Inequitable management of procedural pain in children: reduction of ileocolic intussusception as an example

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The relief of pain and anxiety associated with painful or invasive procedures is a top priority in paediatrics. A 'Sounding Board' in the *New England Journal of Medicine* 30 years ago stated that 'The assessment and treatment of pain in children are important parts of Paediatric practice, and failure to provide adequate control of pain amounts to substandard and unethical medical practice'.[1] As we move into the second quarter of the 21st century, has procedural pain management for children in emergency settings improved? We can probably say that it has. In the USA, procedural sedation and analgesia have now become a core clinical competency of paediatric emergency medicine fellowship training mandated by both the Accreditation Council for Graduate Medical Education and the American Board of Pediatrics. In the UK, the Intercollegiate Guidelines on Standards for Children and Young People in Emergency Care Settings specifically emphasise the need to address processes related to procedural analgesia and sedation, especially during fracture manipulation in children. The UK and other countries have recognised that failure to implement evidence-based pain prevention and treatment for children in medical facilities is now considered a poor standard of care. However, it is vital that clinicians, organisations and regulators constantly challenge their practice as there is still significant progress to be made. A systematic review reported widespread undertreatment of procedural pain in neonates and concluded that it is a concerning issue in neonatal care. The most frequent procedures were heel lance, suctioning, venipuncture and insertion of peripheral venous catheters. Pharmacological and non-pharmacological pain management approaches were inconsistently applied.[2] A study on children with cognitive impairment suggests that these children often endure greater pain and anxiety during needle-related procedures than their typically developing peers. Notably, more than 50% of the children in this study underwent over 30 venipunctures in their lifetime.[3]

A large global multicentre study undertaken by Poonai *et al*[4] revealed that despite the distressing nature of air or fluid enemas for reducing ileocolic intussusception (ICI), most clinicians worldwide perform this procedure without administering any sedation.

Using ICI as a case study, we highlight the importance of continually re-examining care paradigms. Intussusception refers to the telescoping and entrapment of one bowel segment into a more distal gastrointestinal segment; ICI specifically involves the terminal ileum invaginating into the colon for a variable length. ICI is the most common cause of bowel obstruction in children aged 4 months to 4 years. Treatment for this condition is urgent and typically involves an air or fluid enema, with success rates exceeding 85%.[4] During pneumatic reduction of ICI, a large Foley catheter is inserted into the patient's rectum. The buttocks are then securely taped, and air is introduced into the rectum. Under constant fluoroscopic guidance, the pressure is maintained for up to 2 min and may increase to a maximum of 120 mm Hg. Figure 1 illustrates six possible time points at which a patient may experience pain and/or distress during the pneumatic reduction of ICI. Due to the relatively low incidence of ICI (56 per 100 000), there is currently no RCT-level evidence proving that the procedure causes pain or anxiety.[4] In fact, there is currently not a single prospective study examining the amount of pain or distress experienced during the reduction of paediatric ICI. Indirect evidence supporting the necessity of sedation during this procedure can be inferred from the fact that children undergoing elective colonoscopy—a procedure that also involves the introduction of gas into the bowel—are routinely sedated. Surprisingly, despite the likelihood that introducing air or fluid into the gastrointestinal tract induces pain and/or distress, it is performed in most cases on awake children without any sedative or analgesic treatment. The large study by Poonai *et al*[4] on 86 paediatric tertiary care institutions across 14 countries revealed that in approximately 90% of centres, the procedure is carried out without any sedation or analgesia. One argument against sedation during intussusception reduction is the hypothesis that an awake child's Valsalva manoeuvre during rectal air insufflation may protect against intestinal perforation. This theory suggests that the manoeuvre increases opposing pressure, thereby reducing pressure along the intestine. This concept stems from a 1993 laboratory study on young anaesthetised pigs. The study found that during pneumatic reduction, perforation occurred at an average pressure of 108 mm Hg without the Valsalva manoeuvre (in anaesthetised animals) compared with 145 mm Hg with the manoeuvre (in fully awake animals).[5] Does performing the Valsalva manoeuvre during the procedure actually protect against perforation? This theory has never been tested in human subjects. A recent multinational survey study conducted among paediatric radiologists found that clinicians who do not use sedation or general anaesthesia for ICI reduction primarily cite staffing or logistical constraints, a belief that it is unnecessary or perceived risks to the child as their reasons.[6] In response to the question, 'What is the main reason(s) for NOT using sedation or general anaesthesia for the reduction of ICI?' many respondents cited various reasons, including a lack of immediate access to anaesthesiologists or support staff, logistical difficulties, concerns about prolonging the procedure, facilities unsuitable for anaesthesia or sedation and the absence of established protocols. 'Not enough evidence to support use' was also mentioned as a reason for not using sedation or anaesthesia.[6]

The case of ICI reduction represents an example of the inequitable management of procedural pain and/or distress in children. We urge policymakers to address this issue by implementing formal guidelines mandating analgesic and/or sedative treatment for these patients. There are likely other procedures we must be more careful with. While most clinicians acknowledge the pain associated with fracture reduction, some clinicians may underestimate it. A recent paper on paediatric forearm fracture management, which was approved by

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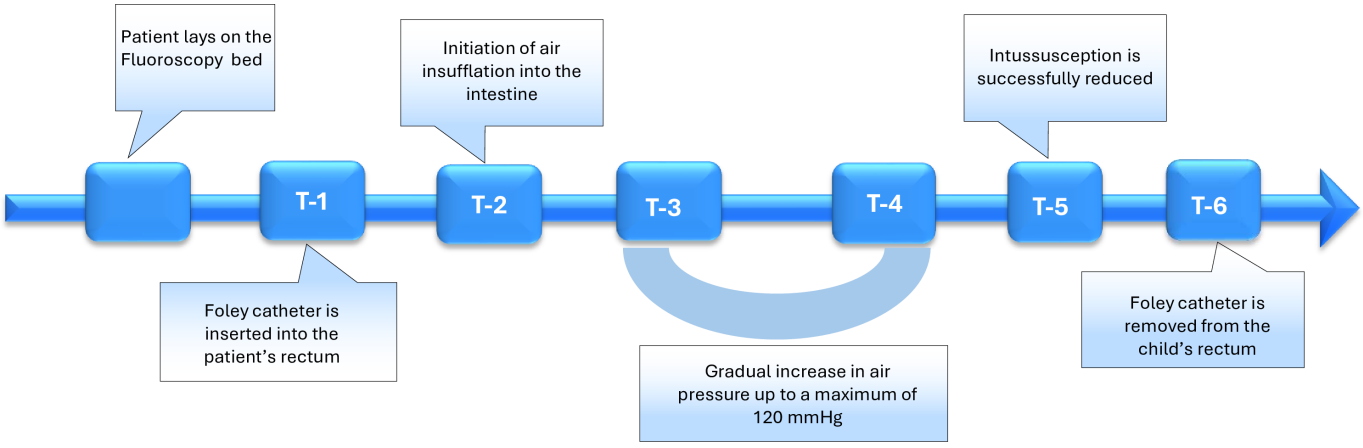

Figure 1 Possible time points at which a patient may experience pain and/or distress during the pneumatic reduction of ileocolic intussusception.

the Institutional Review Board, reported that neither sedation nor analgesia was administered during fracture reduction and pain levels were not objectively recorded before, during or after the procedure. This approach of closed reduction without anaesthesia, referred to as 'You're OK anaesthesia', suggests that some clinicians may believe fracture reduction is not inherently painful.7 Healthcare professionals, as advocates for children, have a moral obligation to ensure optimal pain management—a responsibility that applies to anyone working with children. While the practice of procedural sedation and analgesia continues to improve, this progress is not uniform across all conditions. We must consistently uphold high standards in all our practices, even those we consider well-established.

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