



Guideline for

Perioperative Pain Management Using Local and Regional Analgesia for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries in Adults and Children

Prepared by

The “Guidelines Development Group” (GDG) of the Scientific Committee of the Egyptian Board of Anesthetics, Surgical Intensive Care and Pain Management.

Contents

Acknowledgements	2
Abbreviations	3
Glossary	3
Executive summary	4
Introduction	5
Purpose and Scope of the guideline	5
Target audience	6
Methodology	6
Recommendations	9
Implementation Considerations	14
Research Gaps	14
Clinical Indicators for Monitoring	14
Update of the Guidelines	14
Guidelines development contributors and participants	15
Annexes	
Annex 1: Evidence-to-Decision tables	15
Annex 2: Chest Wall Plane and Abdominal Wall Plane Blocks	18
References	19

Acknowledgements

This practice guideline which addresses perioperative pain management using local and regional anesthesia for cardiothoracic surgeries, mastectomy, and abdominal surgeries in adults and children was prepared by the **Guidelines Development Group (GDG)** of the Egyptian Board of Anesthetics, Surgical Intensive Care and Pain Management which reserves the right to determine the publication and distribution of the Guidelines. The Guideline is subject to revision, and the updated versions will be published when needed, as warranted by the evolution of new-evidenced medical knowledge, new technology, and new practice trends. Although the Egyptian Board of Anesthetics, Surgical Intensive Care and Pain Management encourages Egyptian anesthesiologists to adhere to its practice guidelines to ensure high-quality patient care, we cannot guarantee any specific patient outcome. With recognition that successful implementation requires coordinated approaches that align protocols with objectives at the institutional level, anesthesiologists should exercise their own professional judgement in determining the proper course of action for any patient's circumstances. Egyptian Board of Anesthetics, Surgical Intensive Care and Pain Management assumes no responsibility or liability for any error or omission arising from the use of any information contained in its Guideline to the Practice of perioperative pain management using local and regional anesthesia for cardiothoracic surgeries, mastectomy, and abdominal surgeries in adults and children.

This Guideline is intended to apply to all anesthesiologists in Egypt. The independent practice of anesthesia is a specialized field of medicine, which should be practiced by physicians with appropriate training who continue their education in the practice of anesthetics, surgical intensive care, pain management, perioperative care, and resuscitation.

All physicians applying for privileges in anesthesia should show satisfactory completion of specialist postgraduate training in anesthesiology, surgical intensive care and pain management certified by either the Egyptian Board training or the standard training in University programs to be able to provide these services. International medical graduates approved for licensure by provincial regulatory bodies should show training equivalent to the Egyptian standard. The only route to specialist recognition in anesthesiology in Egypt is through the "Certification process" of the "Egyptian Health Council" (EHC).

We would like to acknowledge the important contributions to the guideline from members of the Anesthesia **Guidelines Development Group (GDG)** of the Egyptian Board of Anesthetics, Surgical Intensive Care and Pain Management.

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Abbreviations

AGREE II: Appraisal of Guidelines for Research and Evaluation II

ASA: American Society of Anesthesiologists

CI: Confidence Interval

COX-2: Cyclooxygenase-2

EHC: Egyptian Health Council

GDG: Guidelines Development Group

GPS: Good Practice Statement

GRADE: Grading of Recommendations, Assessment, Development and Evaluation

MCID: Minimal Clinically Important Difference

NSAIDs: Nonsteroidal anti-inflammatory drugs

OME: Oral Morphine Equivalent

PACU: Post-anesthesia Care Unit

RCTs: Randomized Controlled Trials

WHO: World Health Organization

Glossary

Basic Principles and Terminology

The following definitions are used For the purposes of this guideline:

Dynamic pain: is defined as pain with cough or movement. It is pain triggered or severely worsened by physical activity, movement, or pressure (also called movement-evoked pain).

Minimal Clinically Important Difference (MCID): refers to the smallest change in a treatment outcome or health score that a patient perceives as meaningful and beneficial. An **MCID of 1 point** means that a tiny shift of just **one single point** on a clinical rating scale (such as a 0–10 pain scale or symptom checklist) is enough to represent a real-world, noticeable difference in how a patient feels or functions.

Oral Morphine Equivalent (OME): is a standardized metric used to calculate and compare the potency of different opioid pain medications (e.g., oxycodone, hydrocodone, fentanyl) relative to oral morphine.

Static pain (or pain at rest): pain felt when the body is completely still.

Truncal blocks: are regional anesthesia techniques where local anesthetics are injected into the chest, abdomen, or back to disrupt pain signaling from the T2 through L1 spinal nerves.

Executive Summary

This Guideline deals with the recommendations of perioperative pain management using local and regional anesthesia for Cardiothoracic surgeries, mastectomy, and abdominal surgeries in adults and children.

Open Truncal Surgeries in Adults

1. For adults undergoing open cardiothoracic surgeries including lobectomy, aortic valve replacement, coronary artery bypass grafts, mitral valve repair, or septal repair, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. (Strong)
2. For adults undergoing open abdominal, retroperitoneal, and pelvic surgeries, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. Fascial blocks also improve patient satisfaction. (Strong)

Mastectomy

3. For adults undergoing mastectomy, we recommend fascial plane or paravertebral blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. Fascial plane blocks also improve patient satisfaction and quality of recovery. (Strong)

Minimally Invasive Truncal Surgeries in Adults

4. For adults undergoing minimally invasive cardiothoracic surgeries including lobectomy, valve repair/replacement, and esophageal procedures, we suggest regional techniques including neuraxial and fascial plane blocks to reduce pain in the first 24 h postoperatively. (Conditional)
5. For adults undergoing minimally invasive abdominal surgeries including cholecystectomy, appendectomy, bariatric, gastrectomy, and liver resection surgeries, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. (Strong)
6. For adults undergoing minimally invasive hernia repair, we suggest fascial plane blocks to reduce pain in the first 24 h postoperatively. (Conditional)

Open Truncal Surgeries in Children (Younger than 18 yr)

7. For children (younger than 18 yr) undergoing open cardiothoracic surgeries, we recommend fascial plane blocks to reduce pain and/or opioid use in the first 24 h postoperatively. (Strong)
8. For children (younger than 18 yr) undergoing open hernia repair, we suggest a fascial plane block to reduce pain in the first 24 h postoperatively. (Conditional)

Introduction

A multimodal analgesic strategy improves postoperative pain relief and reduces opioid requirements. Given that the recommendations for systemic analgesics are consistent for all surgical patients and procedures, the only component of an optimal multimodal analgesia strategy that remains variable is the use of regional analgesia and surgical site local anesthetic infiltration techniques. Therefore, the ASA Task Force on Perioperative Pain Management focused their systematic review [1] on procedure-specific regional/local analgesia techniques. Because pain is a complex and multifactorial phenomenon, a multimodal analgesic regimen that leverages a combination of nonopioid analgesics with different mechanisms of action is recommended [2]. While optimal analgesic combinations remain elusive, routine use of the combination of acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), or cyclooxygenase (COX)-2 specific inhibitors have been recommended unless there are contraindications [3].

Postoperative pain is often accompanied by physiologic and psychological stress responses with short-term and long-term consequences. Optimal perioperative pain management facilitates postoperative functional recovery (*e.g.*, ambulation and rehabilitation) and thus is considered a prerequisite to enhancing recovery after surgery [2,4]. Postoperative pain is a major concern reported by most surgical patients. Inadequate postoperative pain management is associated with chronic postsurgical pain, which can affect long-term quality of life. Unfortunately, there is a disturbingly high rate of suboptimal pain control with approximately 75% of surgical patients experiencing moderate to severe pain [5].

This practice guideline provides evidence-based recommendations for perioperative pain management in adults and children undergoing cardiothoracic surgeries, mastectomy, and abdominal surgeries in adults and children. The guidance focuses on local and regional analgesia - key components of an optimal multimodal analgesia regimen.

The Egyptian Guidelines were made in accordance with the 2026 American Society of Anesthesiologists Practice Guideline on Perioperative Pain Management Using Local and Regional Analgesia for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries. Joshi, GP, Mariano; Elkassabany, et al. *Anesthesiology* [144\(1\):p 19-43, January 2026](#). [1]

Purpose and Scope of the guideline

The purpose of these practice guidelines is to provide evidence-based recommendations regarding the appropriate management of perioperative pain for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries in adults and children. The guidance focuses primarily on regional analgesia and surgical site local anesthetic infiltration techniques as a component of a multimodal analgesia regimen. These guidelines address approaches to minimizing the degree of postoperative pain and/or opioid requirements. The use of systemic analgesics that constitutes a crucial component of a multimodal analgesic technique for perioperative pain management is not addressed. The objective is to provide up-to-date information to guide practice that will enhance patient safety. Practice guidelines are systematically developed recommendations that assist anesthesiologists, patients, and their caregivers in making decisions about health care. These recommendations may be adopted, modified, or rejected according to clinical needs and constraints and are not intended to replace local institutional policies.

The intended patient population: the recommendations in this guideline are intended to be applied to patients of all ages undergoing open or minimally invasive elective or urgent abdominal, retroperitoneal, pelvic, intrathoracic, extra-thoracic, or cardiac surgeries associated with substantive opioid requirements. They are intended as a framework for reasonable and acceptable patient care and should be interpreted as such to allow for some degree of flexibility in different circumstances and according to local practice.

Target Audience

These recommendations are intended for use by healthcare professionals working as Anesthesiologists in all operating suites. They also may serve as a resource for healthcare professionals such as operating room nurses, perioperative care teams, policy makers, hospital managers, and other stakeholders who advise or care for adults and children patients undergoing cardiothoracic surgeries, mastectomy and minimally invasive abdominal surgical procedures.

METHODOLOGY

A comprehensive search for guidelines was done to identify the most relevant ones to consider for adaptation. For the literature review, potentially relevant clinical studies were identified *via* electronic and manual searches of the literature. The updated searches covered almost 5-year period from January 1, 2020, to May 31, 2026. The inclusion/exclusion criteria that were followed in the search and retrieval of guidelines are adapted.

We selected guidelines only if they are:

- Evidence-based guidelines.
- National and/or international guidelines.
- Guidelines published within the last 5 years.
- Peer reviewed publications.
- Guidelines written in English language.

We Excluded guidelines that are:

- Written by a single author not on behalf of an organization as guideline to be valid and comprehensive, ideally requires multidisciplinary input.
- Published without references as the GDG panel needs to know whether a thorough literature review was conducted and whether the current evidence was used in the preparation of the recommendations.

All retrieved Guidelines were screened and appraised using AGREE II instrument (www.agreetrust.org) by at least three members of the GDG. The panel decided on a cut-off point or ranked the guidelines (any guideline scoring above 50% on the rigor dimension was retained).

Guidelines used in the Adaptation Process:

The basic elements of the Practice Guideline for Perioperative Pain Management Using Local and Regional Analgesia for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries in adults and children published by ASA can be successfully implemented in the practice of anesthesiology.

The Guidelines Development Group (GDG) for the Egyptian Board of Anesthetics, Surgical Intensive Care, and Pain Management has adopted with modification:

1. Joshi, GP, Mariano; Elkassabany, et al. 2026 American Society of Anesthesiologists Practice Guideline on Perioperative Pain Management Using Local and Regional Analgesia for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries. *Anesthesiology* [144\(1\):p 19-43, January 2026](#). **(Reference No. 1)**
2. Joshi GP, Kehlet H, Lobo DN: Nonsteroidal anti-inflammatory drugs in the perioperative period: Current controversies and concerns. *Br J Anaesth* 2025; 134:294–6. **(Reference No. 3)**
3. El-Boghdadly K, Levy NA, Fawcett WJ, et al.: Peri-operative pain management in adults: A multidisciplinary consensus statement from the Association of Anaesthetists and the British Pain Society. *Anaesthesia* 2024; 79:1220–36. **(Reference No. 4)**
4. Wong HY, Pilling R, Young BWM, Owolabi AA, Onwochei DN, Desai N: Comparison of local and regional anesthesia modalities in breast surgery: A systematic review and network meta-analysis. *J Clin Anesth* 2021; 72:110274. **(Reference No. 27)**
5. Southwell B, Brandt S, Choconta-Piraquive LA, et al.: Peripheral nerve blocks for postoperative pain management in cardiothoracic surgery. Systematic review (prepared by Minnesota evidence-based practice center under contract no. 75q80124f32011), 2025. Agency for Healthcare Research and Quality, Rockville, Maryland. Report No. 25-EHC028. Available at: <https://effectivehealthcare.ahrq.gov/products/peripheral-nerve-blocks/research>. Accessed September 24, 2025. **(Reference No. 28)**

Strength of Recommendations

The strength of a recommendation communicates the importance of adherence to the recommendation.

Strong Recommendations	The GDG found that the desirable effects of adherence to the recommendation outweigh the undesirable effects. This means that in most situations the recommendation can be adopted.
Conditional Recommendations	This means that the GDG found that there is: ▪ Greater uncertainty about the strength of evidence, or ▪ The recommendation may account for a greater variety in patient values and preferences, or ▪ The resource use makes the intervention suitable for some, but not for other locations. Conditional recommendations are still the best available evidence to date, and it can be adopted if it meets the conditions mentioned with it.
Good Practice Statement (GPS)	Statements based on expert opinion of respected authorities, and the guidelines development groups.

Evidence level

Evidence Assessment

According to WHO Handbook for Guidelines, we used the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) approach to assess the quality of a body of evidence, develop and report recommendations. GRADE methods are used by WHO because these represent internationally agreed standards for making transparent recommendations.

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Detailed GRADE information is available on the following sites:

- GRADE working group: <https://www.gradeworkinggroup.org/>
- GRADE online training modules: <http://cebgrade.mcmaster.ca/>

Quality Definition Implications

Evidence is categorized as High, Moderate, Low and Very low.

Table 1: Quality and Significance of the Four Levels of Evidence in GRADE:

Quality	Definition	Implications
High	The guideline development group is very confident that the true effect lies close to that of the estimate of the effect.	Further research is very unlikely to change confidence in the estimate of effect.
Moderate	The guideline development group is moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate.
Low	Confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the true effect.	Further research is very likely to have an important impact on confidence in the estimate of effect and is unlikely to change the estimate.
Very low	The group has very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect.	Any estimate of effect is very uncertain.

RECOMMENDATIONS

This Guideline deals with the recommendations of perioperative pain management using local and regional anesthesia for Cardiothoracic surgeries, mastectomy, and abdominal surgeries in adults and children.

The Guidelines Development Group (GDG) of the Egyptian Board of Anesthetics, Surgical Intensive Care, and Pain Management has adopted with modification:

The 2026 American Society of Anesthesiologists Practice Guideline on Perioperative Pain Management Using Local and Regional Analgesia for Cardiothoracic Surgeries, Mastectomy, and Abdominal Surgeries. Joshi, GP, Mariano; Elkassabany, et al. *Anesthesiology* [144\(1\):p 19-43, January 2026](#). (Reference No. 1)

Open Truncal Surgeries in Adults

- 1. For adults undergoing open cardiothoracic surgeries including lobectomy, aortic valve replacement, coronary artery bypass grafts, mitral valve repair, or septal repair, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. (Strong, Moderate evidence)**
- 2. For adults undergoing open abdominal, retroperitoneal, and pelvic surgeries, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. Fascial blocks also improve patient satisfaction. (Strong, Moderate evidence)**

	Open Truncal Surgeries in Adults
Strength	Strong
Benefit of Direction	Beneficial. Fascial plane blocks lead to a reduction in pain at 24 h postoperatively and reduce the use of opioids.
Evidence	Moderate strength of evidence for Open cardiothoracic surgeries. 2026 ASA Guideline, summary of evidence of 5 RCTs & pooled analysis of 8 trials*. Moderate strength of evidence for Open Abdominal Surgeries: 2026 ASA Practice Guideline pooled analysis of 22 RCTs & of another five trials **
Remarks	It should be noted that the variety of block techniques described in the included studies cover different regions of the chest, and the choice of block should be influenced by surgical approach and site of anticipated pain (i.e., parasternal intercostal plane blocks for sternotomy pain). Other systematic reviews focused on single surgical procedures & comparisons of specific blocks in those procedures have reported variable findings.

*The Pooled results of the **2026 ASA Practice Guideline** [1] summary of evidence for critical and important outcomes for open cardiothoracic surgeries derived from **five randomized clinical trials** assessing pain intensity showed that fascial plane blocks led to a reduction in pain at 24 h postoperatively that exceeded the **Minimal Clinically Important Difference (MCID)** of 1 point [6-10]. A variety of block techniques described in the included studies cover different regions of the chest. Fascial plane blocks included erector spinae plane, pectointercostal, serratus anterior plane, and superficial parasternal intercostal plane. Similarly, pooled analysis of **eight trials** showed that fascial plane blocks reduced the use of opioids compared to controls with a mean difference of 60 oral morphine equivalents (OME) [7,8,10-15]. The overall strength of evidence for both pain intensity and opioid use was rated moderate due to risk

of bias limitations primarily related to lack of blinding of patients and/or outcome assessors [<https://links.lww.com/ALN/E271>]. The 2026 ASA panel recommends incorporating fascial plane blocks into the multimodal analgesic regimen for patients undergoing open cardiothoracic surgeries based on decreased pain at rest and decreased opioid use within 24 h.

** The summary of evidence of the **2026 ASA Practice Guideline** [1] that included pooled analysis of **22 randomized clinical trials** suggests that fascial plane blocks reduced pain at rest (10 trials suggest reduction of dynamic pain and 11 trials showed a reduction in opioid use at 24 h postoperatively compared with controls) . While the reduction in pain intensity was modest, the reduction in opioid use for fascial plane blocks was 35 OME. A **pooled analysis of five trials** indicated that fascial plane blocks were also associated with an increase in patient satisfaction [16-20]. The overall strength of evidence for pain intensity and/or opioid use was **moderate** due to either risk of bias limitations related to lack of blinding or to imprecision (i.e., the 95% CI for dynamic pain overlaps with the MCID threshold); [<https://links.lww.com/ALN/E271>]. **The 2026 ASA panel** recommends fascial plane blocks to reduce pain and/or opioid requirements and improve patient satisfaction for adults undergoing open abdominal, retroperitoneal, and pelvic surgeries. It is noteworthy that analgesic benefits were observed, although there was significant variability in the randomized clinical trials reviewed. Similarly, a reduction in opioid use with fascial plane blocks was found despite variability in the postoperative analgesic regimen in the control cohort, ranging from opioids alone to nonopioids analgesics, acetaminophen, NSAIDs, and COX-2–specific inhibitors.

Mastectomy

- 3. For adults undergoing mastectomy, we recommend fascial plane or paravertebral blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. Fascial plane blocks also improve patient satisfaction and quality of recovery. (Strong, Moderate evidence)**

	Mastectomy
Strength	Strong
Benefit of Direction	Beneficial. Provides effective analgesia after mastectomy and reduced the use of opioids.
Evidence	Moderate strength of evidence. The 2026 ASA panel pooled analysis of total 44 RCTs for pain reduction + pooled analysis of 23 trials for reduction in opioid use*. Consistent with previous systematic reviews and meta-analyses**
Remarks	Evidence suggests that both fascial plane and paravertebral blocks provide effective analgesia after mastectomy. However, fascial plane blocks were associated with improved patient satisfaction and quality of recovery.

* **The 2026 ASA panel** [1] **pooled analysis of 20 randomized clinical trials** showed that fascial plane blocks reduced pain at rest and **11 trials** showed that they also reduced dynamic pain at 24 h. However, the reduction in pain met the MCID of 1 point for dynamic pain but not for pain at rest. **Nine randomized clinical trials** showed a reduction in pain at rest with paravertebral block, and **four trials** achieved a MCID of 1-point in dynamic pain. The **2026 ASA panel** pooled analysis of **18 trials** for fascial plane blocks which included erector spinae plane, interpectoral plane, pectoserratus plane, and serratus anterior plane and **5 trials** for paravertebral blocks showed that both were associated with a reduction in opioid use in the first 24 h after surgery, with a decrease of 25 OME.

While no trials involving paravertebral blocks assessed quality of recovery, **pooled analysis** indicated that fascial plane blocks were associated with improved **quality of recovery** [21-23] and higher patient satisfaction [23-26]. The evidence for **fascial plane blocks** was rated **moderate** due primarily to risk of

bias limitations related to inadequate randomization (*e.g.*, lack of allocation concealment). The evidence for **paravertebral blocks** was rated **low** due to limitations in risk of bias, inconsistency (*e.g.*, variation in the magnitude or direction of effect of individual studies in the pooled analysis), and/or imprecision (95% CI crossing the null or MCID threshold; [<https://links.lww.com/ALN/E271>]).

****Evidence of the 2026 ASA panel [1]** suggests that fascial plane and paravertebral blocks provide effective analgesia after mastectomy. Although there were no differences between paravertebral block and fascial plane blocks, fascial plane blocks were associated with improved quality of recovery and patient satisfaction. These findings are **consistent with previous systematic reviews and meta-analyses** reporting that paravertebral block and fascial plane blocks were superior to control or surgical site local anesthetic infiltration for reducing postoperative pain and opioid use [27].

Minimally Invasive Truncal Surgeries in Adults

4. For adults undergoing minimally invasive cardiothoracic surgeries including lobectomy, valve repair/replacement, and esophageal procedures, we suggest regional techniques including neuraxial and fascial plane blocks to reduce pain in the first 24 h postoperatively. **(Conditional, Low evidence)**
5. For adults undergoing minimally invasive abdominal surgeries including cholecystectomy, appendectomy, bariatric, gastrectomy, and liver resection surgeries, we recommend fascial plane blocks to reduce pain and/or opioid requirements in the first 24 h postoperatively. **(Strong, Moderate evidence)**
6. For adults undergoing minimally invasive hernia repair, we suggest fascial plane blocks to reduce pain in the first 24 h postoperatively. **(Conditional, Low evidence)**

	Minimally Invasive Truncal Surgeries in Adults
Strength	Conditional for Minimally Invasive Cardiothoracic Surgeries Strong for Minimally invasive abdominal surgeries Conditional for Minimally invasive hernia repair
Benefit of Direction	Beneficial. Results in reduction in pain at 24 h and reduction in opioid use.
Evidence	Low strength of evidence for Minimally Invasive Cardiothoracic Surgeries. The 2026 ASA pooled analyses of 20 trials for single-injection & 6 trials for continuous fascial plane blocks + 12 trials for continuous epidural analgesia & 6 trials for single-injection & continuous paravertebral blocks *. Moderate strength of evidence for Minimally Invasive Abdominal surgeries. The 2026 ASA pooled analyses of 62 RCTs, 3 trials for nephrectomy & 5 trials for appendectomy subgroups**. Low strength of evidence for Minimally Invasive Hernia Repair: 4 trials**.
Remarks	The 2026 ASA panel grouped different types of minimally invasive surgical procedures into: Nephrectomy and urologic surgeries group, Appendectomy, bariatric, and cholecystectomy group, Colorectal, hysterectomy, and other gynecologic group, Gastrectomy, liver resection, pancreatic, and splenectomy group, and Hernia repair group, because these procedures have almost similar surgical incisions, resulting in similar intensity of somatic pain, although visceral pain may vary.

*The 2026 ASA summary of evidence [1] for **Minimally Invasive Cardiothoracic Surgeries** included pooled analyses of **20 trials** for single-injection fascial plane blocks and **6 trials** for **continuous fascial plane blocks** showed a reduction in pain at 24 h, but the reduction did not meet the MCID of 1 point [28].

Fascial plane blocks included erector spinae plane, intercostal plane, and serratus anterior plane. However, single-injection fascial plane blocks were associated with a reduction in opioid use by 37 OME [29-31]. Pooled analyses of **six trials** showed that **continuous epidural** analgesia reduced both pain at rest and dynamic pain at 24 h exceeding the MCID of 1 point. While **six trials** showed that single-injection paravertebral blocks were associated with only a modest reduction in pain, further analyses of these trials indicated a 33 OME reduction in opioid use. **Pooled analyses** showed a reduction in pain at rest that met the MCID of 1 point [32,33] but not for dynamic pain [32, 34] with continuous paravertebral block. The overall strength of evidence was rated low for most outcomes due to risk of bias and imprecision (95% CI crossed the MCID threshold [28]. The **ASA 2026 panel** suggested the inclusion of neuraxial or fascial plane blocks within a multimodal analgesic regimen to decrease pain after surgery. However, studies of single-injection paravertebral and fascial plane blocks show clinically relevant reductions in opioid use for the first 24 h after surgery. The opioid-sparing effect may be important to consider for cardiothoracic surgery patients as they are at higher risk for postoperative respiratory compromise. While continuous epidural demonstrated clinically relevant reductions in pain at rest and dynamic pain that exceeded the MCID, this technique is not recommended for minimally invasive thoracic surgery by **the Procedure Specific Postoperative Pain Management group and others** [35,36]. As an alternative, for patients who may benefit from extending the duration of local anesthetic effect, continuous paravertebral block may offer clinically relevant analgesia at rest.

****Minimally invasive abdominal surgeries** have become increasingly common across a broad range of surgical specialties due to established benefits of smaller incisions, reduced surgical stress response, and faster recovery, while appreciating lower risks of complications compared to open procedures [37,38]. Compared with an open surgical approach, a minimally invasive approach is associated with lower postoperative pain and opioid requirements [39,40]. **The 2026 ASA panel [1] grouped different types of minimally invasive surgical procedures** because these procedures have almost similar surgical incisions, resulting in similar intensity of somatic pain, although visceral pain may vary. The **2026 ASA** body of evidence [1] included **62 randomized clinical trials**. **Pooled analysis** showed a reduction in pain intensity and opioid use in all surgical groups, but the reduction in pain did not meet the MCID threshold. Fascial plane blocks included erector spinae plane, quadratus lumborum, rectus sheath, serratus anterior plane, and transversus abdominis plane. **Pooled analysis** of **three trials** indicated higher quality of recovery with fascial plane blocks that met the MCID threshold for nephrectomy [4-43]. Similarly, **five trials** showed higher quality of recovery for appendectomy surgical subgroups, but the difference did not meet the MCID threshold [44-48]. The strength of evidence was moderate due to risk of bias (allocation concealment and blinding) and inconsistency due to variation in the magnitude of effect. It is generally accepted that fascial plane blocks reduce somatic pain but minimally influence visceral pain [49]. Notably, despite not yet fully understanding their mechanisms of action [50], fascial plane blocks resulted in a reduction in opioid usage consistently across all surgical categories.

Open Truncal Surgeries in Children (Younger than 18 yr)

- 7. For children (younger than 18 yr) undergoing open cardiothoracic surgeries, we recommend fascial plane blocks to reduce pain and/or opioid use in the first 24 h postoperatively. **(Strong, Moderate evidence)**
- 8. For children (younger than 18 yr) undergoing open hernia repair, we suggest a fascial plane block to reduce pain in the first 24 h postoperatively. **(Conditional, Low evidence)**

	Open Truncal Surgeries in Children (Younger than 18 yr)
Strength	Strong for Open Cardiothoracic Surgeries in Children Conditional for Open hernia repair for Children

Benefit of Direction	Beneficial. Reduce pain and/or opioid use and improve recovery in infants and children undergoing cardiothoracic surgery and open abdominal surgery.
Evidence	Moderate strength of evidence for Open Cardiothoracic Surgeries in Children: The 2026 ASA pooled analyses of 7 trials for reduced opioid use and 6 trials for pain reduction*. Low strength of evidence for Open Abdominal Surgeries for Children: The 2026 ASA study included 2 randomized clinical trials**
Remarks	Fascial plane blocks for open cardiothoracic surgeries in children included erector spinae plane, intercostal plane, interpectoral plane, pectoserratus plane, retrolaminar, serratus anterior plane, and transversalis fascia plane. Fascial plane blocks for Open Abdominal Surgeries for Children included erector spinae and quadratus lumborum plane.

*The **2026 ASA panel** summary of evidence [1] for Open Cardiothoracic Surgeries in Children (Younger than 18 yr) from the **pooled analyses of seven trials** found that fascial plane blocks reduced opioid use within the first 24 h [51-57] and in **six trials** reported **minimal pain reduction** within the first 12 to 24 h [51-53, 57-59]. The strength of evidence rating for reduced opioid use was moderate due to study risk of bias (lack of patient or observer blinding) and low for pain due to limitations in risk of bias and imprecision for study and patient characteristics, GRADE assessments, and meta-analysis results. The **2026 ASA panel** [1] recommends the incorporation of fascial plane blocks into the multimodal analgesic regimen to reduce pain and/or opioid use and improve recovery in infants and children undergoing cardiothoracic surgery. However, the following limitations to the evidence should be noted. The pain assessments coalesced in this meta-analysis reflect a variety of acceptable, but not necessarily interchangeable scoring systems including the Modified Objective Pain Scale; Face, Legs, Activity, Cry and Consolability scale; and the Numeric Rating Scale. Confounding factors, like postoperative delirium or agitation and operator or parenteral interpretation, can bias the score reporting and further skew cohort results. Another noteworthy consideration is the lack of standardized sensory testing for block efficacy, which is not uniformly assessed in the postoperative period for the pediatric population. As a result, block efficacy is often presumed and not definitively investigated, further hindering the formulation of robust recommendations for widespread practice.

****The ASA 2026** body of evidence [1] for Open Abdominal Surgeries for Children (Younger than 18 yr) included **two randomized clinical trials** comparing single-injection fascial plane blocks (erector spinae plane and quadratus lumborum) to controls [60-61]. Both trials utilized opioids, with NSAIDs and acetaminophen adjuncts for postoperative pain management. Pooled analysis suggests that fascial plane blocks reduced pain within the first 12 to 24 h postoperative. The overall strength of evidence for pain intensity was low due to risk of bias limitations and imprecision due to the small number of studies included in the evidence base. The **2026 ASA panel** [1] suggests the incorporation of fascial plane or peripheral nerve blocks to reduce pain and opioid use in children undergoing open inguinal hernia repair surgery. The studies analyzed herein lacked sensory assessments (efficacy), utilized different pain assessment scales (Numeric Rating Scale vs. Face, Legs, Activity, Cry and Consolability scale), and compared caudal analgesia for children aged 2 to 5 yr old, for which a shorter duration of action/spread with local anesthetic and hence postoperative rescue opioid use would be predictable. Caudal block is the most widely utilized regional technique for children undergoing lower abdominal surgery. Current trends suggest more interest in adjunct fascial plane blocks for lower abdominal pediatric surgery, as these offer prolonged localized coverage without the inherent systemic risks associated with caudal anesthesia [62].

Implementation Considerations

- Pain intensity can be assessed using various tools, *e.g.*, visual analog scales, numerical rating scales, or ordinal scales. Resting and dynamic pain can be measured.
- Reporting important patient-oriented outcomes, such as quality of recovery, patient satisfaction with pain management, and harms are important. The outcomes should include both unidimensional and multidimensional assessments, as pain affects various aspects of daily life, such as function, sleep, emotions, and other activities and cannot be fully captured by assessment of pain intensity within a single time point or interval.
- Resolution of moderate to severe pain after surgery, which limits mobility and other rehabilitative goals, can last several days to weeks based on the patient and procedure.
- Fascial plane blocks are strongly recommended for adults undergoing open cardiothoracic, mastectomy, abdominal, retroperitoneal, pelvic surgeries, and minimally invasive abdominal procedures.
- Fascial plane blocks are strongly recommended for children undergoing open cardiac or thoracic surgeries and are conditionally recommended for children undergoing open hernia repair.

Research Gaps

Literature review shows insufficient research data that need further studies for:

- There is a need for larger, high-quality randomized clinical trials that consistently measure meaningful outcomes related to perioperative pain management.
- Studies that involve regional anesthesia and pain management interventions need to move beyond the immediate 24-h postoperative period.
- For regional analgesic techniques for children undergoing cardiac surgery the sample sizes of the studies were typically small and when compared to adult studies and large multicenter trials are lacking.
- Rigorous prospective studies with comparable methodologies are needed to provide objective criteria across large cohorts specific to median sternotomies and thoracotomies in the pediatric population.
- A concerted effort by pediatric anesthesiologists to collate larger, multi-institutional data may yield the necessary outcomes to validate incorporating more fascial plane and peripheral nerve blocks into pediatric acute postsurgical management.

Clinical Indicators for Monitoring

- **Rate of suboptimal pain control**
Numerator: Number of patients with suboptimal pain control experiencing moderate to severe pain
Denominator: Total number of patients who received pain control
- **Percentage of patients who received Regional or Local pain modalities**
Numerator: Number of patients who received Regional or Local pain modalities
Denominator: Total number of patients operated in a certain period of time

Update of the Guideline

The Guidelines of this current version (Year 2026) are subject to revision, and the updated versions will be published when needed, as warranted by the evolution of new-evidenced medical knowledge, new technology, and new practice trends.

Guidelines Development Contributors and Participants

Contributors and Participants:

The Guidelines Development Group (GDG) of the Egyptian Board of Anesthetics, Surgical Intensive Care, and Pain Management.

Annexes

Annex 1:

Evidence-to-Decision Tables

Open Truncal Surgeries in Adults

1. Fascial plane blocks for open cardiothoracic surgeries

Criterion	Fascial plane blocks for open cardiothoracic surgeries
Problem	Postoperative pain and high opioid requirements in the first 24 h.
Benefit	Reduction in pain intensity and opioid use; improved recovery.
Risk/Harm	Minimal: procedural risks of block.
Certainty of Evidence	Moderate — ASA 2026 guideline; 5 RCTs + 8 trials.
Values & Preferences	Patients value pain relief and reduced opioid side effects.
Resource Use	Low to moderate (requires a trained anesthesiologist).
Equity	High: applicable across institutions.
Acceptability	High: widely accepted in practice.
Feasibility	High: feasible with standard perioperative resources.
Recommendation	Strong.

2. Fascial plane blocks for open abdominal/retroperitoneal/pelvic surgeries

Criterion	Fascial plane blocks for open abdominal surgeries
Problem	Significant postoperative pain and opioid use.
Benefit	Reduction in pain and opioid requirements; improved patient satisfaction.
Risk/Harm	Minimal procedural risks.
Certainty of Evidence	Moderate — pooled analysis of 22 RCTs + 5 trials.
Values & Preferences	Patients value pain control and satisfaction.
Resource Use	Low to moderate.
Equity	High.
Acceptability	High.
Feasibility	High.
Recommendation	Strong.

Mastectomy

3. Fascial plane or paravertebral blocks

Criterion	Fascial plane or paravertebral blocks for mastectomy
Problem	Severe postoperative pain and opioid dependence.
Benefit	Effective analgesia, reduced opioid use, improved satisfaction, and recovery.
Risk/Harm	Minimal procedural risks.
Certainty of Evidence	Moderate — pooled analysis of 44 RCTs (pain) + 23 trials (opioid use).
Values & Preferences	Patients value pain relief and quality of recovery.
Resource Use	Moderate (requires expertise in block techniques).
Equity	High.
Acceptability	High.
Feasibility	High.
Recommendation	Strong.

Minimally Invasive Truncal Surgeries in Adults

4. Cardiothoracic (lobectomy, valve repair/replacement, esophageal)

Criterion	Regional techniques (neuraxial/fascial plane blocks)
Problem	Postoperative pain in minimally invasive cardiothoracic surgery.
Benefit	Reduction in pain intensity.
Risk/Harm	Procedural risks; limited evidence of benefit.
Certainty of Evidence	Low — pooled analyses of 26 trials for fascial plane + 12 trials for continuous epidural & 6 trials for paravertebral blocks.
Values & Preferences	Patients value pain relief.
Resource Use	Moderate.
Equity	High.
Acceptability	Moderate.
Feasibility	Moderate.
Recommendation	Conditional.

5. Minimally invasive abdominal surgeries (cholecystectomy, appendectomy, bariatric, gastrectomy, liver resection)

Criterion	Fascial plane blocks
Problem	Postoperative pain and opioid use.
Benefit	Reduction in pain and opioid requirements.
Risk/Harm	Minimal.
Certainty of Evidence	Moderate — pooled analysis of 62 RCTs.
Values & Preferences	Patients value pain relief and reduced opioid side effects.
Resource Use	Low to moderate.
Equity	High.
Acceptability	High.
Feasibility	High.
Recommendation	Strong.

6. Minimally invasive hernia repair

Criterion	Fascial plane blocks
Problem	Postoperative pain in hernia repair.
Benefit	Reduction in pain intensity.
Risk/Harm	Minimal.
Certainty of Evidence	Low — 4 trials.
Values & Preferences	Patients value pain relief.
Resource Use	Low.
Equity	High.
Acceptability	Moderate.
Feasibility	Moderate.
Recommendation	Conditional.

Open Truncal Surgeries in Children (<18 years)

7. Open cardiothoracic surgeries

Criterion	Fascial plane blocks for children
Problem	Severe postoperative pain and opioid use in pediatric patients.
Benefit	Reduction in pain and opioid requirements.
Risk/Harm	Minimal procedural risks.
Certainty of Evidence	Moderate — 7 trials for reduced opioid use and 6 trials for pain reduction.
Values & Preferences	Families and patients value pain relief and safety.
Resource Use	Moderate.
Equity	High.
Acceptability	High.
Feasibility	High.
Recommendation	Strong.

8. Open hernia repair in children

Criterion	Fascial plane block for pediatric hernia repair
Problem	Postoperative pain in pediatric hernia repair.
Benefit	Reduction in pain intensity.
Risk/Harm	Minimal.
Certainty of Evidence	Low — limited pediatric trials – 2 RCTs
Values & Preferences	Families value pain relief and safety.
Resource Use	Low.
Equity	High.
Acceptability	Moderate.
Feasibility	Moderate.
Recommendation	Conditional.

Annex 2:

Chest Wall Fascial Plane Blocks	Abdominal Wall Fascial Plane Blocks
Erector spinae plane block Interpectoral plane block Parasternal intercostal plane block Pectoserratus plane block Serratus anterior plane block	External oblique intercostal plane block Rectus sheath block Rhomboid intercostal plane block Transversus abdominis plane block Quadratus lumborum block

Table: Examples of ultrasound-guided fascial plane blocks indicated for surgeries involving the chest and abdomen [1].

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