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Review Article

**TOTAL HIP REPLACEMENT POST OPERATIVE
MANAGEMENT: SYSTEMATIC REVIEW IN LITERATURE**

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Abstract:

This review is aiming to discuss the Total hip replacement post-operative management. The present review was conducted by searching in Medline, Embase, Web of Science, Science Direct, BMJ journal and Google Scholar for, researches, review articles and reports, published over the past years. Books published on Total hip replacement post-operative management. If several studies had similar findings, we randomly selected one or two to avoid repetitive results. On the basis of findings and results this review found In the best quality studies, an unfavorable pain outcome was reported in 9% or more of patients after hip and about 20% of patients after knee replacement. The use of TXA reduced intra-operative blood loss by a mean of 104 ml (95% confidence interval (CI) -164 to -44, $p = 0.0006$, heterogeneity $I^2 0\%$), postoperative blood loss by a mean of 172 ml (95% CI -263 to -81, $p = 0.0002$, heterogeneity $I^2 63\%$) and total blood loss by a mean of 289 ml (95% CI -440 to -138, $p < 0.0002$, heterogeneity $I 54\%$)

Keywords: total hip arthroplasty, total hip replacement, post-operative

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Abbreviations: Non-Vitamin K antagonist oral anticoagulants (NOACs) arterial thrombosis (AT) American Society of Anesthesiology physical status (ASA)

INTRODUCTION:

Hip replacement is a surgical procedure in which the hip joint is replaced by a prosthetic implant, that is, a hip prosthesis. Hip replacement surgery can be performed as a total replacement or a hemi (half) replacement. Such joint replacement orthopedic surgery is generally conducted to relieve arthritis pain or in some hip fractures. A total hip replacement (total hip arthroplasty) consists of replacing both the acetabulum and the femoral head while hemiarthroplasty generally only replaces the femoral head. Hip replacement is currently one of the most common orthopedic operations, though patient satisfaction short- and long-term varies widely. The average cost of a total hip replacement in 2012 was \$40,364 in the United States and about \$7,700 to \$12,000 in most European countries¹

For the last 45 years the most successful and common form of arthroplasty is the surgical replacement of arthritic or destructive or necrotic joint or joint surface with a prosthesis. For example a hip joint that is affected by osteoarthritis may be replaced entirely (total hip arthroplasty) with a prosthetic hip. This would involve replacing both the acetabulum (hip socket) and the head and neck of the femur. The purpose of this procedure is to relieve pain, to restore range of motion and to improve walking ability, thus leading to the improvement of muscle strength.²

METHODS:

The present review was conducted Jan 2019 in accordance with the preferred reporting items for systematic reviews and meta-analyses (PRISMA) declaration standards for systematic reviews. We reviewed all the topics on Total hip replacement post-operative management. To achieve this goal, we searched Medline, EMBASE, Web of Science, Science Direct, and Google Scholar for, researches, review articles and reports, published over the past 15 years. Books published on Total hip replacement post-operative management. Our search was completed without language restrictions. Then we extracted data on study year, study design, and key outcome of Total hip replacement post-operative management. The selected studies were summarized and unreproducible studies were excluded. Selected data are shown in the Table 1.

Inclusion criteria

We included studies of consecutive patient's representative of the total hip replacement population. We only included randomized controlled trials in this study. The participants were adults who had undergone THR.

Exclusion criteria

Randomized controlled trials on many evaluations of new technologies comprise selected populations, and furthermore, it is outside the scope of this review to assess whether these reflect best clinical practice.

Data extraction and analysis

Information relating to each of the systematic review elements was extracted from the studies and collated in qualitative tables. Direct analysis of the studies of total hip replacement postoperative management is done with extreme caution, as different sampling techniques can provide bias as an overview of the assemblage.

RESULTS:

We compared the incidence of post-operative AT in non-vitamin K antagonist oral anticoagulants (NOACs) -treated and enoxaparin treated patients, performing a systematic review of phase III randomized controlled trials (RCTs) of venous thromboembolism (VTE) prophylaxis in THR and TKR. Studies were identified by electronic search of MEDLINE and EMBASE database until July 2014. Differences between NOACs and enoxaparin groups in the efficacy and safety outcomes were expressed as odds ratios (ORs) with pertinent 95 % confidence intervals (95 % CI). Statistical heterogeneity was assessed with the I² statistic. Eleven phase III RCTs for 31,319 patients were included. Patients underwent TKR in six studies and THR in five studies. The NOACs under study were dabigatran (four studies), apixaban (three studies) and rivaroxaban (four studies). AT occurred in 0.23 % of patients on NOACs and in 0.27 % of patients on enoxaparin: the OR at fixed-effect model was 0.86 (95 % CI 0.53–1.40; I² 11 %). No differences in AT incidence among the three NOACs were observed. The incidence of major and clinically relevant bleeding was similar in NOACs and enoxaparin groups (OR 1.03, 95 % CI 0.92–1.15; I² 38 %).³

The proportion of people with an unfavorable long-term pain outcome in studies ranged from about 7% to 23% after hip and 10% to 34% after knee replacement. In the best quality studies, an unfavorable pain outcome was reported in 9% or more of patients after hip and about 20% of patients after knee replacement.⁴

A total of seven studies (comprising 350 patients) were eligible for the blood loss outcome data. The use of TXA reduced intra-operative blood loss by a mean of 104 ml (95% confidence interval (CI) –164 to –44, p = 0.0006, heterogeneity I² 0%), postoperative blood loss by a mean of 172 ml (95%

CI -263 to -81, $p = 0.0002$, heterogeneity I^2 63%) and total blood loss by a mean of 289 ml (95% CI -440 to -138, $p < 0.0002$, heterogeneity I^2 54%).⁵

Postoperative pain intensity was significantly lower in Group LIA compared to Group FNB during mobilization at 24 h (primary endpoint), mean difference 1.8 NRS units (95% CI 0.7–2.9) ($P = 0.006$), at rest after 4 h ($P = 0.029$) and on standing after 24 ($P = 0.0003$) and 48 h ($P = 0.043$). Rescue morphine consumption was also significantly lower in Group LIA during 0–24, mean difference 13.5 mg (95% CI, 6.1–20.9) ($P = 0.002$) postoperatively. Motor block was greater at 6 h ($P = 0.029$) postoperatively in Group FNB. Two patients (one in each group) had persistent post-surgical pain (NRS > 3) at 3 months (3.6%) but none at 6 month. No other differences were found between the groups.⁶

During the first stage (August and September 2012), 40 consecutive patients undergoing hip (20 patients) and knee (20 patients) replacements under general anesthesia were observed for peri- and postoperative outcomes (CONTROL group). All patients operated during this period were included and there were none lost to follow up. In the second stage (late November 2012 to early March 2013), 97 hip or knee replacements were performed under general anesthesia and found eligible for study inclusion. Seventeen patients were excluded before randomization for various reasons, 80 patients were included and equally randomized into two groups each with two strata containing 20 patients. All patients in both stages gave informed consent and were included in the final analysis, one of them died within 30 postoperative days because of pulmonary embolization. No significant differences were observed between the three groups about demographic parameters or chronic comorbidities.⁷

Table (1) Results from Sequencing Studies.

Problem	Authors	Design	Population	Main Results
arterial thrombosis	Alessandro Squizzato, et al 2015 ³	controlled trials (RCTs) of venous thromboembolism (VTE) prophylaxis in THR and TKR.	31,319 patients were included.	0.23 % of patients on NOACs and in 0.27 % of patients on enoxaparin: the OR at fixed-effect model was 0.86 (95 % CI 0.53–1.40; I^2 11 %). No differences in AT incidence among the three NOACs were observed. The incidence of major and clinically relevant bleeding was similar in NOACs and enoxaparin groups (OR 1.03, 95 % CI 0.92–1.15; I^2 38 %).
pain after total hip	Beswick et al (2014) ⁴	systematic review of prospective studies	Searches identified 1308 articles of which 115 reported patient-centred pain outcomes. Fourteen articles describing 17 cohorts (6 with hip and 11 with knee replacement) presented appropriate data on pain intensity.	The proportion of people with an unfavourable long-term pain outcome in studies ranged from about 7% to 23% after hip and 10% to 34% after knee replacement. In the best quality studies, an unfavourable pain outcome was reported in 9% or more of patients after hip and about 20% of patients after knee replacement.
Bleeding and Tranexamic acid	Sukeik M, et al (2012) ⁵	systematic review and meta-analysis	11 Clinical Trails	The use of TXA reduced intra-operative blood loss by a mean of 104 ml (95% confidence interval (CI) -164 to -44, $p = 0.0006$, heterogeneity I^2 0%), postoperative blood loss by a mean of 172 ml (95% CI -263 to -81, $p = 0.0002$, heterogeneity I^2 63%) and total blood loss by a mean of 289 ml (95% CI -440 to -138, $p < 0.0002$, heterogeneity (54%).

postoperative pain	Kuchálik et al (2017) ⁶	randomized, double-blind study	56 patients (ASAI-III) undergoing THA consented to participate	Postoperative pain intensity was significantly lower in Group LIA compared to Group FNB during mobilization at 24 h (primary endpoint), mean difference 1.8 NRS units (95% CI 0.7–2.9) ($P = 0.006$), at rest after 4 h ($P = 0.029$) and on standing after 24 ($P = 0.0003$) and 48 h ($P = 0.043$). Rescue morphine consumption was also significantly lower in Group LIA during 0–24, mean difference 13.5 mg (95% CI, 6.1–20.9) ($P = 0.002$) postoperatively. Motor block was greater at 6 h ($P = 0.029$) postoperatively in Group FNB. Two patients (one in each group) had persistent post-surgical pain (NRS > 3) at 3 months (3.6%) but none at 6 months. No other differences were found between the groups.
Fluid management	Benes Jan et al (2015) ⁷	Retrospective case control	the observational (CONTROL, $N = 40$) group before adoption of fluid protocols and two randomized groups after the transition to protocol fluid management	Both protocols were associated with decreased fluid administration and maintained hemodynamic stability. Reduced rate of postoperative infection and organ complications (22 (55 %) vs. 33 (83 %) patients; $p = 0.016$; relative risk 0.67 (0.49–0.91)) was observed in the GDFT group compared to CONTROL. Lower number of patients receiving transfusion (4 (10 %) in GDFT vs. 17 (43 %) in CONTROL; $p = 0.005$) might contribute to this observation. No significant differences were observed in other end-points

DISCUSSION:

These data show that many people with a total hip or knee replacement complain of pain in the operated joint in the early years after surgery. This was particularly evident after total knee replacement. Although we have interpreted pain outcomes as favourable, unfavourable or uncertain, we do not believe that the data justify combination to provide summary values. In the studies identified in our review, several different outcome measures were reported, and in studies with similar outcomes, different methods of analysis were used. Without specific information on responsiveness and correlation between methods, an important additional source of heterogeneity may be introduced.

Local infiltration analgesia significantly reduces pain intensity on standing and mobilization, and rescue analgesic consumption compared to femoral nerve block without causing significant side effects. The superior analgesia in the LIA group may result from the secondary injection at 23 h postoperatively and needs to be further evaluated in future studies. No differences were found in home discharge, quality of life and hip dysfunction between the groups.⁶

In the study, the use of the fluid protocol based on pulse pressure variation assessed using continuous non-invasive arterial pressure measurement seems to be associated with a reduction in postoperative complications and transfusion needs as compared to

standard no-protocol treatment.⁷

Despite major advances in the field of total joint arthroplasty, a standardized postoperative management protocol currently does not exist following total hip arthroplasty (THA) and total knee arthroplasty (TKA). A survey was mailed to the active members of the American Association of Hip and Knee Surgeons to investigate issues such as postoperative rehabilitation and activity restriction. The information derived from this survey provides the total joint surgeon with a compilation and consensus of responses that can serve as the foundation for a standardized postoperative protocol for THA and TKA surgery.⁸

The most significant result of this review is the consistency of TXA in reducing blood loss and transfusion rates after THR in the majority of studies. However, with the exception of intra-operative blood loss, there was significant heterogeneity among the studies when post-operative and total blood losses were evaluated.⁹ The variations that may have accounted for such heterogeneity include the difference in sample sizes, the variations in patient characteristics, inclusion and exclusion criteria, differences in management protocols and logistics between treating centres, and different strategies for measuring outcomes [10]

CONCLUSIONS:

In RCTs of pharmacological VTE prophylaxis in patients undergoing THR, there was no difference in the incidence of post-operative AT among patients treated with NOACs, compared to those treated with enoxaparin. Also, the transition from standard no-protocol treatment to the fluid management protocol THA compared to single-shot femoral nerve block.

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based on pulse pressure variation assessed by continuous non-invasive arterial pressure measurement seems to be associated with reduction of postoperative infections, of organ complications, and of transfusion needs.⁷

Also Local infiltration analgesia is the preferred method for postoperative pain management following¹⁰