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SCIENTIFIC ARTICLE

The influence of airway supporting maneuvers on glottis view in pediatric fiberoptic bronchoscopy

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KEYWORDS
Fiberoptic bronchoscopy;
Pediatrics;
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Abstract
Introduction: Flexible fiber optic bronchoscopy is a valuable intervention for evaluation and management of respiratory diseases in both infants, pediatric and adult patients. The aim of this study is to investigate the influence of the airway supporting maneuvers on glottis view during pediatric flexible fiberoptic bronchoscopy.
Materials and methods: In this randomized, controlled, crossover study; patients aged between 0 and 15 years who underwent flexible fiberoptic bronchoscopy procedure having American Society of Anesthesiologists I–II risk score were included. Patients having risk of difficult intubation, intubated or patients with tracheostomy, and patients with reduced neck mobility or having cautions for neck mobility were excluded from this study. After obtaining best glottic view at the neutral position, patients were positioned jaw trust with open mouth, jaw trust with teeth prottution, head tilt chin lift and triple airway maneuvers and best glottis scores were recorded.
Results: Total of 121 pediatric patients, 57 girls and 64 boys, were included in this study. Both jaw trust with open mouth and jaw trust with teeth prottution maneuvers improved the glottis view compared with neutral position ($p < 0.05$), but we did not observe any difference between jaw trust with open mouth and jaw trust with teeth prottution maneuvers ($p > 0.05$). Head tilt chin lift and triple airway maneuvers improved glottis view when compared with both jaw trust with open mouth and jaw trust with teeth prottution maneuvers and neutral position ($p < 0.05$); however we found no differences between head tilt chin lift and triple airway maneuvers ($p > 0.05$).

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Conclusion: All airway supporting maneuvers improved glottic view during pediatric flexible fiberoptic bronchoscopy; however head tilt chin lift and triple airway maneuvers were found to be the most effective maneuvers.

PALAVRAS-CHAVE
Fibrobroncoscopia;
Pediatria;
Manobras das vias aéreas;
Elevação da mandíbula;
Visibilidade da glote

A influência das manobras de suporte das vias aéreas sobre a visibilidade da glote em fibrobroncoscopia pediátrica

Resumo
Introdução: A broncofibroscopia flexível (BF) é uma valiosa intervenção para o manejo e avaliação de doenças respiratórias em pacientes tanto pediátricos quanto adultos. O objetivo deste estudo foi investigar a influência das manobras de apoio das vias aéreas sobre a visibilidade da glote durante a BF pediátrica.
Material e método: Estudo cruzado, randômico e controlado, incluindo pacientes com idades entre 0-15 anos, ASA I-II, que foram submetidos à BF. Pacientes com risco de intubação difícil, entubados ou com traqueostomia e aqueles com mobilidade reduzida do pescoço ou que exigissem cuidados para a mobilidade do pescoço foram excluídos do estudo. Depois de obter a melhor visibilidade da glote na posição neutra, os pacientes foram posicionados com elevação da mandíbula e abertura da aberta (EMBA), com elevação da mandíbula e protrusão dos dentes (EMPD), com inclinação da cabeça elevação do queixo (ICEQ) e com a tripla manobra das vias aéreas (TMVA). Os melhores escores da glote foram registrados.
Resultados: No total, 121 pacientes pediátricos foram incluídos no estudo: 57 pacientes do sexo feminino e 64 do sexo masculino. Ambos as manobras EMBA e EMPD melhoraram a visibilidade da glote em comparação com a posição neutra ($p < 0,05$), mas não observamos diferença entre as manobras EMBA e EMPD ($p > 0,05$). As manobras ICEQ e TMVA melhoraram a visibilidade da glote em comparação com as manobras EMBA e EMPD e a posição neutra ($p < 0,05$); porém, não encontramos diferenças entre a ICEQ e a TMVA ($p > 0,05$).
Conclusão: Todas as manobras de acesso às vias aéreas melhoraram a visibilidade da glote durante a BF pediátrica; porém, a inclinação da cabeça e elevação do queixo e a tripla manobra das vias aéreas foram consideradas as manobras mais eficazes.

Introduction

Flexible fiber optic bronchoscopy (FOB) is a valuable intervention for evaluation and management of respiratory diseases in both infants, pediatric and adult patients. Since its first introduction by Ikeda in 1968, fiber optic bronchoscope in clinical practice; it has been 46 years and there have also been a number of other changes in pediatric pulmonology that have consequences on bronchoscopy practice.[1] Most common indications of FOB in pediatric population are persistent radiological abnormalities, unexplained respiratory distress, and stridor. Also direct inspection in patients with suspected foreign body aspirations and broncho-alveolar lavage requirement for patients having lung infection are the other indications.

Children often require deep sedation or general anesthesia during FOB procedure.[2] Usually there is a clear airway present in awake patients however in anaesthetized patients, due to changes in upper airway structures; partial or complete obstruction makes the fiber optic advancement difficult. Reduction in muscle tone during deep sedation or anesthesia has effects on upper airway structures like soft palate, tongue base and epiglottis may be relocated to the posterior pharyngeal wall. In order to maintain clear airway in anesthetized patients, airway-supporting maneuvers may be required during fiber optic bronchoscopy. Also employment of intubating airways like Berman or Ovassapian, direct laryngoscopy, lingual traction and supraglottic airway devices (Laryngeal Mask Airway, I-Gel or Intubating Laryngeal Mask, etc.) are the alternative ways of resolving this problem.[3,4]

The effects of airway supporting maneuvers on glottis view during FOB are not studied and there is a lack of knowledge in pediatric group of patients. The aim of this study is to determine the effects of airway supporting maneuvers on glottis view during flexible FOB in pediatric patients.

Materials and methods

The study protocol was approved by the Institutional Ethical Committee of Bezmialem Vakif University. Pediatric patients between 0 and 15 years of age, having American Society