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Original Research Article

"Functional Outcome of Total Knee Arthroplasty Using Knee Score"

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Abstract: ***Introduction:*** Osteoarthritis (OA) is a chronic degenerative joint disease and a major cause of disability in the elderly people. The rapid increase in the prevalence of this disease suggests that OA will have a growing impact on health care and public health systems in the near future. ***Objective:*** To assess the Clinical and Functional Outcome of Total Knee Replacement in patients with osteoarthritis. ***Materials and Methods:*** We conducted a prospective analysis of 40 cases of osteoarthritis knee patients at Orthopedics Department, Shaheed Tajuddin Ahmed Medical College Hospital, Gazipur, Bangladesh over a period of two years (Jun-2019 to July-2021). Those patients who underwent total knee arthroplasty were assessed functionally using knee society score. ***Results:*** The majority of the patients were from the age group of 56-65 years which accounts for 57.5% of patients in our study. The youngest patient was 48 years of age and the oldest patient was 70 years. The mean age was 60 years. Total knee arthroplasty improves the functional ability of the patient and the ability of the patient to get back to pre-disease state, which is to have a pain free mobile joint, as reflected by the improvement in the post-op knee functional score.

Keywords: Osteoarthritis, Total Knee Arthroplasty, Outcome.

I. INTRODUCTION

The common causes of arthritis of the knee include osteoarthritis (OA), rheumatoid arthritis (RA), juvenile rheumatoid arthritis, post traumatic arthritis or secondary osteoarthritis and other types of inflammatory arthritis [1]. The rapid increase in the prevalence of this disease suggests that OA will have a growing impact on health care and public health systems in the near future [2]. The joints most commonly involved include the hip; knee; distal interphalangeal, proximal interphalangeal, and first carpometacarpal joints of the hand; and cervical, thoracic, and lumbar spine. The concept of improving knee joint function by modifying the articular surfaces has received attention since the 19th century [3]. The surgical techniques have varied from soft tissue interpositionarthroplasty to resection arthroplastyto surface replacement arthroplasty. Osteoarthritis (OA) is a chronic degenerative joint disease and a major cause of disability in the elderlypeople [4]. In surface replacementarthroplasty different types of prosthesis were developed to address the complex knee kinematics [4]. The knee society score system is subdivided into a knee score that rates only the knee joint itself and a functional score that rates the patient's ability to walk and climb stairs. The dual rating system eliminates the problem of declining knee scores associated with patient infirmity [5]. The aim of this study was to study the functional outcome of total knee arthroplasty using knee society score.

II. MATERIALS AND METHODS

Materials and Methods

We conducted a prospective analysis of 40 cases of osteoarthritis knee patients at Orthopedics Department, Shaheed Tajuddin Ahmed Medical College Hospital, Gazipur, Bangladesh over a period of two years (Jun-2019 to July-2021). Those patients who underwent total knee arthroplasty were assessed functionally using knee society score.

Inclusion criteria

Moderate to severe knee pain**,** angular knee deformity**,** knee stiffness (extension lags and flexion contractures) with decreased range of motion**,** unilateral/bilateral knee involvement.

Exclusion criteria

Active infection of knee or anywhere in the body**,** revision arthroplasty**,** young patients less than 45 years of age, vascular problems (deep vein thrombosis), havingper prosthetic fracture, previous implant in knee

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joint, positive patients, secondary osteoarthritis-posttraumatic/post inflammatory/post infection, patients not consenting for the study.

Once the patients agreed to participate, informed consent was taken and the subjects were then included in the study. Detailed history of all patients was taken. All patients were assessed functionally using the knee society score [5]. The preoperative medical evaluation of all patients was done to prevent potential complications that can be life-threatening or limb threatening. Any limb length discrepancies were noted. Presence of any hip and foot deformities was assessed. The extensor mechanism was assessed for any quadriceps contractures. The knee deformities were examined for any fixed varus or valgus deformities or presence of any fixed flexion contracture. Thorough preoperative evaluation was done of all patients. Total knee arthroplasty was performed by same surgical team under general or regional anesthesia, patient in supine position with knee flexed to 90 degree. Pneumatic tourniquet was used for all the patients to stop blood flow during the surgery, while suction drain was applied after the surgery. After completion of surgery the patient's knee was immobilised in a Jones compressive bandage and a knee immobiliser immediately post operatively. The patients were started on IV antibiotics and DVT prophylaxis in the form of subcutaneous low molecular weight heparin. Passive movements and weight bearing were started in all patients 2 days after the surgery, when the drain was taken out. The patient was assessed 3 weeks post operatively for any signs of hematoma or other operative consequences like infection. Once postoperative infection was ruled out clinically the patient was assessed clinically, functionally and using the knee society score at an interval of 1, 3 and 6 months.

STATISTICAL ANALYSIS

Descriptive data are expressed as frequency and percentages, and means with SD. A value of $p < 0.05$ was considered statistically significant. Statistical analyses were performed using SPSS 20.0.

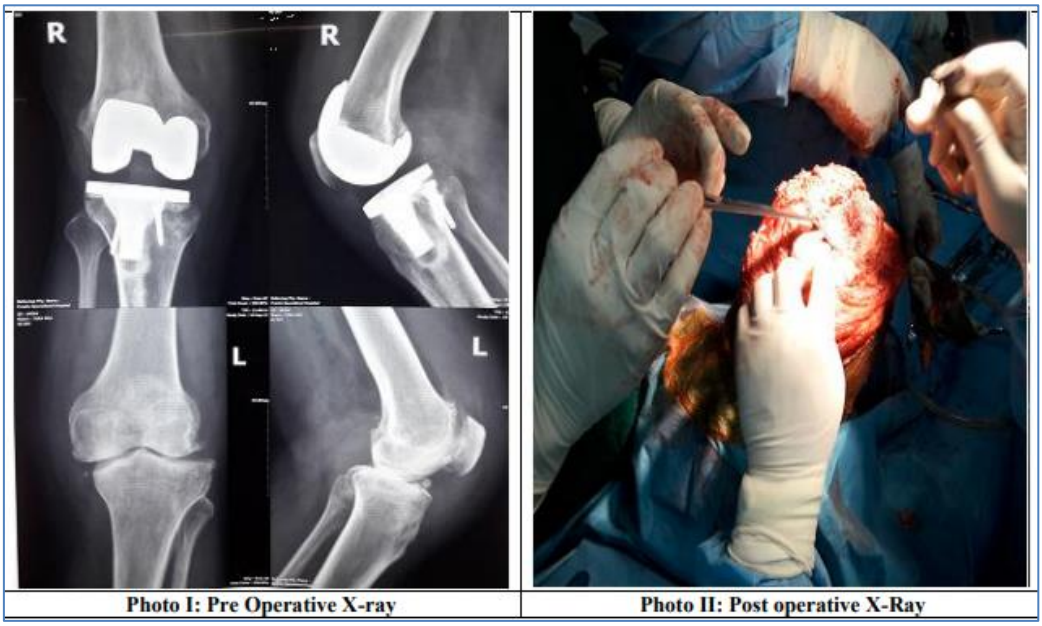

Fig-1: Before and after Innovative Surgical Outcome of Total Knee Replacement

III. RESULTS

The majority of the patients were from the age group of 56-65 years which accounts for 57.5% of patients in our study. The youngest patient was 48 years of age and the oldest patient was 70 years. The mean age was 60 years. There was a male predominance with male female ratio of 2:1 in our study, accounting for 65% of the patients. The mean preoperative knee functional score (KFS) was 32.75±11.79 which was increased to an average postoperative score of 84.43±9.59 at the end of 6 month as seen in (Table 1) and according to the knee society functional scoring system, 30 patients (75%) had excellent, 6 patients (15%) had good, 3 patients (7.5%) had fair and 1 patient (2.5%) poor results as in (Table 2). Association between knee functional score and knee clinical score was done preoperatively at 1, 3 and 6 month with Spearman rank correlation coefficient. Spearman 'r' value was 0.418, 0.516, 0.451, and 0.717 ($p < 0.05$).

Table-1: Knee clinical and functional score (N=40)

Score	Preoperative	1month (Preoperative Vs 1 Month	3 Month (Preoperative Vs 3 Month	6Month (Preoperative Vs 6 Month
KFC (N=40)	32.75±11.79	56.65 ± 10.98	74.58 ± 9.23	84.43 ± 9.59
P Value		0.0001	0.0001	0.0001

Table-2: Grading of Knee Functional Score (N=40)

S. No	Knee Functional Score	Frequency (%)
1	Excellent	30 (75%)
2	Good	6 (15%)
3	fair	3 (7.5%)
4	Poor	1 (2.5%)
5	Total	40 (100%)

Fig-2: Knee Functional Score (N=40)

IV. DISCUSSION

In our study, 56 to 65 years (57.5%) was the most common age group followed by 45 to 55 years (37.5%) with male predominance. This is in accordance to study conducted by Wood *et al*. [6] The knee society score is used to assess the outcome of total knee arthroplasty. The knee society score ratingsystem is a logical outgrowth of the hospital for special surgery rating system. In our study, on clinical and functional evaluation of the patients, assessed by the KSS score significant improvement was observed in KFS score during follow up at 1, 3 and 6 month to preoperative value. There was significant association KFS at every interval [7]. Similarly in the study conducted by Farahini *et al*. significant improvement in knee society score was observed [7]. Our findings also correlates well with study conducted by Yaratapalli *et al.* showing increased in Knee society score after TKA [8]. In our study, only one (5%) patients showed postoperative infection leading to poor KFS score in this patient. Buz-Swanik *et al*., found that after total knee arthroplasty, most of the patients were able to reproduce joint position and significant improve in mobility was observed. There was also significant improvement in the balance index postoperatively. Retention of the posterior cruciate ligament does not appear to significantly improve proprioception and balance compared with those functions in patients with a posterior stabilized total kneedesign [9]. Total knee arthroplasty with patellar resurfacing exhibited significant limitation of knee extension, which was significantly associated with the presence of post-surgery anterior knee pain. In our study, none of the patella was resurfaced. None of the patients reported anterior knee pain in our study [10].

V. CONCLUSION

Total knee arthroplasty is a relatively safe and sure procedure in the hands of the experienced surgeons. Treatment with total knee arthroplasty resulted in greater pain relief and functional improvement after 6 months. It improves the functional ability of the patient and the ability of the patient to get back to pre-disease state, which is to have a pain free mobile joint, as reflected by the improvement in the postoperative knee functional score.

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