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Brief Reports

FEASIBILITY OF THE PREOPERATIVE MALLAMPATI AIRWAY ASSESSMENT IN EMERGENCY DEPARTMENT PATIENTS

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□ Abstract—Background: Multiple predictors have been proposed to assist in identifying patient features that would predict difficult airway management. The Mallampati score (MS) has been shown to be useful in the preoperative assessment of patients being intubated in the operating room. Objective: We sought to define the feasibility of this assessment in the Emergency Department. Methods: A prospective, observational study was performed on all patients being intubated at a university Level I trauma center over a period of 6 months. We recorded and calculated the proportion of patients who were successfully assessed using the MS. Reasons given by individual intubators for failure to assess were recorded. We also tracked patient characteristics between groups and complication rates. Results: Of 328 patients, 32 (10%) were excluded due to incomplete data. Among the remaining 296, 58% were intubated for non-trauma indications, 70% were male, and the mean age was 45.9 years. Only 76 of 296 (26%) (95% confidence interval 21–31%) were able to have the MS performed. Lack of patient cooperation and clinical instability were listed as factors that precluded evaluation in patients whose assessment was unsuccessful. The frequency of procedure-related minor events did not differ significantly between the assessed and non-assessed groups. Major events included two cricothyrotomies in the non-assessed group. Conclusions: We were unable to perform a Mallampati assessment in three-quarters of our patients requiring emergency intubation. These findings call into question the feasibility of the standard Mallampati assessment in the practice of Emergency Medicine. © 2010 Elsevier Inc.

INTRODUCTION

The threat of intubation failure, particularly in patients undergoing intubation with neuromuscular blockade, has inspired the search for techniques to preoperatively predict intubation difficulty. Over the past several decades, multiple studies have assessed anatomical features and their association with difficult intubation in the operating room (OR) (1–4). This is particularly relevant for patients undergoing elective intubation when there are a broad variety of airway management options. As no single physiognomic assessment has been shown to be predictive in isolation, multiple combined functional and anatomic assessments have been proposed. Unfortunately, many of these are too cumbersome to be practical in Emergency Medicine practice. Nevertheless, variable modifications of these preoperative assessments have been extrapolated to Emergency Medicine practice.

The Mallampati score is meant to identify a large tongue that obscures the oropharyngeal structures. If the tongue is relatively large, the patient is more likely to be difficult to intubate using direct laryngoscopy. The Mallampati assessment (Samsoon modification) (Figure 1), particularly when combined with other anatomical assessments, has been suggested as a use-
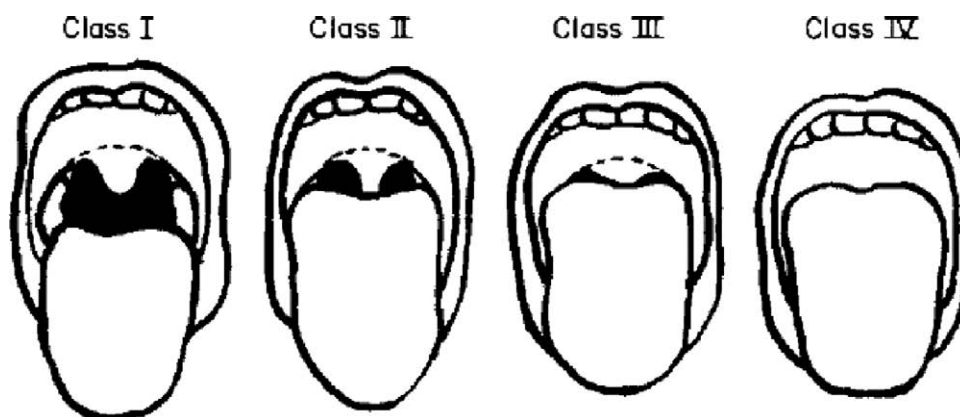
Figure 1. Mallampati scores (with Samsoon and Young modification). Note: Class III, soft palate visible; class IV, soft palate not visible.

ful tool for use in Emergency Department (ED) patients (5–8). One such combination that includes the Mallampati score is the LEMON assessment mnemonic (Look externally, Evaluate 3-3-2 rule, Mallampati score, Obstruction/obesity, Neck mobility) (9,10). The LEMON assessment has been evaluated in the ED setting and has shown some success in being both feasible and fairly sensitive (11,12). However, as the LEMON assessment incorporates the Mallampati score, it requires patient cooperation. A retrospective report by Levitan and colleagues suggested that the Mallampati score was unobtainable on the majority of the patients who required intubation in their ED (13). As such, the real predictive utility of the LEMON mnemonic may lie in the other elements of assessment that do not require patient cooperation.

In this study we sought to determine if routine Mallampati assessment was even feasible in Emergency Medicine practice given the high acuity of patient illness and the frequent lack of patient cooperation.

MATERIALS AND METHODS

Study Design

This was a prospective, observational study performed on all patients being intubated in the ED over a 6-month interval (October 2005 to April 2006).

Study Setting and Population

We attempted to evaluate all patients undergoing intubation at our university tertiary care, Level I trauma center. This study was approved by our Institutional Review Board.

Study Protocol

We instituted reporting of a modified (allowing for supine assessment) Mallampati score by both the intubating resident and supervising attending physician. A data form was constructed to include the following options: 1) full view (class I), 2) partial view (class II–III) or, 3) no view (class IV). We recorded the proportion of patients who were successfully assessed using the Mallampati score. Reasons given by individual assessors (both residents and attendings) for failure to assess Mallampati scores were also recorded. These failures were categorized as follows: patient uncooperative, patient too unstable, patient cooperative but otherwise unable to comply (e.g., disabling maxillofacial trauma), physician unable to perform assessment, and "other" (with explanation). We recorded both resident and attending scores to evaluate inter-rater agreement regarding reasons for success or failure of obtaining the Mallampati score. Our intention was not to assess the Mallampati score itself, but rather to identify conditions that may preclude its assessment. Additionally, we tracked patient characteristics and determined complication rates.

Data Analysis

Our main outcome of interest was the proportion of patients who could be successfully assessed. As such, a sample size determination was not needed because we were not powering this study for group comparisons. Means and 95% confidence intervals (95% CI) are reported. Pearson's chi-squared was used to compare categorical variables.

All statistical analyses were performed in Stata statistical software (Stata Statistical Software, 2003, Release 8; StataCorp; College Station, TX).