Perioperative Pain Management

Overview and Update

Cheryl Ewing, M.D.
Associate Professor of Clinical Surgery

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Perioperative Pain Management

As defined by the Anesthesiologist’s “Task Force on Acute Pain Management” are from the practice guidelines from the American Society of Anesthesiologists published this year.

“As acute pain is defined as pain that is present in a patient after a procedure”.

Perioperative Pain Management

“Pain management in the perioperative setting refers to actions before, during and after a procedure that are intended to reduce pain or eliminate pain before discharge”.

Perioperative Pain Management

Goals for pain management:
- facilitate safety and effectiveness of acute pain management in the perioperative setting.
- reduce the risk of adverse outcomes.
- maintain the patient’s functional abilities, well-being define both as physical and psychological.
- Enhance the quality of life for patients with acute pain during the perioperative period.
Perioperative Pain Management

Goals are happy and comfortable postoperative patient.

1. Thromboembolic events.
2. Pulmonary complications.
3. Additional time in the ICU or in the hospital.
4. Hospital readmission for pain management.
5. Needless suffering and impairment on quality of life.

At the other end of the perioperative pain spectrum adverse complications are:
1. Respiratory depression
2. Brain or neurologic injury
3. Over sedation
4. Circulatory depression
5. Nausea and vomiting
6. Urinary retention
7. Impairment of bowel function
8. Sleep disruption

First step in planning the patient’s perioperative pain management.
1. Type of surgery
2. Expected severity of postoperative pain
3. Underlying medical conditions e.g. respiratory disease, cardiac disease, cognitive functions, allergies,
4. Risk-benefit ratio for available techniques.
5. Patient’s preference or previous experience with pain.
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Continue:
6. Consultation with your pain management service or Anesthesiology for complex patients.

Observation studies suggest a pain management protocol will result in reduced analgesic use, shorter time to extubation and shorter times to discharge and fewer hospital readmissions.


Perioperative Pain Management

Preoperative Management
1. Adjustment or continuation of medication whose sudden cessation may provoke a withdrawal syndrome.
2. Treatment to reduce preexisting pain and anxiety.
3. Premedication before surgery as part of a multimodal analgesic pain management.
4. Patient and family education and setting expectations.

Perioperative Pain Management

Perioperative Techniques: Single Modalities
- Central regional (neuroaxial) opioid analgesia, e.g. epidural/intrathecal blocks.
- PCA with systemic opioids
- Peripheral regional blocks including intercostal blocks, plexus blocks and local anesthesia infiltration of incisions.

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Central Regional (neuroaxial)
Randomized controlled trials (RCT) report improved pain relief with use of pre-incisional epidural or intrathecal morphine compared to pre-incisional oral, intravenous, or intramuscular morphine.


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Central Regional (neuroaxial)
RCTs using postoperative pain scores report the results are equivocal when comparing pre-operative/pre-incisional epidural morphine/fentanyl with postoperative epidural morphine or fentanyl.
The results for nausea, vomiting, pruritis are also equivocal when comparing postoperative epidural fentanyl with IV fentanyl.

Subramaniam et al Anesth Intensive Care 2000
Katz et al Anesthesiology 1992

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PCA and Systemic Opioids
◆ RCT are equivocal on pain relief when comparing PCAs vs. nursing administrated IV opioids.
◆ IV PCA morphine reports improved pain scores when compared to IM morphine.

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PCA and Systemic Opioids

◆ The results of improved pain control are equivocal when comparing epidural PCA vs. IV PCA.

◆ The results are equivocal for nausea, vomiting, and pruritus when comparing PCA to Systemic Opioids.

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PCA and Systemic Opioids

RCTs suggest increase opioid use with IV PCA with background infusion of morphine compared to IV PCA without background infusion.

Berde et J Ped 1991
Choinere et al Anesthesiology 1998
Wheatly et al Br J Anesth 1992
Grant et Can J Anesth 1992
Ngan et al Anesth Intensive Care 1997

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Peripheral Regional Techniques

Peripheral nerve blocks
1. intercostal,
2. ilioinguinal,
3. interpleural,
4. intraarticular,
5. plexus blocks,
6. infiltration of incisions (optimize pain control, infiltrate before you make the incision)

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Multimodal Techniques for Pain Management

Define as the administration of two or more drugs that work by different mechanisms for providing analgesia. These drugs may be administered by the same route or by different routes.

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Results from RCT

- Improved pain scores
- The results are equivocal for nausea, vomiting and pruritus when comparing single modal to multimodal techniques of analgesia delivery.
- More motor weakness with multimodal therapy.
- Improved pain scores and reduce analgesic use when IV Morphine is use with Toradol.
- The above is also true if IV opioids are with gabapentin (Neurontin) and pregabalin (lyrica).

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Recommendations from the Task Force:

- Whenever possible use multimodality pain management.
- Unless contraindication patient should receive around the clock acetaminophen, NSAIDS, or Cox inhibitors. Individualize delivery dose, and duration of therapy.
- Regional blockade with local anesthesia should be considered as part of the multimodal approach.
- Optimized pain control while minimizing adverse events.
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Multimodal/Single Techniques for Pain Management

Recommendations from the Task Force:

◆ Consider the risks and benefit to the patient with planning perioperative pain management.
◆ These modalities should be used in preference to intramuscular opioids.
◆ Selection for plan for pain management according to the expertise of the providers and capacity for safe delivery of the therapy.
◆ Special caution should be taken when using continuous infusion (avoid over sedation).

Paravertebral Blocks (PVB)

◆ Can block multiple mix nerve roots.
◆ Largely somatic blocks.
◆ Provide anesthesia/analgesia for multiple surgical procedures.
◆ Can use continuous infusion.

As the nerves pass through the paravertebral space they are not as tightly bundled with investing fascia.

This anatomy enhances contact with local anesthesia with the nerves roots.

Multiple neurologic structure are confined in this space, therefore PVB can provide unilateral motor, sensory and sympathetic blockade.

Klein et al, Anesth Analg 2000
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Paravertebral Blocks (PVB)
RCT with 60 patients undergoing unilateral or bilateral breast augmentation or breast reconstruction.
Patients were 18 years or older.
Patient excluded were morbidly obese, coagulopathic, infection at the site of the block.
Patient were pre-randomized to General Anesthesia (n 30) and to PVB (n 30).

Klein et al Anesth Analg 2000:90

Indications for PVB:
1. Breast Surgery (most ideal)
2. Hernia Repair (incisional, ventral, umbilical, and inguinal).
3. Chest wall procedures including rib resection and Thoracotomy and VATS, Rib fractures.
4. Abdominal wall procedures.
5. Endovascular Aortic Aneurysm surgery.
6. Upper extremity orthopedic or vascular procedures.
7. Laparoscopic procedure.
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Complication of PVB

- Vascular puncture 3.8%
- Hypotension 4.6%
- Pleural puncture 1.1%
- Pneumothorax 0.5%

Lonnqvist et al, Anesthesia 1995

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Conclusion:

- A plan for pain control should be part of the pre-operative work-up.
- Whenever possible use multimodal pain control.
- Consider risk and benefits to the individual patient.
- Epidural and intrathecal opioids, systemic PCA, regional treatment should are preferred over intramuscular injections.
- Selection based on the expertise of the provider and capacity for safe delivery.
- Special caution with continuous infusion.