COMPARISION OF LIMB LENGTH DISCREPANCY BETWEEN UNILATERAL AND BILATERAL T.K.R.

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Abstract

AIMS & OBJECTIVES: To find out the difference of leg length in unilateral & bilateral TKR &find out clinical management of leg length discrepancy for improving patients function.

Purpose of the Study: To find out the difference of leg length between unilateral v/s bilateral T.K.R. and to find out the patients level of discomfort during walking.

METHODOLOGY: STUDY DESIGN: cross sectional observational study. Sample Population and Sample Size- 30 patients included according to criteria. In Group –A-15, unilateral Total knee replacement patients & in Group B - 15, bilateral Total knee replacement patients were included. Sampling Technique: Convenient sampling according to selection criteria.

OUTCOME MEASURES: Limb length was measured by using Tape measurement method (TMM) in centimeters.

DATA COLLECTION & ANALYSIS: Data were collected from sterling hospital, Ahmedabad at post 3 months of surgery. Limb length measurement was done in the supine position with pelvis squared. The lower limbs were placed parallel to the body and limb length measurement (in centimeters) done from the anterior superior iliac spine to the medial malleolus using a measure tape. The measurement was taken twice by two different observers and the mean of the two values was recorded. Outcome parameters were analyzed with t-test in both group.

RESULTS: Data was analyzed by using Paired t-test. The t-value for unilateral T.K.R. was 9.73 ($p<0.001$) highly significant and bilateral T.K.R was 3.58 ($p<0.05$) respectively.

CONCLUSION: In unilateral T.K.R. there is a significant difference in leg length between operated & non-operated leg & in bilateral. There is no much leg length discrepancy between both operated legs. So in unilateral T.K.R., Limb length discrepancy is due to other leg's arthritis condition which may cause imbalance in gait.

KEYWORDS: limb length discrepancy; unilateral- bilateral T.K.R.

INTRODUCTION

Leg-length inequality, defined as a difference in lengths of the 2 legs, is very common, occurring in up to 70% of the population[1].

Improved surgical techniques and rehabilitation protocols have resulted in excellent knee function and range of motion following total knee arthroplasty[2].

Limb length discrepancy and its effects on patient function have been discussed in depth in the literature with respect to hip arthroplasty but there are few studies that have examined the effect on function of limb length discrepancy following total knee arthroplasty (TKA)[3,4].

Nevertheless, there remain 15-20% of patients with persistent dysfunction that is difficult to treat[5-7].

Although problems after total knee arthroplasty are frequently linked to prosthetic mal-alignment, radiographic loosening, and comorbidities, some cases are related to functional problems that are less evident clinically and/or radiographically.

Functional problems following total knee arthroplasty may be incapacitating as a result of persistent pain[8], instability[9], and limited range of motion[10,11].

Patients who experienced more pain and functional impairment after total knee arthroplasty were less likely to be satisfied with the procedure.

AIMS & OBJECTIVES

- To find out the difference of leg length in unilateral & bilateral TKR.
- Find out solution of leg length discrepancy for improving patients function & satisfaction.

METHODOLOGY

Sample size

Group A: 15, Unilateral Total knee replacement patients

Group B: 15, Bilateral Total knee replacement patients

STUDY DESIGN

Cross sectional observational study

INCLUSION CRITERIA

- Patients were operated with midline incision with primary T.K.R.
- Age-group 50-70yrs
- Post op 3 month

- Post op same exercises program in both group
- In both group pre op FFD 10-15degree & 8-10 degree varus deformity
- No anymal-alignment, component malposition, loosening, or patellar maltracking
- No hamstring tightness
- No any hip joint pathology & SI joint dysfunction

EXCLUSION CRITERIA

- Other surgical technique
- Other than high flex knee joint
- Other than midline incision
- Post op less than 3 month
- Any mal-alignment, component malposition, loosening, or patellar maltracking
- Hamstring tightness.
- Any hip joint pathology & SI dysfunction & postural deviation.
- Marked abductor weakness.
- Pre-operative limb length discrepancy

METHODS

Data were collected from sterling hospital, Ahmedabad at post 3 months of surgery.

Limb length measurement was done in the supine position with pelvis squared.

The lower limbs were placed parallel to the body and limb length measurement (in centimeters) done from the anterior superior iliac spine to the medial malleolus using a measure tape[12].

The measurement was taken twice by two different observers and the mean of the two values was recorded.

OUTCOME MEASURES

Limb length was measured by using Tape measurement method (TMM) in centimeters[13,14].

RESULTS

TABLE 1: VALUE OF UNILATERAL AND BILATERAL T.K.R.LEG LENGTH

Unilateral	Average Length	Bilateral	Average Length
Limb-1(Operated)	49.8	Limb-1(Operated)	47.2
Limb-2(Non-Operated)	47.4	Limb-2(Operated)	47.26

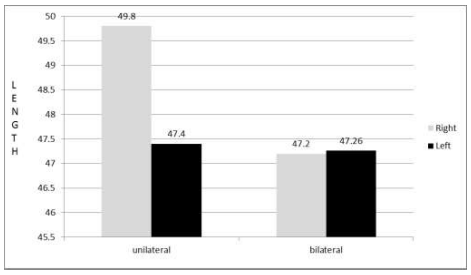

FIGURE 1: COMPARISION OF UNILATERAL AND BILATERAL T.K.R.LEG LENGTH

DISCUSSION

A persistent limp is one of the most frustrating symptoms after total knee arthroplasty.

There are many causes of limp; however, leg length discrepancy is one of the common reason for litigation after successful total knee arthroplasty[3,4,12].

Leg-length inequality may be an important risk Factor for the longer leg exhibited increased ground-reaction forces and therefore should be at greater risk for osteoarthritis.

Limb length discrepancy affects functional outcome after total knee arthroplasty[7,15].

Bhave et al.[7] showed that the operated leg gained length compared to the contralateral un-operated leg due to correction of the varus deformity.

A number of factors may be responsible for the limb length discrepancy, including correction of the varus alignment after surgery, the amount of preoperative flexion deformity, and the postoperative flexion deformity

In present study it was obvious difference in both leg length in unilateral knee replacement patients who having limp during walking & there is no as such any major difference between limb length bilateral knee replacement.

CONCLUSION

In unilateral T.K.R. there is a significant difference in leg length between operated & non-operated leg & in bilateral there is no much leg length discrepancy between both operated legs.

So in unilateral T.K.R., Limb length discrepancy is due to other leg's arthritis condition which may cause imbalance in gait.

CLINICAL IMPLICATION

We can give sole compensation for correcting LLD & improving function.

LIMITATIONS

- Sample size is small.
- Measurements of leg length,, are subject to measurement error, which could result in misclassification.

FUTURE STUDY

- Outcome measure for functional activity
- Comparison of LLD between unilateral operated patient & those same operated for second time knee replacement

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