

## ONCOLOGICAL BREAST 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.

#### *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](#).

#### Notes on pain after Oncological Breast Surgery

Oncological breast surgery (hereafter, 'breast surgery') is associated with significant acute and chronic postoperative pain ([Vadivelu 2008](#)). A systematic review was performed by the PROSPECT collaboration in 2006 (archived on the PROSPECT website: [Non-cosmetic Breast Surgery 2006](#)). However, several new analgesic regimens, particularly regional analgesic techniques have been introduced since ([Elsharkawy 2018](#)). An updated systematic review on analgesic interventions dedicated to breast cancer was required.

## Summary recommendations

### Recommended: Pre- and 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-operatively) to provide adequate analgesia in the early recovery period

Minor breast surgery	Major breast surgery
<b>Paracetamol and NSAIDs/COX-2-selective inhibitors</b>	<b>Paracetamol and NSAIDs/COX-2-selective inhibitors</b>
<ul style="list-style-type: none"> <li>• Paracetamol (Grade B) and NSAID (Grade A) or COX-2-specific inhibitor (Grade B) are recommended for minor and major breast surgery, administered pre-operatively or intra-operatively and continued postoperatively, unless there are contra-indications.</li> <li>• The use of NSAIDs (Grade A) is supported by studies performed before 2006 in breast surgery (<a href="#">Chan 1996</a>, <a href="#">Priya 2002</a>), although there are no recent data.</li> <li>• The analgesic benefits and opioid-sparing effects of these simple analgesics are well described (<a href="#">Martinez 2017</a>, <a href="#">Ong 2010</a>).</li> </ul>	
<b>Gabapentin</b>	<b>Gabapentin</b>
<ul style="list-style-type: none"> <li>• Pre-operative gabapentin is recommended (Grade A) for minor and major breast surgery as it has been shown to reduce postoperative pain scores and opioid consumption. However, it is recommended with caution as high doses could induce side-effects that are particularly concerning in ambulatory patients.</li> <li>• Pre-operative pregabalin is not recommended as the observed pain relief did not last up to 24 h.</li> </ul>	
<b>Dexamethasone</b>	<b>Dexamethasone</b>
<ul style="list-style-type: none"> <li>• Single-dose IV dexamethasone is recommended (Grade B) for minor and major breast surgery as it provides additional pain relief as well as reducing analgesia use and the incidence of PONV.</li> </ul>	
<b>Local anaesthetic wound infiltration (minor breast surgery)</b>	<b>PVB (major breast surgery)</b>
<ul style="list-style-type: none"> <li>• LA wound infiltration should be considered in patients scheduled for minor-to-moderately invasive surgical</li> </ul>	<ul style="list-style-type: none"> <li>• PVB is recommended (Grade A) as the first-choice regional analgesic technique for major breast surgery (e.g.</li> </ul>

<p>procedures (e.g. lumpectomy and partial mastectomy) (Grade A), although it provides postoperative analgesia of a limited duration.</p> <ul style="list-style-type: none"> <li>• Postoperative pain after these procedures is typically mild-to-moderate and the intensity decreases over the first couple of postoperative days.</li> </ul>	<p>mastectomy with or without axillary node dissection)</p> <ul style="list-style-type: none"> <li>• Studies demonstrated that this intervention was associated with: lower postoperative pain scores; lower systemic analgesia consumption; reduced PONV; and a shorter length of hospital stay than GA alone, although the studies did not follow an enhanced recovery programme</li> <li>• Continuous PVB should be considered for major breast surgery if a catheter is in place (Grade B)</li> <li>• A single-injection PVB requires a shorter time to perform and is less labour intensive as compared with the multiple-injection technique or placement of a paravertebral catheter</li> <li>• Some studies report an improvement in functional outcomes and less severe chronic pain after the use of continuous PVB</li> <li>• These findings should be interpreted with caution as these studies did not use 'basic' non-opioid analgesics (i.e. paracetamol, NSAIDs or COX-2 selective inhibitors) in a fully implemented multimodal analgesia programme</li> <li>• A cost effectiveness study reported higher costs of continuous PVB (<a href="#">Offodile, 2017</a>); however, these costs would be offset by the reduced duration of hospital stay (<a href="#">Terkawi 2015</a>, <a href="#">Abdallah 2014</a>, <a href="#">Fallatah 2016</a>, <a href="#">Mohta 2016</a>)</li> </ul>
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	<ul style="list-style-type: none"> <li>PVB cannot reliably provide sufficient analgesia to the axilla (i.e. T1 nerve distribution) (<a href="#">Pawa 2018</a>) and supplemental local anaesthetic wound infiltration may be beneficial for these cases</li> </ul>
	<p><b>PECS block (major breast surgery)</b></p>
	<ul style="list-style-type: none"> <li>PECS block is recommended for major breast surgery if no axillary node dissection is performed or if PVB is contraindicated (Grade A), but data are limited and the procedure cannot anatomically provide adequate analgesia to the axilla.</li> <li>Evidence to guide the choice between PECS-1, PECS-2 and serratus plane blocks is limited.</li> </ul>
	<p><b>Local anaesthetic wound infiltration (major breast surgery)</b></p>
	<ul style="list-style-type: none"> <li>LA wound infiltration may be added to regional analgesia techniques in major breast surgery (Grade A).</li> <li>LA wound infiltration may be considered in cases where PECS block and PVB do not provide appropriate analgesia to the axilla (i.e. T1 nerve distribution).</li> </ul>

### 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-operatively) to provide adequate analgesia in the early recovery period

#### Minor breast surgery

#### Major breast surgery

#### Paracetamol and NSAIDs/COX-2-selective inhibitors

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- Paracetamol (Grade B) and NSAID (Grade A) or COX-2-specific inhibitor (Grade B) are recommended for minor and major breast surgery, administered pre-operatively or intra-operatively and continued postoperatively, unless there are contra-indications.
- The use of NSAIDs (Grade A) is supported by studies performed before 2006 in breast surgery ([Chan 1996](#), [Priya 2002](#)), although there are no recent data.
- The analgesic benefits and opioid-sparing effects of these simple analgesics are well described ([Martinez 2017](#), [Ong 2010](#)).

#### Opioids

#### Opioids

- Opioids are recommended for rescue postoperative analgesia (Grade B).

#### Continuous PVB (if catheter in place) (major breast surgery)

- Continuous PVB should be considered for major breast surgery if a catheter is in place (Grade B)
- A single-injection PVB requires a shorter time to perform and is less labour intensive as compared with the multiple-injection technique or placement of a paravertebral catheter
- Some studies report an improvement in functional outcomes and less severe chronic pain after the use of continuous PVB
- These findings should be interpreted with caution as these studies did not use 'basic' non-opioid analgesics (i.e. paracetamol, NSAIDs or COX-2 selective

- inhibitors) in a fully implemented multimodal analgesia programme
- A cost effectiveness study reported higher costs of continuous PVB ([Offodile, 2017](#)); however, these costs would be offset by the reduced duration of hospital stay ([Terkawi 2015](#), [Abdallah 2014](#), [Fallatah 2016](#), [Mohta 2016](#))
  - PVB cannot reliably provide sufficient analgesia to the axilla (i.e. T1 nerve distribution) ([Pawa 2018](#)) and supplemental local anaesthetic wound infiltration may be beneficial for these cases

#### Interventions that are NOT recommended

	Intervention	Reason for not recommending
<b>Intra-operative</b>	Retrolaminar block	Limited procedure-specific evidence
	Erector spinae plane block	Limited procedure-specific evidence
	Perineural adjuncts: opioids (fentanyl, tramadol), alpha-2-adrenoceptor agonists (clonidine, dexmedetomidine), catecholamines (adrenaline) or N-methyl-D-aspartate antagonists (ketamine) added to the local anaesthetic solution	Limited procedure-specific evidence
<b>Postoperative</b>	Transversus thoracic muscle plane block	Limited procedure-specific evidence

## Overall PROSPECT recommendations

Overall recommendations for pain management in patients undergoing non-cosmetic breast surgery.

Recommendations	Minor breast surgery	Major breast surgery
<b>Pre-operative and intra-operative interventions</b>	<ol style="list-style-type: none"> <li>1. Paracetamol (Grade B) and conventional NSAIDs (Grade A) or COX-2-selective inhibitors (Grade B)</li> <li>2. Gabapentin (Grade A)</li> <li>3. Dexamethasone (Grade B)</li> <li>4. Local anaesthetic wound infiltration (Grade A)</li> </ol>	<ol style="list-style-type: none"> <li>1. Paracetamol (Grade B) and conventional NSAIDs (Grade A) or COX-2-selective inhibitors (Grade B)</li> <li>2. Gabapentin (Grade A)</li> <li>3. Dexamethasone (Grade B)</li> <li>4. PVB (Grade A)</li> <li>5. PECS blocks if no axillary node dissection or PVB is contraindicated (Grade A)</li> <li>6. Local anaesthetic wound infiltration may be added to regional analgesia techniques (Grade A)</li> </ol>
<b>Postoperative interventions</b>	<ol style="list-style-type: none"> <li>1. Paracetamol (Grade B) and conventional NSAIDs (Grade A) or COX-2-selective inhibitors (Grade B)</li> <li>2. Opioids as rescue (Grade B)</li> </ol>	<ol style="list-style-type: none"> <li>1. Paracetamol (Grade B) and conventional NSAIDs (Grade A) or COX-2-selective inhibitors (Grade B)</li> <li>2. Opioids as rescue (Grade B)</li> <li>3. Continuous PVB if catheter in place (Grade B)</li> </ol>