Perioperative analgesia in TKA: a selected-source narrative evidence map

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Collin B. George | Independent educational portfolio | Revised 27 October 2026; wording and reference corrections 5 November 2026

Abstract

This narrative map organizes five domains: anesthesia modality, regional analgesia, adjunct medicines, risk factors and outcome measurement. It replaces an earlier manuscript whose screening counts, detailed extraction tables and several citation-result pairings could not be substantiated. It is neither a complete systematic/scoping review nor a treatment guideline. No pooled result, formal certainty rating, universal recovery estimate or robot-specific efficacy claim is supplied.

Methods and provenance

The author-reported historical search date was 21 March 2026. Original dated exports, screening logs, exclusion records and a reproducible extraction dataset were not supplied for this audit. The former estimated flow counts, JBI/PRISMA-ScR compliance claims, 60-study inclusion claim, informal GRADE hierarchy and original pooling are withdrawn.

The current revision uses selected identifiable primary/synthesis records listed below. Checks addressed source identity, design, population, comparator and the specific conclusions retained here; they do not constitute an exhaustive current literature search or independent replication of the cited analyses. Bibliographic records and abstracts do not replace full-text critical appraisal when that is required.

The legacy Markdown/PDF filenames ("Scoping-Review") are retained only for link continuity; this document is a selected-source narrative evidence map, not a scoping review. Earlier content remains in Git history for provenance and should not be cited as a verified review. No external preprint submission or institutional approval has been verified.

1. Anesthesia modality

The Johnson review and ICAROS consensus differ in evidence scope: Johnson pooled randomized and prospective comparative studies, whereas ICAROS also included retrospective and large-database observational studies. For knee arthroplasty, ICAROS rated its neuraxial preference as a weak recommendation on low-level evidence (its hip recommendation was strong). Their conclusions must be interpreted with population, era, confounding and outcome definitions in view. Neither supplies a universal patient-selection rule.

The companion anesthesia-modality note (04_Spinal_vs_General_Anesthesia_TKA.md) distinguishes these sources and the limitations of applying mixed arthroplasty or hip-fracture findings to elective TKA. Antithrombotic practice requires current specialist guidance, not an old portfolio timing table.

2. Regional analgesia

The Cochrane review of adductor canal block (adult knee surgery: 18 TKA and 7 arthroscopic trials) does not establish universal analgesic non-inferiority, equivalence or a reduction in falls. Motor-strength findings and patient-important functional outcomes are different claims.

The Hussain iPACK review depends on whether periarticular local infiltration was already used. The earlier draft reversed this qualification. Read the regional note (01_Regional_Anesthesia_ACB_IPACK.md) for the corrected comparator-specific interpretation.

No preferred injection regimen, dose, technique ranking or robot-specific benefit is established by this map.

3. Adjunct medicines

Procedure-specific PROSPECT recommendations and the 2022 randomized add-on trial (Muñoz-Leyva et al.) show why the background analgesic regimen matters. A bundle trial does not isolate each component. A nonsignificant difference does not establish equivalence or prove absence of benefit.

The adjunct note (02_Opioid_Free_Anesthesia_TKA.md) replaces unsupported dose algorithms and fabricated source-result pairings. Pharmacologic mechanisms alone do not establish clinical effectiveness in robot-assisted surgery. IV lidocaine also raises cumulative-local-anesthetic safety questions; this map supplies no administration regimen.

4. Risk factors and opioid exposure

Preoperative characteristics may be associated with later pain, function or opioid use. These are different endpoints. Observational prediction does not establish causation or demonstrate that changing a risk factor improves the outcome.

The risk-factor note (05_Chronic_Pain_Opioid_Risk_Stratification_TKA.md) uses the corrected Goesling and Forsythe source identities. It supplies no questionnaire cutoff, medication taper, diagnosis or rule for withholding surgery.

5. Outcome measurement

Pain intensity, function, quality of life, satisfaction and medication use should be distinguished. A group mean does not describe every patient's improvement. An important-change estimate depends on its construct, population, scale and method; it is not a universal success threshold.

The measurement note (03_Patient_Reported_Outcomes_TKA.md) corrects the KOOS origin: the original development study's validation involved ACL reconstruction, not a TKA cohort. No copyrighted questionnaire or scoring form is reproduced.

Cross-cutting interpretation

A result requires a defined intervention, comparator, background treatment, population, outcome and time point. Reporting the direction of a finding without these elements can mislead. Evidence for conventional TKA does not automatically validate robotic-TKA claims, but this selected review also cannot establish that all robot-specific evidence is absent.

No clinically meaningful non-inferiority margin was documented for the earlier pooling. I-squared near zero would not repair incorrect extraction, establish equivalence or rule out bias. A future quantitative synthesis requires auditable inputs, outcome definitions, analysis code and an appropriate appraisal of bias.

Sources checked for the retained discussion

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3. Schnabel A, et al. Adductor canal blocks for postoperative pain treatment in adults undergoing knee surgery. Cochrane Database Syst Rev. 2019;CD012262. DOI: 10.1002/14651858.CD012262.pub2. PMID 31684698.
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9. Goesling J, et al. Trends and predictors of opioid use after total knee and total hip arthroplasty. Pain. 2016;157(6):1259-1265. PMID 26871536.
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12. American Society of Regional Anesthesia and Pain Medicine. Current guidelines index: https://asra.com/guidelines-articles/guidelines (accessed for currency; lists the 2025 fifth-edition antithrombotic guideline).

Limitations and rights

This selected-source educational analysis is intentionally narrower than the earlier manuscript. It is not submission-ready, peer-reviewed or clinically validated. Full-text appraisal, a comprehensive search, external deposits and the wider public repository history have not all been audited. No legal-compliance guarantee or patient-care authorization is asserted.

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