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Positive end-expiratory pressure with I-gel in children: Is it safe and effective?

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Background & Aim: I-gel is designed to suit the anatomy of hypo-pharyngeal and peri-laryngeal areas in adults without an inflatable cuff. There is insufficient evidence regarding quality of seal of I-gel during PEEP application in pediatric patients. The objective of this study was to evaluate the performance of I-gel usage in children during general anesthesia with PEEP application at a level of 5 cm H₂O and assess whether it improves oxygenation.

Patients & Methods: A total of 42 ASA physical status I, and II children undergoing surgery under general anesthesia were included. Patients were randomly allocated to one of two equal groups to be on Pressure-Control Ventilation (PCV) with PEEP 5 cm H₂O (group I) and PCV without PEEP (group II). I-gel size 2 1/2 was used in children weighing from 25-35 kg. Leak Volume (LV) and Leak Fraction (LF) were recorded. Peak Inspiratory Pressure (PIP), expiratory and inspiratory tidal volume as well as minute volume and End tidal CO₂ (ETCO₂) were also recorded at 5 min, 30 min and 1 h after I-gel insertion.

Results: Leak volume and leak fraction had no statistical significant differences between both groups. Patients with PEEP had significantly lower (ETCO₂), higher PIP, higher inspiratory tidal volume, and higher expiratory tidal volume (p=0.001) during the post I-gel insertion follow up period. Patients with PEEP also had significantly higher PaO₂ and lower PaCO₂ levels (p=0.001).

Conclusions: I-gel may be used safely during PCV while applying PEEP of 5cm H₂O in children with an effective seal pressure, improvement in oxygenation and without leak or gastric insufflation.

Biography

Ghada Kamhawy is the Lecturer of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Suez Canal University, Ismailia, Egypt. Beside her interest in regional anesthesia, she also worked as anesthesia consultant in two multiple specializations hospitals in Cairo the capital of Egypt, (Air forced Specialized Hospital, and International Medical Center).

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