

CLEFT PALATE SURGERY

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.

Pain after cleft palate surgery and aims of the PROSPECT review

Cleft palate surgery is associated with moderate-to-severe postoperative pain. Effective pain control should improve surgical outcomes and reduce stress and agitation in children following surgical correction of cleft palate, which may otherwise increase the risk of complications such as wound dehiscence and development of fistulae ([Shin 2022](#)).

However, the difficulty of assessing postoperative pain in the paediatric population and the limited evidence for appropriate analgesia after cleft palate surgery means that pain management is often inadequate.

This review ([Suleiman 2023](#)) aimed to evaluate the available evidence and to develop recommendations for optimal pain management after cleft palate surgery using procedure-specific postoperative pain management (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. The methodology has been updated now for future reviews ([Joshi 2023](#)).

Literature databases were searched for randomised controlled trials and systematic reviews assessing pain in children (under 18 years of age) undergoing cleft palate repair, published in the English language, from July 2002 to August 2023. 19 randomised controlled trials and 4 systematic reviews met the inclusion criteria.

PROSPERO registration number: CRD42022364788.

Summary of recommendations and key evidence

Summary of recommendations and key evidence for pain management in children undergoing cleft palate surgery

Systemic analgesia

The basic analgesic regimen should include paracetamol and NSAIDs or COX-2-specific inhibitors administered preoperatively or intraoperatively and continued postoperatively, administered as scheduled (round-the-clock) dosing

Opioids should be reserved as rescue analgesia in the postoperative period

Regional analgesic strategies

Pre-incisional suprazygomatic maxillary nerve block is recommended

- Since the block can be performed as landmark-guided technique, it is also suitable for low-resource settings ([Chiono 2014](#))
- Ultrasound guidance has been used with the aim of improving the technique ([Abu Elyazed and Mostafa 2018](#); [Sola 2012](#); [Echaniz 2020](#)). However, visualisation of the pterygopalatine fossa which contains the maxillary nerve is not described in most reports. Instead, visualisation of the more superficially-situated infratemporal fossa and local anaesthetic spread within this region are described
- No studies compared landmark-based with ultrasound-guided suprazygomatic maxillary nerve blocks. Therefore, no specific recommendation on needle guidance can be given
- The recommendation corresponds to the conclusions of a systematic review ([Oberhofer 2021](#)) that suprazygomatic maxillary nerve blocks is the preferred method for reducing pain in cleft palate surgery. In contrast, another systematic review ([Morzycki 2022](#)) concluded that palatal nerve blocks demonstrate the greatest effectiveness, but it included both randomised- and non-randomised controlled studies

If suprazygomatic maxillary nerve block cannot be performed, pre-incisional palatal nerve block should be administered

- Although palatal blocks give a similar reduction in pain intensity, a higher postoperative opioid consumption was found compared with maxillary nerve blocks in one study ([Abu Elyazed and Mostafa 2018](#))
- Reasons for not performing the suprazygomatic blocks include craniofacial deformations, skin infections at the needle insertion site, or lack of experience with the method

Analgesic adjuncts

Dexmedetomidine is recommended as an additive to local anaesthetic for suprazygomatic maxillary nerve block

- Studies investigating dexmedetomidine as an adjuvant to bupivacaine in suprazygomatic maxillary nerve blocks demonstrate improved postoperative pain relief from 8 to 24 hours postoperatively ([Mostafa 2020](#); [Ramasamy 2022](#)). However, the effect only becomes clear several hours after surgery. This indicates that dexmedetomidine as an adjuvant mainly prolongs the duration of a nerve block rather than producing a systemic analgesic effect ([Marhofer 2013](#))
- Prolonged duration of analgesia with dexmedetomidine as perineural adjuvant for various nerve blocks has been previously demonstrated ([Andersen 2022](#); [Vorobeichik 2017](#))
- It is possible that similar observations may be true with dexmedetomidine as an adjuvant for palatal nerve blocks, but this was investigated in only one study ([Obayah 2010](#))

Intravenous dexmedetomidine may be administered if not used as an additive for suprazygomatic maxillary nerve block

- Studies of intravenous dexmedetomidine focused on emerging agitation as a primary endpoint; follow-up periods were short (maximum 2 hours postoperatively) ([Boku 2016](#); [Huang 2022](#); [Luo 2017](#); [Surana 2017](#)); studies investigating a longer postoperative period are necessary
- High dexmedetomidine plasma concentrations can cause pronounced side effects including dizziness, bradycardia, or hypotension ([Weerink 2017](#)). The same concern applies for the simultaneous use of dexmedetomidine or other alpha-2 agonists for premedication

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

Interventions that are NOT recommended

Analgesic interventions that are not recommended* for pain management in patients undergoing cleft palate repair.

Intervention	Reason for not recommending
Sphenopalatine ganglion block	Lack of procedure-specific evidence
Clonidine as adjuvant to suprazygomatic maxillary nerve block	Lack of procedure-specific evidence
Dexmedetomidine as adjuvant for palatine nerve block	Limited procedure-specific evidence to recommend one local anaesthetic over another
Specific local anaesthetics (for nerve block)	Limited procedure-specific evidence to recommended one local anaesthetic over another
Local anaesthetic infiltration	Limited procedure-specific evidence
Specific local anaesthetics (for infiltration)	Limited procedure-specific evidence to recommended one local anaesthetic over another
Dexamethasone	Limited procedure-specific evidence
Ketamine local infiltration	Limited procedure-specific evidence
Intravenous lidocaine	Lack of procedure-specific evidence
Intravenous propofol	Limited procedure-specific evidence

*Some of these techniques may potentially be effective but there is not yet enough data available to consider a recommendation.

Of note, pre-incisional local anaesthetic infiltration and dexamethasone were administered as a routine in several studies. However, because of limited procedure-specific evidence, their contribution to pain relief after cleft palate surgery remains unknown. Future well-designed studies are necessary to examine the role of surgical site infiltration and dexamethasone as components of the recommended multimodal analgesia.

Overall PROSPECT recommendations table

Overall recommendations for procedure-specific pain management in children undergoing cleft palate repair

Preoperative and intraoperative	<ul style="list-style-type: none"> • Basic analgesic regimen should include paracetamol and NSAIDs or COX-2-specific inhibitors administered preoperatively or intraoperatively • Pre-incisional suprazygomatic maxillary nerve block, and if that cannot be performed, administer pre-incisional palatal nerve block • Dexmedetomidine as an additive to local anaesthetic for suprazygomatic maxillary nerve block. Alternatively, intravenous dexmedetomidine if not used as an additive for the block
Postoperative	<ul style="list-style-type: none"> • Basic analgesic regimen should include paracetamol and NSAIDs or COX-2-specific inhibitors administered as scheduled (round-the-clock) dosing • Opioids reserved for rescue medication

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

PROSPECT publication

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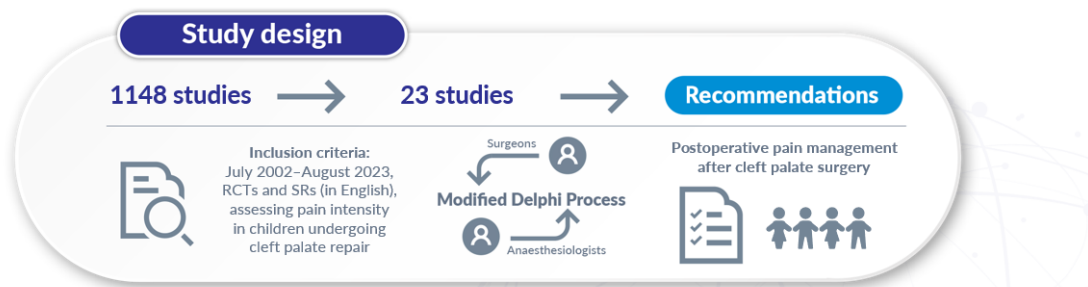
Perioperative pain management for cleft palate surgery: a systematic review and procedure-specific postoperative pain management (PROSPECT) recommendations.

[Reg Anesth Pain Med. 2023 Dec 18:rapm-2023-105024. doi: 10.1136/rapm-2023-105024.](https://doi.org/10.1136/rapm-2023-105024)
[Online ahead of print.](#)

[PROSPECT guideline for cleft palate surgery-infographic](#)

Guideline for cleft palate surgery

A systematic review with recommendations for postoperative pain management



	<p>Systemic (basic) analgesia</p> <p>Basic analgesic regimen should include paracetamol and NSAIDs or COX-2-specific inhibitors administered preoperatively or intraoperatively and continued postoperatively, administered as scheduled (round-the-clock) dosing.</p>
	<p>Opioids</p> <p>Opioids should be reserved as rescue analgesia.</p>
	<p>Regional analgesia</p> <p>Pre-incisional suprazygomatic maxillary nerve block is recommended. If that cannot be performed, administer pre-incisional palatal nerve block.</p>
	<p>Analgesic adjuncts</p> <p>Dexmedetomidine may be used as an additive to local anaesthetic for suprazygomatic maxillary nerve block. Alternatively, intravenous dexmedetomidine may be administered if not used as an additive for the block.</p>

Suleiman NN, et al. Perioperative pain management for cleft palate surgery: a systematic review and procedure-specific postoperative pain management (PROSPECT) recommendations. Reg Anesth Pain Med. 2023 Dec 18:rapm-2023-105024. doi: 10.1136/rapm-2023-105024. Online ahead of print.

COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; RCT, randomised controlled trial; SR, systematic review.

