Case Report

Profile of total knee replacement patients and short term outcome in the sanglah public hospital 2018: a case reports

I. Wayan Suryanto Dusak*, Dwiwahyonokusuma, I. Gusti Ngurah Paramartha Wijaya Putra

Department of Orthopaedic and Traumatology, Sanglah General Hospital, Udayana University, Bali, Indonesia

ABSTRACT

Total knee replacement (TKR) is considered to be among the most successful type of orthopedic surgery, with 15-year-survival-rate of implant exceeding 95%; furthermore, the improvement in quality of life is very significant. This study aims to describe the demographics, length of hospitalization and short-term outcome observed in patients undergoing TKR at Sanglah Hospital in 2018. All patients undergoing TKR at Sanglah Hospital in 2018 have been prospectively entered into our database. A total of 59 patients were recorded on 2018 for this study and 1 revision TKR patient and 2 patients with incomplete data were excluded. At baseline, 78.6% patients were female, 72.3% were Balinese and 84.1% were housewives. The mean age of patients was 63 years old. Authors also record that 44 (78.6%) patients are Overweight patients (BMI 25.00-29.99 kg/m2), 11 (19.6%) patients are at Obese Class I (30.00-34.99 kg/ m2) range, and only 1 (1.8%) patients have normal weight (18.50-24.99 kg/m2). As many as 51.8% patients had right TKR and 49.2% left TKR. The modus of patient's length of stay is 7 days with 27 (48.2%) patients started to walk on the 4th day. VAS was recorded at level 4/10 on 92.9% patient. Drain was removed after 3 days on 42 (75%) patients. 15 patients (26.8%) had PRC transfusion due to anemia after operation.

Keywords: Body mass index, Obese, Orhopaedic surgery, Ostearthritis knee, Overweight, Total knee replacement

INTRODUCTION

Osteoarthritis (OA) is a very common disease of the joints and a leading cause of pain and disability in middle-aged and elderly patients.[1] The incidence of knee OA is rising as a result of longer life expectancy and increasing BMI in the population. This condition leads to an increase of demand for knee surgery.[2]

The growing number of procedures such as arthroplasty results from a number of factors such as the aging of the population, the increasing prevalence of rheumatoid arthritis, and increased numbers of obese patients.[1,3] Total knee arthroplasty (TKA) is considered to be among the most successful types of orthopedic surgery, since even after 15 years implant survival exceeds 95%; furthermore, the improvement in quality of life is very significant.[4] The main cause in most patients who undergo this procedure is osteoarthrosis.[1]

In 2010, total knee replacement was the most frequently performed inpatient procedure on adults ages 45 and over. In the 11-year period from 2000 through 2010, an estimated 5.2 million total knee replacements were performed. Adults aged 45 and over comprised 98, 1% of those surgeries.

This report uses data from the National Hospital Discharge Survey (NHDS) to present trends in the rate of hospitalizations for total knee replacement, mean age at hospitalization, and discharge status for inpatient ages 45 and over from 2000 through 2010.[5]

Most people who undergo a total knee replacement are between ages of 50 and 80. The average age is about 70. About 60 percent of the patients are women.[6] A systematic review by Zheng Huaqing et al. showed that overweight and obesity were significantly associated with higher knee OA risks respectively. The risk of knee OA increases by 35% with 5 km/m2 increase in BMI.[7] Youssef F. El Bitar et al. said that majority of patients had a hospital LOS of 3 or less (74.8%).[8]

Pain control and rehabilitation are two crucial aspects of postoperative care after TKR. They are important for patients to maximize range of motion, improve muscle strength, ambulate, and resume activities of daily living. The acute phase of rehabilitation last up to 3 to 4 days after surgery. Physical therapy session are performed since the first day postoperative. Many patients are sent home on postoperative day 2 and 3 without negative consequnces.[9,10]

This study aims to describe the demographics, length of hospitalization and short-term functional outcome observed in patients undergoing TKR at Sanglah Hospital period 2018.

CASE REPORT

All patients undergoing TKR at Sanglah Hospital in 2018 have been prospectively entered into our database. Authors selected patients undergoing primary TKR for Osteoarthritis (OA) of the knee and analyzed them retrospectively. Our inclusion criteria were all patients who underwent elective primary unilateral or simultaneous bilateral TKR for OA in 2018. Authors excluded patients undergoing revision arthroplasty and incomplete data.

All patients underwent assessment prior to surgery and had demographic data including gender, age, height, weight recorded. Patients were categorised by age (\60 'young', 60-79 'standard' and 80 or older 'old') and by BMI to further facilitate comparison between groups. BMI is a measure of body fat based on height and weight. The World Health Organisation (WHO) has classified BMI into six categories: 'underweight' (\18.50 kg/ m2), 'normal' (18.50-24.99 kg/m2), 'overweight' (25.00-29.99 kg/m2), 'Obese Class I' (30.00-34.99 kg/ m2), 'Obese Class II' (35.00-39.99 kg/m2) and 'Obese Class III-morbidly obese' ([40.00 kg/m2). Time of surgery and Intra-operative bleeding also have been recorded.

All patients underwent a cemented TKR. A tourniquet was used in all cases and released at the end of the procedure. Drain was used to evacuate hematoma. authors introduced a transfusion protocol. Patients with a haemoglobin of <10 g/dl were transfused. All patients had a cemented, fixed bearing cruciate retaining knee replacement. Posterior stabilised knee replacements were reserved for use in severe deformities only. Patellar resurfacing was not routinely performed. Each procedure

was performed by, or under the supervision of, a consultant surgeon. All patient received low molecular weight heparin as prophylaxis for deep-vein thrombosis. It was given subcutaneously every day starting 12 hours after the surgery.

Authors examined VAS score for the first 3 days and the length of stay for each patient, when the patient's drain removed and when the patients start to mobilized and start to walk, postoperative hemoglobin and requirement for blood transfusion. No other long-term observation was reported in this study. Authors used proportional hazard models to examine the relationship between demographic factors and the occurrence of these data on all patients after primary total knee replacement.

The study population consisted of 59 patients; 3 patients were excluded because of incomplete data or undergoing other procedure. The mean age of patients was 63 years old (range 41 to 86 years).

At baseline, 78.6% patients were female, 72.3% were Balinese and 84.1% were housewives. The mean age of patients was 63 years old. 51.8% patient undergoing right TKR and 49.2% on left TKR. The modus of patient's length of stay is 7 days.

Table 1: Demographic data.

Patient	Data
Gender	
Male	12 (22.4%)
Female	44 (78.6%)
Age	
<50 y.o.	3 (5.3%)
50-80 y.o.	52 (92.9)
>80 y.o.	1 (1.8%)
BMI	
Normal (18.50-24.99 kg/m2)	1 (1.8%)
Overweight (25.00-29.99 kg/m2)	44 (78.6%)
Obese class I (30.00-34.99 kg/ m2)	11 (19.6%)
Ethnic group	
Bali	41 (73.20%)
Java	12 (21.40%)
Batak	1 (1.8%)
Chinese	1 (1.8%)
Sumba	1 (1.8%)
Diagnosis	
Bilateral Knee OA	43 (76.8%)
Right Knee OA	11 (19.6%)
Left Knee OA	2 (3.6%)
Operation	
Right TKR	29 (51.8%)
Left TKR	27 (49.2%)
ASA	
II	17 (30.36%)
III	39 (69.64%)

On the first day after operation, 71.4% patients was able to move and 48.2% patients start to walk on the 4th day. Drain was removed after 3 days on 75% patients. 15 patients (26.8%) had PRC transfusion due to anemia after operation. (Table 1).

Table 2: Short term outcome.

Short term outcome	Data
Length of Stay	
6 days	9
7 days	31
8 days	11
9 days	4
10 days	1
Mean	7.23 days
Durante operation bleeding	
Range	50-500 cc
Mean	174 cc
Operation time	
Range	120-195 mins
Mean	154.64 mins
1st day VAS with CSE	
3	2 (3.57%)
4	52 (92.86%)
5	2 (3.57%)
Drainage removal	
Day 3	42 (75%)
Day 4	14 (25%)
Mean	3.25 days
Start to mobilization	
Day 3	18 (32.14%)
Day 4	27 (48.21%)
Day 5	11 (19.64%)
Mean	3.88 days
Post operation transfusion	
Needed	29 (51.8%)
Not needed	27 (49.2%)

The main preoperative diagnosis was bilateral knee osteoarthritis (76.8%). All patients received deep venous thrombosis prophylaxis and prophylactic antibotics with empirical drug. Table 1 shows some patient characteristics. From gender, authors record that 44 (78.6%) patients were female and 12 (22.4%) male patients. From 59 patients, 41 (73.2%) was Balinese, 12 (21.4%) was Javanese and 3 (5.4%) was from other ethnic groups.

Authors categorized patients according to their age (\60 'young', 60-79 'standard' and 80 or older 'old'). Authors found that 35 (62.5%) patients are at standard age, 20 (35.7%) patients at young age and 1 (2.8%) patient at old age. By BMI, authors recorded that 44 (78.6%) patients were overweight (BMI 25.00–29.99 kg/m2), 11 (19.6%) were Obese Class I (30.00–34.99 kg/ m2) range, and 1 (1.8%) had normal weight (18.50–24.99 kg/m2). About

17 (30.36%) patients had ASA II and 39 (69.64%) others ASA III.

From intraoperative data authors found that bleeding ranges between 50-500 cc with mean bleeding 174 cc and operation duration between 120-195 minutes with mean time 154.64 minutes. Postoperative observation are shown in table 2. The mean length of hospital stay was 7.23 days. Time range for drainage removal is 3-4 days with mean 3.25 days, time to start moving was 1-2 days with mean 1.04 days and time to walk was 3-5 days with mean 3.875 days. There is an early complication after operation, 15 (26.8%) patients had anemia due to intraoperative bleeding and they received PRC transfusion. VAS on the 1st day of 92.9% patient is 4/10 with epidural anesthesia, and it was decreased until 1-2/10 after 3rd day. (Table 2).

DISCUSSION

This study demonstrates the demographic, length of stay of the patients undergoing TKR procedure and the short-term functional outcome that can be observed until the patient was discharged.[1]

From this study, authors recognize that women were still the main gender that went for TKR operation with 78.6% and the age was mainly at range of 50-80 years old (92.9% patient) with just 3 patients younger than 50 years old and 1 patient older than 80 years old. The young age patients, might developed an osteoarthritis because of the past trauma condition, and old age usually was afraid to get operated due to concerns about complication of the operation to older people. Patient's body mass index was also recorded and the result showed that overweight and obesity were significantly associated with higher knee OA risks.[1,2]

In this hospital, the most length of stay at hospital is 7 days, with range of 6-10 days and mean 7.3 days. In our hospital, the patient was admitted 2 days before the operation, on the 3rd days, they went for surgery and then 6th days or 7th days, after the drain was removed, they might go home. Some patients with prolonged bleeding on the drain was sent home longer than usual, but the main cause of the prolonged patients stay at hospital is because of anemia complication that need to get blood transfusion. However, authors found that prolonged drain usage was not associated to the amount of bleeding during surgery. From our data, the amount of bleeding during surgery was at range 50-500 cc with mean bleeding 174 cc. There are 13 (32.31%) patients that suffered anemia after operation and need to take transfusion. Duration of the operation was at range 120-195 minutes with mean 154.64 minutes. There are 2 patients that need 2 days to start moving because of the pain. All other patient start to excercised at 1st day after operation. All patients received physical therapy. Patients start to walk in range 3-5 days after operation with mean 3.88 days. Most of the patient start to walk after 4 days

after operation with 27 (48.21%) patients, 18 (32.14%) patients start to walk after 3 days and 11 (19.64%) patients start to walk after 5 days after operation. Compared to other studies, authos had later start of mobilization due to the misperception that immobilization after surgery is preferred to avoid pain and break of the stitches.[3,6]

CONCLUSION

This result found that majority of TKR patients in our hospital are women with the age ranging from 50-80 years old and overweight or obese. There were no significant complications during study period and authors found that the bleeding was well controlled. Culture and education status still influence the decision to start mobilization and later start of mobilization increase the length of stay at hospital.

REFERENCES

1. Bezerra MJC, Barbosa IM, De Souza TG, et al. Profile of Patients Receiving Total Knee Arthroplasty: A Cross Sectional Study. Acta Ortop Bras. 2017;25(5):202-5.
2. Nguyen US, Zhang Y, Zhu Y, Niu J, Zhang B, Felson DT Increasing prevalence of knee pain and symptomatic knee osteoarthritis: survey and cohort data. Ann Intern Med. 2011;155(11):725-32.
3. Guenther D, Schmidl S, Klatte TO, Widhalm HK, Omar M, Krettek C, et al. Overweight and obesity in hip and knee arthroplasty: Evaluation of 6078 cases. World J Orthop. 2015;6(1):137-44.
4. Kuo FC, Hsu CH, Chen WS, Wang JW. Total knee arthroplasty in carefully selected patients aged 80 years or older. J Orthop Surg Res. 2014;9:61.
5. Williams SN, Wolford ML, Bercovitz A. Hospitalization for Total Knee Replacement Among Inpatients Aged 45 and Over: United States, 2000-2010. NCHS data brief no.210. 2015:1-8.
6. Morrison W. Clinical outcomes and statistic of knee replacement. 2017. Available at: www.healthline.com.
7. Zheng H, Chen C. Body mass index and risk of knee osteoarthritis: systemic review and meta-analysis of prospective studies. BMJ Open. 2015;5(12):e007568.
8. El Bitar YF, Illingworth KD, Scaife SL, Horberg JV, Saleh KJ. Hospital length of stay following primary total knee arthroplasty: data from the nationwide inpatient sample database. J Arthropl. 2015 Oct 1;30(10):1710-5.
9. Lieberman JR, Berry DJ, Azar FM. Advance Reconstruction Knee, The Knee Society. AAOS. 2011;127-35.
10. Bini SA, Fithian DC, Paxton LW, Khatod MX, Inacio MC, et al. Does discharge disposition after primary total joint arthroplasty affect readmission rates?. J Arthropl. 2010 Jan 1;25(1):114-7.