PATIENT SAFETY AND RISK MANAGEMENT II

TITLE: DIFFICULT INTUBATION FOR CERVICAL SPINE SURGERY: AIRWAY ASSESSMENT WITH MAGNETIC RESONANCE IMAGING

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INTRODUCTION
Cervical spine surgery may be associated with difficult intubation, if cervical spine is anesthetic or spinal cord compressed by tumors and traumatic lesions. Magnetic resonance imaging (M.R.I.) provides multi-dimensional imaging without use of ionizing radiation and is now widely performed before spinal surgery. For the cervical region, T1-weighted images in the sagittal plane offer anatomic visualization of airways, including soft-tissue, from mouth to trachea (Figure 1). The purpose of this study was to evaluate the ability of M.R.I. to predict difficult intubation.

METHODS
From July 86 to January 88, 102 patients were scheduled to undergo cervical spine surgery (60 traumatic lesions, 40 tumors, 2 cervical myelopathy). Preoperatively, all had a careful physical examination (3), cervical roentgenograms and M.R.I. Awake endotracheal intubation with topical anesthesia and neuromuscular blockade was performed. Until February 87, M.R.I. data were not reviewed by the anesthesiologist prior to surgery (group I: n = 34 patients); Following a case of difficult intubation, M.R.I. data were systematically reviewed after February 87 (group II: n = 68 patients). M.R.I. analysis, both performed by the anesthesiologist and the neuroradiologist, included: alignment between rhinopharynx and trachea (blind nasal intubation), angulation and length between epiglottis and base of tongue (exposure of larynx during laryngoscopy), size of trachea and prevertebral hematomas (sub-glottic obstacle).

RESULTS
Group I: difficult intubation occurred in 5 cases (15%) although it had been clinically predicted in 3 cases. Retrospective analysis of M.R.I. was contributive in all cases (hematoma = 1 angulation of 90° between epiglottis and base of tongue = 3, malalignment between rhinopharynx and trachea = 1). Group II: difficult intubation occurred in 9 cases (13%) which had all been predicted by preoperative review of M.R.I. (hematoma = 1, angulation of 90° between epiglottis and base of tongue = 8). Although 6 cases only could have been predicted clinically, intubation technics were adapted to the 9 patients according to M.R.I. findings (figure 2): blind nasotracheal intubation for difficult exposure of larynx in case of good alignment between rhinopharynx and trachea, smaller internal diameter tube in case of hematoma, use of a flexible fibroptic bronchoscope for nasal intubation in case of malalignment between rhinopharynx and trachea.

CONCLUSION
Preoperative review of M.R.I. by the anesthesiologist can be contributive to detect difficult intubation during cervical spine surgery. Direct assessment of airways shows the cause of difficult intubation and gives the anatomic solutions. Everytime this procedure is available, anesthesiologist will draw benefit from careful preoperative M.R.I. analysis.

REFERENCES