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Functional Outcomes and Patient Satisfaction Following Total Knee Arthroplasty in Dakar: A Single-Center Retrospective Study

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ABSTRACT

Introduction: *Total knee arthroplasty (TKA) is the standard surgical treatment for advanced and disabling knee osteoarthritis that is resistant to conservative treatment. Despite therapeutic advances, functional outcomes and postoperative satisfaction remain variable. The objective of this study was to evaluate functional outcomes and patient satisfaction following TKA at a hospital in Dakar.*

Patients and Methods: *We conducted a single-center retrospective study of 27 patients who underwent unilateral TKA between January 1, 2020, and January 31, 2025, at the Order of Malta Hospital in Dakar. Postoperative evaluation was performed between September and October 2025 using the 2011 Knee Society Score (KSS). Sociodemographic, clinical, and therapeutic characteristics, as well as functional outcomes and patient satisfaction, were analyzed.*

Results: *The mean age was 66.3 years, with a predominance of female patients (77.8%). Overweight and obesity were present in 66.7% of patients, and hypertension was the most common comorbidity (59.2%). Advanced tricompartmental knee osteoarthritis was the primary indication for surgery. The median postoperative follow-up was 42.6 months. The mean objective KSS score was 76/100. The mean scores for satisfaction, expectations, and functional activities were 29.9/40, 13.8/15, and 57.1/100, respectively. Twenty-one patients (77.8%) had a satisfaction score of 30/40 or higher. Postoperative complications were observed in six patients (22.2%).*

Conclusion: *In this Senegalese series, the clinical and functional outcomes following TKA were generally favorable, with an encouraging level of satisfaction. A multidimensional assessment of postoperative outcomes appears essential for evaluating the benefits of this procedure. Prospective studies with larger sample sizes are needed to confirm these observations.*

Keywords

Total knee arthroplasty, Functional outcomes, Patient satisfaction, Knee Society Score, Senegal.

Introduction

Total knee arthroplasty (TKA) is the standard surgical treatment for advanced and disabling knee osteoarthritis that is resistant to conservative treatment [1,2]. Its use is increasing worldwide, with significant variations across regions and healthcare systems [3]. Advances in surgical techniques and rehabilitation protocols have contributed to improved postoperative outcomes. However, despite these advances, a significant proportion of patients remain dissatisfied after surgery, particularly due to persistent pain, functional limitations, or unmet expectations [4]. The assessment of outcomes after TKA cannot therefore be limited to clinical and radiological parameters alone. It must also incorporate functional

abilities and the patient's perception of the outcome. The 2011 Knee Society Score (KSS) provides a multidimensional assessment that combines clinical examination of the knee, symptoms, functional activities, and the patient's satisfaction and expectations [5]. This approach contributes to a better understanding of postoperative outcomes and helps tailor follow-up care in Physical Medicine and Rehabilitation. In sub-Saharan Africa, particularly in Senegal, published data on functional outcomes and patient satisfaction following ATG remain limited. The available studies focus primarily on epidemiological characteristics and surgical aspects, while the combined assessment of function and satisfaction remains poorly documented. A better understanding of these outcomes could help optimize postoperative follow-up and rehabilitation strategies tailored to the local context. The objective of this study was to evaluate functional outcomes and patient satisfaction among patients who underwent total knee arthroplasty at the Order of Malta Hospital in Dakar.

Patients and Methods

Study Type, Setting, and Period

We conducted a retrospective, single-center, descriptive study at the Order of Malta Hospital (CHOM) in Dakar, Senegal. The study included patients who underwent total knee arthroplasty (TKA) between January 1, 2020, and December 31, 2024. Data collection took place from September 1 to October 15, 2025.

Study Population

The study included patients who underwent unilateral TKA at the CHOM during the study period, for whom the necessary data for evaluation were available, and who agreed to participate in the study. Patients who underwent bilateral TKA, those operated on outside the center or outside the enrollment period, and those with insufficient data for evaluation were excluded. A total of 375 patients underwent ATG during the study period. Of these, 66 had undergone bilateral ATG surgery. Of the 309 patients who had undergone unilateral ATG, 282 were excluded due to incomplete medical records, inability to be reached by phone, or lack of informed consent. The final sample thus comprised 27 patients.

Data Collection

Data were collected from medical records and a clinical evaluation of the patients who were summoned, conducted using a standardized questionnaire. This evaluation included a medical history interview and a general and locoregional physical examination. The variables studied included sociodemographic characteristics (age, sex, occupation), clinical data (symptoms, comorbidities, weight, and height), radiological data (prosthetic alignment, bone quality), and surgical data (side operated on, surgical approach). Details regarding postoperative rehabilitation were also collected. The rehabilitation program consisted of an initial phase of daily physical therapy during hospitalization in the orthopedic surgery ward, combined with therapeutic education, followed by an outpatient phase involving three to four weekly physical therapy sessions.

Assessment of Functional Outcomes and Patient Satisfaction

Postoperative outcomes were assessed using the Knee Society Score (KSS) in its 2011 revised version [5]. This tool consists of two complementary components. The objective component, scored out of 100 points, assesses clinical parameters of the knee, including symptoms, range of motion, and joint stability. The subjective component comprises three domains assessed by the patient: satisfaction (0 to 40 points), expectations (0 to 15 points), and functional activities (0 to 100 points). The results were analyzed separately for each dimension of the KSS 2011.

Statistical Analysis

Data were entered using Microsoft Excel and analyzed with Jamovi, version 2.7.30. Descriptive analysis focused on general patient characteristics, treatment data, and the various dimensions of the KSS 2011. Qualitative variables were expressed as counts and percentages, while quantitative variables were described by their means, medians, and measures of dispersion, depending on their distribution.

Ethical Considerations

Free and informed consent to participate in the study was obtained from each included patient, with respect for anonymity and the confidentiality of personal data.

Results

General Patient Characteristics

A total of 27 patients who underwent unilateral total knee arthroplasty (TKA) were included in the study. The mean age at the time of surgery was 66.3 ± 8.1 years, ranging from 40 to 77 years. There was a predominance of female patients, with 21 women (77.8%) and six men (22.2%), resulting in a male-to-female ratio of 0.29. The mean body mass index (BMI) was 30.2 kg/m². Fifteen patients (55.6%) were obese, with eight patients (29.6%) classified as grade I, five patients (18.5%) as grade II, and two patients (7.4%) as grade III. Three patients (11.1%) were overweight, and nine (33.3%) were of normal weight. Hypertension was the most common comorbidity (59.2%), followed by heart disease, hypothyroidism, and dyslipidemia (14.8% each). Seven patients (25.9%) had at least two comorbidities. Advanced primary knee osteoarthritis was the primary indication for surgery, found in 25 patients (92.6%). The other two patients (7.4%) had secondary post-traumatic knee osteoarthritis (Table 1).

Surgical Data and Postoperative Outcomes

ATG was performed on the right knee in 18 patients (66.7%) and on the left knee in nine patients (33.3%). Spinal anesthesia was used in 88.9% of cases. All patients underwent a medial parapatellar approach, combined with a midvastus arthrotomy in 88.9% of cases and a subvastus arthrotomy in 11.1%. The median postoperative hospital stay was three days [Q1–Q3: 3–4], ranging from two to seven days. The median number of physical therapy sessions was 15 [Q1–Q3: 10–20], ranging from three to 38 sessions, for 26 patients evaluated. Six patients (22.2%) experienced postoperative complications: two cases of septic loosening (7.4%), two cases

Table 1: General characteristics of the patients (n=27).

Characteristic	n	%
Age (years)		
Mean ± SD	–	66.3 ± 8.9
Median (range)	–	67 (40–77)
≥ 65 years	16	59.2
Sex		
Female	21	77.8
Male	6	22.2
Body mass index (BMI)		
< 25 kg/m² (normal)	9	33.3
25–29.9 kg/m² (overweight)	3	11.1
≥ 30 kg/m² (obesity)	15	55.6
Grade I (30.0–34.9 kg/m²)	8	29.6
Grade II (35.0–39.9 kg/m²)	5	18.5
Grade III (≥ 40 kg/m²)	2	7.4
Comorbidities		
Hypertension	16	59.2
Cardiac disease	3	11.1
Hypothyroidism	2	7.4
Dyslipidemia	2	7.4
Rheumatoid arthritis	1	3.7
Etiology of knee osteoarthritis		
Primary osteoarthritis	25	92.6
Secondary osteoarthritis	2	7.4
Contralateral knee involvement		
Yes	15	55.6
No	12	44.4

Table 2: Operative data and postoperative follow-up.

Variables	n (N = 27)	%
Surgical approach		
Medial parapatellar + midvastus	24	88.9
Medial parapatellar + subvastus	3	11.1
Length of hospital stay		
≤ 3 days	14	51.9
> 3 days	13	48.1
Median [range] (days)	3 [2–7]	
Number of physiotherapy sessions		
≤ 15 sessions	14	51.9
> 15 sessions	13	48.1
Median [range] (sessions)	15 [3–38]	
Postoperative complications		
Yes	6	22.2
No	21	77.8

Table 3: Results of the Knee Society Score (KSS). 2011 (n=27).

KSS 2011 Components	Maximum score	Mean ± SD	Median	Min–Max
Objective score (clinical)	**100**	**76.0 ± 25.8**	**88**	**27–97**
Clinical examination	75	54.2 ± 18.6	62	15–75
Symptoms	25	21.4 ± 5.3	23	10–25
Subjective score (patient)	**–**	**–**	**–**	**–**
Satisfaction	40	29.9 ± 8.6	30	14–40
Functional activities	100	57.1 ± 18.2	61	20–78
Patient expectations	15	13.8 ± 3.8	15	3–15

KSS: Knee Society Score; SD: standard deviation; -: not applicable.

of persistent stiffness (7.4%), one case of lower limb length discrepancy (3.7%), and one case of prosthetic dislocation (3.7%). Six patients (22.2%) required revision surgery, including one case of complete prosthesis revision following dislocation (Table 2).

Clinical and Radiological Outcomes

The median postoperative follow-up was 42.6 months [Q1–Q3: 33.4–52.4], ranging from 10 to 60 months. Radiographic evaluation showed satisfactory alignment of the femoral and tibial implants, with no signs of loosening at the last follow-up, including in patients who underwent revision surgery. The mean objective score on the 2011 Knee Society Scoring System (KSS) was 76/100, with a median of 88 [Q1–Q3: 60.5–91.5] and a range of 27 to 97. Analysis of the objective components revealed a mean score of 54.2/75 for the clinical examination of the knee and 21.4/25 for symptoms.

Functional Outcomes and Patient Satisfaction

The mean satisfaction score was 29.9 ± 5/40, with a median of 30 and a range of 14 to 40. The mean score for functional activities was 57.1 ± 16/100, with a median of 61 and a range of 20 to 78. The mean expectations score was 13.8 ± 3/15, with a median of 15 and a range of 3 to 15. The results for the various dimensions of the KSS 2011 are presented in Table 3.

Discussion

The objective of our study was to evaluate functional outcomes and patient satisfaction following total knee arthroplasty (TKA) at a hospital in Dakar. The main findings reveal a predominantly female patient population with a high prevalence of overweight, as well as generally encouraging clinical and functional outcomes in the medium term.

General Patient Characteristics

The mean age of our patients was 66.3 years, with a predominance of women (77.8%). These characteristics are comparable to those reported in the Senegalese series by Sow [6] and Lubenga [7], as well as in several international studies [8,9]. This predominance of female patients may reflect, in particular, the prevalence and severity of knee osteoarthritis among older women [10]. Overweight affected 66.7% of patients, of whom 55.6% were obese. The mean body mass index was 30.2 kg/m², close to the values reported by Sow [6], Jones et al. [11], and Lingard et al. [8]. Hypertension was the most common comorbidity (59.2%), consistent with observations from other African series [6,12]. Primary knee osteoarthritis accounted for 92.6% of surgical indications. This predominance is consistent with the findings of Sow [6], El Haouf [13] and Singh and Lewallen [14], confirming the predominant role of degenerative knee osteoarthritis among the indications for TKA.

Surgical Data and Postoperative Outcomes

Spinal anesthesia was used in 88.9% of patients. The surgical approach combined a medial parapatellar incision with a midvastus arthrotomy in 88.9% of cases and a subvastus arthrotomy in 11.1%. These practices are consistent with those described in several Senegalese series [6,15], although anesthetic and surgical techniques vary depending on the surgical team and the healthcare setting. The median length of hospital stay was three days, shorter than that reported by Azarg [12] and El Haouf [13]. This relatively short duration is consistent with evolving perioperative practices that promote early mobilization and shorter hospital stays [16]. The median number of physical therapy sessions was 15, ranging from 3 to 38 sessions. This variability highlights the heterogeneity of rehabilitation pathways. Data from the literature suggest that the modalities and intensity of rehabilitation should be tailored to individual functional needs rather than to a uniform number of sessions [17,18]. Postoperative complications were observed in six patients (22.2%), primarily infectious complications and joint stiffness. Differences from rates reported in the literature should be interpreted with caution, given the small sample size of our series, the heterogeneity of definitions, and the varying follow-up periods [6,12,19].

Clinical and Functional Outcomes

The mean objective Knee Society Score (KSS) 2011 was 76/100, indicating generally satisfactory clinical outcomes. However, this mean was lower than those reported by Noble et al. [5] and

Ueyama et al. [20], which were 86 and 90/100, respectively. These discrepancies may reflect differences in baseline patient characteristics, severity of joint damage, and treatment modalities. The mean functional activity score was 57.1/100, close to that reported by Matsuda et al. (53/100) [21], but lower than that observed by Matsushita et al. (66/100) [22]. These results suggest that, despite significant clinical improvement following ATG, certain functional limitations may persist, particularly in demanding activities.

Patient Satisfaction and Expectations

The average satisfaction score was 29.9/40, with a median of 30/40. Twenty-one patients (77.8%) had a score of 30/40 or higher. This result suggests an encouraging level of satisfaction, although this threshold is not a validated reference value for the 2011 KSS. By way of comparison, Matsuda et al. [21] reported an average satisfaction score of 23/40, while Liu et al. [23] observed an overall satisfaction rate of 83.5%. However, these results are not directly comparable due to differences in assessment tools and criteria. The mean expectation score was 13.8/15, higher than that reported by Matsuda et al. (10/15) [21]. This high value suggests a favorable perception of the results obtained relative to patients' expectations. Nevertheless, the interpretation of this score must take into account how expectations were assessed and the retrospective nature of our study. Overall, our findings highlight the value of a multidimensional assessment following TKA, combining objective clinical outcomes, functional abilities, and patient-reported assessments.

Limitations of the Study

Our study has several limitations, primarily its retrospective nature, small sample size, and single-center recruitment, which limit the generalizability of the results. The lack of standardized preoperative assessment using the 2011 KSS prevents us from quantifying individual improvement following arthroplasty. Finally, the heterogeneity in the postoperative follow-up period—ranging from 10 to 60 months—must be taken into account when interpreting the results. Despite these limitations, this study provides descriptive data on functional outcomes and patient satisfaction following total knee arthroplasty in a Senegalese hospital setting.

Conclusion

This single-center retrospective study of 27 patients who underwent total knee arthroplasty at the Order of Malta Hospital in Dakar revealed generally encouraging clinical and functional outcomes, with a favorable level of satisfaction in the medium term. The mean objective KSS 2011 score was 76/100, while the mean scores for functional activities and satisfaction were 57.1/100 and 29.9/40, respectively.

Despite the persistence of certain functional limitations and the occurrence of postoperative complications in 22.2% of patients, these results highlight the value of a multidimensional assessment following total knee arthroplasty. Prospective, multicenter studies with larger sample sizes are needed to confirm these observations in the Senegalese context.

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