DOI: https://dx.doi.org/10.47746/FMCR.2025.6203

# Various Sedation Modalities in Securing Paediatric Central Line Cannulation

**Ritesh Kumar Panda | Krishna Prasad T* | Blesson John Prabhakar R | Soundarya Priyadharsini K**

***Correspondence:** Krishna Prasad T

**Address:** Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth, Chennai, Tamil Nadu, India

**E-mail** ✉: drkrishna86@gmail.com

**Received:** 16 April 2025; **Accepted:** 25 April 2025



## Short Communication

The use of central venous catheters (CVC) to provide venous access in critically unwell children has become essential. Contrary to adult patients, who can have a CVC put under local anaesthetic, children usually need sedation or general anaesthesia (Egelhoff *et al*., 1997).

Furthermore, sedation or anaesthesia decreases the child's mobility, which could improve the likelihood that the necessary treatments would be successful.

The pediatric population has therefore shown a growing interest in and significant need for sedation in recent years. Sedation levels have been established, and medical teams have suggested standards for monitoring and supervision of the many procedures that call for varying degrees of sedation.In contrast to the femoral vein, deep sedation is required for the jugular or subclavian veins, which is commonly utilized in patients undergoing central venous catheterisation, who need light sedation and local analgesia. Informed consent was acquired from the legal guardians or parents, before sedating any children age group. The drugs must be generally accessible, efficacious, easily titrated, and should have a short half-life. On the day of surgery, the anaesthesiologist performed a focused physical examination, including evaluating the airway for any issues that might make mask ventilation or intubation difficult, and procedures were delayed for at least two weeks if they were not considered urgent for children who later developed an acute respiratory tract infection (Hasan *et al*., 2003; Holger *et al*., 2005).

Usually, the children in a Pediatric intensive care unit, who are not intubated require procedural sedation to facilitate safe and successful central line placement, even though they may be more vulnerable to the adverse effects of sedatives, such as cardiopulmonary depression and impaired protective airway reflexes, than less critically ill conditions. Careful patient monitoring is required for the process, which

**DOI: https://dx.doi.org/10.47746/FMCR.2025.6203**

takes time and has an impact on the availability of nursing staff and the functioning of the unit. Paediatric sedation/anaesthesia presents two main challenges: the medical effects of the sedation and the administrative difficulties that result from the termination of any procedures, usually as a result of insufficient sedation. Hypoventilation, apnoea, or airway blockage (positional or secretion-related) can cause hypoxemia (Roback *et al*., 2005; Yldzdas *et al*., 2004). These issues are typically related to breathing and ventilation management in sedation/anaesthesia. Children have a greater metabolic rate and consume more oxygen per unit of weight than adults. Moreover, they have less functional residual capacity. As a result, children experience hypoxemia sooner than adults after ceasing ventilation for any reason.

Total sedation time, sedation score and recovery time everything differs from patient to patient. One minor airway adverse event was the need to manually adjust the airway (Hasan *et al*., 2003). Tracheal intubation, bag valve ventilation, or medicine to counteract respiratory depression were considered major airway adverse events. Non-invasive blood pressure readings were taken every five minutes before and during sedation treatments, and $SpO_2$ and standard cardiopulmonary parameters were continuously monitored. All patients were given oxygen supplementation throughout treatment using a nasal cannula or blow-by with a gas flow rate of 2 L/min).

To the best of our knowledge, this is the first paediatric pilot study conducted specifically to evaluate procedural sedation for CVC installation in this age group in the intensive care unit who are breathing on their own. We chose to use the total sedation time as our primary outcome measure since the doctor's commitment to patient sedation in the pediatric ICU may take a long period. Strong data also suggests that each patient using sedation should be closely watched by a committed medical professional until their recuperation is well established (Egelhoff *et al*., 1997). More time for other patients can be spent by the doctor and nurse if less time is spent sedating patients. Children were placed in the care of a responsible adult after they were awake and had returned to their regular activities. The parents received instructions regarding food consumption, medication, and monitoring for potential late difficulties.

These problems are addressed by the procedure proposed in this study, which offers a strict set of guidelines.

We discovered that the Fentanyl and Ketamine combined group of patients showed better outcomes in our pilot study. Two patients needed a brief rest period due to excessive secretions that needed to be suctioned, but the other patients' problems were deemed minimal and they recovered swiftly. Patients undergoing sedation for the insertion of a CVC in a subclavian or jugular vein are therefore still susceptible to minor issues that could make the treatment unsuccessful. Antisialogogues were not

**DOI: https://dx.doi.org/10.47746/FMCR.2025.6203**

employed because preliminary data suggests that ketamine does not require their administration. Further studies on large scales must be established to ensure this in current practice.

## References

Egelhoff JC, Ball WS Jr, Koch BL, Parks TD. Safety and efficacy of sedation in children using a structured sedation program. *Am J Roentgenol* 1997; 168: 1259-1262

Hasan RA, Shayevitz JR, Patel V. Deep sedation with propofol for children undergoing ambulatory magnetic resonance imaging of the brain: experience from a pediatric intensive care unit. *Pediatr Crit Care Med* 2003; 4: 454–458.

Holger JS, Satterlee PA, Haugen S. Nursing use between 2 methods of procedural sedation: midazolam versus propofol. *Am J Emerg Med* 2005; 23: 248–252.

Roback MG, Wathen JE, Bajaj L, Bothner JP. Adverse events associated with procedural sedation and analgesia in a pediatric emergency department: a comparison of common parenteral drugs. *Acad Emerg Med* 2005; 12: 508-513.

Yldzdas D, Yapcoglu H, Ylmaz HL. The value of capnography during sedation or sedation/analgesia in pediatric minor procedures. *Pediatr Emerg Care* 2004; 20: 162–165.