

Title: Insufflation versus Intubation During Esophagogastroduodenoscopy in Children

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We compared insufflation and intubation during esophagogastroduodenoscopy(EGD) in children.

Methods-After IRB approval and written parental consent, 415 children presenting for EGD were randomized to airway management with insufflation (I), intubation/deep extubation (D), or intubation/awake extubation (E). All subjects received a standardized anesthetic consisting of inhalation induction with sevoflurane in N₂O, maintenance with sevoflurane in O₂, propofol 2 mg/kg before intubation or insertion of nasopharyngeal airway, and ondansetron 50 µg/kg. Time of induction, airway insertion/removal, endoscope insertion/removal, PACU arrival, and discharge readiness were recorded. Adverse airway events (desaturation, laryngospasm, emesis, aspiration, bronchospasm) were recorded during the procedure and recovery. Continuous variables were analyzed using ANOVA. Categorical variables were analyzed with chi-square or Fisher's exact test as appropriate.

Results-There were no differences in mean ± SD age (83 ± 44 mo) or weight (26 ± 13 kg) for subjects randomized to group A (n = 100), group D (n = 104), or group I (n = 207). There were fewer males in group A than in groups D and I (45% vs 59.6% and 57.5%; P = 0.065). Representative anesthetic, procedural, and recovery times are shown in Table 1. Time to extubation was longer in group A; however, time to discharge readiness was less in group A and total induction to discharge time did not differ between groups. Differences in procedural and recovery adverse events are summarized in Table 2. Desaturation and laryngospasm were more common in group I; interruptions from inadequate anesthesia and sore throat/dysphagia/hoarseness were more common in groups A and D. Events requiring a change in airway management technique [inability to confirm endotracheal intubation (1); laryngospasm (3), desaturation (6); undigested food in the stomach (2)] occurred more often in group I. Undigested food in the stomach was seen in 3 subjects (2.8%; 2 in group I and 1 in group A). One subject in group I had radiographic findings consistent with aspiration pneumonitis but was discharged the next day without sequelae.

Discussion-Choice of airway management technique had little overall impact on the time required to perform EGD. OR time was longer for subjects extubated awake; this was compensated for by a shorter time to discharge readiness. Laryngospasm and desaturation (some requiring intubation) were seen more often with insufflation. Inadequate anesthesia interrupting endoscopy and sore throat were seen more often with intubation. Choice of airway management for EGD can be based on personal preference and institutional priorities.

Table 1

Time	Group A	Group D	Group I	P
Preparation	9 ±2	9 ±3	9 ±2	NS
Procedure	9 ±7	9 ±7	9 ±9	NS
Emerge/extubation	8 ±4	2 ±2	1 ±3	< 0.0001*
Discharge Ready	45 ±17	54 ±17	54 ±23	< 0.0002*

*P < 0.05 for A vs D and I

Table 2

Event	Group A	Group D	Group I	P	P (A+D vs I)
Desaturation < 95%	4%	1.9%	12.6%	0.024	0.0005
Desaturation < 85%	0%	0%	4.7%	0.15	0.051
Laryngospasm	0%	1%	4.9%	0.10	0.015
Interruption	17%	23.1%	8.7%	0.005	0.0017
Change Technique	1%	0%	5.3%	0.013	0.0004
Sore Throat/Dysphagia	32%	29.8%	19.5%	0.028	0.008

