



Features of Anesthetic Management of Patients with Severe Cervical Contracture with Shortness of Breath

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Received 29th Nov 2021,
Accepted 31st Dec 2021,
Online 17th Jan 2022

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Abstract: During intubation, airway management is difficult for the anesthesiologist due to rigid flexion deformation that results in misalignment of the oral, pharyngeal, and laryngeal planes. Ovassipian fiberoptic intubation can be a canal for the airway, Williams airway intubator, and Berman's oropharyngeal airway bronchoscope. We provide successful anesthetic treatment to a patient with nasal obstruction, microstomy, and severely limited neck enlargement due to extensive keloid scars by consciously performing oral fiber optic intubation using Berman airways.

Introduction

Airway management in patients with oral and neck burns is often a challenge for the anesthesiologist. Limited opening of the mouth, contraction of the oropharyngeal cavity, limited dilation of the atlanto-occipital joint, decreased adaptation of the submandibular space, and scarring of the neck skin inevitably lead to airway obstruction [1]. Neck contracture, microstomy, and nasal fibrosis are the result of treatment of burn wounds in these areas. Such patients usually go to the hospital for a contract. In this case, providing a patented airway for surgery is difficult for the anesthesiologist, leading to rigid flexion deformity that results in misalignment of the oral cavity, pharynx, and laryngeal planes during intubation. Such patients are usually treated according to a complex regimen depending on airway permeability [2]. It should be noted that the core value of anesthesia management includes not only the technologies and procedures used by anesthesiologists, but also the role of anesthesiologists in the administrative and organizational support of medical care [3]. We provide successful anesthetic treatment using Berman's airway permeability in a patient with postoperative nasal obstruction, microstomy, and oral cervical dilatation using fibrous optic intubation through the mouth. Airway management in these patients is still a contentious issue.

Medical history: A 26-year-old man suffering from ASA I burns was scheduled to have a microstomy repaired, neck contracture removed, and skin grafting. He had severe burns to his mouth and neck 5 months ago. Examination revealed a microstomy, the size of the mouth was only 7 mm. The burns also affected the eyes and nose. There is fibrosis and obliteration in the nasal passages (Pic. 1). He had anterior neck fibrosis with severe flexion deformity.

Survey: The degree of difficulty of the forthcoming tracheal intubation according to Mallampati could not be determined due to the limited opening of the mouth and the bent neck. X-ray of the neck showed a decrease in the oropharyngeal space.

Preoperative preparation

Before the operation, the patient underwent a thorough preoperative preparation, including the installation of sophisticated airway equipment, including a stylet, face mask of various sizes, oral and nasopharyngeal airways, various sizes of endotracheal tubes, Macintosh and McCoy laryngoscopic wedges, and a laryngeal mask (LMA), fiber optic bronchoscope and tracheostomy kit.



A clinical photograph of a flame burn patient.

Anesthetic management

Our first attempt was a wakeful oral fiberoptic bronchoscopy (FOB) with intubation through Burman's airway. An alternative plan was to surgically remove the contracture and correct the microstomy under intravenous ketamine anesthesia followed by direct laryngoscopy or LMA if FOB intubation failed. In the operating room, venous access was performed using a peripheral cannula 18. All monitoring devices were placed, including continuous electrocardiography, a non-invasive blood pressure cuff. Baseline blood pressure, heart rate, respiration rate, and SpO₂ saturation were 110/60 mm Hg. Art 98 beats / min, 18 / min and 97%, respectively. In premedication - atropine sulfate. The oropharyngeal airways were anesthetized by gargling and a spray of 10% lidocaine solution. A 6.5 mm reinforced endotracheal tube was mounted on an adult fibroscope. We introduced a size # 9 Berman air duct through the narrow mouth opening. FOB was delivered through this airway and 2 ml of 2% lidocaine was injected through the FOB in the vocal cord region. Intubation was performed subsequently without any difficulty. The position of the tube has been confirmed, fixed and secured. Subsequently, anesthesia was maintained with an oxygen-isoflurane mixture. Intravenous fentanyl (100 mcg) has been used to provide intraoperative analgesia. ALV in normocarbica mode. The intraoperative period was uneventful. After the restoration of consciousness, spontaneous good muscle tone of the patient is

extubated. Hemodynamic parameters were quite stable, no respiratory disturbances were observed. In order to ensure comfort, sedation was performed with dormicum, the total consumption of which did not exceed 5 mg per operation.

The patient was transferred to the ward after 4 hours of observation in the recovery ward. His further stay in the hospital passed without complications, and after 6 days he was discharged home.

Discussion

Post-burn neck contracture with fixed flexion deformity is a serious problem for the anesthesiologist. The causes of difficult tracheal intubation can be divided into four main categories: limited oropharyngeal space, narrowing of the pharyngeal space, reduction of atlanto-occipital dilation, and decreased submandibular flexion. Compression of the mouth due to narrowing of the oropharyngeal cavity or burns due to burns can directly limit the field of view with laryngoscopy. This contributes to the impossibility of aligning the oral and pharyngeal axes [4]. In such cases, there are different intubation options: awakened fiberoptic intubation, LMA, ILMA, blind nasal intubation, retrograde intubation, tracheostomy. The use of fiberoptic intubation is the gold standard compared to other methods [2,5]. In our case, ILMA and LMA were not possible due to very limited oral opening. This patient was unfit for tracheostomy due to fibrous neck structures and loss of anatomical information [1]. Bullard laryngoscopy is another suitable alternative in this situation, but it has been questioned that it is difficult and expensive to use [6]. Due to the lack of this tool, its use was denied.

The patient had a microstomy and bilateral nostril fibrosis, which made airway management more problematic and difficult. The optic fiber pathway of the nose is generally considered easier because the angle of curvature of the endotracheal tube naturally approaches the upper airway [1,7]. However, in our case, this was not possible due to the complete closure of the nasal passages [1]. Berman's oropharyngeal canal, ovassipia fiberoptic intubation canal, and Williams canal can also serve as channels for bronchoscopy (Figure 2-4). Berman's airway allows the tracheal tube to pass directly through his canal into the glottis [8]. Some authors limit the use of the Berman airway because they have a longer curved section, which can lead to abrupt bending and difficulties in advancing the endotracheal tube [1,8]. In our patient, we were able to intubate the patient through Berman airway without any difficulty. The Williams intubator is an airway that allows the trachea to pass directly through the anterior canal into the glottis. It can be removed by sliding it over the tracheal tube [4]. According to the literature, a combination of Trachlight and MADgic nebulizer can also be provided excellent local airway anesthesia for awake orotracheal intubation.

Picture 2. Berman air duct.

Picture 3. Ovassipian air duct

Picture 4. Williams duct

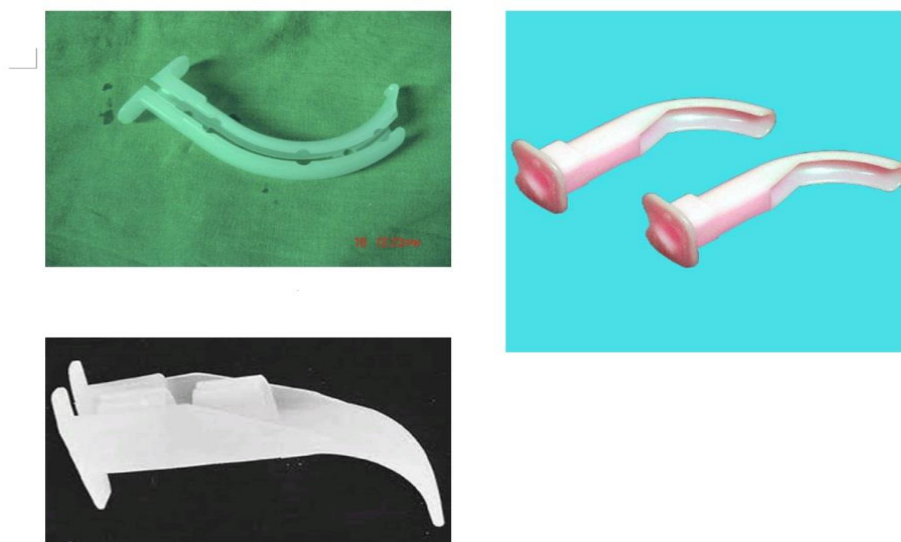
This technique is easy to perform, well tolerated by the awake patient, and useful for difficult intubation, but transillumination can be problematic in patients with dense fibrous tape [9]. If all of the above maneuvers are not feasible, then the only alternative is contractures and surgical removal with re-intubation of the trachea, which should correspond to the type of operation, the patient's health status, as

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Conclusion, we recommend that you thoroughly study and prepare for airway difficulties prior to surgery. Correct intraoperative planning and teamwork are essential for a positive outcome in these cases. During intubation of patients with oral cavity burns, a complex intubation kit, including a fiberoptic bronchoscope, should be kept ready in the operating room. This will help to manage the airway patency in a timely manner, as well as prevent any side effects in the perioperative period.

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