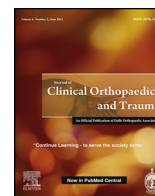




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Full length article

Is simultaneous bilateral total knee arthroplasty safe in geriatric population? A retrospective cohort study with upto 9 years follow up

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ABSTRACT

Introduction: Considering the old age, uncertain life expectancy, co-morbidities and fear of postoperative complications, elderly patients often hesitate to undergo simultaneous bilateral total knee arthroplasty (SBTKA).

Materials & methods: A retrospective study of SBTKA in 46 patients (92 knees) of age >70 years done between 2003 and 2012. Mean age was 80.13 ± 5.24 years (range –70–93 years).

Results: 74 percent had 1 or more major medical problems. There was a significant improvement of KSS at six months (p value = 0.00).

Conclusion: With expected benefits of surgery, SBTKA seems a safe, efficient, and viable procedure for carefully selected elderly patients.

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1. Introduction

In the recent decades, there has been a considerable increase in the number of elderly population in developed countries especially with age >85 years old.¹ It is expected that the population of aged more than 90 years in the USA will quadruple by 2050 and they will comprise 10% of the total population.² This increase in aging population is likely to be associated with a parallel increase in the number of total knee arthroplasty (TKA) done in this age group.²

The average life expectancy at birth in India has also increased to 70 years (68 years in male and 73 years in female) in 2013.³ However, numbers of older adults above 80 years are significantly low in India as compared to the developed countries. Due to the comparatively lower life expectancy of the Indian population, individuals aged above the age of 70 years were considered to be above the normal life expectancy.

Despite the high incidence of degenerative arthritis and its burden of impairment and disability cause significant problems, these older adults are unwilling to undergo TKA surgery.^{4,5} It could be due to several reasons like consideration of old age and uncertainty about life their expectancy, associated comorbidities and fear of potential postoperative complications.¹

However, with recent advances in the medical field, major surgical procedures like TKA can be done safely in elderly patients.⁶ Comparative studies have shown that there is a

significant improvement in pain and function in these patients without increased complication rates when compared to younger counterparts.⁷ There have been very few publications related to simultaneous bilateral total knee arthroplasty (SBTKA) in octogenarian and nonagenarian population and some reports of SBTKA in septuagenarian and younger population of fewer than 70 years.^{8–10} The advantage of performing SBTKA as compared to the two-stage procedures include a shorter time of exposure to anesthesia, less hospital stay, quicker rehabilitation, fewer wound complications, decreased surgical stress and more cost-effectiveness.^{11–13} Despite these distinct advantages, most people still prefer not to do SBTKA due to concerns regarding safety in the elderly patients. Few studies have raised concerns of increased preoperative morbidity and mortality, but in other studies, SBTKA had similar clinical outcomes as compared to unilateral or staged bilateral TKA.^{13,14}

We conducted a retrospective cohort study of SBTKA in patients of age more than 70 years to assess the preoperative comorbidities, pain relief, functional improvement and overall satisfaction, perioperative complications, time and blood loss during surgery, the length of stay (LOS) and mortality after surgery.

2. Materials and methods

The senior author (author 1) performed a total of 177 SBTKA between 2003 and 2012. Of these, we did a retrospective cohort study of 46 patients (92 knees) of age >70 years who underwent SBTKA, under single anesthesia. These patients had surgery under either combined spinal-epidural (93.5%) or general anesthesia (6.5%). Informed consent was taken from all the patients included

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in the study. The patients were informed that their more painful side would be operated first and the second side would be done if there were no significant events during the surgery. All the patients had dobutamine stress echocardiogram (DSE) to assess cardiac function. Associated comorbidities like hypertension, diabetes mellitus, coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), liver and renal diseases, thyroid disorders, and rheumatoid arthritis were recorded during the preoperative assessment. We recorded the patient's age, sex, weight, height, body mass index (BMI), American Society of Anesthesiologist (ASA) grade, Knee Society Score (KSS), date of surgery, tourniquet time, preoperative and postoperative hemoglobin, perioperative complications during a hospital stay, LOS. The amount of blood loss in the drain (in 24 and 48 h) after surgery, blood transfusions, use of intravenous Tranexamic acid (TA) perioperatively was also noted. Local infiltration analgesia (mixture of 0.25% Bupivacaine (20 ml), 15 mg Morphine, 80 mg Gentamycin, 15 mg Ketorolac, 0.1% Adrenaline and 50 ml normal saline) was used in all cases. KSS were recorded preoperatively, at 6 and 12 months after surgery. The postoperative complications like urinary tract infection, myocardial ischemia, confusion, respiratory tract infection, deep vein thrombosis (DVT) with the positive scan, shifting to high dependency unit or ICU, surgical site infection (SSI), and repeat surgery were also recorded. In all cases, TKA was done through anterior midline incision under tourniquet and cemented, posterior stabilized knee prostheses (Scorpio, Stryker) were used. A drain was put in all cases for 24–48 h. Broad-spectrum intravenous antibiotics were given at the time of induction of anesthesia and continued for 48 h. The patients were encouraged to mobilize and do isometric exercises of the knee on the next day of surgery. A multimodal approach for DVT prevention was employed in all cases using thigh length compression stockings, foot pump, and low molecular weight heparin (Enoxaparin 40 mg subcutaneously daily for five days), followed by oral aspirin (75 mg daily) was continued. Check radiographs, hemogram and electrolytes were done on the first postoperative day. Our threshold to transfuse blood after surgery was 8 g/dl.

All data was collected by a fellow who was not involved in surgery or post-operative follow-up of patients. Those patients who were not coming to OPD for follow-up were contacted telephonically to enquire about their clinical status. The collected

data was recorded in Microsoft Excel, and simple descriptive analysis was done. An average of all the continuous data was expressed in mean \pm standard deviation. Pre- and post-operative KSS were assessed by applying Wilcoxon Signed Ranks test. A p-value less than 0.05 was considered significantly different between two variables.

3. Results

Our study included 25 males (54.4%) and 21 females (45.6%). The mean age of patients in our study was 80.13 ± 5.24 years (range 70 to 93 Years), and body mass index (BMI) was 29.4. The number of patients with age between 70 and 79 (a septuagenarian) was 22 (47.8%), those between 80 and 89 (octogenarian) were 23 (50%), and there was a single nonagenarian patient of 93 years. Amongst the preoperative comorbidities, the most common were hypertension (60.9%) (Fig. 1).

There were 14 (30.4%) patients having two diseases and 6 (13%) having three conditions. None of the patients had any significant medical event during anesthesia and surgery and hence were operated on both sides under single anesthesia. Twenty-six percent cases had no major medical problems. Nineteen patients (41.3%) did not require any blood transfusion (Table 1).

The mean pre-operative KSS of both the knees was 38.08 ± 4.85 points and score at six months and one year after surgery was 82.19 ± 5.61 and 82.60 ± 4.18 respectively (Fig. 2).

There was a significant improvement of KSS at six months (p value = 0.00). However, no difference in KSS was noted between 6 months and one year (p value = 0.242). In our study, 26.08% of patients were ASA grade I, 54.34% were ASA grade II, and 17.4%

Table 1
Patients demographics.

	Mean/number	Standard deviation/percentage
Age	80.13	5.25
Sex		
Male	25	54.4%
Female	21	45.6%
BMI	29.4	5.36

Abbreviations: BMI, body mass index.

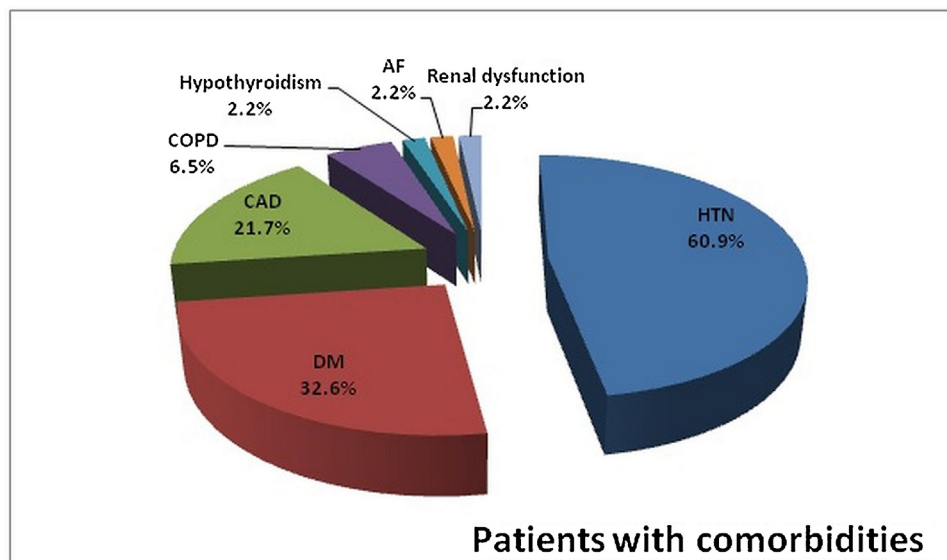


Fig. 1. Pie diagram showing the percentage of patients with preoperative comorbidities.

(Abbreviations: HTN, hypertension; DM, diabetes mellitus; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; AF, atrial fibrillation)

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