Ultrasound-guided Transversus Abdominis Plane (US-TAP) Block
Post-operative Analgesia after Laparoscopic Cholecystectomy
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INTRODUCTION

• TAP block
  • Primary indication is to provide analgesia for major surgical procedures of the anterolateral abdominal wall
  • An alternative strategy or adjuvant to reduce intra-operative opioid consumption and post-operative pain after laparoscopic cholecystectomy
  • Ultrasound-guided TAP block increases margin of safety and block quality by allowing direct visualization to:1,3,5
    • identify abdominal wall muscle and fascial layers (Figure 2)
    • precisely advance the needle to the correct plane for injection of local anesthetic solution
  • Ultrasound anatomy of the three abdominal wall muscle layers
    • External oblique muscle (EO) - most superficial
    • Internal oblique muscle (IO)
    • Transversus abdominis muscle (TA)
  • Goal:
    • Deposition of local anesthetics within the transversus abdominis plane, which is situated between the IO and TA (Figure 3)
  • Blockade of intercostal nerves T7 – T1 that provide sensory innervation to the skin, muscles and parietal peritoneum of the anterolateral abdominal wall

METHOD

• Search for relevant literature comprised of:
  • PubMed, EBSCO, Cochrane databases for peer-reviewed journals, meta-analyses, systematic reviews, randomized controlled trials, review articles
  • Key search words include combinations of ‘ultrasound-guided’, ‘transversus abdominis plane block’, ‘laparoscopy’, and ‘laparoscopic cholecystectomy’
  • Primary articles within last 5 years
  • Technique1,3,5
    • Patient position: Supine
      - Transducer position: Transverse (horizontal) on the skin, above the iliac crest in the anterior mid-axillary line
      - Needle position: In-plane technique, insert perpendicular to skin

RESULTS

• Utilizing ultrasound guidance for TAP block administration
  • Intra-operative analgesia requirement:
    • Remifentanil mean use significantly lower than that for Group Control
    • Group B vs Group A: Non TAP group mean 469.8 mcg, Group B vs Group A: 435.1 mcg, Group Control 685.5 mcg
  • Sufentanil use significantly reduced in the TAP group
    • TAP group mean 8.6 mcg ± 3.5 mcg
    • Non TAP group mean 23.0 mcg ± 4.8 mcg
  • Post-operative analgesia demand:
    • Number of patients whom fentanyl was administered
      • 0 in Group B and Group A
    • Demand for morphine via PCA device
      • TAP group mean 0.9 mg ± 0.7 mg
      • Non TAP group mean 2.3 mg ± 1.0 mg

DISCUSSION/CONCLUSION

• Better pain relief, less opioid requirements during operation and post-operative analgesics, resulting in proportionally less opioid-mediated adverse effects
• Enhanced patient recovery, earlier mobilization promoted, shorter hospital stay, and ultimately increased patient satisfaction

KEY REFERENCES