

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 arthrosic or spinal cord compressed by tumors and traumatic lesions (1). Magnetic resonance imaging (M.R.I.) provides multi-dimensional imaging without use of ionizing radiation and is now widely performed before spinal surgery (2). For the cervical region, T 1-weighted images in the saggital 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 neuroleptanalgesia 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 hematomas, 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

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Figure 1 :
C4 metastasis,
normal airways.
Uneventful intubation



Figure 2 :
Cervical myelopathy.
Angulation of 90°
between epiglottis
and large base of
tongue, narrow
oropharynx.
Difficult intubation