



Surgery

A STUDY OF FUNCTIONAL OUTCOME OF ADVANCED OSTEOARTHRITIS KNEE TREATED WITH TOTAL KNEE ARTHROPLASTY

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ABSTRACT **INTRODUCTION:** Osteoarthritis is thought to be the most prevalent chronic joint disease. The incidence of arthritis is increasing because of ageing population and rise of obesity. Total knee arthroplasty is now the reliable technique for severe arthritis. Many designs are available with different type of prosthesis it is important to study the outcome of prosthetic replacement. Different types of scoring system are used to assess the functional outcome. Of this the most important is the knee society scoring system. This is prospective study done in patients with advanced osteoarthritis knee who were done Total Knee Arthroplasty in Department of Orthopedics, Government Medical College Thrissur

OBJECTIVES OF THE STUDY: 1, To study the Functional Outcome of Advanced Osteoarthritis Knee Treated with Total Knee Arthroplasty, 2, To compare the knee society knee score preoperatively and postoperatively

SUMMARY AND CONCLUSION: All the patients were treated with posterior cruciate substituting type of total knee arthroplasty. At 6 months follow up knee clinical score improved from an average of 27 to 87.90 showing an excellent outcome and knee functional score improved from an average of 40 to 81.05 showing an excellent outcome and patients were able to have pain free mobile joint. All the parameters measured and results obtained were comparable with literature and the results were showing an excellent outcome

KEYWORDS :

INTRODUCTION

Osteoarthritis is thought to be the most prevalent chronic joint disease. According to Symmons et al osteoarthritis is a 'condition characterised by the focal areas of loss of cartilage within synovial joint, associated with hypertrophy of the bone (osteophyte and subchondral bone sclerosis) and thickening of the capsule'. There is usually joint space narrowing and osteophyte formation as seen in x-ray¹ Incidence of osteoarthritis is on the rise because of increase in longevity in the population and obesity. Main clinical features that lead to treatment which include both surgical and non-surgical are pain and loss of function².

Total Knee Arthroplasty is now a reliable treatment for advanced arthritis. Many systems are available with specific features regarding the degree of conformity of the articulating surface, the geometry of the components, and the anchoring technique. With the advent of these varied types of prosthesis it became necessary to conduct studies for assessing the outcome of prosthesis of different types.

Different types of scoring system are used to assess the functional outcome. Of this the most important is the Knee society scoring system. The Knee Society Score rating system was the logical outgrowth of the Hospital for Special Surgery (HSS) rating system. In 1989, the Knee Society published its revised knee rating system. The Knee Society Score system separates findings in the operated knee with findings in the patient's function. The scoring system combines a relatively objective Knee Clinical Score that is based on the clinical parameters and a Knee Functional Score based on how the patients perceives that knee function with specific activities³

This a prospective study about the functional outcome of patients with advanced osteoarthritis knee treated with posterior cruciate substituting type of Total Knee Arthroplasty by using Knee Society Scoring system

MATERIALS AND METHODS

Data collection:

We studied patients with advanced osteoarthritis knee as per radiological grading⁴ attending department of orthopedics Govt Medical College Hospital Thrissur over a period of 18 months i.e. from March 2015 to September 2016 to whom Total Knee Arthroplasty was done.

Method of Collection of Data:

After proper history taking, clinical examination, radiological examination, pre operative work up and informed written consent, patients were taken up for surgery after assessing pre operative knee society score. Patients with co-morbidities that prevented them from early mobilization and patients with pre-operative fractures were excluded

Post Operative Protocol which included compression bandage and long knee brace from day 1, early mobilization on Day 3 with dressing change and drain removal, dressing change every 3 days, 4th post op day knee flexion and dynamic quadriceps exercise, intravenous antibiotics from day 1, suture removal on post op day 12 with continuation of physiotherapy were done

Patients were assessed 6 weeks post operatively for any signs of post operative infection. Once post operative infection was ruled out clinically the patients were assessed clinically, functionally using the Knee Society Score at an interval of 3 months, 6 months. Knee Society Score included both clinical and functional scores. In clinical score pain, range of motion, alignment, contractures and deformities were assessed and score were given. In functional score walking distance, climbing stairs and need of support were assessed. Other complications were looked for and treated appropriately. Scores were given excellent [80-100], good [70-79], fair [60-69], poor [>60]

OBSERVATIONS

In this study 42.5% were from age group 56-65 which was followed by 30% belonged to age group 66-75, out of which 80% were females.

Out of 40 patients studied 28 had excellent Knee Functional Score, 8 had good score and one each had fair and poor score after 6 months follow up. 2 patients were excluded from study as they did not appear in follow up. Patients who were studied had a mean pre-op score of 40.37 with a standard deviation of 7.71. After 3 months post operative score was found to have increased to 78.28 with a standard deviation of 7.63 which further increased to 81.05 with a standard deviation of 7.18 indicating an excellent outcome.

Out of 40 patients studied 34 had excellent Knee Clinical Score, 3 had good score and 1 had poor score after 6 months follow up 2 patients were excluded as they did not appear in follow up. Patients who were studied had a mean pre-op score of 27 with a standard deviation of 6.06. After 3 months the mean post-op score was found to have increased to 85.47 with a standard deviation of 8.16 which further increased to 87.90 with a standard deviation of 7.03 indicating an excellent outcome

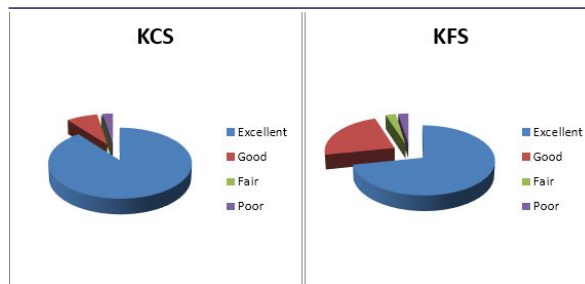


Figure 1&2: Clinical and Functional outcome after 6 months

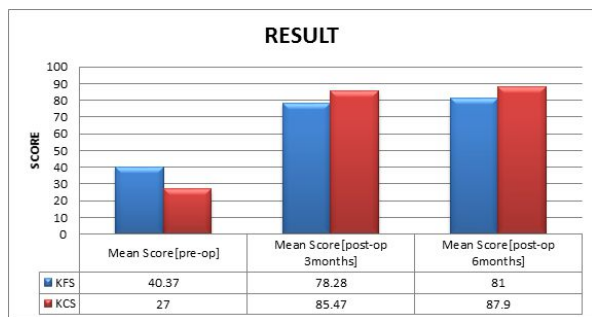


Figure 3: Score after 3 and 6 months

DISCUSSION

Elderly patients who were having difficulty in mobilizing knee because of degenerative arthritis showed good relief after Total Knee Arthroplasty. It was seen there was a substantial relief of pain of joint, increased mobility of the joint, correction of deformity and an improvement in the quality of life of the patients following Total Knee Arthroplasty.

In this study 29 [72%] subjects belonged to 56 to 77 years. This is to be expected, as an American profile from 1986-2002, states that arthritic changes in the over 65 years' population, are considered normal⁵. 49.7% of adults more than 65 years reported doctor-diagnosed arthritis from 2010-2012.⁶ The age range of study subjects were comparable to literature.

Women has more chance of getting osteoarthritis knee than men and severe osteoarthritis knee is also more in women⁷. 32 [80%] subjects in this study were female which is comparable to other studies. In a study on sociodemographic factors affecting total knee arthroplasty outcomes, in the United Kingdom, United States of America and Canada it was found that the majority of participants for TKA's were female [70%] by davis et al⁸. The incidence of osteoarthritis knee in females is hypothesized as hormonal. But studies show conflicting results^{9,10}.

In vivo studies by Stiehl et al.; Victor, Banks, and Bellemans and Dennis et al., who used fluoroscopy during single-stance deep knee bends to show in some PCL-retaining knees a paradoxical forward translation of the femorotibial contact point while weight bearing and flexion; PCL-substituting knees studied showed more uniform femoral rollback.^{11,12} C. Buz Swanik found that following total knee arthroplasty, patients were able to reproduce the joint position and improve mobility of the joint significantly. Retensioned capsulo-ligamentous structure reduces pain and inflammation. Retention of the posterior cruciate ligament does not appear to significantly improve the proprioception and balance compared with those functions in patients with a posterior stabilized Total Knee design were also seen in the study.¹³

Knee Society Score 85.5 which is obtained in our study is comparable to that obtained by Giesinger in a one year follow up¹⁴. The average pre-op Knee Clinical Score was 28.13 which improved to an average post-op score of 95.38 while the average pre-op Knee Functional Score of 41.53, improved to a post-op score of 88.49 in a study done by Chandran R Shetty¹⁵

In a study published by A Suhail the average American Knee Society Knee score was found out to be 87.9% (standard deviation 5.7) with 77.3% of patients (58 knees) rated excellent, 21.3% (16 knees) rated

good and 1.3% of patients (1 knee) rated fair. None were rated poor¹⁶

Almost all patients were able to have a good range of motion and a good functional outcome following surgery in our study

SUMMARY AND CONCLUSION

In our study a significant improvement in scores was observed confirming that Arthroplasty is a good operating technique allowing persons to get a good functional ability and range of motion with advanced osteoarthritis knee. Excellent outcome was observed in both Knee Clinical and Functional score on a 6 month follow up.

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