

**Unplanned reintubation in the immediate postoperative period in patients who received general anesthesia:
A two year retrospective analysis in a pediatric hospital**

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Introduction: The endotracheal tube is the most widely used device in securing the airway. Complications related to intubation range from minor sore throat to major trauma to upper airway and teeth. The need for reintubation in patients who received general anesthesia is also a known complication of intubation.¹To date, there is only one published study that examined the incidence of reintubation following endotracheal extubation after surgical procedure under general anesthesia. This retrospective study by Engoren et al² involved adult patients who underwent cardiac surgery. The aim of this study is to determine the incidence of unplanned reintubation in pediatric patients in the immediate postoperative period and distinguish patient characteristics, processes of care, and other probable contributing factors leading to reintubation.

Methods: After obtaining IRB approval, a retrospective review of the charts of patients who were reintubated in the immediate postoperative period (<3 hours) following general anesthesia in the past 2 years was done. The following data were collected and analyzed: age, gender, weight, ASA physical status, anesthesia provider, medical condition, procedure, perioperative medications, duration of surgery, deep extubation and reason for reintubation. A descriptive analysis of the demographic data was done and Chi-square test of the different variables that may be contributory to unplanned reintubation was performed. P value of < 0.05 was considered statistically significant.

Results: There were only 8 unplanned reintubations from the 2-year period studied. Those who had reintubation were between ages 1 ½ and 7 years old, mostly ASA 2 except for one ASA I and two ASA III and their weight ranges from 3 to 42 kg. Out of the 8 reintubated patients, 2 (2/8), were females, 2 (2/8) received muscle relaxation, 2 (2/8) did not receive any narcotics and 3 (3/8) did not receive premedication (midazolam). One (1/8) was an attending only case and 4 (4/8) were born premature. All, except for one healthy patient, have some other medical conditions notably reactive airway disease or asthma. The duration of procedures lasted between 9 and 100 minutes. Only 4 patients have documented deep extubation in the chart (not sure about the other 4). All were easy intubations. Laryngospasm was the reason for reintubation in 6 of the cases and apnea/obstruction for the remaining 2 patients. The only statistically significant variable is tonsillectomy/adenoidectomy (P<0.001).

Discussion: The incidence of unplanned reintubation was 0.04%. This is low compared to one study done in adults (0.2%)³. We conclude that patients undergoing tonsillectomy and adenoidectomy are at risk for unplanned reintubation and therefore special attention to this patient population is required to prevent this perioperative complication.

Table 1

	1	2	3	4	5	6	7	8
Age (years)	1.75	7	2	2.5	4.9	1.5	2	2
ASA physical status	2	2	3	3	2	1	2	2
Weight (kg)	11.5	42.2	10.3	3	14.3	8.9	11.2	16
Gender	M	M	M	M	F	F	M	M
Muscle Relaxant	no	yes	no	yes	no	no	no	no
Narcotics	yes	no	yes	no	yes	yes	yes	yes
Premedication	yes	yes	yes	no	no	yes	no	yes
Anesthesia Provider (resident vs. attending)	res.	res.	res.	res.	res.	attending	res.	res.
Ex-premies	yes	no	yes	yes	no	yes	no	no
Procedure	T&A	T&A	T&A	other	other	other	T&A	T&A
Co-morbidities	yes	yes	yes	yes	yes	no	yes	yes
Duration of procedure(mins)	30	35	17	100	14	56	9	9
Deep extubation	?	yes	yes	?	?	?	yes	yes

References:

1. Amstrong M. et al., Laryngoscope 1997
2. Engoren M. et al., Ann Thoracic 1999
3. Hilmi, I. et al., Abstract presented in IARS 2001