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CLINICAL INFORMATION

Difficult fiberoptic tracheal intubation in 1 month-old infant with Treacher Collins Syndrome

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KEYWORDS
Treacher Collins Syndrome;
Difficult airway;
Fiberoptic bronchoscope;
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Abstract Neonates and small infants with craniofacial malformation may be very difficult or impossible to mask ventilate or intubate. We would like to report the fiberoptic intubation of small infant with Treacher Collins Syndrome using the technique described by Ellis et al.
Case report: A 1 month-old infant with Treacher Collins Syndrome was scheduled for mandibular surgery under general endotracheal anesthesia. Direct laryngoscopy for oral intubation failed to reveal the glottis. Fiberoptic intubation using nasal approach and using oral approach through a 1.5 size laryngeal mask airway were performed; however, both approach failed because the fiberscope loaded with 3.5 mm ID uncuffed tube was stuck inside the nasal cavity or inside the laryngeal mask airway respectively. Therefore, the laryngeal mask airway was keep in place and the fiberoptic intubation technique described by Ellis et al. was planned: the tracheal tube with the 15 mm adapter removed was loaded proximally over the fiberscope; the fiberscope was advanced under video-screen visualization into the trachea; the laryngeal mask airway was removed, leaving the fiberscope in place; the tracheal tube was passed completely through the laryngeal mask airway and advanced down over the fiberscope into the trachea; the fiberscope was removed and the 15 mm adapter was reattached to the tracheal tube.
Conclusion: the fiberoptic intubation method through a laryngeal mask airway described by Ellis et al. can be successfully used in small infants with Treacher Collins Syndrome.
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PALAVRAS-CHAVE
Síndrome de Treacher Collins;
Via aérea difícil;
Broncoscópio de fibra óptica;

Intubação traqueal difícil com fibra óptica em bebê de um mês de idade com síndrome de Treacher Collins

Resumo Os recém-nascidos e crianças pequenas com malformação craniofacial podem ser muito difíceis ou impossíveis de ventilar via máscara ou intubar. Gostaríamos de relatar a intubação com fibra óptica de um bebê com síndrome de Treacher Collins usando a técnica descrita por Ellis et al.

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Máscara laríngea;
Bebês

Relato de Caso: Uma criança de um mês de idade com síndrome de Treacher Collins foi programada para cirurgia mandibular sob anestesia geral endotraqueal. A laringoscopia direta para intubação oral não revelou a glote. A intubação com fibra óptica usando as abordagens nasal e oral por meio de máscara laríngea de tamanho 1,5 foi tentada, mas ambas as abordagens falharam porque o fibroscópio portanto um tubo de 3,5 mm ID sem balonete ficou preso no interior da cavidade nasal ou dentro da máscara laríngea, respectivamente. Portanto, a máscara laríngea foi mantida no lugar, e a técnica de intubação com fibra óptica descrito por Ellis et al. foi planejada: o tubo traqueal com o adaptador de 15 mm removido foi colocado proximalmente sobre o fibroscópio; o fibroscópio foi avançado na traquéia sob visualização em tela de vídeo; a máscara laríngea foi removida, deixando o fibroscópio no lugar; o tubo traqueal foi passado completamente através da máscara laríngea e avançado para baixo sobre o fibroscópio na traquéia; o fibroscópio foi removido e o adaptador 15 de mm foi recolocado no tubo traqueal. *Conclusão:* O método de intubação com fibra óptica através de uma máscara laríngea descrito por Ellis et al. pode ser usado com sucesso em bebês com síndrome de Treacher Collins.
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Introduction

Treacher Collins Syndrome is a congenital craniofacial malformation mainly characterized by bilateral hypoplasia of facial bones (mandible, maxilla and zygoma), cleft palate, ears and eyes deformities and temporomandibular joint abnormalities. Patients with this syndrome may be very difficult or impossible to mask ventilate or intubate.[1,2]

Several techniques and devices have been successfully used to intubate pediatric patients with Treacher Collins Syndrome.[1–10] In newborns and small infants with Treacher Collins Syndrome only the use of laryngeal mask airway (LMA), fiberoptic bronchoscope (FB) and, more recently, two different optical devices have been described to handle the airway.[11–15] We would like to report the tracheal intubation of 1-month-old infant with Treacher Collins Syndrome, undergoing mandibular surgery, using the fiberoptic intubation method described by Ellis et al.[16]

Case report

Consent for publication was obtained from the patient's father. A 1 month old, 5 kg boy, with upper airway obstruction secondary to Treacher Collins Syndrome was scheduled for mandibular distraction osteogenesis under general endotracheal anesthesia. He had a significant micrognathia; therefore difficult tracheal intubation was anticipated. A nasal intubation was planned using conventional direct laryngoscopy or, in case of failure, using a pediatric FB with no working channel (Fujinon 120P, 2.8 mm OD; Fujinon Corporation, Saitama, Japan). Fiberoptic oral intubation through a LMA would be the next step if previous approaches were unsuccessful. Two senior pediatric anesthesiologists, a senior anesthesia registrar and two senior plastic surgeons were present in the operating room, and we were prepared for a tracheostomy if mentioned methods were unsuccessful.

In the operating room, before the anesthesia induction, the airway devices were checked and that the pediatric FB would fit easily through a 3.5 mm ID uncuffed tracheal tube (Rusch Uruguay Ltda., Montevideo, Uruguay). Standard monitoring were applied while the infant received 100% O_2 via facial mask. Atropine 0.01 mg kg^{-1} was administered through a 24 gauge intravenous cannula previously inserted. In order to maintain spontaneous ventilation, inhalation induction was performed with increasing doses of sevoflurane in an air/O_2 mixture to obtain 4% end tidal concentration. Lung ventilation was easily assisted with bag and facial mask. Direct laryngoscopy with a Miller 0 blade failed to reveal the vocal cords. Then, we moved to fiberoptic nasal intubation. Maintaining an adequate anesthesia depth and spontaneous ventilation, a 3.5 mm ID uncuffed tracheal tube was carefully inserted through one naris into the nasopharynx to verify that passed easily across the nasal cavity and to facilitate the fiberoptic intubation. However, the FB was stuck inside the lumen of nasal tube and could not move further. Therefore, we went to the next step to secure the airway.

We verified that a FB loaded with a 3.5 mm ID uncuffed tracheal tube could pass both together through a size 1.5 LMA (Unique, LMA North America, San Diego, USA) lumen that had its grill bars previously cut. The LMA was gently inserted and its correct position was confirmed by end tidal CO_2 and the ability to provide assisted ventilation. The FB was threaded through the tracheal tube and both together were introduced and advanced into the LMA lumen under video-screen visualization. However, the tracheal tube with the FB in its interior was stuck inside the LMA lumen and anyone could not advance further, and both were removed keeping the LMA in place. At that time, we decided to try the fiberoptic intubating method through LMA described by Ellis et al.[16] (Fig. 1).

A new 3.5 mm ID uncuffed tracheal tube with the 15 mm adapter removed was loaded proximally over the bronchoscope. The FB was introduced easily through the size 1.5 LMA and advanced under video-screen visualization into the trachea until the carina was visualized (Fig. 1A). Then, the LMA was deflated and removed from the mouth, leaving the FB in the trachea (Fig. 1B). The tracheal tube was passed completely through the removed LMA (Fig. 1B) and

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