

**ORIGINAL RESEARCH**

# Clinical assessment of patient of osteoarthritis knee for optimum outcome in total knee replacement

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## ABSTRACT

**Background:** Knee osteoarthritis (OA) is classified as either primary or secondary, depending on its cause. In addition to a thorough history and physical, radiographic imaging is required. The present study was undertaken for carrying out the clinical assessment of patient of osteoarthritis knee for optimum outcome in total knee replacement. **Materials & methods:** To evaluate the importance of clinical assessment of patients of osteoarthritis knee for optimum outcome in Total Knee Replacement, the present study was conducted on 20 patients. Inclusion criteria for the present study included patients with Primary or Secondary arthritis with or without deformities who has already undergone TKA. For clinical and radiological assessment of patients of osteoarthritis knee the following criteria were assessed by Knee Society Score. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. **Results:** The preoperative Femur-tibia angle was 183.1 degree while postoperative Femur-tibia angle was 174.9 degree. On comparing statistically, significant reduction in Femur-tibia angle postoperatively was seen. Mean preoperative KSS was 119.2 while postoperative KSS was found to be 218.3. Comparing the results statistically, significant increase in KSS postoperatively was seen. **Conclusion:** Total knee replacement is a reliable and safe modality of treatment and can be performed with results comparable to the other global studies provided there is adequate expertise and follow up by the patient to detect any complications early, before they occur.

**Key words:** Osteoarthritis, Total knee replacement

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## INTRODUCTION

The knee is the largest joint in the body. It is a compound synovial joint that consists of the tibiofemoral joint and the patellofemoral joint. It primarily serves as a hinge joint which allows flexion and extension as well as various other movements. The 4 main stabilizing ligaments of the knee are the anterior cruciate (ACL), posterior cruciate (PCL), medial collateral (MCL), and lateral collateral (LCL). Knee osteoarthritis (OA), also known as degenerative joint disease, is typically the result of wear and tear and progressive loss of articular cartilage.<sup>1-3</sup> Knee osteoarthritis (OA) is classified as either primary or secondary, depending on its cause. In addition to a thorough history and physical, radiographic imaging is required. The recommend views include standing anteroposterior (AP), standing lateral in extension, and a skyline view of the patella. Treatment for knee osteoarthritis can be broken down into non-surgical

and surgical management. Initial treatment begins with non-surgical modalities and moves to surgical treatment once the non-surgical methods are no longer effective.<sup>4</sup> A wide range of non-surgical modalities is available for the treatment of knee osteoarthritis. These interventions do not alter the underlying disease process, but they may substantially diminish pain and disability.<sup>5-7</sup>

Surgical Treatment Options includes Osteotomy, Unicompartmental knee arthroplasty (UKA) and Total knee arthroplasty (TKA). TKA is a viable treatment for symptomatic osteoarthritis of the knee refractory to conservative measures. In those with end-stage degenerative changes compromising the articular cartilage affecting multiple compartments of the knee, the literature has yet to identify a potentially viable alternative option for the regeneration of cartilage. Thus, TKA has demonstrated reproducible, long-term, successful results in such patients concerning

outcomes of decreased pain and improved overall quality of life.<sup>7-10</sup> Hence; under the light of above-mentioned data, the present study was undertaken for carrying out the clinical assessment of patient of osteoarthritis knee for optimum outcome in total knee replacement.

## MATERIALS & METHODS

To evaluate the importance of clinical assessment of patients of osteoarthritis knee for optimum outcome in Total Knee Replacement, the present study was conducted on 20 patients. Inclusion criteria for the present study included patients with Primary or Secondary arthritis with or without deformities who has already undergone TKA. For clinical and radiological assessment of patients of osteoarthritis knee the following criteria were assessed by Knee Society Score. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Student t test and Pearson's correlation was used for evaluation of level of significance.

## RESULTS

Mean age of the patients was 61.45 years. 80 percent of the patients were males while the remaining were females. Right side involvement was seen in 60 percent of the patients while left side involvement was seen in 40 percent of the patients. The preoperative Femur-tibia angle was 183.1 degree while postoperative Femur-tibia angle was 174.9 degree. On comparing statistically, significant reduction in Femur-tibia angle postoperatively was seen. Mean preoperative KSS was 119.2 while postoperative KSS was found to be 218.3. Comparing the results statistically, significant increase in KSS postoperatively was seen.

**Table 1: Preoperative and postoperative FTA**

FTA	Mean	SD	p-value
Preoperative	183.1	4.96	0.000 (Significant)
Postoperative	174.9	1.82	

**Table 2: Preoperative and postoperative KSS**

KSS	Mean	SD	p-value
Preoperative	119.2	31.5	0.000 (Significant)
Postoperative	218.3	18.2	

## DISCUSSION

Total knee arthroplasty (TKA) is one of the most cost-effective and consistently successful surgeries performed in orthopedics. Patient-reported outcomes are shown to improve dramatically with respect to pain relief, functional restoration, and improved quality of life. TKA provides reliable outcomes for patients' suffering from end-stage, tri-compartmental, degenerative osteoarthritis (OA). While OA affects millions of Americans, the knee is the most commonly affected joint plagued by this progressive condition which is hallmarked by a gradual

degeneration and loss of articular cartilage.<sup>8-10</sup> The advantage of primary total knee arthroplasty (TKA) is to re-establish the normal mechanical axis with a stable prosthesis that is well fixed. This is achieved by both the bone resection and the soft tissue balance. Surgical outcomes, patient satisfaction, and implant survival have improved steadily since its introduction and the operation has become widely accepted to afford relief of pain, restoration of range of motion (ROM), stability, and function.<sup>11</sup>

Mean age of the patients was 61.45 years. 80 percent of the patients were males while the remaining were females. Right side involvement was seen in 60 percent of the patients while left side involvement was seen in 40 percent of the patients. The preoperative Femur-tibia angle was 183.1 degree while postoperative Femur-tibia angle was 174.9 degree. Guler O et al compared the clinical and radiological outcomes of TKA in obese patients (>30 kg/m<sup>2</sup>) operated with midvastus (MV) or medial parapatellar (MPP) approaches. Patients were allocated into 2 groups as for the type of approach conducted during TKA: group I (n=41) underwent TKA by MV approach, while the MPP technique was used in group II (n=39). Demographic, clinical, and radiological parameters included age, side of involvement, sex, BMI, diameters of thigh and calf, length of incision, duration of operation, amount of bleeding and transfusion, duration of hospitalization and follow-up, complications, and range of motion, as well as Knee Society Score (KSS) and Knee Society Function Score (KSFS). Patients with a higher BMI (≥35 kg/m<sup>2</sup>) experienced more profound bleeding and needed more transfusion of erythrocyte suspension. The range of motion was more favorable in groups with BMI <35 kg/m<sup>2</sup>. The functional outcomes as reflected in KSS and KSFS were much better in patients with BMI <35 kg/m<sup>2</sup>. The data indicated that obesity can adversely influence the clinical and radiological outcomes after TKA performed by both MV and MPP approaches.<sup>12</sup>

On comparing statistically, significant reduction in Femur-tibia angle postoperatively was seen. Mean preoperative KSS was 119.2 while postoperative KSS was found to be 218.3. Comparing the results statistically, significant increase in KSS postoperatively was seen. Al Juhani W et al studied the post-operative clinical and radiological outcomes of MP-TKA, as well as the postoperative complications. A retrospective cohort chart review study was conducted on 46 patients and 70 knees after applying the inclusion/exclusion criteria. The patients were followed up for an average period of two years. Clinical outcomes were assessed pre- and postoperatively by the validated Saudi Arabian version of the Knee Injury and Osteoarthritis Outcome Score (KOOS), as well as radiological outcomes and postoperative complications gathered from patients' charts. The postoperative KOOS score showed a statistically significant improvement in pain,

symptoms, and activities of daily living in comparison with the preoperative score (P-value < 0.0001). The mean time until ambulation and length of hospital stay were five and 14 days, respectively. Four patients (8.7%) showed radiological complications. Deep vein thrombosis was observed in only two knees (4.3%), and there were no revision cases. Thus, MP-TKA has been shown to improve pain, symptoms, and activities of daily living with a relatively short time until ambulation and length of hospital stay, in addition to a low incidence of postoperative and radiological complications.<sup>13</sup> Jose RS, Kannan V evaluated the functional and radiological outcome of total knee replacement for osteoarthritis knee with varus deformity, using medial parapatellar approach and posterior stabilized (PS) design. Settings and Design: This is a prospective observational study and nonprobability sampling technique. In this prospective study, 20 patients with osteoarthritis knee of Grades III and IV were selected according to Kellgren-Lawrence Grading system. In this study, we assess the functional outcome of total knee replacement using Knee Society Score and radiological outcome using radiographic alignment. The patients were regularly followed up for both functional and radiological outcome at 1st, 3rd, 6th, 12th, and 18 months and then yearly. Preoperatively, the overall mean Knee Clinical and Knee Functional Score was 30.9 and 36.45 which improved to 87.7 and 84 postoperatively with the significant P < 0.001. The study shows that they have 80% of excellent and 15% good results following total knee replacement. Radiologically all patients have a near-normal radiographic alignment which in turn improves the functional outcome of the patients.<sup>14</sup>

## CONCLUSION

Total knee replacement is a reliable and safe modality of treatment and can be performed with results comparable to the other global studies provided there is adequate expertise and follow up by the patient to detect any complications early, before they occur.

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