

Title: A COMPARISON OF PULMONARY FUNCTION TESTING, ARTERIAL BLOOD GAS ANALYSIS AND ROIZEN CLASSIFICATION IN PREDICTING POST-OPERATIVE PULMONARY COMPLICATIONS IN HEAD AND NECK SURGICAL PATIENTS.

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Introduction: Numerous reports disclaim the ability of pulmonary function test (PFT) to predict occurrence of post-operative pulmonary complications (PPC's).¹ Yet, some studies support the assessment of the forced expiratory volume in one second (FEV₁), Peak Flow (PF) and arterial blood gas (ABG) values, or a simple clinical assessment of respiratory reserve.² Many reports are limited because of study design or heterogeneous subjects with a number of operative procedures and incision sites, which have a variable effect upon pulmonary reserve. This report selected to compare PFT's, ABG's and the Roizen classification in non-thoracic non-abdominal surgical patients at risk for PPC's.³

Methods: Seventy-one patients for head and neck surgery between September, 1988, and September, 1989, were prospectively studied with the approval of Human Subjects Review Committee. History and physical examination included the Roizen classification which grades dyspnea from Grade 0 (none) to Grade IV (dyspnea at rest). Arterial blood gas values (FiO₂ 0.21) and standard pulmonary function tests were obtained prior to surgery, including FVC, FEV, PF, RV/TLC and smoking history. PFT's were considered abnormal if less than 70% of predicted. General inhalational anesthesia was utilized for the operative procedure according to the attending

anesthesiologist. Patients were examined post operatively for PPC's classified as minor (rales, rhonchi, wheeze, requiring a change in post-operative therapy), or major (post-operative ventilator dependency greater than 12 hrs., pneumonia, or death) by observers who were blinded as to results of the pre-operative PFT and ABG values. Statistical evaluation of the data was performed using one-way analysis of variance, and chi-square test, p<0.05 was considered significant.

Results: There were 13 minor complications and 7 major. Only patients with a major PPC had a prolonged hospital stay. The only abnormal PFT which correlated with PPC was PF (p<0.0025). The group with complications had PF of 63.4% of predicted (n=27) while those without complications had 82.6% (n=42). Arterial pO₂ was also reduced in those with complications (74.5 mmHg) versus without (84.4 mmHg), p<0.001. The Roizen classification also correlated with PPC's (p<0.01) if one compared Grade 0 (normal) with all other grades (I-IV). Length of operation was significantly increased (6.0 vs. 4.6 hrs.) in those with pulmonary complications (p<0.05).

Conclusions: In this group of head and neck surgical patients, PF, PaO₂ and the Roizen classification correlated with PPC's, without the confounding variables of abdominal or thoracic procedures to influence results. Further, multivariate analysis is required to produce specific preoperative values of these tests which predict risk for PPC's.

References:

1. *Anesthesiology*, 63:A75, 1985.
2. *Anaesthesia*, 43:543-51, 1988.
3. *Anesthesia* (pp. 21-95). New York, NY: Churchill Livingstone, 1981.

TITLE: THE SAFETY OF AIRWAY MANAGEMENT IN TRAUMA PATIENTS

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Introduction The airway management of patients triaged to trauma centers for acute care presents unique challenges to the anesthesiologist. Combinations of full stomach, suspected increased intracranial pressure or cervical spine injury, hypotension, distorted airway anatomy, intoxication and combativeness make each encounter unique and hazardous. We evaluated complications of intubation in one year's experience.

Methods 232 of 851 patients evaluated in our trauma bay were intubated as part of initial management between Jan. and Dec. 1989. Of the 232, 90 (44%) were blunt and 117 (57%) penetrating injuries. Every trauma patient was evaluated by an anesthesiologist (PGY2 or greater). Indications for intubation were emergency surgery, airway control, combativeness, or the need for hyperventilation. Intubations were performed in the trauma bay or the operating room. Intubation mishaps (IM) were defined as multiple attempts (N>1), aspirations, or esophageal intubation. Pulmonary complications (PCx) were defined as aspiration pneumonias or persistent infiltrates unrelated to injury. Dental injuries were not evaluated.

Results 132 (64%) of the 232 intubations were for emergency surgery, 31 (15%) for airway control, 24 (12%) for combativeness, 20 (10%) for hyperventilation. 60% were intubated in the OR and 40% in the emergency department (ED). 25 (13%) intubation mishaps

occurred. 14 (7%) had multiple attempts, 8(4%) aspirations, 3 (1%) esophageal intubations. All intubations were oral. No cricothyroidotomies were performed. There were 15 (7%) pulmonary complications: 8 (3%) aspiration pneumonias and 5(2%) persistent infiltrates. No deaths were related to IM or PCx. There was no statistical relationship between IM and PCx (Fischer exact test). IM frequency was not related to intubation location (chi-squared). 2 IM occurred with combative patients, neither resulted in PCx.

Conclusions Despite the difficulties inherent in emergency airway management, when performed by anesthesiologists at least at a PGY2 level, intubation can be performed in either the OR or ED with a low complication rate.

INTUBATION MISHAPS BY LOCATION
(incidence/n)

	OR	ED
Emergency Surgery	11/121	2/11
Airway Control	1/1	6/29
Combativeness	N.A.	2/24
Hyperventilation	N.A.	3/20
	12/122	13/84