Study Protocol with Statistical Analysis Plan

Official Title:
Xarelto for Thromboprophylaxis After Total Hip and Total Knee Arthroplasty

NCT Number:
NCT05449327

Unique Protocol ID:
IRB2021079

Document Date:
December 17, 2021

1. Study Objective

The objective of this study was to evaluate the efficacy and safety of rivaroxaban for postoperative thromboprophylaxis in Taiwanese patients undergoing total hip arthroplasty (THA) or total knee arthroplasty (TKA).

2. Study Design

This was a single-center, prospective, parallel-group, randomized controlled trial conducted in patients undergoing primary THA or TKA. Participants were randomized in a 1:1 ratio to receive rivaroxaban or no pharmacologic thromboprophylaxis. The study enrollment period was from February 2023 and December 2025.

3. Study Population

Inclusion Criteria

- Adults aged ≥20 years
- Undergoing primary THA or TKA

Exclusion Criteria

- Use of anticoagulant medication within 14 days before surgery
- Known coagulopathy
- History of vascular embolism
- Evidence of venous thrombosis on preoperative ultrasonography
- BMI > 40 kg/m^2
- Bilateral joint replacement

4. Randomization and Intervention

Patients were randomized using a computer-generated randomization sequence prepared by an independent analyst.

Intervention Group

- Rivaroxaban 10 mg orally once daily
- Initiated 6–8 hours after surgery
- Continued for 14 days

Control Group

- No pharmacologic thromboprophylaxis

All patients received standard perioperative care, including mechanical prophylaxis, early mobilization, analgesia, and wound management.

5. Study Procedures and Follow-up

Venous ultrasonography of both lower limbs was performed at:

- Preoperative baseline
- Postoperative day 3
- Postoperative day 14

All examinations were conducted using a standardized protocol.

Patients were followed for at least 3 months postoperatively. Any symptoms suggestive of venous thromboembolism were evaluated and recorded.

6. Outcome Measures

Primary Outcomes

- Incidence of deep vein thrombosis (DVT) detected by ultrasonography at postoperative day 3 or day 14

- Incidence of symptomatic venous thromboembolism (VTE) within 3 months, including DVT and pulmonary embolism (PE)

Secondary Outcomes

- Major bleeding (e.g., gastrointestinal or intracranial hemorrhage)
- Wound bleeding
- Bruising
- Impaired wound healing
- Superficial infection
- Deep infection

7. Sample Size Calculation

Sample size was calculated using G*Power 3.1.9.7. Based on prior data, 84 patients per group were required to achieve 80% power at a two-sided alpha of 0.05. Due to practical constraints, 75 patients per group (150 total) were enrolled.

8. Statistical Analysis Plan

Categorical variables are presented as frequencies and percentages. Continuous variables are presented as medians with interquartile ranges (IQRs) due to non-normal distribution.

Between-group comparisons were performed as follows:

- Categorical variables: chi-square test or Fisher’s exact test
- Continuous variables: Mann–Whitney U test

A two-sided p-value < 0.05 was considered statistically significant.

All analyses were performed using SAS software version 9.4 (SAS Institute Inc., Cary, NC, USA).

9. Ethics

The study protocol was approved by the Institutional Review Board (IRB approval number: IRB2021079). Written informed consent was obtained from all participants prior to enrollment.