PREDICTING AIRWAY AND OTHER COMPLICATIONS IN CERVICAL SPINE SURGERY

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INTRODUCTION: Surgical procedures on the cervical spine (c-spine) are complex interventions that are associated with postoperative airway compromise and other major complications^{1,2}. This study was performed to determine the incidence of, and predisposing factors for, complications following c-spine surgery.

METHODS: After IRB approval, we conducted a retrospective review of 329 non-polytrauma c-spine procedures. Airway complications were defined as severe hypoxia, emergency reintubation, prolonged postoperative ventilation, or tracheostomy. Other major complications included new neurologic deficits, severe dysphagia, end-organ dysfunction, and death. Risk factors were derived from both procedure and patient characteristics. Statistical analyses were performed by Chi-square test.

RESULTS: In the 329 cases examined, there were 32 major complications, including 17 airway complications and 3 deaths (incidence of major and airway complications = 9.7% and 5.2%, respectively). The most common airway complication was prolonged postoperative ventilation [mean (s.d.) duration = 4.1 (4.6) days]. Of the 18 patients who required postoperative ICU admission, ten were planned. Risk factors ($P \leq 0.02$) predictive of major complications included type of procedure (Figure 1), operative time ≥ 220 minutes, blood loss ≥ 300 mL, age ≥ 55 years, and ASA status ≥ 3 . When airway problems were analyzed separately, type of procedure, operative time ≥ 220 minutes, blood loss ≥ 300 mL, and age ≥ 55 years were predictive of complications ($P \leq 0.04$).

PROCEDURE	INCIDENCE OF MAJOR COMPLICATIONS (%)	INCIDENCE OF AIRWAY COMPLICATIONS (%)
Anterior (N = 255)	5.1	5.1
Posterior (N = 53)	15.4	7.6
Combined (N = 21)	52.4	42.9

Figure 1. Incidence of complications according to procedure type

DISCUSSION: C-spine surgery carries a high incidence of airway and other major complications. Our results agree with those of a smaller study² which showed that prolonged operating time and large intraoperative blood loss predispose to airway complications. These, and the additional factors identified in our study, need to be examined in a prospective, randomized trial to determine if they accurately identify which patients are at risk for increased perioperative morbidity and mortality, and possibly, which patients may benefit from planned postoperative ICU admission.

REFERENCES: 1. *Can J Anesth* 2004. 51(Supp):A28, 2. *Spine* 2002. 27:949-53