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Perioperative medicine in paediatric anaesthesia

Perioperative medicine is an expanding field within paediatric surgery. This article gives an overview of the different areas of perioperative medicine throughout the paediatric surgical journey.

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Risk stratification

In light of increasing service demands, it is not possible to care for all children in specialist centres, so preoperative risk assessment is vital to triage children into the appropriate location for their surgery (Clancy and George, 2018). In recent years, tools have been developed that can be used to predict perioperative risk for paediatric surgical patients (Nasr et al, 2019), but these are still not widely used.

Preoptimisation

Most children attending for surgery are well and are managed in nurse-led assessment clinics. The role of preoperative assessment in these children is to identify undiagnosed pathology and reduce anxiety by providing preoperative information. There is ongoing research into the use of virtual reality equipment to reduce perioperative anxiety in children.

The care of children with complex comorbidities is optimised by multidisciplinary working with the lead medical and surgical team and therefore good communication is paramount. Common medical conditions that can be easily optimised before non-urgent surgery include asthma, diabetes and anaemia.

Anxiety management

Excessive perioperative anxiety in children has harmful sequelae (Heikal and Stuart, 2020) and it is important that it is managed correctly. Teams including anaesthetists, play therapists and specialist nurses are involved in preoperative planning for patients who are at high risk of anxiety.

Anxiety should initially be managed using non-pharmacological methods, such as pre-hospital information, play therapy and distraction techniques. Pharmacological methods involve a ladder of therapies from least to most invasive, beginning with oral and intranasal preparations of benzodiazepines or alpha-2 agonists. Rarely, invasive techniques such as intramuscular injections of ketamine may be required.

Fasting

Fasting times have been unchanged for many years, with the regimen of 6 hours for solids (including formula milk), 4 hours for breast milk and 2 hours for clear fluids being used. However, a consensus statement (Thomas et al, 2018) states that the fasting time for clear fluids should be reduced to 1 hour, as a result of the evidence that this is safe and reduces the excessive starvation times often experienced by paediatric patients.

Vascular access

Vascular access is a conundrum for the paediatric anaesthetist. Awake access is problematic as a result of poor patient cooperation, but having an anaesthetised patient without intravenous access has inherent risks. Ultrasound is now commonly used to gain intravenous access after induction.

Paediatric patients often present with a myriad of long-term vascular devices, such as indwelling vascular access catheters or ports, and these can be used perioperatively while adhering to strict aseptic non-touch technique.

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Multimodal analgesia

A multimodal analgesic approach is favoured for children undergoing surgery. All patients undergoing surgery should receive basic analgesia including paracetamol, non-steroidal anti-inflammatory drugs, local anaesthetic and opiates if required. Regional techniques are favoured because of their prophylactic nature for analgesia and these are safe and effective in children (Polaner et al, 2012). Caudal neuraxial blocks are very common in paediatric anaesthesia and are sometimes used for the insertion of epidural catheters. For major surgery, adjunctive medications used perioperatively include alpha-2 agonists, magnesium and ketamine.

Enhanced recovery after surgery pathways

Enhanced recovery after surgery pathways combine multiple evidenced-based practices that improve outcomes for patients. Enhanced recovery after surgery has been widely used in adult surgery and is now starting to be explored in paediatric major surgery. In the future, it is envisaged that enhanced recovery after surgery will expand and play a major role in paediatric surgery.

Conclusions

Perioperative medicine is an expanding field within paediatric surgery. In future, the increase in complex patients undergoing surgery promises to make it a fulfilling area in which to practice.

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