شبكة المعلومات الجامعية

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بسم الله الرحمن الرحيم

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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Aspirin versus Oral Anticoagulant for Prevention of Deep Venous Thrombosis after Arthroplasty A systematic review

Thesis

Submitted for Partial Fulfillment
of Master ***Degree in Orthopedics***

By

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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

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Abdelrahman Nabil Nada

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List of Abbreviations

Abb.	Full term
AAHKS	*American Association of Hip and Knee Surgeons*
ACCP	*American College of Clinical Pharmacy*
AT	*Antithrombin*
COX-1	*Cyclooxygenase*
DVT	*Deep venous thrombosis*
IPC	*Intermittent pneumatic compression*
IPCDs	*Intermittent pneumatic compression devices*
LDUH	*Low-dose unfractionated heparin*
LMWH	*Low molecular-weight heparin*
NICE	*National Institute for Health and Care Excellence*
NOAC	*Novel oral anticoagulants*
NSQIP	*National Surgical Quality Improvement Program*
PE	*Pulmonary embolism*
PGI2	*Prostaglandin I2*
PMMA	*Polymethylmethacrylate*
POISE-2	*Perioperative Ischemic Evaluation-2*
SCI	*Spinal cord injury*
SCIP	*Surgical Care Improvement Project*
SIGN	*Scottish Intercollegiate Guidelines Network*
THA	*Total hip arthroplasty*
THR	*Total hip replacement*
TJA	*Total joint arthroplasty*
TXA2	*Thromboxane A2*
VKA	*Vitamin K antagonists*
VTE	*Venous thromboembolism*

INTRODUCTION

Total hip arthroplasty (THA) is one of the most successful orthopedic surgical procedures. In patients with degenerative hip joint cartilage pathologies, this technique offers significant pain relief, improved quality of life, and increased mobility in the medium- and long-terms. [1]

By 2030, the number of arthroplasties is projected to increase by 170% worldwide. An increase in the complication rates is expected to follow. Thromboembolic events are considered to be common postoperative complications of hip arthroplasty. Nonetheless, their prophylaxis is still questioned in two ways: the need to prevent avoidable complications, such as deep venous thrombosis (DVT) and pulmonary embolism (PE), and to reduce the risk of hemorrhage. Oral anticoagulants aim to improve these indices, seeking efficacy in prophylaxis and to reduce the adverse effects through a more acceptable route of administration. [1]

Thromboembolic events are observed in 50–60% of the patients who undergo hip arthroplasty in the absence of thromboprophylaxis; the great majority of cases do not present clinical manifestations. Studies indicate the first peak risk of DVT and PE to be between 3rd and 5th days after surgery in both THA and TKA. The second peak risk in THA is between the third and fourth postoperative weeks more specifically

between the 18th and 21st days. In TKA, the second peak risk is 10 days after surgery. [1]

The perioperative administration of anticoagulant prophylaxis has proved to reduce the rates of death and complications associated with venous thromboembolism after these procedures. Additional benefit is observed by extending prophylaxis beyond hospital discharge, particularly after total hip arthroplasty. Evidence based guidelines recommend that patients who are undergoing total hip or total knee arthroplasty receive anticoagulant prophylaxis for a minimum of 14 days and suggest that such prophylaxis continue for up to 35 days after surgery. [2]

The ideal chemical thromboprophylaxis after total joint arthroplasty (TJA) remains unknown. An ideal agent would not only prevent venous thromboembolism (VTE) occurrence but also minimize bleeding risks. Warfarin is commonly used for VTE prophylaxis. Although effective, it is still associated with clinically significant pulmonary embolism (PE) and deep vein thrombosis (DVT) rates, bleeding risks, and the need for regular monitoring.[3]

Aspirin is a widely used antiplatelet drug. It prevents platelet aggregation by inhibiting the production of thromboxane A2 by activated platelets. Aspirin increases the bleeding time without affecting other coagulation parameters. Its use for secondary prevention of heart attacks and strokes has

been well established. However, some controversy still exists concerning its ability to prevent VTE incidents after arthroplasty procedures.[4]

Aspirin is an inexpensive, generic, and widely available antiplatelet drug. Clinical trials and meta-analyses have suggested that aspirin may be effective for the prevention of venous thromboembolism postoperatively, but comparisons with direct oral anticoagulants are lacking. We reasoned that aspirin, because of its efficacy, low cost, and well-established side-effect profile, was potentially a good choice for extended prophylaxis after total hip or total knee arthroplasty. In the EPCAT II (Extended Venous Thromboembolism Prophylaxis Comparing Rivaroxaban to Aspirin Following Total Hip and Knee Arthroplasty II) trial, they studied the effectiveness and safety of extended prophylaxis with aspirin as compared with the direct oral anticoagulant rivaroxaban for the prevention of venous thromboembolism after total hip or total knee arthroplasty. [2]

Aim of the Work

This study aims to review the acceptability of aspirin vs oral anticoagulant prophylaxis for reducing the risk of postoperative VTE in patients undergoing arthroplasty.

The objective is to perform a systematic review of the outcomes of use of aspirin versus oral anticoagulant for prevention DVT after arthroplasty to assist the decision makers in selecting their treatment according to recommendations by the best available evidence.

Review of Literature

Venous thromboembolism (VTE) is a common complication during and after hospitalization for medical and surgical patients, including orthopaedic patients. More than half of all hospitalized patients are at risk for VTE, with a higher risk in surgical patients than in medical patients. However, the overall VTE prophylaxis rates are in the range of 13% to 70%, implying a large variability between institutions and countries. Without any prophylaxis, pulmonary embolism (PE) is responsible for 5% to 10% of deaths in hospitalized patients; the incidence of fatal PE in hospitalized patients is 0.1% to 0.8% after elective general surgery, 2% to 3% after elective hip replacement and 4% to 7% after hip fracture surgery. Similarly, the overall incidence of deep venous thrombosis (DVT) in medical and general surgery hospitalized patients is in the range of 10% to 40%; in comparison, the incidence of DVT ranges up to 40% to 60% in major orthopaedic surgery. Death within one month of diagnosis occurs in approximately 6% of DVT patients and approximately 12% of PE patients. The cumulative ten-year incidence of recurrent VTE reaches 39.9% (35.4% to 44.4%).[5]

Orthopaedic patients are at higher risk among all patients for DVT and VTE. In the early 2000s, despite the existence of VTE prophylaxis guidelines, the use of VTE prophylaxis was low; currently, the adherence to in hospital American College