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AIRWAY CHALLENGES IN MORBIDLY OBESE PREGNANT PATIENT: SUCCESSFUL AWAKE FIBREOPTIC INTUBATION FOR ELECTIVE LAPAROSCOPIC OVARIAN CYSTECTOMY

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ABSTRACT **Background:**Airway management in pregnancy is associated with increased risk of difficult ventilation, difficult intubation, and rapid oxygen desaturation due to physiological and anatomical changes. Morbid obesity further aggravates airway difficulty by reducing functional residual capacity and increasing upper airway soft tissue. Awake fibreoptic intubation remains an important strategy in anticipated severe difficult airway.**Case Presentation:**A 28-year-old female, gravida 2 para 1 living 1, at 20 weeks of gestation with Class III obesity (BMI 42.2 kg/m²), was posted for elective laparoscopic ovarian cystectomy. Preoperative airway assessment revealed Mallampati Grade IV, short neck, increased submental fat, and limited neck extension. A check laryngoscopy with video laryngoscope showed Modified Cormack–Lehane Grade IV view. The patient was planned for awake fibreoptic-guided intubation after detailed airway preparation. **Management and Outcome**:The patient was positioned in a ramped-up position and adequately preoxygenated. Airway preparation was performed using topical lignocaine nebulisation (2–4%)Lignocaine spray to the oral/nasal cavity Superior laryngeal nerve block Spray-as-you-go (SAYGO) technique during fibreoptic bronchoscopy. Awake fibreoptic-guided intubation was successfully performed while maintaining spontaneous ventilation. General anaesthesia was induced after confirmation of endotracheal tube placement. Intraoperative haemodynamics remained stable and the patient was extubated uneventfully after surgery with stable maternal and fetal condition. **Conclusion**:Pregnancy combined with morbid obesity significantly increases airway-related risk during general anaesthesia. Early recognition of difficult airway, meticulous planning, optimal positioning, adequate preoxygenation, and preparedness with advanced airway equipment are essential for safe perioperative management. Awake fibreoptic intubation remains a reliable technique in anticipated severe difficult airway.

KEYWORDS : Morbid obesity; Pregnancy; Difficult airway; Awake fibreoptic intubation; Laparoscopic surgery; Anaesthetic challenges.

INTRODUCTION

Airway management in pregnant patients remains one of the most critical responsibilities for anaesthesiologists because failure to secure the airway can rapidly lead to maternal and fetal compromise. Physiological adaptations during pregnancy significantly alter respiratory mechanics and airway anatomy. Hormonal changes produce mucosal vascular engorgement and oedema involving the upper airway, making airway instrumentation more difficult and increasing the risk of bleeding during laryngoscopy. In addition, enlargement of the breasts and weight gain may interfere with optimal laryngoscopic positioning. Pregnant women also demonstrate reduced functional residual capacity and increased oxygen consumption, which predispose them to rapid oxygen desaturation even during brief periods of apnoea.

Morbid obesity independently contributes to difficult airway management because of excessive soft tissue deposition around the neck and upper airway, increased neck circumference, large tongue, restricted neck extension, and poor alignment of airway axes. Obese patients also have reduced pulmonary compliance and decreased oxygen reserve, thereby increasing the risk of difficult mask ventilation and perioperative hypoxaemia. When pregnancy coexists with morbid obesity, airway management becomes particularly challenging due to the combined effects of both conditions on oxygenation and airway anatomy.

Awake fibreoptic intubation continues to be regarded as a safe and effective technique in patients with anticipated severe difficult airway because it allows preservation of spontaneous ventilation while the airway is being secured under direct visualisation. Careful preoperative assessment, adequate airway preparation, optimal positioning, availability of advanced airway equipment, and multidisciplinary planning are essential for successful perioperative management in such high-risk patients.

CASE REPORT

A 28-year-old pregnant woman, gravida 2 para 1 living 1, at 20 weeks of gestation, presented with abdominal discomfort and was diagnosed with ovarian cyst requiring elective laparoscopic ovarian cystectomy. She weighed 115 kg with a height of 165 cm, corresponding to a body mass index of 42.2 kg/m², categorising her as Class III obesity. There was no history suggestive of hypertension, diabetes mellitus, bronchial asthma, or obstructive sleep apnoea.

During pre-anaesthetic evaluation, airway examination revealed Mallampati Grade IV, short neck, increased neck circumference, prominent submental fat deposition, and restricted neck extension. Mouth opening was adequate but visualization of oropharyngeal structures was poor. Pregnancy-related airway oedema was anticipated. Cardiovascular and respiratory examinations were unremarkable. Routine laboratory investigations, electrocardiogram, and two-dimensional echocardiography were within normal limits. The patient was classified as ASA physical status III.

In view of anticipated difficult airway, a detailed airway management plan was formulated. A difficult airway cart containing video laryngoscope, fibreoptic bronchoscope, supraglottic airway devices, bougies, and emergency cricothyrotomy equipment was kept ready. The patient and relatives were counselled regarding awake intubation and possible airway-related complications. Aspiration prophylaxis was administered preoperatively.

Inside the operating theatre, standard ASA monitors including electrocardiography, pulse oximetry, non-invasive blood pressure, and capnography were attached. The patient was placed in ramped position using blankets to align the external auditory meatus with the sternal notch. Adequate preoxygenation was performed with 100% oxygen.

A gentle check laryngoscopy using video laryngoscope demonstrated Modified Cormack–Lehane Grade IV view with inability to visualise the glottic opening. Considering the anticipated difficulty with tracheal intubation and risk of failed ventilation following induction, the decision was made to proceed with awake fibreoptic-guided intubation.

Airway preparation was performed using topical lignocaine nebulisation (2-4%) Lignocaine spray to the oral/nasal cavity and in Superior laryngeal nerve block Spray-as-you-go (SAYGO) technique during fibreoptic bronchoscopy while maintaining spontaneous ventilation and oxygen supplementation throughout the procedure.

The vocal cords were visualised under direct vision and the endotracheal tube was advanced successfully into the trachea without airway trauma or oxygen desaturation. Correct tube placement was confirmed with bilateral chest auscultation and end-tidal carbon dioxide monitoring. General anaesthesia was subsequently induced uneventfully. Intraoperative haemodynamics remained stable throughout the procedure. At the end of surgery, the patient was extubated after complete recovery and shifted to postoperative care with stable maternal and fetal status.

DISCUSSION

Airway management in obese obstetric patients is associated with significantly increased perioperative risk because both pregnancy and obesity adversely affect airway anatomy and respiratory physiology. Pregnancy produces mucosal oedema and capillary engorgement of the airway, which may worsen with repeated airway instrumentation. Functional residual capacity decreases progressively during pregnancy while oxygen consumption increases, resulting in rapid oxygen desaturation during apnoea. These physiological alterations become even more pronounced in obese patients.

Morbid obesity contributes to airway difficulty due to increased pharyngeal soft tissue, limited atlanto-occipital extension, reduced chest wall compliance, and diminished pulmonary reserve. Difficult mask ventilation and difficult laryngoscopy are more frequently encountered in obese patients, particularly in those with increased neck circumference and Mallampati Grade III or IV airway. Appropriate positioning is therefore crucial. The ramped position improves alignment of the oral, pharyngeal, and laryngeal axes while simultaneously enhancing preoxygenation and pulmonary mechanics.

Awake fibreoptic-guided intubation remains the preferred approach in anticipated difficult airway when difficulty with both ventilation and intubation is expected. Preservation of spontaneous ventilation during airway instrumentation provides an additional margin of safety. Adequate topical anaesthesia and patient cooperation are important factors influencing the success of awake intubation. Current ASA and Difficult Airway Society guidelines strongly recommend considering awake tracheal intubation in patients with severe predictors of difficult airway and risk of rapid desaturation.

In the present case, the coexistence of pregnancy and morbid obesity substantially increased the risk of airway-related complications. Early anticipation of airway difficulty, detailed planning, availability of backup airway devices, and timely performance of awake fibreoptic-guided intubation contributed to safe perioperative management and successful maternal outcome.

CONCLUSION

Pregnancy associated with morbid obesity presents significant airway challenges to anaesthesiologists. Thorough airway assessment, meticulous preparation, adequate preoxygenation, and availability of advanced airway equipment are essential for safe management. Awake fibreoptic intubation remains a safe and effective technique in patients with anticipated severe difficult airway because it preserves spontaneous ventilation while allowing controlled airway securement.

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