

Spinal versus General Anesthesia for Hip Fracture

Intraoperative teaching · CA-2

THE QUESTION

Where the evidence disagrees

Regional vs. General Anesthesia for Hip Fracture Surgery: A Comprehensive Evidence Review Scope and Framing
This review examines the totality of evidence comparing spinal/regional anesthesia (RA) with general anesthesia (GA) for hip fracture surgery in older adults, with a focus on the two landmark trials — REGAIN and RAGA — that fundamentally challenged the long-held teaching that regional anesthesia is inherently...

THE EVIDENCE

What each source contributes, and how strong it is

Study design first — a cohort and a randomised trial do not carry the same weight.

Design	Year	Journal	What it found
Meta-analysis	2024	Annals of emergency medicine	Preoperative peripheral nerve blocks reduce hip fracture pain at two hours
Randomised trial	2021	The New England journal of medicin	In REGAIN, spinal anaesthesia was not superior to general for hip fracture
Randomised trial	2022	Annals of internal medicine	REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in
Randomised trial	2023	Regional anesthesia and pain medic	Two randomised trials totalling 2,550 patients found no mortality benefit, no less

4 resolved citations behind this deck; every point above traces to one of them.

WHERE THE GUIDANCE SITS

Preoperative peripheral nerve blocks reduce hip fracture pain at two hours

Meta-analysis · Annals of emergency medicine

Preoperative peripheral nerve blocks reduce hip fracture pain at two hours, and the pericapsular nerve group block outperformed femoral and fascia iliaca blocks, though most evidence was low confidence.

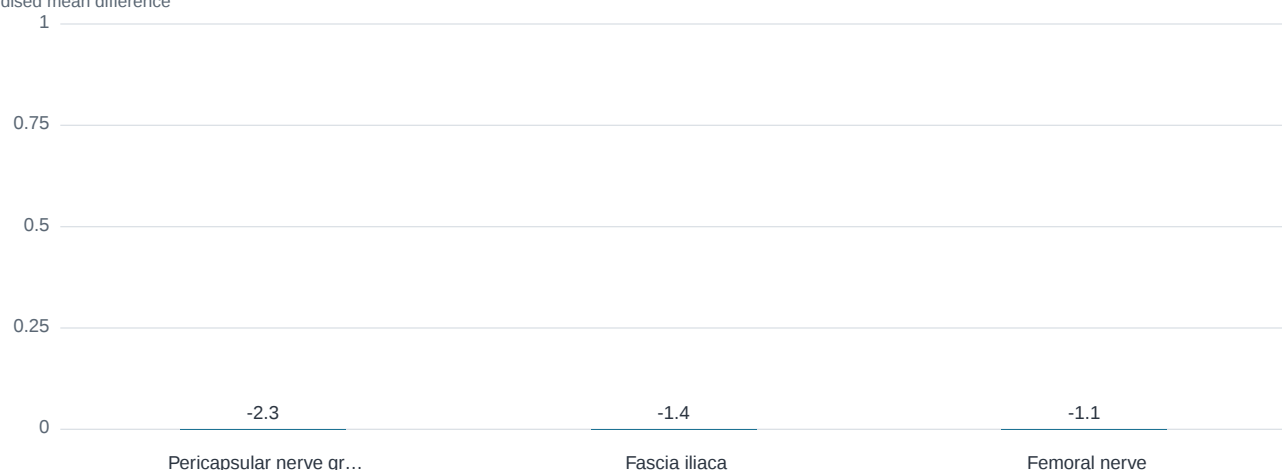
Peripheral Nerve Blocks in the Preoperative Management of Hip Fractures: A Systematic Review and Network Meta-Analysis, Annals of emergency medicine 2024 · PMID 38385910

THE NUMBERS

Preoperative blocks work, and the newer block works best

63 trials, 4,778 participants; pain at 2 hours versus no block.

standardised mean difference



Blocks reduced pain at two hours; the ranking between block types rested on low or very low certainty comparisons.

Peripheral Nerve Blocks in the Preoperative Management of Hip Fractures: A Systematic Review and Network Meta-Analysis, Annals of emergency medicine 2024 · PMID 38385910

WHAT THE TRIALS FOUND

Where randomised evidence moved the question

3 findings, each on the slide that follows.

THE NEW ENGLAND JOURNAL OF MEDICINE 2021

In REGAIN, spinal anaesthesia was not superior to general for hip fracture

In REGAIN, spinal anaesthesia was not superior to general for hip fracture: death or inability to walk at 60 days occurred in 18.5% versus 18.0%

ANNALS OF INTERNAL MEDICINE 2022

REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in

REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in the first 24 hours and more prescription analgesic use at 60 days...

REGIONAL ANESTHESIA AND PAIN MEDICINE 2023

Two randomised trials totalling 2,550 patients found no mortality benefit, no less

Two randomised trials totalling 2,550 patients found no mortality benefit, no less delirium and no better ambulation with spinal anaesthesia, so...

WHAT THE TRIALS FOUND

In REGAIN, spinal anaesthesia was not superior to general for hip fracture

Randomised trial · The New England journal of medicine

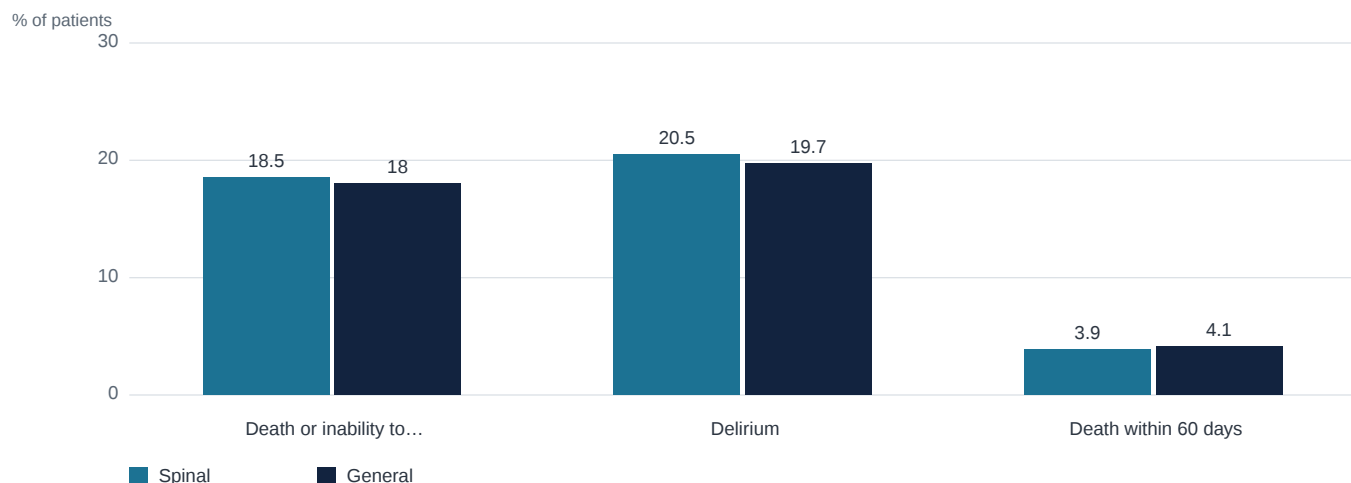
In REGAIN, spinal anaesthesia was not superior to general for hip fracture: death or inability to walk at 60 days occurred in 18.5% versus 18.0%, and delirium in 20.5% versus 19.7%.

Spinal Anesthesia or General Anesthesia for Hip Surgery in Older Adults, The New England journal of medicine 2021 · PMID 34623788

THE NUMBERS

REGAIN: spinal was not superior to general

1,600 patients, hip fracture surgery.



A superiority trial that found no significant difference — which removes the basis for telling a patient spinal is safer, without proving the two identical.

Spinal Anesthesia or General Anesthesia for Hip Surgery in Older Adults, The New England journal of medicine 2021 · PMID 34623788

WHAT THE TRIALS FOUND

REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in

Randomised trial · Annals of internal medicine

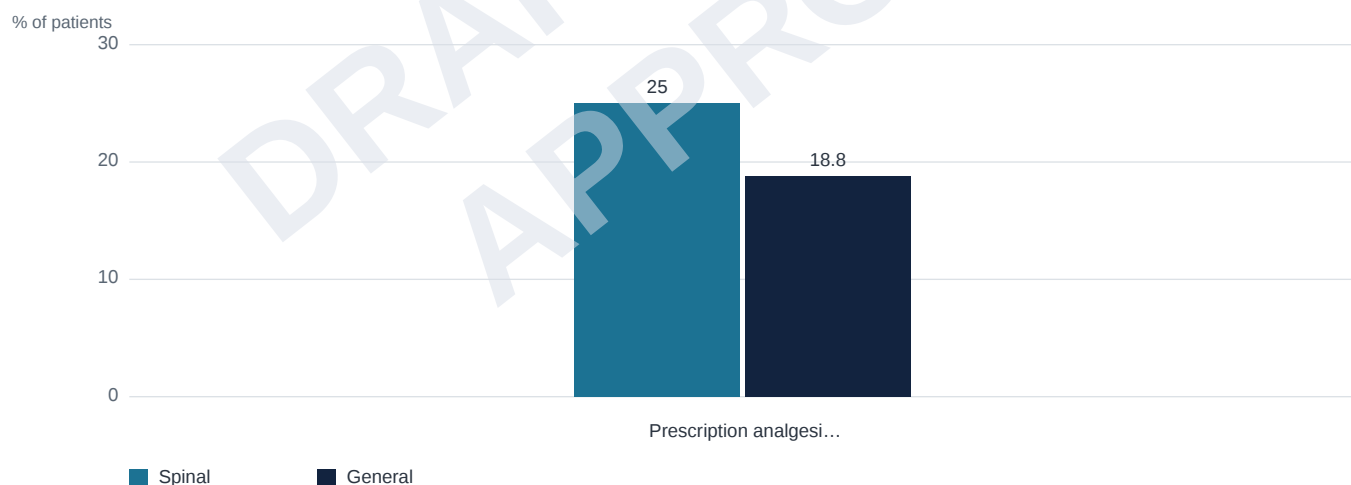
REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in the first 24 hours and more prescription analgesic use at 60 days (25% versus 18.8%) than general anaesthesia.

Pain, Analgesic Use, and Patient Satisfaction With Spinal Versus General Anesthesia for Hip Fracture Surgery : A Randomized Clinical Trial, Annals of internal medicine 2022 · PMID 35696684

THE NUMBERS

Spinal gave slightly more pain and more analgesic use at 60 days

REGAIN pain analysis, 1,600 patients.



If anything the difference favours general anaesthesia — the opposite of the usual counselling.

Pain, Analgesic Use, and Patient Satisfaction With Spinal Versus General Anesthesia for Hip Fracture Surgery : A Randomized Clinical Trial, Annals of internal medicine 2022 · PMID 35696684

WHAT THE TRIALS FOUND

Two randomised trials totalling 2,550 patients found no mortality benefit, no less

Randomised trial · Regional anesthesia and pain medic

Two randomised trials totalling 2,550 patients found no mortality benefit, no less delirium and no better ambulation with spinal anaesthesia, so telling a patient that spinal is the safer choice is not supported.

General Anesthesia Is an Acceptable Choice for Hip Fracture Surgery, Regional anesthesia and pain medicine 2023 · PMID 36977525

IN THE ROOM

What this changes about the next case

Colour is the strength of the evidence behind each step, not the urgency.

- 1
Preoperative peripheral nerve blocks reduce hip fracture pain at two hours, and the pericapsular nerve group block outperformed femoral and fascia iliaca blocks, though most evidence was low confidence.
- 2
In REGAIN, spinal anaesthesia was not superior to general for hip fracture: death or inability to walk at 60 days occurred in 18.5% versus 18.0%, and delirium in 20.5% versus 19.7%.
- 3
REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in the first 24 hours and more prescription analgesic use at 60 days (25% versus 18.8%) than general anaesthesia.
- 4
Two randomised trials totalling 2,550 patients found no mortality benefit, no less delirium and no better ambulation with spinal anaesthesia, so telling a patient that spinal is the safer choice is not supported.

KEY TAKEAWAYS

What to carry into the next case

Preoperative peripheral nerve blocks reduce hip fracture pain at two hours

Annals of emergency medicine 2024

In REGAIN, spinal anaesthesia was not superior to general for hip fracture

The New England journal of medicine 2021

REGAIN's pain analysis found spinal anaesthesia gave slightly worse worst-pain in

Annals of internal medicine 2022

Two randomised trials totalling 2,550 patients found no mortality benefit, no less

Regional anesthesia and pain medicine 2023

Preoperative peripheral nerve blocks reduce hip fracture pain at two hours

QUESTIONS I'LL ASK YOU IN THE ROOM

1. How does your plan change if the patient is not optimised?
2. What is the physiology behind what we just did?
3. Talk me through the trade-off you made there.
4. What would make you abandon this plan and do something else?

ORAL BOARDS STEM

An 87-year-old with dementia and aortic stenosis presents for hemiarthroplasty after a hip fracture. The orthopaedic team asks for a spinal because it is "safer for her head".

BOARD QUESTIONS

1. In the REGAIN trial of spinal versus general anaesthesia for hip fracture surgery, name the composite outcome reported at 60 days, give the rate in each group, and state the trial's conclusion about superiority.
2. A patient with a hip fracture is waiting for surgery. What does the network meta-analysis evidence show about preoperative peripheral nerve blocks for pain at two hours, which block ranked best, and how confident is that evidence?
3. REGAIN included an analysis of pain and analgesic use. Describe how spinal anaesthesia compared with general anaesthesia for worst pain in the first 24 hours and for prescription analgesic use at 60 days, including the numbers.

4. The surgical team asks you to tell a hip fracture patient that a spinal is the safer anaesthetic. Citing the randomised evidence, state how many patients have been randomised, which outcomes were compared, and what you can honestly tell the patient.

ANSWER KEY

- 1. Death or inability to walk independently at 60 days occurred in 18.5% of spinal patients versus 18.0% of general anaesthesia patients, and delirium occurred in 20.5% versus 19.7%; spinal anaesthesia was not superior to general anaesthesia for hip fracture surgery.**

REGAIN's rates sit close enough together that you cannot promise a family the spinal will keep her walking or keep her from becoming delirious.

Spinal Anesthesia or General Anesthesia for Hip Surgery in Older Adults, The New England journal of medicine 2021 · PMID 34623788

- 2. Preoperative peripheral nerve blocks reduce hip fracture pain at two hours; the pericapsular nerve group block outperformed femoral and fascia iliaca blocks, but most of the evidence supporting this was low confidence.**

The two-hour analgesic benefit is worth acting on, but the ranking of the pericapsular nerve group block over femoral and fascia iliaca rests mostly on low-confidence evidence.

Peripheral Nerve Blocks in the Preoperative Management of Hip Fractures: A Systematic Review and Network Meta-Analysis, Annals of emergency medicine 2024 · PMID 38385910

- 3. Spinal anaesthesia gave slightly worse worst-pain scores in the first 24 hours and more prescription analgesic use at 60 days, 25% versus 18.8%, compared with general anaesthesia.**

If anything the pain data run against spinal: slightly worse early worst pain, and more patients still on prescription analgesics at 60 days.

Pain, Analgesic Use, and Patient Satisfaction With Spinal Versus General Anesthesia for Hip Fracture Surgery : A Randomized Clinical Trial, Annals of internal medicine 2022 · PMID 35696684

- 4. Two randomised trials totalling 2,550 patients compared mortality, delirium and ambulation and found no mortality benefit, no reduction in delirium and no better ambulation with spinal anaesthesia, so telling a patient that spinal is the safer choice is not supported by that evidence.**

Two trials and 2,550 patients later, 'spinal is safer' is a claim the randomised data do not support — tell the patient these outcomes looked the same.

General Anesthesia Is an Acceptable Choice for Hip Fracture Surgery, Regional anesthesia and pain medicine 2023 · PMID 36977525

Preoperative peripheral nerve blocks reduce hip fracture pain at two hours

SOURCES

[1] Peripheral Nerve Blocks in the Preoperative Management of Hip Fractures: A Systematic Review and Network Meta-Analysis, Annals of emergency medicine 2024 · PMID 38385910

[2] Spinal Anesthesia or General Anesthesia for Hip Surgery in Older Adults, The New England journal of medicine 2021 · PMID 34623788

[3] Pain, Analgesic Use, and Patient Satisfaction With Spinal Versus General Anesthesia for Hip Fracture Surgery : A Randomized Clinical Trial, Annals of internal medicine 2022 · PMID 35696684

[4] General Anesthesia Is an Acceptable Choice for Hip Fracture Surgery, Regional anesthesia and pain medicine 2023 · PMID 36977525