



Evaluation of the Functional Outcome After Total Knee Replacement And Factors Affecting The Overall Functional Outcome

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Aim

To evaluate the functional outcome after total knee replacement and factors affecting the overall functional outcome

Materials & methods

40 patients with knee arthritis , 8 female & 12 male, mean age 58(40-70) assigned for total knee replacement (TKR) at the Department Of Orthopedics of our tertiary care centre .All patients were evaluated pre operatively & post operatively at 2 months, 4 months, 6 month and 1 year with knee society clinical and functional score for the functional outcome and also various factors assessed which may affect the outcome.

Results

The average pre-operative knee clinical score (KCS) was 29 which improved to an average post-operative score of 94 . At 1 year follow up, 14 patients (70%) had Excellent, 4 patients (20%) had Good, and 1 patient had fair (5%)and 1 patient had poor (5%) results as per KCS. The average pre-operative knee functional score (KFS) was 36, which improved to a post-operative score of 88. At 1 year follow up, 12 patients (60%) had Excellent, 3 patients (15%) had Good, 3 patients (15%) had Fair and 2 patient (10%) had poor results as per KFS. Men had better results, older patients had more better functional outcomes and those with rheumatoid arthritis fared well as compared to osteoarthritis.

Conclusion

Total knee replacement significantly improves the functional outcome of the arthritic knee . There are factors like age, sex, main diagnosis which may affects the overall functional outcome after TKR.

Keywords: functional outcome , knee society score, total knee replacement

Introduction

The incidence of osteoarthritis has increased in our country . An increased body mass index (BMI) in combination with cross legged and squatting posture leads to joint degeneration. In osteoarthritis of the knee there is severe joint pain and for that total knee replacement (TKR) is a proven treatment and has predictable and reproducible results in elderly population 1-4. Few reports are there, that show that under 55 age group also, there can be favourable

outcomes in relation to total knee replacement 5-7. Total knee replacement provides stability and good range of motion in arthritis of knee 8 .

TKR generally have predictable results, but with geriatric population, results of TKR less predictable as arthritis is associated with other co-morbid condition 9. The primary aim of this study is to evaluate the functional outcome after total knee

replacement in terms of pain relief, range of motion and stability of the joint and identify what factors can affect the functional outcomes.

Materials and methods

This study was a prospective study, conducted by the department of orthopaedics, in our tertiary care centre from January 2016 to January 2018. 20 patients with 12 men and 8 women, were included. Minimum follow up upto 1 year was done in all.

Exclusion criteria

- 1 age <40 and >70 years
- 2 posttraumatic osteoarthritis

3 neurovascular disorder of involved lower limb

All patients were asked for detailed history. Standard standing anteroposterior view and a lateral view and a skyline view of the patella xrays were taken (figure 1). All patients were given spinal anesthesia and placed in supine position with knee flexed to 90 degree. tourniquet was applied and under all aseptic precautions, total knee replacement was performed, the incision was midline on patella with median parapatellar approach. Patellar resurfacing not performed in any. Functional outcome measured after clinical and functional assessment using knee society score 10 after 1 year.

Figure 1 preoperative x rays of right knee (rheumatoid arthritis) of 58 years male



Figure 2 post operative x rays of right knee (rheumatoid arthritis) of 58 years male



Results

There were 12 males and 8 females with mean age 58 (range 40 -70 years). The average duration of surgery was 90 minutes (range 60- 120). 14 patients were treated for osteoarthritis and 6 patients for rheumatoid arthritis . Average range of movements preoperatively was 56^o which improved postoperatively to 110^o.

Table – 1: Knee Clinical Score

. Knee Clinical Score	Mean (range)
Pre – operative	29 (14-36)
Post – operative	94 (90-96)

Table – 2: Knee Functional Score.

. Knee Functional Score	Mean (range)
Pre – operative	36 (24-46)
Post – operative	88 (80-96)

The knee clinical score is given in table 1 . At 1 year follow up, 14 patients (70%) had Excellent, 4 patients (20%) had Good, and 1 patient had fair (5%)and 1 patient had poor (5%) results as per KCS .(figure 3) the knee functional score is given in table 2 .At 1 year follow up, 12 patients (60%) had Excellent, 3 patients (15%) had Good, 3 patients (15%) had Fair and 2 patient (10%) had poor results as per KFS . of the 14 excellent in KCS, 8 were males and 6 females, and 10 were >60 years .of the 12 excellent in KFS, 7 were males and 5 females, and 8 were >60 years . out of the 6 rheumatoid arthritis, all had excellent outcomes(100%) and out of 14 osteoarthritis, 8 had excellent outcomes(57.14%).

A: Flexion



B: Extension



Figure 3 : follow up after 1 year of total knee replacement of right knee (rheumatoid arthritis) of 58 years male showing excellent functional outcome .

Table 3 knee clinical scores in other studies

Study	Preoperative mean	Post operative mean
Fitch et al 2014 ¹⁴	46	84
Richard et al 2006 ¹⁵	48	86
Rand 1991 ¹⁶	32	93
This study 2018	29	94

Table 4 knee cfunctional scores in other studies

Study	Preoperative mean	Post operative mean
Fitch et al 2014 ¹⁴	48	87
Richard et al 2006 ¹⁵	44	82
Rand 1991 ¹⁶	49	86
This study 2018	30	88

Discussion

Total Knee replacement provides satisfactory functional outcomes evident with relief of joint pain, increased range of motion and also the quality of life of the patients improved following Total Knee replacement. In the study conducted by Back *et al* mean age was 61 years which was comparable to mean age of patients in our study which was 58 Years¹¹. Hooper *et al* in their study had the mean age of patients 66.9 years¹². Hooper *et al* in 2007, in their study saw that there was male predominance (56.45%)¹². Our study too had male predominance (60%). 14 patients were treated for osteoarthritis (70%) and 6 patients for rheumatoid arthritis (30%) in our study. Back *et al.* in 2001 had in Their study, 354 (83%) patients with osteoarthritis and 59 (14%) with rheumatoid arthritis, and the remaining other aetiologies (2%)¹¹. Reddy *et al* in their study on *rheumatoid knees*, in 2013 found that the outcome according to the functional knee score was excellent in 79.4%, good in 5.8%, and poor in 5.8%. This study conducted at present, of the 6 rheumatoid knees, 100% were found to have excellent result¹³.

In 1999, Li *et al* in their study found mean preoperative ROM to 88° and mean postoperative ROM to be 100°¹⁷. In Our Study, The Mean Preoperative Range Of Motion Was 56° Which Improved To 110°.

Conclusion

After total knee replacement, patients have considerable pain relief and improvement of function as depicted by the improvement in knee surgery score. It has excellent outcomes in degenerative and inflammatory arthritis. Older age group, males, patients with rheumatoid arthritis show more promising results and can be the factors affecting the overall functional outcome after total knee replacement.

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