OPEN LAPAROTOMY IN A 1-KG PRETERM NEONATE
MANAGED PERIOPERATIVELY BY BILATERAL RECTUS SHEATH BLOCKS

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Introduction

The premature infant undergoing open gastrostomy is most often managed with general anesthesia, and occasionally with regional anesthesia.

Techniques which reduce the need for postoperative opioids and mechanical ventilation are preferred.

The ultrasound-guided rectus sheath block has become an increasingly popular technique in older pediatric patients, but has not yet been described in the preterm neonate.

Management

A 20-day old ex-28 week, 1.0 kg infant with a history of Edwards syndrome, long-gap esophageal atresia, hyperbilirubinemia, PDA, ASD, respiratory distress syndrome and chronic lung disease was scheduled for open gastrostomy tube. Patient arrived on NIMV with an FiO2 of 30%

After induction of general anesthesia and intubation, the patient was maintained on propofol and remifentanil infusions. No other narcotics were given, though ofirmev 7.5mg IV was given intraoperatively.

Surgical course: A midline incision extended from approximately T4-T9, with a left lateral drain placed at T7. The case was uneventful.

Rectus sheath block: After sterile preparation, a linear ultrasound was placed transversely on the abdominal wall just cephalad to the umbilicus. Scanning medially, the rectus muscle was identified as it tapered into the linea alba. Under direct visualization using an in-plane technique, a 25g needle was advanced and after hydrodissection with sterile saline confirmed needle-tip position, 0.4mL/kg of bupivacaine 0.25% was injected bilaterally with perineural dexamethasone 0.4mg added as an adjunct.

Emergence/post-operative course: The patient was extubated in the operating to baseline NIMV settings.

The first dose of pain medication postoperatively was not given until 47 hours after nerve injection.

NIMV settings were unchanged postoperatively.

Discussion

While the use of regional anesthetic techniques for perioperative pain management is more established in adults, its use in the pediatric population is still in its relative nascency. Recent studies (ADARPEF, PRAN) have suggested the safety of regional anesthetic techniques in children, even under general anesthesia, though its use in preterm neonates is not well established.

Conventional perioperative pain management for preterm neonates typically involves opioids, which leads to impaired ventilatory drive. This, in conjunction with the high risk of apnea of prematurity, may lead to prolonged postoperative ventilation with airway and lung injury. The use of regional techniques can augment perioperative pain control and minimize the exposure to opioids and the consequent side effects. Under direct visualization using an in-plane technique, a rectus sheath block is easy to perform, has a low risk of peritoneal puncture, and can provide long term pain relief, even in the much smaller and more technically challenging preterm neonates.

The use of a rectus sheath block in preterm infants may be an effective alternative to minimize the need for opioids and postoperative conventional mechanical ventilation in the preterm infant.