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SCIENTIFIC ARTICLE

Difficult laryngoscopy and tracheal intubation: observational study

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KEYWORDS
Difficult airway;
Airway;
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Mallampati test;
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Abstract
Introduction: Since anesthesia complications associated with unexpected difficult airway are potentially catastrophic, they should be avoided. The modified Mallampati test and jaw-thrust maneuver enable the identification of difficult airway. The aim of this study was to associate the modified Mallampati test and the jaw-thrust maneuver with laryngoscopy (Cormack–Lehane) in an attempt to identify a better predictor of difficult airway in an adult population undergoing elective surgery.
Method: A cross-sectional study in which 133 adult patients undergoing elective surgery requiring tracheal intubation were analyzed. The accuracy and specificity of the modified Mallampati test and jaw-thrust maneuver were assessed by correlating them with difficult laryngoscopy (Cormack–Lehane Degrees 3 and 4).
Results: In the 133 patients evaluated the difficult intubation rate found was 0.8%; there was association between the two predictive tests proposed ($p = 0.012$). The values of 94.5% for specificity and 95.4% for accuracy were found for the jaw-thrust maneuver and for the modified Mallampati test, the values found were 81.1% and 81.2%, respectively. Kappa agreement identified a result of 0.240 between jaw-thrust maneuver and Cormack–Lehane, which was considered reasonable. On the other hand, a poor agreement ($\kappa = 0.06$) was seen between modified Mallampati test and Cormack–Lehane test.

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Conclusion: The jaw-thrust maneuver presented superior accuracy and agreement than the modified Mallampati test, showing the ability to identify a difficult airway. It is necessary to emphasize the association of tests in the evaluation of patients, emphasizing their complementarity to minimize the negative consequences of repeated laryngoscopies.

PALAVRAS-CHAVE
Via aérea difícil;
Via aérea;
Intubação;
Laringoscopia;
Teste Mallampati;
Manobra de protrusão da mandíbula

Dificuldade na laringoscopia e na intubação orotraqueal: estudo observacional

Resumo
Introdução: As complicações anestésicas associadas às vias aéreas difíceis inesperadas por serem potencialmente catastróficas devem ser evitadas. O teste de Mallampati modificado e a manobra de protrusão mandibular possibilitam a identificação da via aérea difícil. O objetivo deste estudo foi associar o teste de Mallampati modificado e a manobra de protrusão mandibular com a laringoscopia (Cormack-Lehane) e tentar identificar um melhor preditor de via aérea difícil na população adulta submetida à cirurgia eletiva.
Método: Estudo corte transversal, foram analisados 133 pacientes adultos submetidos a cirurgias eletivas que necessitavam de intubação orotraqueal. Avaliaram-se a acurácia e especificidade do teste de Mallampati modificado e da manobra de protrusão mandibular, correlacionados com laringoscopia difícil (Cormack-Lehane Graus 3 e 4).
Resultados: Entre os 133 pacientes avaliados, a taxa de intubação difícil encontrada foi 0,8%, houve associação entre os dois testes preditores propostos ($p = 0{,}012$). Foram encontrados os seguintes valores para a especificidade 94,5% e a acurácia 95,4% na manobra de protrusão mandibular. Já para o teste de Mallampati modificado valores de 81,1% e de 81,2% respectivamente. A análise de concordância *Kappa* identificou entre manobra de protrusão mandibular e Cormarck-Lehane um resultado de 0,240; considerado razoável. Por outro lado, observou-se uma fraca ($\kappa = 0{,}06$) concordância entre o teste de Mallampati modificado e o Cormarck-Lehane.
Conclusão: A manobra de protrusão mandibular apresentou acurácia e concordância superiores ao teste de Mallampati modificado, mostrou a capacidade de identificar uma via aérea difícil. Faz-se necessário enfatizar a associação dos testes na avaliação do paciente, destacar a complementariedade deles, minimizar as consequências negativas de laringoscopias repetidas.

Introduction

Airway management remains a major challenge for anesthesiologists.[1] Although advances in the development of new airway devices and well-defined algorithms that guide the approach in emergency situations have reduced difficult airway complications, there has been little change regarding difficult airway predictors, which are essential for the adequate use of these protocols.[2,3]

Laryngoscopy and tracheal intubation are one of the pillars in airway management during general anesthesia and usually are uneventfully performed. However, if tracheal intubation is difficult or impossible after induction of anesthesia, there may be soft tissue injury, trauma and consequent airway edema, dental avulsion, unnecessary surgical airway, inability to maintain tissue oxygenation, brain injury, cardiorespiratory arrest, and even death.[4,5] It is worth noting that anesthetic complications associated with unexpected difficult airway, although potentially catastrophic, may be avoided.

The difficulty of achieving direct laryngoscopy and tracheal intubation ranges from 1.5% to 13% in patients undergoing elective surgery.[6] The great variation seen is justified because some studies that support these data are retrospective, apply different definitions for difficult intubation, in addition to the inter-population variation itself.[7]

There are a number of characteristics that can anticipate a difficult airway, but none of them alone has proved totally reliable after some studies.[6] Among the difficult airway predictors, the modified Mallampati test (MMT) globally known and easily applied has good specificity (95.7%), but low sensitivity (27.1%) and accuracy (80.3%).[1] Thus, its use alone may lead to an unacceptable number of false negatives, having as a great disadvantage its observer dependency nature.

On the other hand, another predictor that becomes interesting in this context is the jaw-thrust maneuver (JTM). According to studies, this maneuver shows greater sensitivity (95.5%) and accuracy (90.1%) with an acceptable specificity (88.4%).[1] Moreover, it has a good reproducibility and does not require specific patient positioning.

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