

## DIFFICULT INTUBATION IN THE OBESE PATIENT

Case Report

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March 2017

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## DOI

10.15436/JAS.2.1.5

## CONFLICTS OF INTEREST

THERE ARE NO CONFLICTS OF INTEREST FOR ANY OF THE AUTHORS.

Received Date: 5<sup>th</sup> Mar 2017Accepted Date: 16<sup>th</sup> Mar 2017Published Date: 23<sup>th</sup> Mar 2017

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## ABSTRACT

The following scenario is a synopsis of the anesthesiologist's worst nightmare: can't intubate / can't ventilate. This ongoing concern in anesthesiology is being revisited in light of the personal observation that as the prevalence of obesity increases, standard oral intubation is becoming more difficult. The following summary is based on an actual closed claim case.

## CASE REPORT

A 54 year old man was scheduled for a total knee replacement. The patient was 5' 6" and weighed 250 pounds. His BMI was 40 kg / m<sup>2</sup>. In addition to obesity concerns, his medical history included hypertension, hypercholesterolemia, GERD, type 2 diabetes (diet controlled) and possible sleep apnea. The patient agreed to the placement of an epidural catheter for post-op pain control but demanded to "be asleep" for the surgery.

Following the uneventful placement of an epidural catheter, the patient was placed in a fully supine position, monitors were connected, and a rapid sequence induction was performed. Oral laryngoscopy with a MAC 3 blade was attempted which revealed a grade 4 view (1.) (no identifiable laryngeal anatomy). Mask ventilation with an oral airway / bag and mask was attempted and noted to be difficult requiring high positive inspiratory pressures. Oral laryngoscopy with a MAC 4 and then a Miller 2 blade

was attempted. The difficult airway cart with advanced intubating aids and additional anesthesia assistance was summoned. Between each attempt to secure an airway, mask ventilation became increasingly difficult; peak airway pressures were reported to be “sky high”. After several minutes of unsuccessful airway management, a general surgeon arrived. As the surgeon attempted a difficult tracheotomy, the patient arrested and further resuscitation efforts failed.

## DISCUSSION

For every dramatic, worst case scenario as above, how many countless near misses occur? This article is not intended to be a lengthy review of the difficult airway. There are many excellent resources addressing this topic by notable national and international airway educators. The intent of the article is to share some suggestions based on personal experience as well as to draw attention to the importance of proper pre-positioning of the obese patient prior to induction of both general and regional anesthesia.

As a broad classification, the morbidly obese patient is “apple-shaped” (tight fat) in appearance or is “pear-shaped” (loose fat) in appearance. (2) Based on my experience, the “tight fat” obese patient tends to have a higher incidence of difficult airway issues.

## CLINICAL ASSESSMENT

There are several physical signs that can alert one to the possibility or probability of a patient having a difficult airway. The 6-Ds to airway assessment is one method used to evaluate for signs of difficulty:

1. Disproportion (tongue to pharyngeal size / Mallampati classification)
2. Distortion (e.g. a neck mass)
3. Decreased thyromental distance (receding or ‘weak’ chin)
4. Decreased interincisor gap (reduced mouth opening)
5. Decreased range of motion of the cervical spine
6. Dental overbite (3,4)

Although all six points are important, in my opinion, “the jaw tells the story”. An over-looked and simple clinical sign to assess the jaw is the upper lip bite test. (5) The patient is asked to touch their upper lip with their lower teeth; i.e. protrude the mandible. This simple test addresses D3 and D6. Concerning point D5, ask the patient to look up at the ceiling or tilt their head backward. Any launching forward of the patient’s shoulders confirms that the range of motion of the cervical spine is limited.

## AIRWAY MANAGEMENT

Having clinically identified a potentially difficult airway and especially for the “tight fat” or “apple shaped” obese patient, here are some personal, practical suggestions.

1. **Start from a position of strength:** The term H.E.L.P. (head elevated laryngoscopy position) was coined by Dr. R. Levitan.(6) Two important articles on pre-positioning the morbidly obese patient have shown that this position improves the laryngoscopy view (7) and that there is an increase in the desaturation safety period.(8) Rescue ventilation techniques, (oral airway / bag and mask) are facilitated by the H.E.L.P. position. The head and neck are elevated above the chest and abdomen.

The airway is therefore more isolated and easier to work with. Further, the weight of the abdomen is falling away from the diaphragm and less positive airway pressure is required. Stacking with blankets can create the H.E.L.P. position but this can be time consuming and result in an unstable and precarious pile. Please read the letter at the conclusion of this writing. There is a better way that many here in North America are using to position obese patients.

2. **Have airway management plans A, B and C worked out:** All materials for advanced airway care should be immediately available in the O.R. before the induction of anesthesia for the anticipated difficult airway scenario. If plan A is not achieving the desired result, activate plan B or Plan C early. There is much wisdom in the phrase “don’t persist in the same technique and expect a different result”.

Again, the above suggestions are my opinions based on personal experience. For more information, please review the ASA algorithm for managing the difficult airway. This can be found on the ASA’s website.

### Post Script:

The result of an airway disaster and the occurrence of several “close calls”; I began an effort to do something more constructive than just requesting that our anesthesia group pay more attention to good positioning; please review the following letter.

Dear Anesthesia Colleagues:

*The problem of the obese and morbidly obese patient is now a global concern. For the anesthesia professional, airway management (as always) trumps all other obesity related co-morbid issues. In an effort to improve the safety and ease of airway management; in 1999, development of the Troop Elevation Pillow (TEP) began in earnest. (The TEP was created to replace a ‘ramp’ made from a pile of blankets). Over a period of two to three years and ultimately with collegial input from UTSW-Dallas, UTSW-Houston, University of Chicago, University of Toronto and University of Manitoba, Canada... the TEP system came to fruition.*

*Unfortunately, an illegitimate and unauthorized copy of the TEP has been in circulation in the UK over the past few years.*

*The TEP is the original and only obesity airway positioner referenced in five anesthesia textbooks as well as numerous anesthesia article publications.*

*For a complete list, please visit the teaching website: [www.troopelevationpillow.com](http://www.troopelevationpillow.com)  
The site is designed to be used as an educational resource.*

*The TEP compliments all methods of airway management for both regional and GEA cases.*

*‘First pass’ intubation via direct laryngoscopy or with any video laryngoscopy device is facilitated. My contact information is at the TEP’s teaching website and I welcome your comments.*

*Sincerely,  
Craig Troop M.D.*

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