocho-gu, Seoul 06591, Republic of Korea.

http://dx.doi.org/10.1016/j.arth.2016.11.034
0883-5403/

Although various clinical scoring systems are used to assess patients after arthroplasty, most PROMs might not distinguish between patients with different levels of knee function because of ceiling effects [11,13-15]. The Forgotten Joint Score (FJS) is a recently validated score for joint awareness that minimizes the ceiling effect [13]. The High Flexion Knee Score (HFKS) was also developed and validated for clinical use to eliminate the ceiling effect [16].

Thus, this study was performed to (1) compare the patient-reported outcomes (PROs) regarding joint awareness and function following TKA and UKA using PROMs that minimize the ceiling effects and (2) compare the degree of satisfaction, and identify which items are more satisfactory following TKA and UKA, using detailed satisfaction questionnaires. We hypothesized that post-operative PROs and patient satisfaction would be better in patients who underwent UKA than in those who underwent TKA. It was also hypothesized that the identification of different satisfaction items between patients who underwent TKA and UKA would be helpful to decide whether to perform TKA or UKA.

Materials and Methods

This study was a retrospective comparative study with prospectively collected data and minimized the variability of the preoperative demographic and clinical scores using propensity score matching (PSM). We identified all patients who underwent a TKA or UKA at our institution for the treatment of knee OA between September 2011 and March 2014 with a minimum follow-up of 2 years. The criteria for UKA were: (1) OA involving isolated medial knee compartments with no degenerative changes in the lateral compartment, (2) intact anterior cruciate ligament, and (3) correctable varus deformity [17]. A TKA was performed for patients with at least one compartment OA of the knee joint. We excluded

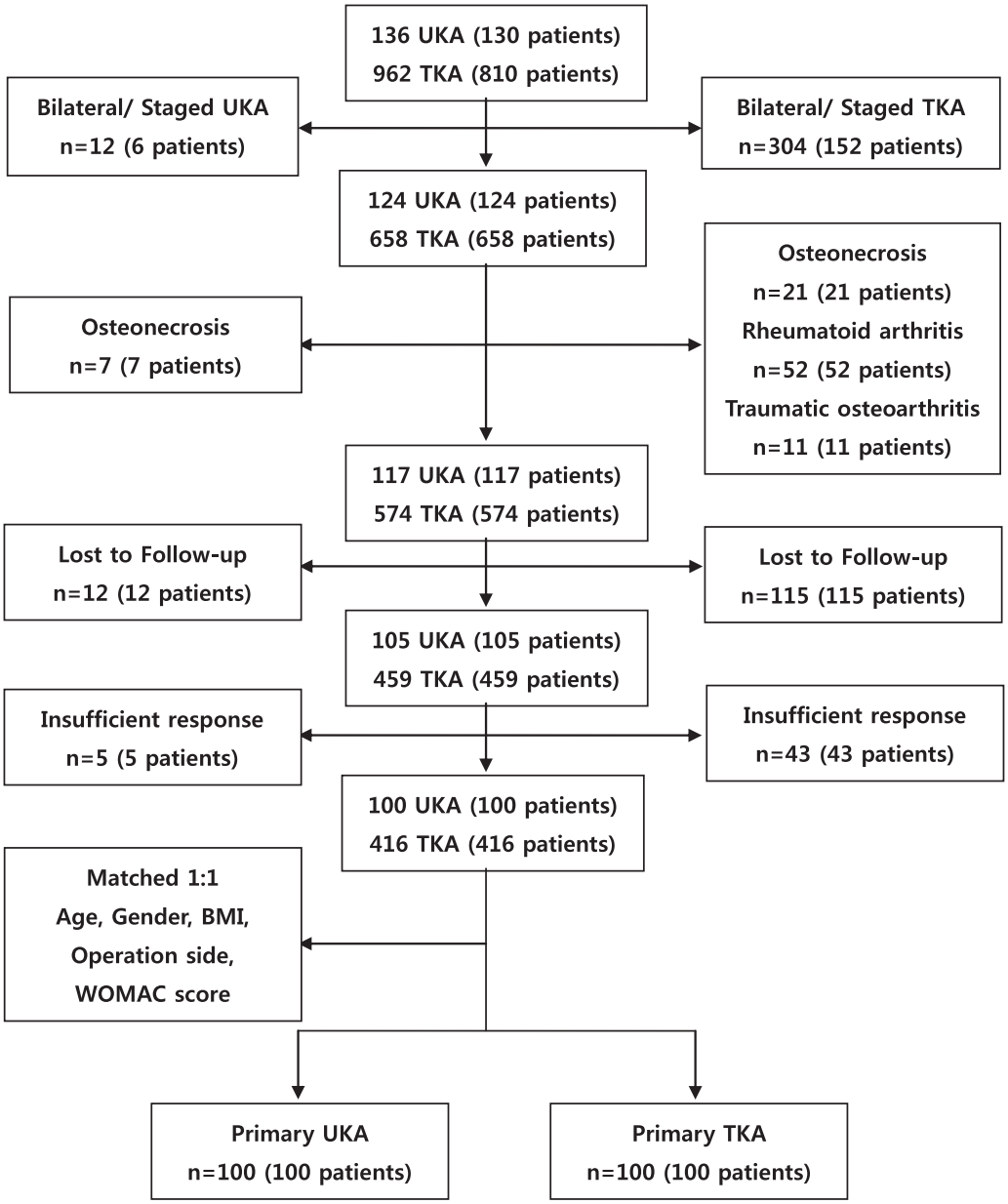

Fig. 1. Flow chart describing the patients invited to participate in the study and included in the analysis. BMI, body mass index; TKA, total knee arthroplasty; UKA, unicompartmental knee arthroplasty; WOMAC, Western Ontario and McMaster Universities.