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Comparative study of bed side tests to assess difficult airway in paediatric patients

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ABSTRACT:

BACKGROUND AND AIM: The difficult airway incidence in paediatric patients is 20%. Poorly managed airway contributes to about 15% of perioperative cardiac arrests in children. Repeated intubation attempts are traumatic resulting in bleeding, oedema of the larynx and oropharynx, trauma to airway and teeth. The complications of poorly managed difficult airway include admission to ICU, need for surgical airway, hypoxic damage to brain and even death. In this study we compare the various tests to predict the difficult airway with existing airway grading systems and validate various tests in paediatric patients.

METHOD: This prospective randomised study was conducted between October 2019 and June 2021. The various tests included: modified Mallampati test, upper lip bite test, ratio of height to thyromental distance, sternomental distance, thyromental height distance and compared with Cormack Lehane classification to assess difficult airway. Inclusion criteria are patients from two- ten years of age, ASA Ⅰ and Ⅱ category for elective procedure. Test results were recorded and sensitivity, specificity, positive predictive value, negative predictive value of each parameter evaluated. $p < 0.05$ was considered significant statistically.

RESULTS: Sensitivity of SMD and TMHD is 66.67% which is the highest among the tests. But, TMHD also has a higher negative predictive value of 94.85%. however, ULBT has the highest specificity of 99.65%, positive predictive value of 94.74% and accuracy of 92.40%.

CONCLUSION: It is better to use a combination of airway tests routinely to assess paediatric airway since a single test cannot give accurate results. These parameters are easy to perform during routine pre anaesthetic evaluation and hardly requires any new equipment.

KEYWORDS: Paediatric airway assessment, Modified Mallampati test, thyromental distance, sternomental distance, thyromental height distance, upper lip bite test, difficult airway, paediatric anaesthesia