British Journal of Medicine & Medical Research
13(1): 1-4, 2016, Article no.BJMMR.22653
ISSN: 2231-0614, NLM ID: 101570965

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Opening of Tracheostomy in a Morbid Obese Patient With Frova Catheter

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Authors' contributions

This work was carried out in collaboration between all authors. Authors OO and MEZ did the drafting of the manuscript. Authors OO, MEZ and OI performed the critical revision of manuscript for important intellectual content. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2016/22653
Editor(s):
(1) Patorn Piromchai, Department of Otorhinolaryngology, KhonKaen University, Thailand.
Reviewers:
(1) Jerzy Beltowski, Medical University, Lublin, Poland.
(2) Gonzalo Hernandez, Hospital Virgen de la Salud, Toledo, Spain.
(3) Jun Wada, Okayama University, Japan.
(4) Oguz Ozcelik, Firat University, Turkey.
Complete Peer review History: http://sciencedomain.org/review-history/12804

Case Report

Received 17th October 2015
Accepted 2nd December 2015
Published 26th December 2015

ABSTRACT

Morbid obesity is defined as body mass index (BMI) at or over 40. Unfavorable neck anatomies of the patient are considered counter indication for percutaneous tracheostomy and they are referred for opening of surgical tracheostomy. In our case report, problems encountered in a morbid obese patient who could not be extubated due to post operative respiratory problems and the use of frova catheter (COOK, USA) in this procedure is discussed. A 42 old female patient at the weight of 246 kg. with BMI 89.4 could not be extubated due to respiratory causes post operatively and she was transferred to operating theater for surgical tracheostomy. After tracheostomy was opened, due to unsuitable anatomy associated with thick fat tissue on the neck the tracheostomy cannule couldn't forwarded from tracheostomy hole, frova intubation catheter was sent and over it, 8 no endotracheal tube was sent in order to aerate the patient. Opening of tracheostomy in the morbidly obese is challenging operation due to specific anatomic conditions. Frova intubation guide helps in difficult intubation cases and was reported to be used for retrograde intubation in patients in whom

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antegrade intubation was not possible. In morbid obese patients, opening tracheostomy and then cannulating is difficult. Frova intubation guide can be used for difficult intubation in morbidly obese patients. In addition, as in the present case, it can be used in conditions in which tracheostomy cannula is too short or could not be placed during tracheostomy procedure.

Keywords: Obesity; morbid; tracheostomy; airway; catheter.

1. INTRODUCTION

Morbid or severe obesity is defined as body mass index (BMI) at or over 40 or BMI over 35 accompanied by comorbidities [1]. In obese people, in addition to cardiovascular system complications, respiratory complications also play an immportant role in morbidity and mortality. Excessive load on respiratory muscles due to obesity decreases compliance, leading to hypoventilation with mechanical effect [2]. Percutanesous tracheostomy (PT), is one of the most common surgical procedures in patients whose condition is critical and requires long term mechanic ventilation. Although PT is clinically safe and reliable, PT is not preferred in obese patients with large and thick necks. Unsuitable neck anatomies are considered relative counter indications for PT, and they are referred to ear nose throat (ENT) department for opening surgical tracheostomy [3].

2. CASE

A 42 year old female patient (Fig 1.) at the weight of 246 kg and BMI 89.4 who had hypertension, type 2 Diabetes Mellitus (DM), and restricted cardio respiratory functions was underwent obesity surgery (gastric by-pass). Patient could not be extubated due to post operative respiratory problems and transferred to intensive care unit (ICU) where she was monitorized for nine days in intubated position. On the 9th day in ICU; tracheostomy opening was planned by ENT department and the patient was taken to operating theater. For anesthesia induction, 50 mg propofol (Propofol, Fresenius Kabi, Turkey) and 100 mg rocuronium bromur (Esmeron®, Organon, Ireland) i.v. were administered for mainteance of anesthesia, %2 sevoflurane 50% oxygen and 50% N_2O were administered. After surgical tracheostomy was opened, due to unsuitable neck anatomy associated with the thick fat tisuue on the neck, size 9 tracheostomy cannula was too short and cannulation could not be performed. Size 8 and 9 intubation tubes were tried, but attempt failed again. Meanwhile, hypoxia and profound bradycardia developed in the patient. Intubation was attempted again with no success. Then, frova intubation catheter (COOK, USA) (Fig 2.) was sent from the tracheostomy hole, which was opened, and over the guide size 8 cannula was sent. Oxygen saturation and pulse returned to normal and the patient was transferred to intensive care unit with endotracheal tube sended from tracheostomy hole.

3. DISCUSSION

In morbid obese patients, there is excessive fat tissue in breats, neck, chest wall, lip and pharynx. This excessive fat tissue may prevent reaching upper airways during intubation or tracheostomy. In these patients, position and preoxygnesiation may be useful. Lung functions are worse than those of with normal BMI owing to decreased residual capacity and aggravated ventilation perfusion mismatch [4].

The risk of complication is high in opening tracheostomy in morbid obese people. Although new surgical techniques facilitate the opening of tracheostomy, in obese patients, this procedure is challenging due to special anatomic conditions [5]. Using video laryngoscope and ultrasonography may be beneficial in percutaneous tracheostomy. Video laryngoscope may be useful in identification and correction of the position of cuff of tracheal tube. Similarly, carrying out percutanesous dilatation treacheostomy procedure with the guidence of ultrasonography is less traumatic and more practical [4,6]. However, in morbid obese, using these may be quite difficult. Frova intubation guide is designed for difficult orotracheal intubation with angled and flexible tip and hard inner stylet. In a previous report, frova intubation guide was reported to be used for retrograde intubation with success, in a case in whom antegrade intubation could not be performed [7]. Frova intubation guide aids difficult intubation and limited laryngoscopic view [8]. Clinical studies have demonstrated that, frova intubation guide can be placed in trachea with 95% success rate by a single person at maximum two attempts. Rigidity of frova intubation guide makes

it possible to lift epiglottis on posterior pharyngeal wall. Even in patients with Grade 3b laryngeal view, it provides high visualization [9]. In the present case, in a morbid obese patient in whom tracheostomy hole was opened but tracheostomy canule and intubation tube could not be placed, frova intubation guide was sent from tracheostomy hole and intubation tube was sent over the guide for the aeration of the patient.

Fig. 1. Image of the morbid obese patient in ICU

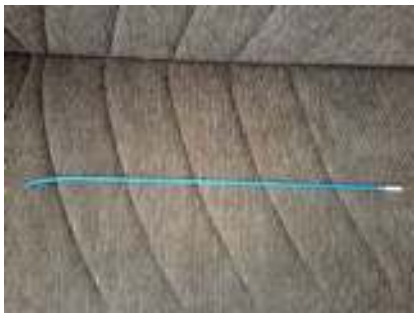

Fig. 2. Image of the Frova intubation guide

4. CONCLUSION

Post operative monitoring of morbidly obese cases is difficult. Especially long term intubated monitoring in intensive care unit necessitates tracheostomy. Due to excessive fat tissue and thick neck structure, it is difficult to open tracheostomy and then to cannulate. The success of frova intubation guide was demonstrated with clinical studies. It can be used in the morbid obese patients during difficult intubation. In addition, it is our suggestion that it can also be used in cases when tracheostomy cannula is too short during tracheostomy or when it can not be placed. Additionally frova catheter is a rescue option for morbid obese patients' airway management.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/12804