



EVALUATION ON THE CLINICAL STATUS OF PERI-OPERATIVE TOTAL KNEE REPLACEMENT (TKR) PATIENTS UNDER ANTIPLATELET THERAPY

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ABSTRACT

Aim: The aim of the study is to evaluate the clinical status of the peri-operative total knee replacement patients under antiplatelet therapy.

Objective: To compare the bleeding time, clotting time, drain collected from site of surgery, duration of hospital stay and suture removal in patients under antiplatelet treatment regimen with those not under an antiplatelet therapy.

Methodology: A Prospective Observational Study was conducted in the department of orthopaedics at Vivekanandha Medical Care Hospital, Tiruchengode-Namakkal for a period of 2 months from December 2020 to January 2021 to evaluate the clinical status of the peri-operative total knee replacement patients under antiplatelet therapy. All the anthropometric, clinical and laboratory data of the patients were collected and the statistical analysis was done.

Results: A total of 50 Osteoarthritis patients who required an immediate TKR was included in our study based on the inclusion and exclusion criteria. Among these 50 patients, 28 (56%) were females and 22 (44%) were males. The age group between 61-70 years had maximum number of patients. Average bleeding and clotting time was prolonged in those under an antiplatelet therapy. The average amount of drain collected after surgery in this group was also higher when compared to those not under an antiplatelet therapy. Days of hospital stay and suture removal was also prolonged in the antiplatelet group when compared to those not under an antiplatelet treatment regimen.

Conclusion: Antiplatelet treatment regimen are the first-line therapy in preventing cardiovascular thrombotic events and other cardiac complications. When patients on antiplatelet therapy have to undergo surgery, the perioperative team must design an optimal strategy to manage antiplatelet medicines. Each patient must be classified according to risk of developing a cardiovascular thrombotic event and risk of surgical bleeding. Later various therapeutic strategies including continuing or discontinuing all or maintaining any one antiplatelet agent should be made. Proper management of antiplatelets as recommended in a perioperative setting would be necessary for better patient health outcomes.

KEYWORDS: Antiplatelet therapy, Total Knee Replacement, Clotting time, Bleeding time, Suture removal.

INTRODUCTION

Total knee replacement is a surgical procedure in which the damaged bone and cartilage is removed and are replaced with prosthetic components. It is performed in patients who are suffering from severe knee pain due to osteoarthritis and thus these procedures are performed mostly in the older population between 50 to 80 years. However, the need for a replacement in patients is determined individually by the orthopaedic surgeons based on the pain score, bone degeneration and disability. These procedures are safe and have long-term benefits on the quality of life and pain relief in the patients. However those patients who are already under an antiplatelet therapy may be at a higher risk for bleeding during surgery.^[1,2] Thus, all the possible and potential risk in perioperative bleeding associated with

antiplatelet therapy must be managed with the associated morbidity as chronic antithrombotic therapy is essential for some patients with cardiovascular and cerebrovascular diseases.^[3,4] Perioperative bleeding may lead to various other complications such as anemia, hematoma and infections which could further decrease the quality of life in patients leading to increased length in hospital stay and delayed recovery.^[5] Even though the development of surgical instruments and medical technology for early mobilization has advanced significantly, the mortality rate due to complications in surgery still remains high in the old age. A single dose of clopidogrel, for example, will inhibit the platelet function and may require upto 5 to 9 days for complete restoration of platelet function to take place.^[6]

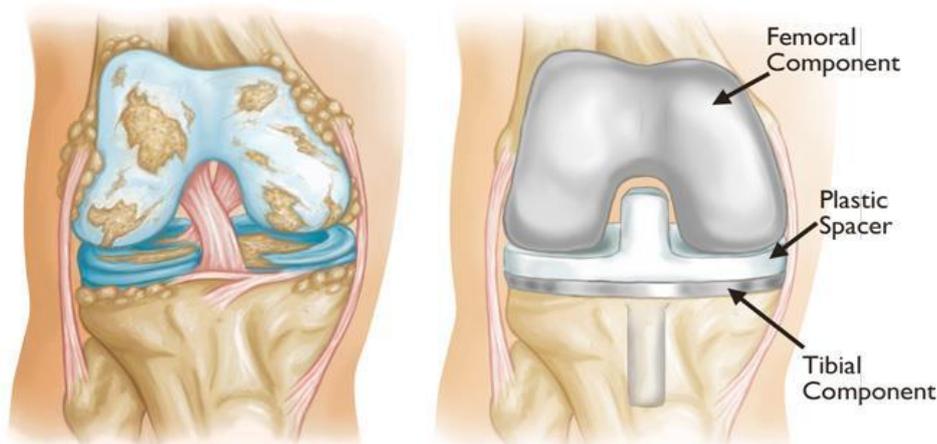


Fig. 1: Representation of total knee replacement.^[7]

Over a quarter of surgeons continue to opt for surgical delay in patients on antiplatelet therapy.^[8] The treatment outcomes after arthroplasty are generally excellent to relieve pain and restore function to the joint, with low complication rates.^[9,10] However, some patients especially the older generation after arthroplasty may be prone to infection and venous thromboembolism (VTE). Strategies to reduce blood loss and transfusion rates improve patient outcomes and reduce healthcare costs.^[11] Anticoagulation must be carefully managed perioperatively to balance the risk of thromboembolic event versus the risk of hemorrhage. Intraoperatively, tranexamic acid reduces blood loss and is recommended for all knee arthroplasty surgery; however, the optimal route, dose or timing of administration remains uncertain.^[12,13]

METHODOLOGY

A Prospective Observational Study was conducted in the department of orthopaedics at Vivekanandha Medical Care Hospital, Tiruchengode-Namakkal for a period of 2 months from December 2020 to January 2021 after obtaining the approval from the ethical committee. A total population of 50 patients who required an immediate TKR were included in our study. They may or may not be under an antithrombotic/antiplatelet treatment regimen. All the other anthropometric, clinical and laboratory data of the patients were collected. Initially the patients clinical status before and after the surgery were collected. The bleeding, clotting time and the amount of blood drained out from the site of surgery was evaluated to find the risk of bleeding in the patients. Their total duration of stay in the hospital and suture removal were considered to assess the rate of recovery in the patients and the statistical analysis was done.

RESULTS

A total of 50 Osteoarthritis patients were included based on the inclusion and exclusion criteria.

Gender distribution of patients

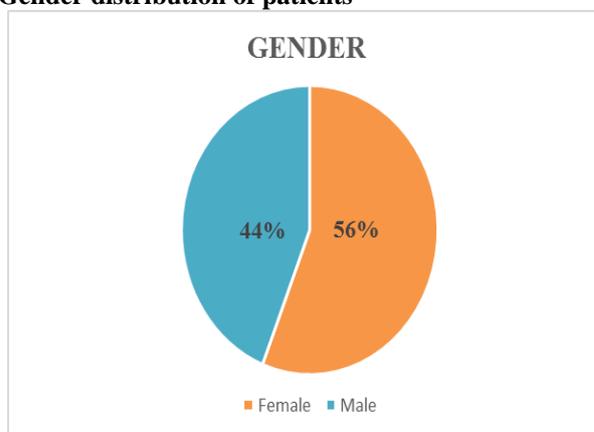


Figure 1: A total of 28 (56%) females and 22 (44%) males comprised the total patient population.

Age distribution in years

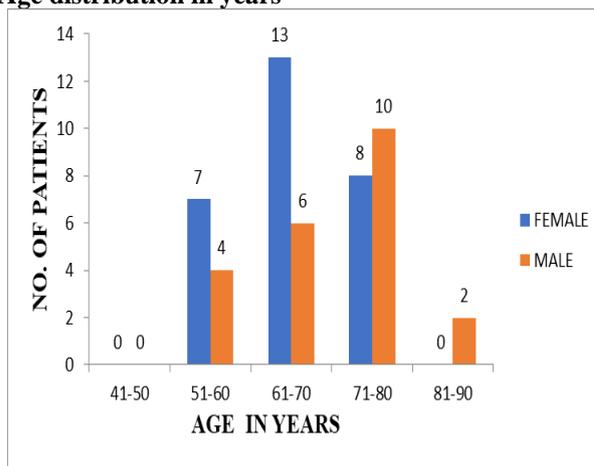


Figure 2: Age group of 61-70 years had maximum number of patients (19 patients) followed by 71-80 years with a total of 18 patients. Age group of 51-60 had 11 patients and age group of 81-90 had only 2 patients.

Bleeding time

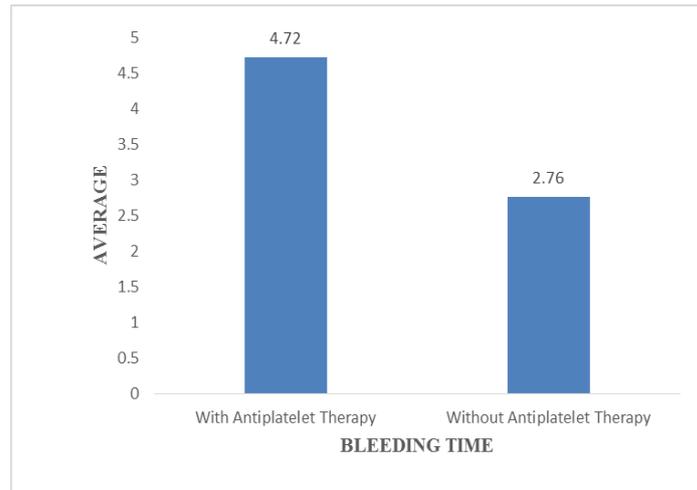


Figure 3: Average bleeding time for those under an Antiplatelet therapy was 4.72 minutes and for those not under an antiplatelet therapy was 2.76 minutes.

Clotting time

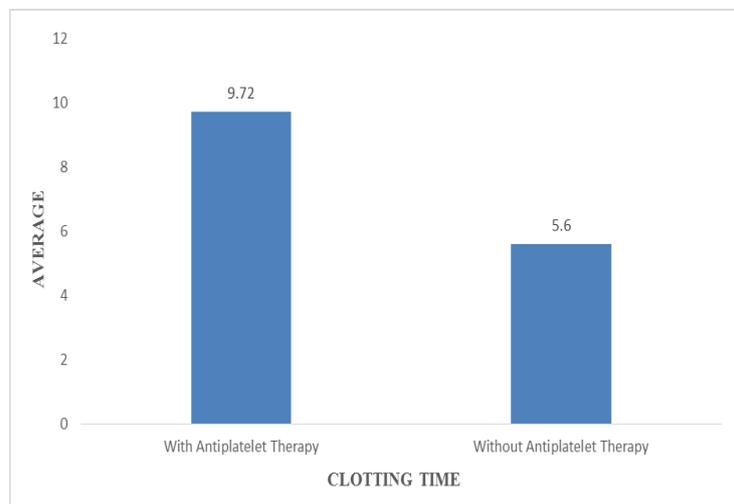


Figure 4: Average clotting time for those under an antiplatelet therapy was 9.72 minutes and for those not under an antiplatelet therapy was 5.6 minutes.

Drain collected

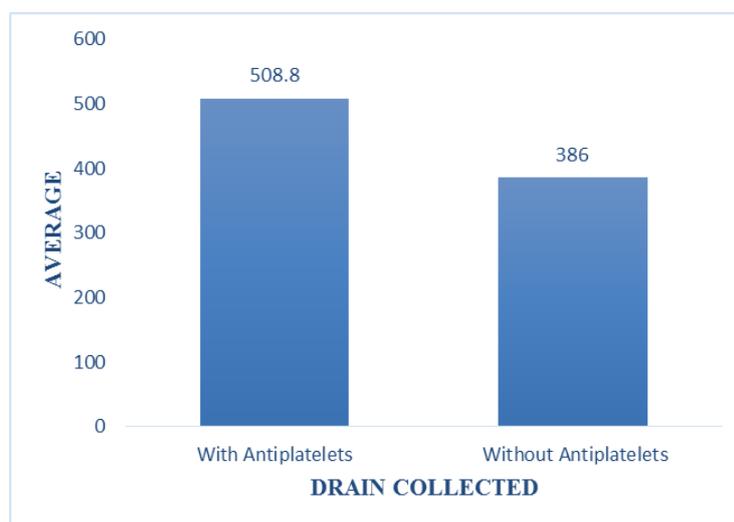


Figure 5: Average amount of drain collected in the patients under an antiplatelet therapy was 508.8 ml and in those not under an antiplatelet therapy was about 386 ml.

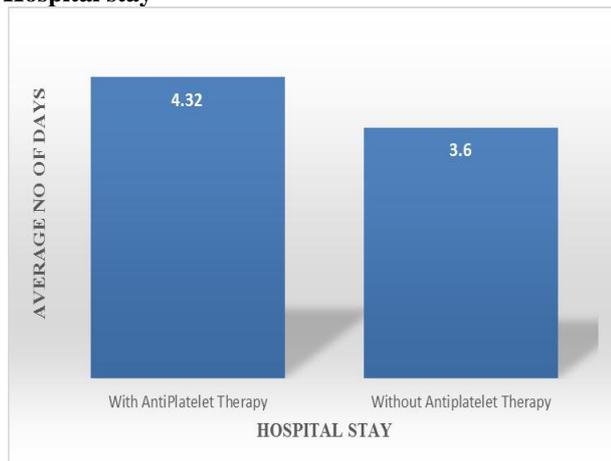
Hospital stay

Figure 6: Average days of hospital stay in the patients under antiplatelet therapy was 4 days and for those not under an antiplatelet therapy was about 3 days.

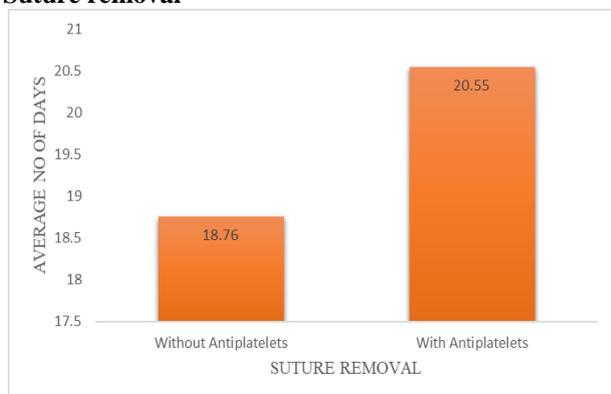
Suture removal

Figure 7: Average days taken to remove suture in the patients under antiplatelet therapy was 20 days and for those not under an antiplatelet therapy was 18 days.

DISCUSSION

A total of 50 study subjects were included in our study, among which 22 were males and 28 were females. Maximum number of patients was found in the age group between 61- 70 years, followed by 71-80 and 51- 60 respectively. A Meta-analysis conducted by Srikanth *et al.*, 2005 coincides with our study were males had a significantly reduced risk of prevalent (osteoarthritis) OA in the knee. Females, particularly for those above 55 years had higher incidence of OA when compared to males.

Females also tend to have more severe knee OA, particularly after menopausal age due to reduced bone density, hormonal and age-related factors.^[14] Here the average bleeding time for those study subjects under an antiplatelet treatment regimen was found to be 4.72 minutes and for those not under an antiplatelet treatment regimen it was 2.76 minutes. Similarly clotting time was also prolonged in the antiplatelet group when compared to the non-antiplatelet group. An average of 9.72 and 5.6

minutes was observed in the antiplatelet group and non-antiplatelet group. Metharom P *et al.*, 2015 study showed that risk of bleeding increase with the prolonged duration of dual antiplatelet therapy.^[15] GodierA *et al.*, 2019 also indicates the same.^[16] The amount of drain collected after surgery was also significantly higher in the antiplatelet group, accounting to an average of 508.8 ml blood, whereas an average of 386 ml blood was collected from those not under an antiplatelet therapy. Adalberth G *et al.*, 1998 study states that the use of suction drainage after orthopedic surgery reduce hematoma formation and wound problems.^[17] Hasan *et al.*, 2020 in his findings states that wound complications like bleeding from the site of injury can significantly affect the outcome of orthopaedic surgery and can be an early indication of periprosthetic joint infection that may lead to skin necrosis and amputation in severe cases.^[18] Correspondingly, hospital stay and suture removal was also prolonged in the antiplatelet group indicating a slow recovery in these patients compared to the other group. An average of 4 and 3 days of hospital stay and an average of 20 and 18 days for suture removal was observed in the antiplatelet and non-antiplatelet group respectively. Oprea *et al.*, 2013 showed that bleeding is the most significant side-effect associated with ADP receptor-blocker therapy. Patients receiving dual antiplatelet therapy with clopidogrel and aspirin had an increased chance of bleeding and were also presented with prolonged wound healing.^[19]

CONCLUSION

The study concluded that the risk of bleeding and other complications was higher in the patients who were under an antiplatelet treatment regimen. Days of hospital stay and wound healing was also prolonged in this group when compared to the patients who were not under an anti-platelet treatment regimen. However, in patients with various cardiovascular ailments the use of antiplatelets may be inevitable to prevent cardiovascular complications. Therefore, a delay in surgery or proper management of antiplatelets in a perioperative setting is necessary for better patient health outcomes.

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