

## Review Article

# Perioperative systemic glucocorticoids in total hip and knee arthroplasty: A systematic review of outcomes



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## ARTICLE INFO

## Article history:

Received 7 February 2017

Accepted 26 March 2017

Available online 12 April 2017

## Keywords:

Total knee arthroplasty

Total hip arthroplasty

Glucocorticoid

Analgesia

Systematic review

## ABSTRACT

**Background:** Perioperative systemic glucocorticoids are frequently included in multimodal analgesia and antiemetic regimens administered to patients undergoing total hip arthroplasty (THA) and total knee arthroplasty (TKA). The objective of this systematic review was to evaluate the available randomized controlled trials (RCTs) to determine the effect of perioperative systemic glucocorticoids on postoperative nausea and vomiting (PONV), pain, narcotic consumption, antiemetic consumption, length of stay in hospital, and major complications in patients undergoing elective THA or TKA.

**Methods:** A predefined protocol of eligibility and methodology was used for conduct of systematic reviews. Two reviewers screened citations for inclusion, assessed methodological quality, and verified the extracted data.

**Results:** Six RCTs were included for analysis. Across all outcomes analyzed, patients who received glucocorticoids experienced either a benefit or no difference compared to those patients who did not receive glucocorticoids. There were no instances in which perioperative glucocorticoids had a negative impact on any of the outcomes that were analyzed. Furthermore, perioperative glucocorticoids had no effect on the rates of superficial infection, deep infection, wound complications or deep vein thrombosis (DVT).

**Conclusion:** The results of this systematic review support the use of perioperative systemic glucocorticoids in patients undergoing elective total hip and knee arthroplasty. Perioperative glucocorticoids have overall positive outcomes with the benefits being more robust in those patients undergoing TKA compared to THA. Glucocorticoids did not increase the occurrence of major complications. There is limited data to support the conclusion that they can reduce length of stay in hospital.

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## 1. Introduction

Total hip and knee arthroplasty are established as effective means of improving pain and function in those suffering from hip

and knee arthritis. Patient satisfaction at one year for TKA has been reported between 75 and 89.8% and satisfaction with THA is even higher.<sup>1</sup> This has resulted in the procedures being among the most common elective orthopedic surgeries. Despite arthroplasty's long-term success, the patients' immediate post-operative experience can be unpleasant due to pain, nausea, and vomiting.<sup>2,3</sup> Not only does this lead to decreased patient satisfaction, it can also preclude participation in physiotherapy and limit early mobilization. This results in increased length of hospital stay and increased utilization of analgesic and anti-emetic medications.<sup>4</sup> For payers of health care, this ultimately leads to increased resource utilization.

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Perioperative systemic glucocorticoid administration has been shown to decrease post-operative nausea and vomiting (PONV), as well as pain in a number of surgical populations.<sup>5,6</sup> The addition of glucocorticoids to a multimodal analgesia regimen can also reduce the amount of anti-emetic and analgesic medications consumed in the early post-operative period.<sup>5</sup> Theoretically, in patients undergoing arthroplasty of the hip and knee, a reduction in PONV and pain should lead to earlier mobilization and discharge from hospital. The benefits of improved patient satisfaction and decreased resource utilization must be balanced by the potential risks of glucocorticoid use. The most devastating complications following arthroplasty surgery include infection and wound complications. Glucocorticoids historically have been shown to increase the risk of both; however, this is secondary to prolonged use.<sup>7</sup> The risk of complications following limited perioperative use of glucocorticoids in arthroplasty surgery has not been clearly established.

The objective of this systematic review is to evaluate the available randomized controlled trials investigating glucocorticoid use in hip and knee arthroplasty to answer the following questions: 1) Are glucocorticoids effective at reducing PONV and pain?; 2) Do glucocorticoids reduce post-operative narcotic and anti-emetic utilization?; 3) Do patients who receive perioperative glucocorticoids have reduced length of hospital stay?; and 4) Do glucocorticoids increase the risk of major complications including superficial and deep infection, thromboembolic events, and wound healing?

## 2. Methods

A predefined protocol of eligibility and methodology was used for conduct of systematic review and meta-analysis of randomized controlled trials (RCT).

### 2.1. Literature search

A literature search was performed with the assistance of a health sciences librarian for articles published prior to and including October 3, 2015. The following databases were searched: MEDLINE and EMBASE through the OVID interface, PubMed, and the Cochrane Library. Search terms included MeSH and Emtree headings as well as keywords related to arthroplasty; glucocorticoids; and randomized controlled trials. Additionally; references of included studies were screened to identify other eligible trials.

### 2.2. Eligibility criteria

Inclusion and exclusion criteria were established prior to conducting the literature search. Randomized controlled trials that compared any type of perioperative systemic glucocorticoid use to placebo or standard post-operative analgesia in adult patients undergoing elective hip or knee arthroplasty were eligible for inclusion. We did not limit studies based on type, dose or timing of systemic glucocorticoid. We excluded non-randomized trials, studies investigating local administration of glucocorticoids,

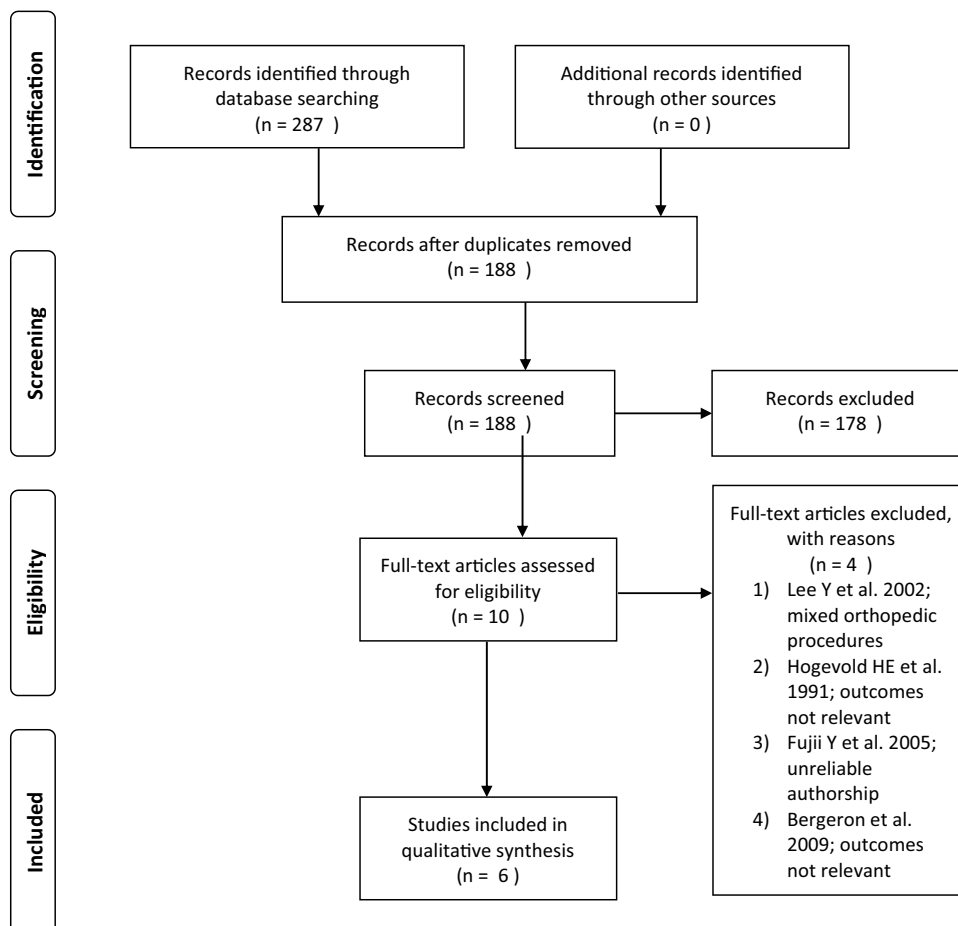


Fig. 1. PRISMA flow diagram.

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