

LAPAROSCOPIC CHOLECYSTECTOMY

SUMMARY RECOMMENDATIONS

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.

Grades of recommendation (GoR) and levels of evidence (LoE)

GoRs are assigned according to the overall LoE on which the recommendations are based, which is determined by the quality and source of evidence: [Relationship between quality and source of evidence, levels of evidence and grades of recommendation](#).

Summary recommendations

Recommended: Pre-/intra-operative interventions

- Unless otherwise stated, 'pre-operative' refers to interventions applied before surgical incision and 'intra-operative' refers to interventions applied after incision and before wound closure
- Analgesics should be administered at the appropriate time (pre- or intra-op) to provide sufficient analgesia in the early recovery period

Paracetamol

- Pre-operative oral paracetamol is recommended for routine use (Grade A) based on analgesic efficacy in several studies in this and the previous review (LoE 1 and 2)
- If not given pre-operatively, intra-operative IV paracetamol is recommended for routine use (Grade A, LoE 1)

<p>NSAIDs/COX-2-selective inhibitors</p>	<ul style="list-style-type: none"> • Pre-operative oral NSAIDs/COX-2-selective inhibitors are recommended for routine use (Grade A) based on several studies showing analgesic efficacy in this and the previous review (LoE 1 and 2) • If not given pre-operatively, intra-operative IV NSAIDs/COX-2-selective inhibitors are recommended for routine use (Grade B, LoE 2)
<p>Dexamethasone</p>	<ul style="list-style-type: none"> • Pre-operative dexamethasone is recommended for routine use (Grade A) based on evidence of analgesic and anti-emetic effects (LoE 1 and 2)
<p>Wound (port site) LA</p>	<ul style="list-style-type: none"> • Port site LA is recommended, preferably administered before incision, using a long-acting LA to prolong its effect (Grade A), based on evidence of analgesic benefit (LoE 1 and 2)
<p>Low-pressure pneumoperitoneum</p>	<ul style="list-style-type: none"> • Low-pressure pneumoperitoneum (10–12 mm Hg) is recommended if surgically possible (Grade A) based on evidence of analgesic benefit in a majority of studies (LoE 1 and 2)
<p>Saline lavage and suction</p>	<ul style="list-style-type: none"> • Local lavage with saline and then suction is recommended after removal of the gallbladder (Grade A) based on evidence of a reduction in pain scores or analgesic consumption (LoE 1). The lavage should be done with adequate suction of the remaining pneumoperitoneum (Grade A)
<p>Aspiration of pneumoperitoneum gas</p>	<ul style="list-style-type: none"> • Aspiration of pneumoperitoneum gas is recommended (Grade A) based on evidence of a reduction in pain scores (LoE 1 and 2)
<p>Mini-port techniques</p>	<ul style="list-style-type: none"> • A mini-port laparoscopic technique is recommended as it reduced pain in one study (LoE 1), but the cost and availability of equipment should be taken into consideration (Grade B)

Recommended when 'basic' analgesia is not possible: Pre-/intra-operative interventions

('Basic' analgesia: paracetamol, NSAID/COX-2-selective inhibitor, dexamethasone, port-site LA infiltration)

<p>Gabapentinoids: may be considered if 'basic' analgesia is not possible</p>	<ul style="list-style-type: none"> • Preoperative gabapentinoids are not recommended for routine use but may be considered if 'basic' analgesia is not possible (Grade D) • Although several studies have reported reduced postoperative opioid requirements (LoE 1 and 2) with pre-operative gabapentinoids, they may not add to the effectiveness of the 'basic' analgesic technique of paracetamol, NSAID/COX-2-selective inhibitors, and surgical site infiltration • Also, the optimal dose is unknown, and there is a need to balance analgesic benefits with potential adverse effects such as increased potential for sedation
<p>TAP or OSTAP blocks</p>	<ul style="list-style-type: none"> • TAP or OSTAP blocks are not recommended for routine use (Grade D), despite several studies reporting reduced postoperative opioid requirements and pain scores (LoE 1 and 2), as they may not add benefit beyond the 'basic' analgesic protocol. However, they may be considered if 'basic' analgesia is not possible

Recommended: Post-operative interventions

- Unless otherwise stated, 'postoperative' refers to interventions applied at or after wound closure
- Analgesics should be administered at the appropriate time (pre- or intra-op) to provide sufficient analgesia in the early recovery period

<p>Paracetamol</p>	<ul style="list-style-type: none"> • Paracetamol is recommended for routine use, continued postoperatively (Grade A), based on evidence of analgesic benefit (LoE 2)
<p>NSAIDs/COX-2-selective inhibitors</p>	<ul style="list-style-type: none"> • NSAIDs/COX-2-selective inhibitors are recommended for routine use, continued postoperatively (Grade A), based on evidence of analgesic benefit (LoE 1 and 2)
<p>Rescue opioids</p>	<ul style="list-style-type: none"> • Opioid analgesia should be reserved for rescue analgesia only (Grade B) to avoid potential side

	effects where possible (LoE 1 and 2)
--	--------------------------------------

<i>Interventions that are NOT recommended</i>	
Alpha-2 agonists	<ul style="list-style-type: none"> Alpha-2 agonists, such as dexmedetomidine and clonidine, are not recommended because of limited evidence and potential adverse effects (Grade D)
Ketamine	<ul style="list-style-type: none"> Ketamine has shown mixed results regarding reduction of pain and analgesic requirement, and overall it is not recommended (Grade D, LoE 4). Additionally, there are concerns about adverse effects such as hallucinations
Magnesium	<ul style="list-style-type: none"> Magnesium is not recommended (Grade D) despite some evidence of analgesic effect (LoE 1). Magnesium during operation may cause adverse effects such as potentiation of neuromuscular blocking agents and increasing the incidence of residual muscle paralysis
IV lidocaine	<ul style="list-style-type: none"> IV lidocaine infusions are not recommended (Grade D), despite evidence of analgesic benefit (LoE 1), owing to the need for close monitoring and the possibility of overdose
Esmolol infusion	<ul style="list-style-type: none"> Esmolol infusions are not recommended (Grade D), despite evidence of analgesic benefit (LoE 1 and 2), owing to the need for close monitoring and the possibility of overdose
TAP or OSTAP blocks	<ul style="list-style-type: none"> TAP or OSTAP blocks are not recommended (Grade D), despite several studies reporting reduced postoperative opioid requirements and pain scores (LoE 1 and 2), as they may not add benefit beyond the 'basic' analgesic protocol
IP LA instillation	<ul style="list-style-type: none"> IP LA instillation is not recommended (Grade D), despite a majority of studies reporting reduced postoperative opioid requirements and pain scores (LoE 1), as it may not add benefit beyond the 'basic' analgesic protocol The addition of IP LA with port site local infiltration could potentiate LA toxicity. If IP LA is used, care should be

	taken to control the maximum dosage while still giving adequate port site LA
Regional anaesthesia techniques	<ul style="list-style-type: none"> Regional anaesthesia techniques such as epidural anaesthesia, paravertebral block, intrathecal opioids, and rectus sheath block are not recommended because of limited, small trial evidence and potential for complications or failure of anaesthetic technique (Grade D) Epidural anaesthesia is also counterintuitive in the ambulatory setting
Warmed and humidified CO₂	<ul style="list-style-type: none"> Warmed CO₂ and humidified CO₂ are not recommended (Grade D) due to limited evidence
Single port techniques	<ul style="list-style-type: none"> Single port techniques are not recommended (Grade A) as a majority of studies found no significant benefit for analgesia (LoE 1 and 2)

Overall PROSPECT recommendations

PROSPECT overall recommendations for postoperative pain management: Laparoscopic cholecystectomy

Timing	Recommended for routine use	Recommended when 'basic' analgesia is not possible
Pre-operative	<p><i>Oral medication:</i></p> <ul style="list-style-type: none"> • Paracetamol • Conventional NSAID/COX-2-selective inhibitor <p>Dexamethasone</p>	<p><i>Oral medication:</i></p> <ul style="list-style-type: none"> • Oral gabapentin
Intra-operative	<p><i>If not given pre-operatively:</i></p> <ul style="list-style-type: none"> • Paracetamol • Conventional NSAID/COX-2-selective inhibitor <p>Port site local anaesthetic infiltration (preferably with long-acting agents and prior to incision)</p> <p><i>Operative techniques:</i></p> <ul style="list-style-type: none"> • Low pressure insufflation 10–12 mm Hg • Saline lavage followed by suction • Aspiration of pneumoperitoneum • Mini-port (reduced port size) 	<p>TAP or OSTAP blocks</p> <p>Intraperitoneal local anaesthetic (care to be taken if port site local is used to avoid potential toxicity)</p>
Postoperative	<p><i>Postoperative regular analgesia:</i></p> <ul style="list-style-type: none"> • Oral paracetamol • Oral NSAID/COX-2-selective inhibitor • Rescue analgesia with opioids, orally if possible 	

TAP: transversus abdominus plane; OSTAP: oblique subcostal TAP

Not recommended:

- **Ketamine**
- **Magnesium**
- **Alpha-2-agonist**
- **Epidural anaesthetic**
- **IV lidocaine infusion**
- **Esmolol infusion**
- **Single port technique**
- **Warmed CO₂ insufflation**
- **Humidified CO₂ insufflation**