International Journal of Orthopaedics Research
www.orthopaedicsjournal.in
E-ISSN: 2663-0923, P-ISSN: 2663-0915
Received: 12-11-2023, Accepted: 27-11-2023, Published: 13-12-2023
Volume 5, Issue 2, 2023, Page No. 32-36

Clinical outcome and safety of bilateral staged TKR Done in single admission in old age patients with multiple co morbidities

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Abstract
The number of patients requiring bilateral Total knee arthroplasty has increased over past decade. Controversy surrounds the safety of bilateral total knee arthroplasty (TKA) and whether staging the procedures one week apart represents a safer option. We evaluated the Clinical Outcome and Safety of Bilateral Staged TKR Done In Single Admission In Old Age Patients With Multiple Co Morbidities.
Conclusion: Staged procedures are particularly attractive for those with medical comorbidities precluding a simultaneous operation. The prerequisite is suitable patient selection and perioperative protocol. 1 week-stage, bilateral TKRs can be recommended to patients who fulfil the selection criteria and could benefit patients and the entire healthcare system which can help in better rehabilitation and better patient satisfaction

Keywords: Staged, clinical outcome

Introduction
The number of patients requiring bilateral Total knee arthroplasty has increased over past decade. Controversy surrounds the safety of bilateral total knee arthroplasty (TKA) and whether staging the procedures one week apart represents a safer option. In severely deformed bilateral knees, unilateral TKR can significantly affect rehabilitation and result in poorer outcome. In this study we evaluated the clinical outcome and safety of bilateral staged tkr (1 week staged) in old age with multiple co morbidities. Some studies [1, 4] identifies a potential advantage of a staged protocol over simultaneous bilateral TKA in not subjecting higher-risk patients to a second physiologic insult of a contralateral TKA.
Some studies [1] have found that same-admission staged Bilateral TKA has been used as a treatment option with the intent to reduce the perioperative complication rate compared with same-day Bilateral TKA

Material and Methods
All patients data who under-went staged (1 week) bilateral Total knee replacement from 2013- 2021 was assessed retrospectively and following parameters were assessed
1. Length of Hospital Stay
2. In hospital Complication
3. One month readmission rate
4. Mortality
5. Need for Blood transfusion

Inclusion criteria
1. All patients who underwent Primary Staged (1 week) bilateral Total knee replacement from 2013- 2021 in Aster Medcity was included in the study.
2. Age > 70 years
3. Multiple co morbidities like CAD, DM, HTN

Exclusion criteria
1. Revision Total knee replacements
2. Patients who underwent other joint replacements (THR)

Statistical Analysis: Retrospective Observational Study. Survival analysis and Cox regression

Intra op and post op protocol
Pre operatively morbidities were assessed using Charlson co morbidity index score

Table 1: Charlson Co morbidity index

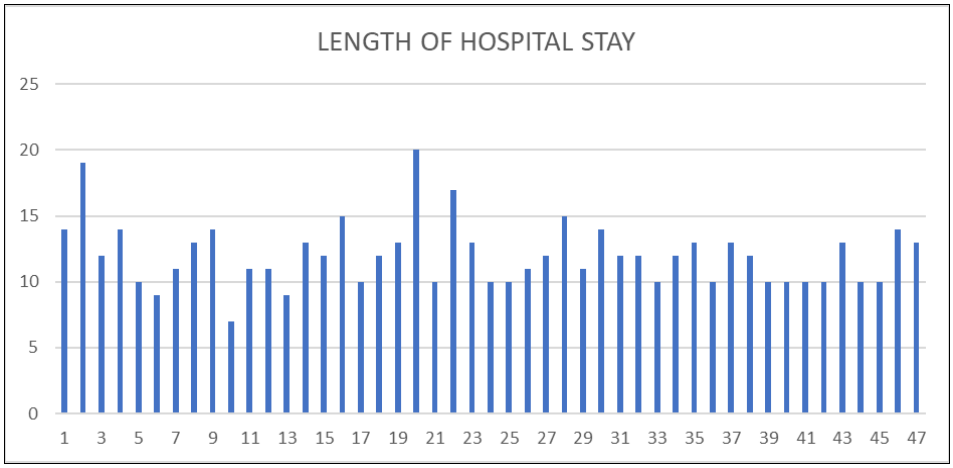
CoMorbidity	Score
Prior Myocardial Infarction	1
Congestive heart Failure	1
Peripheral Vascular disese	1
Cerebrovascualr disease	1
Dementia	1
Chronic Pulmonary disease	1
Peptic Ulcer Disease	1
Mild Liver Disease	1
Diabetes	1
Cerbrovascular(Hemiplegic) event	2
Diabetes with chronic comlication	2
Cancer without metastases	2
Leukemia	2
Lymphoma	2
Moderate/severeLiver disease	3
Metastatic Solid Tumour	6
AIDS	6

All surgeries were done by the same surgeon pre op and post op protocol were same and all were PS knee
All patients data were analysed in perioperative post operative period for amount of blood transfusion, length of hospital stay, perioperative complications, readmission rate, mortality within 1 month and 1 yr complication rate.

Results

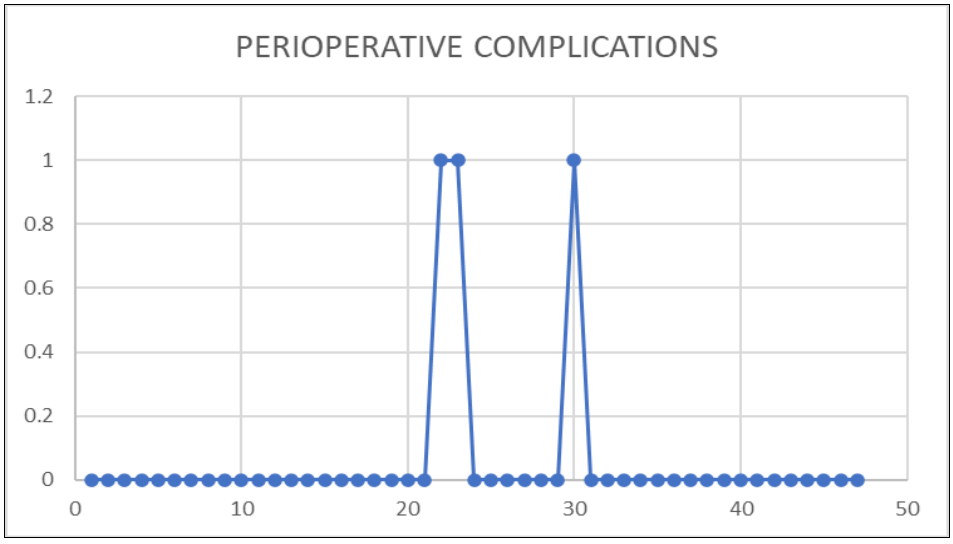
Out of 47 patients who under went 1 week staged bilateral TKR the average surgery interval between two sides was 4.2, average hospital stay 12 days, average Charlson co morbidity index 3.93.

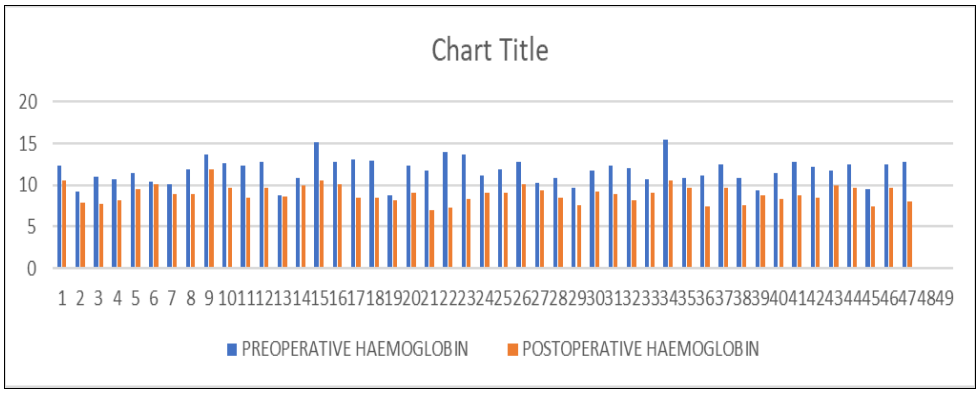
Length of Hospital Stay



Mean duration of stay was 12.04 days

Perioperative complication rate was very low – 0.12





Average hb drop was 2.79 and blood transfusion rate -1.34 %

Out of 47 patients 1 had pulmonary embolism as a perioperative complication,1 had saturation drop post op and 1 developed arrythmia post op. The perioperative complication rate was 0.12 and zero at 1 yr.

The need for blood transfusion was less and blood transfusion rate was 1.34 Out of 47 patients 2 patients were readmitted one for evaluation of wound discharge and one for physiotherapy. Readmission rate was 0.08.

There were no morality in 1 month

Discussion

Staged bilateral TKA is an option for patients with advanced degenerative joint disease of both knees who desire a single

rehabilitation period, and who have medical comorbidities putting them at high risk during simultaneous bilateral TKR

The advantages of a simultaneous, bilateral TKRs include one anaesthetic session, single theatre use, and a single hospital admission, and shorter hospital stay [2]. Multiple studies reported that simultaneous, bilateral TKR is a safe procedure [3], with similar morbidities and mortality [3, 4]. The disadvantages include the possibility of more significant post-operative pain, increased rate of cardiovascular events, thromboembolism, blood loss, and mortality [4]. The timing of a staged Bilateral tkr is still debatable, some surgeons prefer a time gap of upto 3 months [6] after one side to do the contralateral side. With development of better perioperative monitoring the time interval can be reduced with out compromising the functional outcome or patient safety.

Riiter *et al* [9] found that Staging the procedure 3 to 6 months seems to offer the fewest disadvantages, is only slightly more expensive, and has the lowest mortality rate.

In our study the 1 yr complication rate was zero and peri operative complication 0.12, some studies [3, 7] shows a longer duration (90days) of interval has a better advantage in reducing complication. Although certain studies have shown performing the second-stage TKA at 90 days or less after the first TKA is not associated with increased risk of complications. [7]

A number of more recent studies have shown no difference in mortality between simultaneous TKA and staged TKA, [6, 8] which may correlate with the improvement in surgical technique over time or better patient selection, although some had relatively small numbers. This is in concurrence with our study which show s no mortality within 1 month in 1 week staged TKR

Limitation

This study was limited by the small size of the patient group, the lack of control group, and the lack of cost-analysis. Other studies including much larger groups, a multicenter study with the same inclusion criteria, or a case control study would help confirm our conclusions.

Conclusion

In Our study out of 47 patients assessed not much complications were encountered in the perioperative period. Staged procedures are particularly attractive for those with medical comorbidities precluding a simultaneous operation. The prerequisite is suitable patient selection and perioperative protocol. 1 week-stage, bilateral TKRs can be recommended to patients who fulfil the selection criteria and could benefit patients and the entire healthcare system which can help in better rehabilitation and better patient satisfaction. There is no increased complications in reducing the surgery interval (1 week) as per our study.

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