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CASE REPORT

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Nasotracheal intubation with c-mac video-laryngoscope in a patient with Treacher Collins Syndrome

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Abstract
Treacher Collins Syndrome (TCS) is a dominantly inherited autosomal disease which limited to head and neck movement. In management of difficult airways which is seen in patients with TCS, the direct laryngoscope, video-laryngoscope (VL), and fiber-optic laryngoscope (FOB) were successfully utilized. No study that was indicated the successful execution of nasotracheal intubation on a patient with TCS by using C-MAC video-laryngoscope was found in literature review. In this case report, we aimed to share our airway management on a patient with TCS for whom we planned nasotracheal intubation due to a dental surgery.

Keywords: Treacher Collins Syndrome, nasotracheal intubation, videolaryngoscope

Introduction

Treacher Collins Syndrome (TCS) is a dominantly inherited autosomal disease which limited to head and neck movement and seen on 1/50000 of live births and causes many developmental craniofacial anomalies. The most frequent clinic findings are the hypoplasia of facial bones, especially those of mandibular and zygomatic bones, malocclusion and misplacement of teeth, cleft or high-arc palate, eyelid anomalies and external and middle ear atresia [1]. TCS has severe and variable clinic characteristics. Small mouth opening, high-arc palate, temporamandibular joint anomalies and hypoplasia of zygomatic and jawbones make direct laryngoscopy and intubation more difficult [2].

In management of difficult airways which is seen in patients with TCS, the direct laryngoscope, video-laryngoscope (VL), and fiber-optic laryngoscope (FOB) were successfully utilized [2,3]. No study that was indicated the successful execution of nasotracheal intubation on a patient with TCS by using C-MAC video-laryngoscope (Karl Storz, Tuttlingen, Germany) was found in literature review. In this case report, we aimed to share our airway management on a patient with TCS for whom we planned nasotracheal intubation due to a dental surgery.

Case Report

Because of the cystic structure in mandible, a dental surgery was planned for 35 year-old and 167 cm-55 kg woman who was diagnosed for TCS. In preoperative evaluation, thiromental distance was measured 5 cm, mouth opening was 3.5 cm and neck mobility was less than 15-20°. Mallampati score was 3. Characteristic dysmorphic facial appearance of TCS was present. Maxillary incisor teeth were up and long. Eye and ear deformity, macroglossia and short-depressed jaw appearance were also present (Figure 1:a,b). In anamnesis, it was learned that the nasal deformity surgery was performed under general anesthesia 2 years ago and no problem was experienced in anesthesia. The management of airway was executed using a supraglotic airway tool (laryngeal mask airway -LMA).

Following 6 hours of fasting, the patient was taken to operation room. Electrocardiography (EKG), hearth rate (HR), noninvasive artery blood pressure (NABP) and peripheral oxygen saturation (SpO2) parameters were monitored. HR was measured as 110 pulses min-1, NABP: 110/80 mmHg, SpO2:98%. Considering the possible difficulty in airway, the alternative supraglotic airway tools, FOB, various sizes of tubes and stiles, and VL (C-MAC) were prepared. Pre-oxygenation with 100% oxygen was implemented during 5 minutes. For fast serial induction, 2 mg kg-1 propofol and 1 µ kg-1 intravenous (iv) fentanyl were applied. After ventilation with mask easily, rocuronium was applied with dose of 1 mg kg-1, then 6.5 mm north-poled nasotracheal tube was placed through right nostril. Direct laryngoscopy was performed using No:3 Macintosh blade. Cormack-Lehane score was 4 during direct laryngoscopy. No further image could be achieved via external laryngeal pressure and changing of position of head. Intubation using direct laryngoscope was never tried. The intubation intervention was repeated using C-MAC VL D-blade. A part of epiglottis and vocal cords was monitored in video-laryngoscopy and Cormack-Lehane score was 2.

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The intubation was executed by using Magill forceps. After confirming the position of tube through observing the chest movements, hearing the lung voices and monitoring the end-tidal CO2 value, the tube was fixed. No desaturation was observed during the direct laryngoscopy and video-laryngoscopy. The maintenance of anesthesia was ensured using 1-2% sevoflurane that was added into the mixture of 50% oxygen and 50% nitrogen-protoxide. During operation, the hemodynamic and respiratory parameters were stable, and no complication was seen. Surgery was taken 150 minute. Neuromuscular blockage was reversed using sugammadex (4 mg kg-1) and the case was extubated without any problem. The case who had no problem in recovery time was referred to the service.

Figure 1. a,b. Characteristic dysmorphic facial appearance of TCS.

Discussion

Treacher Collins syndrome is very important for the management of airway in general anesthesia, because upper airway obstruction and difficult tracheal intubation may be seen due to the maxillofacial deformity [4]. Because of the small retrognatic mandibula and macroglossia effusing from posterior, it may be very difficult or even impossible to align the oral cavity and pharyngeal and laryngeal axes to observe them directly. For this reason, alternative methods were utilized in airway management of these cases. In airway management of the patients with TCS, awake intubation, fiber-optic bronchoscopy, LMA, fiber-optic bronchoscopy through LMA, retrograde intubation, and tracheotomy have been successfully employed. In addition to these methods, the illuminated stile, GlideScope, and LMA-C Track have also been suggested [5]. These devices are facilated the observing of anatomic structures and application of laryngoscopy and endotracheal intubation without aligning the oral cavity, pharyngeal and laryngeal axes. Therefore, these methods are utilized as alternative airway management tools. Video-laryngoscopy has been suggested in cases which the laryngeal vision is limited [6].

In cases with TCS, the airway management tools and airway maneuvers which were alternative to direct laryngoscopy may facilate the airway management, even if the management of airway becomes difficult due to the anatomic anomalies. Leena et al. [4] have reported that macroglossia which was developed due to bone anomalies in TCS cases complicates the intubation by restraining the manipulation of endotracheal tube. During our direct laryngoscopy attempt, we couldn't position the direct laryngoscope in the mouth since the lip was large but the mount was small. For this reason, we determined to retry the intubation by using VL that is an alternative airway tool. But, during the procedure, we had to use Magill forceps in order to direct the intubation tube. Even if the use of Magill forceps is not generally needed in nasotracheal intubation using VL, it may be inevitable to use them in cases having anatomic anomalies in airway. Jane et al. [2] have emphasized for the patients who had TCS that the intubation becomes more difficult as the age advances and LMA is the most

useful airway management tool in these cases when endotracheal intubation cannot be performed. In anamnesis of cases, it was learned that LMA has been successfully implemented in airway management during previous nasal operation in our case. After we determined that Cormack-Lehane score was 4 during direct laryngoscopy, we preferred nasotracheal intubation by using C-MAL VL. Use of VL in nasotracheal intubation is a suggested method, especially in cases with expected difficult airway management [7]. Because of better glottic image and easy of directing the tube, VL may be preferred in nasotracheal intubation. C-MAC VL was preferred because its blade structure is same with Macintosh blade that is used on routine, besides its large screen.

In our literature review, we determined that the case presentations and clinic studies regarding TCS has been substantially carried out on pediatric cases and no adult TCS cases who had been applied nasotracheal intubation was found in literature. We aimed to present the applicability of C-MAC VL if nasotracheal intubation is planned for cases with TCS, but further studies are needed for the reliability.

Conclusion

While planning the anesthesia management in syndromes such as TCS accompanied by maxillofacial deformities, the alternative airway management tools should be available in operation room and it should be in mind that different airway methods can also be used. The nasotracheal intubation using C-MAC VL was successfully utilized in management of difficult airway in a patient with TCS. C-MAC VL with D-Blade can be used an alternative device in management of difficult airway.

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