Nerve Blocks & Long Acting Analgesia for Plastic Surgeons

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Disclosures

None related to this topic
Why is Non-Opioid Analgesia Important

- Opioid epidemic
- Less opioid use
- Less PONV
- Faster transfer from PACU
- Faster discharge home
- Normalized physiology (RR, HR, BP)
- Decreased surgical stress response?
- Decreased risk of long-term pain & CRPS?
Liposomal Bupivacaine (Exparel)

• Controlled bupivacaine release
• Pain relief 2 to 3 days
• Can’t mix with lidocaine within 20 min
• May be an “add on” cost
• Mixed results in breast augmentation
• Use in plastic surgery not standardized

$300 vial
Liposomal Bupivacaine – Big Picture

- Lack of evidence prevents assessment of liposomal bupivacaine as a peripheral nerve block (2016)
- Liposomal bupivacaine at surgical site (2017)
  - Does appear to reduce postoperative pain compared to placebo
  - Limited evidence does NOT demonstrate superiority to bupivacaine
Preemptive & Preventive Analgesia

• Preemptive analgesia (before incision) effectiveness is debatable
  • Local anesthetic at incision sites (mandatory in MAC cases)
  • Preoperative oral NSAIDs, acetaminophen (useful for short cases)
• Preventive analgesia (after incision) effectiveness is debatable
• Has to be part of ERAS protocol
Breast Procedures
Preemptive Bupivacaine in Breast Reduction

• 110 mL dilute bupivacaine + epi per side
• Incisions and retroglandular
• Significant improvement in
  • Time from surgery to first analgesic
  • Number of analgesic doses
  • McGill Pain Questionnaire
  • Visual analogue pain scale
  • Verbal pain scale

Preemptive Analgesia with Bupivacaine in Reduction Mammaplasty: A Prospective, Randomized, Double-Blind, Placebo-Controlled Trial

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Background: Preincisional analgesia is an antinociceptive treatment that prevents altered central excitability from high-intensity noxious stimuli. To determine the analgesic efficacy of preoperative infiltration with bupivacaine for reduction mammoplasty, a randomized, double-blind, placebo-controlled trial was designed.
Tumescent Lidocaine in Breast Reduction

• 250 mg lidocaine in 500 mL NS per breast
• No difference in pain, narcotic use, PONV in first 24 hrs
• Consider 750 to 1000 mg - it works!
• Need bupivacaine in incision sites

A Prospective Randomized Trial Comparing the Effects of Lidocaine in Breast Reduction Surgery

Background: Use of dilute epinephrine tumescent solution in breast reduction surgery has been shown to significantly decrease operative blood loss without increasing perioperative complications. Lidocaine is commonly added to epinephrine to decrease postoperative pain. Evidence supporting this practice, however, is limited, and lidocaine toxicity has been reported.

Methods: With institutional review board approval, patients undergoing bilateral breast reduction surgery were assigned to receive either tumescent saline...
Paravertebral Block for Breast Reduction

• Reduction in
  • Time to first pain
  • Fentanyl requirement
  • Pain scale scores
  • Tramadol in PACU

• Not worth the effort?
Paravertebral Block Implant Reconstruction

- RCT 74 patients PVB vs no block
  - Less opioid (109 vs 246 fentanyl units)
  - Lower pain scores
- Less PONV medication

A Prospective, Randomized, Controlled Trial of Paravertebral Block versus General Anesthesia Alone for Prosthetic Breast Reconstruction

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Background: Paravertebral blocks have gained popularity because of ease of implementation and a shift toward ambulatory breast surgery procedures. Previous retrospective studies have reported potential benefits of paravertebral blocks, including decreased narcotic and antiemetic use.
Liposomal Bupivacaine in Immediate Implant Breast Reconstruction

- Conventional (C) vs bupivacaine pump (BP) vs liposomal bupivacaine intercostal nerve block (LB)
- LB LOS 1.5 days vs 2.0 days for conventional protocol
- LB lower pain scores at from 4 to 24 hrs compared to BP & C

Postoperative Pain and Length of Stay Lowered by Use of Exarel in Immediate, Implant-Based Breast Reconstruction

Background: Patients undergoing mastectomy and prosthetic breast reconstruction have significant acute postsurgical pain, routinely mandating inpatient hospitalization. Liposomal bupivacaine (LB) (Exarel, Pacira Pharmaceuticals, Inc., Parsippany, N.J.) has been shown to be a safe and effective pain reliever in the immediate postoperative period and may be advantageous for use in mastectomy and breast reconstruction patients.
Bupivacaine Intercostal Blocks & Implant Reconstruction

• Bilateral reconstruction, lower
  • Length of stay
  • IV morphine
  • Valium

• Unilateral reconstruction, lower
  • IV morphine

• Cost savings per patient
  • Bilateral $2873
  • Unilateral $1532
Nerve Blocks Alone Not Enough?

- No outcome difference between bupivacaine nerve blocks & placebo
- Not part of a robust postoperative multimodal analgesic regimen

Intraoperative Nerve Blocks Fail to Improve Quality of Recovery after Tissue Expander Breast Reconstruction: A Prospective, Double-Blinded, Randomized, Placebo-Controlled Clinical Trial

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Background: The authors’ study represents the first level I evidence to assess whether intraoperative nerve blocks improve the quality of recovery from immediate tissue expander/implant breast reconstruction.

Methods: A prospective, randomized, double-blinded, placebo-controlled clinical trial was conducted in which patients undergoing immediate tissue expander/implant breast reconstruction were randomized to either (1) intraoperative intercostal and pectoral nerve blocks with 0.25% bupivacaine with 1:200,000 epinephrine and 4 mg of dexamethasone or (2) sham nerve blocks with nor-
Epidural Anesthesia + General Anesthesia

- EA catheter remove at end of surgery
- EA+GA lower pain scores up to 24 hrs compared to GA alone
- No increase in flap thrombosis

- EA is more invasive
  - Patient stress
  - Spinal headache
  - Hypotension
Transversus Abdominis Plane (TAP) Block

- **TRANSVERSUS ABDOMINIS PLANE (TAP)**
- Between transversus abdominis and internal oblique muscle
- 30 mL 0.25% ropivacaine or bupivacaine (with Epi) per side
- Ultrasound guided by anesthesiologist preoperative
- Open access by surgeon intraoperative
Transversus Abdominis Plane (TAP) Block
TAP Block: Abdominal Based Reconstruction

- Regional or local blocks minimize pain and sedation
- Continuous bupivacaine infusion catheters reduce opioid use
- Decrease abdominal donor-site pain
- Single liposomal bupivacaine injection lasts for several days
- Decreased PONV

Emerging Paradigms in Perioperative Management for Microsurgical Free Tissue Transfer: Review of the Literature and Evidence-Based Guidelines


Prospective, Randomized, Controlled Comparison of Bupivacaine versus Liposomal Bupivacaine for Pain Management after Unilateral Delayed Deep Inferior Epigastric Perforator Free Flap Reconstruction
Bupivacaine Catheter TAP Block

- Reduction in POD 1 morphine use (21 mg vs 30 mg)

Transversus Abdominis Plane Block Reduces Morphine Consumption in the Early Postoperative Period following Microsurgical Abdominal Tissue Breast Reconstruction: A Double-Blind, Placebo-Controlled, Randomized Trial

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Background: The analgesic efficacy of the transversus abdominis plane peripheral nerve block following abdominal tissue breast reconstruction has not been studied in a randomized controlled trial.
Liposomal Bupivacaine TAP Block

- Evolution from nothing (control), to continuous bupivacaine infusion TAP block with catheters, to single-dose TAP block with liposomal bupivacaine
- Reduction in length of stay
  - 2.7 days - liposomal bupivacaine
  - 3.5 days - bupivacaine catheter infusion
  - 4.1 days - control
Intraoperative TAP Block
Abdominal Wall
Intraoperative TAP Block in Abdominoplasty

- 10 ml 0.5% bupivacaine 0.5% + 10 ml 1% lidocaine with Epi
- Reduced morphine requirement
- Earlier ambulation
- Lower pain scores
Transversus Abdominis Plane (TAP) Block

- 1 cm incision in facia
- Blunt dissection through EOM & IOM
- Short infiltration cannula into TAP
- Figure 8 suture in fascia

Gutowski, PRS 2018
Intraoperative TAP Block

Gianpiero Gravante, PRS 2010
ERAS & TAP Block for AWR

• Intraoperative liposomal bupivacaine TAP block
  • Decreased postoperative pain
  • Fast bowel function recovery
  • Shorter hospital stay

Enhanced Recovery after Surgery Pathway for Abdominal Wall Reconstruction: Pilot Study and Preliminary Outcomes

Summary: Enhanced recovery after surgery (ERAS) pathways represent a multimodal approach to improve the quality of postoperative care by diminishing the stress response to the trauma of an operation, thereby minimizing hospital length of stay and potentially complications. At a time when healthcare costs are being intensely scrutinized, efforts to reduce patient morbidity and
NSAIDs Are Safe in Plastic Surgery

Time to dispel the myth of NSAIDs causing bleeding in breast & body cases

Ketorolac Does Not Increase Perioperative Bleeding: A Meta-Analysis of Randomized Controlled Trials

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Background: Postoperative pain control is essential for optimal patient outcomes. Ketorolac is an attractive alternative for achieving pain control postoperatively, but concerns over postoperative bleeding have limited its use.

Methods: Computer searches of the MEDLINE, EMBASE, and Cochrane Library databases were performed. Twenty-seven double-blind, randomized,

Ibuprofen May Not Increase Bleeding Risk in Plastic Surgery: A Systematic Review and Meta-Analysis

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Background: Nonsteroidal antiinflammatory drugs such as ibuprofen are common medications with multiple useful effects, including pain relief and reduction of inflammation. However, surgeons commonly withhold all nonsteroidal antiinflammatory drugs perioperatively because of bleeding concerns. However, not all nonsteroidal antiinflammatory drugs irreversibly block platelet function. The authors hypothesized that the use of ibuprofen would have no
Team Effort with Anesthesiologist

• Seek out those who want to give a better patient experience
• Collaborate on ERAS protocols
• Give them patient feedback
• Learn from each other
Lipo-Abdominoplasty & Body Lift Protocol

- Gabapentin 300 mg PO (#40)
  - 600 mg at bedtime before surgery, then every 6 hrs x 3 to 5 days
- TAP or RS block
- SQ tumescent infiltration (500 mg lidocaine/L + epi)
- Ketorolac 30 mg IV during skin closure
- Acetaminophen 500 mg + NSAID of choice every 4 hr
- Oxycodone + acetaminophen (5/325 mg) as needed (#24)
- Ondansetron 4 mg ODT prn #4
Breast Protocol

- Gabapentin 300 mg PO (#40)
  - 600 mg at bedtime before surgery, then every 6 hrs x 3 to 5 days
- Lidocaine + epi & bupivacaine in all incisions
- Breast reduction or Mastopexy
  - Breast tissue tumescent infiltration (500 mg lidocaine/L +epi)
- Breast Augmentation
  - 5 cc 0.5% bupivacaine in each breast pocket
- Ketorolac 30 mg IV during skin closure
- Acetaminophen 500 mg + NSAID of choice every 4 hr
- Oxycodone + acetaminophen (5/325 mg) as needed (#24)
- Ondansetron 4 mg ODT prn #4
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