



## ANAESTHETIC MANAGEMENT OF A MORBIDLY OBESE PATIENT WITH MULTIPLE COMORBIDITIES AND POST-BURN COMPLICATIONS: A CASE REPORT

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### ABSTRACT

We present a case report of a 53-year-old woman with multiple comorbidities, including morbid obesity, severe obstructive sleep apnoea, hypertension, type 2 diabetes mellitus, post-burn complications, poor intravenous access, and an anticipated difficult airway. The patient underwent elective umbilical meshplasty under general anaesthesia. This report highlights the challenges encountered during anaesthetic management and the successful outcomes achieved through a carefully planned approach. The induction, intubation, and intraoperative period were uneventful, and the patient was extubated on the first postoperative day. Intermittent non-invasive ventilation support was provided until the fifth postoperative day. This case report emphasizes the importance of considering the unique considerations and potential contraindications in patients with multiple comorbidities and post-burn complications.

**KEYWORDS :** Morbid Obesity; Post-Burn Complications; Difficult Airway; General Anaesthesia; Umbilical Meshplasty;

### 1. INTRODUCTION

Morbid obesity, obstructive sleep apnoea (OSA), and post-burn complications can pose significant challenges in administering general anaesthesia [1,2]. These patients often present with difficult airways, comorbidities, and unique physiological considerations that require careful planning and a multidisciplinary approach. We present a case report of a 53-year-old woman with morbid obesity, severe OSA, hypertension, type 2 diabetes mellitus (T2 DM) [3], post-burn complications, poor intravenous access, and an anticipated difficult airway who underwent elective umbilical meshplasty under general anaesthesia. This case highlights the successful management strategies and the importance of individualized care in complex patients. Anticipated complex airway assessment with physical examination are mentioned in Figure 1 and explained below:



**Figure 1 (A)** Post-burn scarring: Scar contractures that occur in the head and neck region following burns have the potential to result in failed intubation and airway emergencies. The prediction of a difficult airway in burn patients may not always be straightforward due to the concealment of disfigurement by many patients and the potential lack of obvious visibility of subcutaneous contractures beneath the mature scar [4].

Figure 1 (B & C) illustrates the restricted mouth opening (MP-4) short neck with limited extension, resulting in anticipated difficult mask ventilation and difficult intubation [5]. The significance of the 3-3-2 Rule becomes apparent in this context. The procedure involves the utilization of the examiner's fingers to estimate and measure three distinct distances on the patient [6].

- The measurement of the inter-incisor space was less than three.
- The measurement of the hyoid-mental distance is determined by the distance between the anterior tip of the mandible and the anterior neck on the hyoid bone, which was less than three fingers.
- The measurement of the distance between the hyoid bone

and the thyroid notch on the anterior neck was less than the width of two fingers.

### 2. Case Presentation

A 53-year-old woman with a body mass index (BMI) > 45 presented with severe OSA, HTN, T2 DM, post-burn complications, poor intravenous access, and an anticipated difficult airway. She had previously sustained burn injuries, resulting in limited neck extension and a prominent triple chin. Due to symptomatic umbilical herniation, she was scheduled for elective umbilical meshplasty under general anaesthesia.

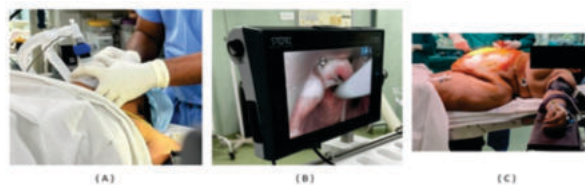
#### Preoperative Assessment:

The patient's comorbidities were carefully assessed during the preoperative evaluation. The anticipated difficult airway was of particular concern, given her limited neck extension, Mallampati class 4, and prominent triple chin.

Informed written consent and an Anaesthetic Plan were explained to the patient and her family members; the consent document was provided with detailed information about the risks, benefits, and alternative options. The informed consent process addressed the anticipated difficult airway, the need for postoperative ventilation, and the potential complications associated with her comorbidities. The patient accepted the proposed plan, and informed consent was duly obtained. She was classified as American Society of Anaesthesiologists (ASA) physical status 4, indicating severe systemic disease that constantly threatens life.

#### Anaesthetic Technique:

The patient was brought to the operating room, and standard monitors were applied. Preoxygenation was initiated with 100% oxygen for three minutes to optimize oxygen reserve; two wide-bore cannulas (18G) were secured. The induction of anaesthesia was performed using propofol (150 mg), midazolam (2 mg), and fentanyl (150 mcg) to achieve a smooth and rapid transition to the anesthetized state. A two-hand mask ventilation technique was used to confirm adequate ventilation before neuromuscular blockade [7], as shown in Figure 2.



**Figure 2:** (A) Two Hand mask holding technique (B) C-MAC

## Video Laryngoscopic view of vocal cords ( C ) Post-intubation final position depicting Morbidly obese

Due to the patient's post-burn status, depolarizing muscle relaxant succinylcholine was contraindicated. Instead, vecuronium (8 mg) was administered for paralysis. Adequate ventilation was ensured for five minutes, confirmed by end-tidal CO<sub>2</sub> trace, and stable hemodynamic were maintained throughout the process. Intubation was successfully performed using C-MAC video-assisted laryngoscopy with a 7.0-sized endotracheal tube in the first attempt [8]. Capnography, auscultation, and chest rise confirmed the endotracheal tube placement.

### Intraoperative Course:

The intraoperative period was uneventful. Strict attention was paid to maintaining normothermia, appropriate fluid management, and prevention of surgical site infection. Blood loss during the procedure was minimal (<100 ml), and hemodynamic stability was maintained with a carefully titrated anaesthetic. Prevention of pressure ulcers was diligently implemented.

### Postoperative Course:

The outpatient was shifted to the High Dependency Unit (HDU) for planned elective ventilation. Continuous monitoring of vital signs, including oxygen saturation and end-tidal CO<sub>2</sub>, was carried out. Pain management was optimized, and the patient was closely monitored for signs of respiratory compromise or other postoperative complications.

On the first postoperative day, the patient was successfully extubated after meeting Extubation criteria. Intermittent non-invasive ventilation (NIV) support was provided until the fifth postoperative day to facilitate weaning and optimize respiratory function [9]. Throughout the postoperative period, vigilant multidisciplinary care was provided to address all aspects of her complex condition.

## 3. CONCLUSION

This case report highlights the successful anaesthetic management of a morbidly obese patient with multiple comorbidities and post-burn complications undergoing elective umbilical meshplasty. The favourable outcome was the careful preoperative assessment, anticipation of a difficult airway, ideal recommended medications, and meticulous intraoperative and postoperative care. Individualized care, close collaboration between the surgical and anaesthesia teams, and a multidisciplinary approach are crucial for managing such complex patients effectively.

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