

## HIP FRACTURE REPAIR SURGERY

### SUMMARY RECOMMENDATIONS

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#### Notes on PROSPECT recommendations

PROSPECT provides clinicians with supporting arguments for and against the use of various interventions in postoperative pain based on published evidence and expert opinion. Clinicians must make judgements based upon the clinical circumstances and local regulations. At all times, local prescribing information for the drugs referred to must be consulted.

#### Pain after hip fracture repair surgery and aims of the PROSPECT review

Hip fracture repair surgery is associated with moderate-to-severe postoperative pain, which can delay postoperative recovery and increase length of hospital stay. Therefore, effective postoperative pain management is essential to improve functional recovery, and reduce morbidity and mortality. However, pain after hip fracture repair surgery is often undertreated due to concerns of analgesic-related adverse effects ([Abou-Setta 2011](#)).

The aim of this systematic review ([Pissens 2024](#)) was to update the available literature and develop recommendations for optimal pain management after hip fracture repair surgery, using PROSPECT methodology.

The unique PROSPECT methodology is available at <https://esraeurope.org/prospect-methodology/>. The methodology requires that the included studies are critically assessed, taking into consideration their clinical relevance, use of basic analgesia, and the effectiveness, adverse effects, and invasiveness of each analgesic or anaesthetic technique ([Joshi 2019](#)). The methodology has been updated now for future reviews ([Joshi 2023](#)).

Literature databases were searched for randomised controlled trials, systematic reviews and meta-analyses, published in the English language, which evaluated the effects of analgesic, anaesthetic and surgical interventions on pain after hip fracture repair surgery from 04 April 2005 to 12 May 2021. 60 studies met the inclusion criteria.

## Summary of recommendations and key evidence

### Summary of recommendations and key evidence for pain management in patients undergoing hip fracture repair surgery

#### **Systemic analgesia**

Paracetamol and NSAIDs or COX-2-selective inhibitors are recommended as part of basic multimodal analgesia, and should be administered pre-operatively or intra-operatively and continued postoperatively, if there are no contraindications

- No procedure-specific studies were identified for paracetamol. Nevertheless, paracetamol is recommended as part of basic multimodal analgesia because it contributes to pain relief, particularly when combined with NSAIDs or COX-2-selective inhibitors ([Joshi 2019](#)).
- No procedure-specific studies were identified for NSAIDs/COX-2-selective inhibitors. However, NSAIDs/COX-2-selective inhibitors are recommended as part of basic multimodal analgesia, when not contra-indicated. Of note, gastro-intestinal, cardiac and renal complications of NSAIDs should be taken into account particularly in older patients ([Wongrakpanich 2018](#)).

Opioids should be reserved as rescue analgesia in the postoperative period

#### **Regional analgesic strategies**

Single shot FNB (including 3-in-1 block\*) or single shot FICB is recommended

- Procedure-specific evidence shows that both the FNB and the FICB reduced pain scores and opioid consumption in the majority of trials.
- Our findings confirm previous systematic reviews and meta-analyses, which concluded that either FNB or FICB is safe and effective to provide good perioperative analgesia and to reduce opioid consumption ([Guay 2018](#); [Skjold 2020](#); [Rashiq 2013](#); [Ritcey 2016](#); [Riddell 2016](#); [Fadhilillah 2019](#); [Hong 2019](#); [Steenberg and Møller 2018](#); [Wan 2020](#)).
- Of note, FICB is a heterogeneous group of blocks, the distal and the proximal supra-inguinal blocks, and some may consider them as different techniques. Since the supra-inguinal approach covers a broader area than the infra-inguinal approach, the supra-inguinal approach is preferred.

Choice of nerve block should be based on local expertise

- Both the FICB and the FNB are easy to perform, with a favourable safety profile; there is no evidence to favour one technique over the other. Therefore, the choice between FNB or FICB should be based on clinician experience and/or institutional preferences.
- Although, in theory, FICB should provide better pain relief than FNB, as it blocks the lateral femoral cutaneous nerve along with the femoral nerve, several investigations have shown them to be equally effective ([Shukla 2018](#)).
- Also, FICB might provide better outcomes in terms of chronic postsurgical pain and might be preferable because of its relative simplicity and reduced invasiveness, but also because it

requires less expensive equipment and less time to perform the FICB placement ([Shukla 2018](#), [Diakomi 2020](#); [Newman 2013](#)).

No catheter should be used except in specific circumstances

- The analgesic benefits of continuous infusion techniques are not sufficient to justify the placement of catheters on a routine basis, but may be considered if there is an expected delay for surgery.
- Motor blockade can occur depending on the local anaesthetic dilution. However, this should not preclude the use of peripheral nerve blocks because patients typically do not ambulate for about 24 h. Nevertheless, depending on the timing of surgery, single shot nerve blocks are recommended as continuous catheter techniques might delay ambulation. Also, peripheral blocks could be repeated if necessary.
- There is a need for further research assessing the balance of risks and complexity versus analgesic benefits of continuous techniques in the presence of optimal basic analgesic administration.

### ***Anaesthesia techniques***

The choice of spinal anaesthesia or general anaesthesia depends on factors other than pain

- Spinal anaesthesia may provide superior pain relief in the immediate postoperative phase ([Haghighi 2017](#); [Heidari 2011](#); [Luger 2010](#)). However, the choice of spinal or general anaesthesia depends on factors other than pain (e.g. patient-, surgeon- and institution-related factors).
- Future trials are necessary to assess differences in outcome between different anaesthetic techniques in hip fracture patients.

COX, cyclooxygenase; FICB, fascia iliaca compartment block; FNB, femoral nerve block; NSAIDs, non-steroidal anti-inflammatory drugs.

\*In this review, we grouped the 3-in-1 block and the FNB although the terminology differs in the literature.

## Interventions that are NOT recommended

Analgesic interventions that are not recommended\* for pain management in patients undergoing hip fracture repair surgery.

Intervention	Reason for not recommending
<b>Pre-operative</b>	
Transdermal buprenorphine	Limited procedure-specific evidence
PENG block	Limited procedure-specific evidence
<b>Intra-operative</b>	
LIA	Inconsistent evidence
Epidural anaesthesia and analgesia	Limited procedure-specific evidence
Epidural adjuvant drugs	Lack of procedure-specific evidence and increased risks
Dexmedetomidine IV	Lack of procedure-specific evidence
Dexmedetomidine adjuvant to LA in PNB	Limited procedure-specific evidence
Clonidine IV and adjuvant to LA in PNB	Lack of procedure-specific evidence
<b>Postoperative</b>	
CFCT	Lack of procedure-specific evidence
Supportive psychotherapy	Limited procedure-specific evidence
TENS	Limited procedure-specific evidence

CFCT, continuous-flow cryocompression therapy; IV, intravenous; LA, local anaesthetic; LIA, local infiltration analgesia; PENG, pericapsular nerve group; PNB, peripheral nerve block; TENS, transcutaneous electrical nerve stimulation.

\*Some of these techniques may potentially be effective but there is not yet enough data available to consider a recommendation. Many interventions such as traction, early surgery, various adjuvant drugs, intrathecal morphine, etc. have not been tested in this specific group of patients with hip fracture who are generally old and frail. We suggest that research on postoperative pain after hip fracture repair surgery focuses on these issues.

## Overall PROSPECT recommendations table

### Overall recommendations for procedure-specific pain management in patients undergoing hip fracture repair surgery

<b>Pre-operative</b>	<ul style="list-style-type: none"> <li>• Paracetamol</li> <li>• NSAIDs or COX-2-selective inhibitors</li> <li>• Single shot femoral nerve block (including 3-in-1 block, no catheter except in specific circumstances) OR Single shot fascia iliaca compartment block, no catheter except in specific circumstances)</li> </ul>
<b>Intra-operative</b>	<ul style="list-style-type: none"> <li>• Paracetamol, if not given pre-operatively</li> <li>• NSAIDs or COX-2-selective inhibitors, if not given pre-operatively</li> <li>• Spinal anaesthesia or general anaesthesia</li> </ul>
<b>Postoperative</b>	<ul style="list-style-type: none"> <li>• Paracetamol, scheduled</li> <li>• NSAIDs or COX-2-selective inhibitors, scheduled</li> <li>• Opioids as rescue</li> </ul>

COX, cyclooxygenase; NSAIDs, non-steroidal anti-inflammatory drugs.

### PROSPECT publication

S. Pissens, L. Cavens, G. P. Joshi, M.P. Bonnet, A. Sauter, J. Raeder, M. Van de Velde, on behalf of the PROSPECT Working Group of the European Society of Regional Anaesthesia and Pain Therapy (ESRA).

**Pain management after hip fracture repair surgery: a systematic review and procedure-specific postoperative pain management (PROSPECT) recommendations.**

[Acta Anaesth Bel 2024;75:15–31.](#)


[PROSPECT recommendations for hip fracture repair surgery – infographic](#)





# Recommendations for hip fracture repair surgery


A systematic review with recommendations for postoperative pain management



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**Systemic (basic) analgesia**  
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**Opioids**  
Opioids should be reserved as rescue analgesia.
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**Regional analgesia**  
Single shot FNB (including 3-in-1 block) or single shot FICB is recommended. No catheter should be used except in specific circumstances.
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**Anaesthetic techniques**  
The choice of spinal anaesthesia or general anaesthesia depends on factors other than pain.

Pissens S, et al. Pain management after hip fracture repair surgery: a systematic review and procedure-specific postoperative pain management (PROSPECT) recommendations. Acta Anaesth Bel 2024;75:15–31.

COX, cyclooxygenase; FICB, fascia iliaca compartment block; FNB, femoral nerve block; NSAIDs, non-steroidal anti-inflammatory drugs; RCT, randomised controlled trial; SR, systematic review.

