



STUDY OF EARLY FUNCTIONAL OUTCOME OF TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH TRICOMPARTMENTAL OSTEOARTHRITIS OF KNEE JOINT

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ABSTRACT

BACKGROUND : Total knee replacement is highly efficacious operation to substitute for kinematic and dynamic function of human knee against advanced arthritis. The prevalence of OA rises strikingly with age. OA is uncommon in adults under age 40 and highly prevalent in those over age 60. Primary OA of knee is more common as compared to other joints. The aim of study is to evaluate the clinical and functional outcome of the patients undergoing total knee arthroplasty (TKA).

MATERIALS AND METHODS : The study includes patients of Tricompartmental Osteoarthritis of knee joint who were treated by total knee arthroplasty in the department of Orthopaedics, SMIMER, Surat during December 2015 to August 2016. This study includes 50 patients who were on regular follow up during this period.

RESULTS & CONCLUSION : Total knee replacement is a safe & highly efficacious operation to substitute for kinematic and dynamic function of human knee in for tricompartmental osteoarthritis of knee joint in the elderly with good recovery, inspite of having several comorbidities, and it will give decades of trouble free life

KEYWORDS : Tricompartmental Osteoarthritis, Total Knee Arthroplasty, OA Knee, TKR.

BACKGROUND

Total knee replacement is a highly efficacious operation to substitute for kinematic and dynamic function of human knee against advanced arthritis.

OA is joint failure, a disease in which all structures of the joint have undergone pathologic changes which is characterized by degenerative changes in articular cartilage of joint and subsequent new bone formation (Osteophytes) at articular margin. The prevalence of OA rises strikingly with age. OA is uncommon in adults under age 40 and highly prevalent in those over 60.

Primary OA knee is more common as compared to other joints. The various predisposing factors of secondary OA are trauma, obesity, articular surface destruction due to infection, subchondral necrosis of bone, malunited fractures and alignment of knee joint. Initially conservative treatment is usually advised for OA of knee joint. Most of the patients can get relief from pain with conservative line of management.

MATERIALS AND METHODS

It was a case series study. The purpose of this study was to study the Functional outcome of Total Knee Arthroplasty in patients with tricompartmental Osteoarthritis Knee joint.

The present study includes patients of Tricompartmental Osteoarthritis of knee joint who were treated by Total knee arthroplasty in Department of Orthopaedics, SMIMER hospital, Surat during December 2014 to August 2015. This study includes 50 patients who were on regular follow up during this period.

INCLUSION CRITERIA

- Adult patients above 40 years who had tricompartmental osteoarthritis knee joint were included in this study after taking written consent from them
- Patients with tricompartmental osteoarthritis treated in our hospital between 2014 and 2016 were included in study.

EXCLUSION CRITERIA

- Recent or current knee sepsis
- Remote source of ongoing infection
- Extensor mechanism discontinuity or severe dysfunction.
- Recurvatum deformity secondary to muscular weakness.
- Presence of painless, well functioning knee arthrodesis

All the patients in our study were first examined in outpatient department. Patient particulars were noted as name, age, sex, registration number, occupation, pain in knee with detailed characteristic limp, duration of symptoms, progression of symptoms, deformity, support required to walk or not, any history of trauma and history of other joint pain. History of smoking and Alcoholism was also taken.

Examination was done to rule out any other associated disorder or multiple joint involvements or any other bony abnormalities. Cardiovascular, respiratory and neurological examination was done. Also any foci of infection were ruled out.

Detailed local examination of knee was done noting attitude of limb, range of motion, stability in anteroposterior and mediolateral plane, any flexion contracture, extensor lag and distal neurovascular status. Opposite side knee was examined to rule out bilateral involvement. Same side hip and ankle were also examined.

RESULTS

the detailed analytical observation of 50 knees in 33 patients in whom total knee arthroplasty was done for advanced tricompartmental osteoarthritis, conducted in the Department of Orthopaedics, SMIMER hospital, Surat between December 2015 to August 2016 as follows.

Table 1 : AGE DISTRIBUTION

Age Group	No. of patients	Percentage
41-50	6	18.18%
51-60	13	39.39%
61-70	9	27.27%
71-80	3	9.09%
>81	2	6.06%
Total	33	100%

This data shows that most common age group was 51-60 years. About 39.39% of patients came under this age group.

Table 2 : SEX DISTRIBUTION

Sex	No. Of patients	Percentage
Male	11	33.33%
Female	22	66.66%
Total	33	100%

Eleven patients were male and twenty two patients were female. Male to female ratio in our study was approximately 1:2.

Table 3 : PAIN (Preoperatively)

PAIN	No. of knees	Percentage
None	0	0.00%
Mild	1	2
Moderate	18	36
Severe	31	62
TOTAL	50	100

In our study 98% of patients had moderate to severe pain preoperatively and 2% of patients had mild pain preoperatively.

Table 3 : Pain (postoperatively)

PAIN	No. Of knees	Percentage
None	33	66%
Mild	17	34%
Moderate	0	0
Severe	0	0
Total	50	100%

In our study 66% of patients had no pain and 34% of patients had mild or occasional pain at final follow up.

Table 4 : RANGE OF MOTION (Preoperatively)

Range (excluding FFD)	No. of Knees	Percentage
0-40	0	0
41-50	1	2
51-60	20	40
61-70	2	4
71-80	12	24
81-90	15	30
TOTAL	50	100

In our study 70% of patients had range of motion below 81 preoperatively and 30 of patients had range of motion between 81 to 90.

Table 5 : RANGE OF MOTION (Postoperatively)

Range (in degree)	No. of Knees	Percentage
0-90	2	4
0-100	5	10
0-110	9	18
0-120	13	26
0-130	21	42
TOTAL	50	100

The average range of motion was 117.12 (Range 85 to 125)

Table 6 : Function (preoperatively)

Function	Walking					Stairs and chair			Walking				
	Unlimited	10-20 blocks	5-10 blocks	1-5 block	<1 block	Cannot	Normal Up & down	Up & down with hand balance	Up & down with hands pull or hold	Cannot or bizzare	Cane	Crutches or walker	None
No. of patients	0	2	19	19	10	0	0	13	37	0	8	6	36
Percentage	0	4	38	38	20	0	0	26	74	0	16	12	72

None of the patients in this study could climb unlimited, neither could any one climb up and down normally preoperatively. Walking aids were used by 28% patients preoperatively.

Table 7 : Function (postoperatively)

Function	Walking					Stairs and chair			Walking				
	Unlimited	10-20 blocks	5-10 blocks	1-5 block	<1 block	Cannot	Normal Up & down	Up & down with hand balance	Up & down with hands pull or hold	Cannot or bizzare	Cane	Crutches or walker	None
No. of patients	17	32	1	0	0	0	31	19	0	0	0	0	50
Percentage	34	64	2	0	0	0	62	38	0	0	0	0	100

Thirty four percent of patients at final follow up could walk unlimited and sixty two percent could walk up and down normally. Sixty four percent of patients at final follow up could walk 10-20 blocks comfortably without pain. All the patients could walk comfortably without walking aids at final follow up.

Table 8 : KNEE SOCIETY CLINICAL SCORE

CLINICAL SCORE	PRE OP	POST OP
0-10	0	0
11-20	11	0
21-30	17	0
31-40	12	0
41-50	9	0
51-60	1	0
61-70	0	1
71-80	0	0
81-90	0	20
91-100	0	29

Our average clinical score increased from 30.60 preoperatively to 92.24 on final follow up.

Table 9 : KNEE SOCIETY FUNCTIONAL SCORE

FUNCTIONAL SCORE	PRE OP	POST OP
0-10	0	0
11-20	3	0
21-30	4	0
31-40	21	0
41-50	15	0
51-60	1	0
61-70	1	0
71-80	3	1
81-90	2	15
91-100	0	34

Our average functional knee score increased from 44.1 preoperatively to 91.06 on final follow up.

Table 10 : RESULTS

Results	Excellent 85-100 points	Good 70-84 points	Fair 60-69	Poor <60
Preoperative KSS	0	1	1	48
Percentage	0	2	2	96
Postoperative KSS	49	1	0	0
Percentage	98	2	0	0

DISCUSSION

Normal mechanical function of knee joint is substantially altered in osteoarthritis. The surgical treatment of such condition by total knee arthroplasty offers an opportunity not only to replace articular surface of the joint but also to improve the long term mechanical function.

In our study about 39.39% of patients were in age group of 51-60 years and 27.27% were in the age group of 61-70 years, which clearly indicates earlier age of onset of osteoarthritis in Indian population as compared to western population.

The male to female ratio in our study was approximately 1:2. In our study 66% of the patients had no pain at final follow up and the rest 34% had mild pain, compared to the moderate to severe pain in all the patients preoperatively. The average range of motion on final follow up was 117.12, which increased from average preoperative value of 73.5.

In final follow up 34 % of the patients could walk unlimited, 64% of the patients could walk 10-20 blocks comfortably without pain and rest 2% could walk upto 5-10 blocks only. At final follow up 62% of the patients could climb the stairs up and down normally and 38% of the patients could climb up and down with hand support. This could be due to short follow up in these patients. We think that they too would improve with time and would be able to walk and climb the stairs and down the stairs unlimitedly. We could achieve an average functional score of 91.06 at final follow up. The average functional score preoperatively was 44.01%.

CONCLUSION

The present study was aimed at evaluating the early clinical and functional outcome of total knee arthroplasty in patients with tricompartmental osteoarthritis of knee joint. These surgeries are routinely performed in our hospital with a well equipped operation theatre having a laminar airflow, under strict aseptic protocol and special care to patients. In Indian population, tricompartmental osteoarthritis is the main indication for surgery. In advance stage osteoarthritis even in younger patients it is a good option.

Our study confirms that total knee arthroplasty has distinct advantages which are as follow:

- Alleviation of pain
- Early resumption of ambulation and return to functional activity.
- Provide good range of motion at knee joints.
- Provide deformity correction and valgus alignment of operated knee joint.

To conclude total knee replacement is a safe option for tricompartmental osteoarthritis of knee joint in elderly with good recovery, inspite of having several co-morbidities, and it will give decades of trouble free life.

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