

Intraoperative Real-Time Diagnosis of Idiopathic Subglottic Stenosis During Emergency Cesarean Delivery Using Dual-Modality Airway Visualization

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Learning Objectives

- Recognize that distal airway obstruction may occur despite a normal laryngoscopic view during obstetric emergencies.
- Demonstrate how dual-modality visualization (direct laryngoscopy + fiberoptic bronchoscopy) enables real-time diagnosis and effective airway rescue.

Introduction

Subglottic stenosis is a rare but clinically important cause of unexpected difficulty during airway management. In pregnancy, symptoms such as mild exertional dyspnea are often attributed to normal physiological changes, which can delay recognition of underlying fixed airway obstruction.

During emergencies where rapid conversion to general anesthesia is needed, an unrecognized narrowing of the airway can quickly become critical. Maintaining early suspicion and ensuring ready access to advanced airway visualization tools are essential to prevent delays, misdiagnosis, and complications.

Case Description

- 30-year-old primigravida scheduled for emergency cesarean delivery due to fetal bradycardia.
- Spinal anesthesia failed, requiring conversion to general anesthesia.
- Laryngoscopy: Grade I view obtained, yet multiple ETTs met distal resistance.
- Dual-modality visualization (direct laryngoscopy + fiberoptic bronchoscopy) revealed circumferential subglottic stenosis.
- Successful intubation achieved with a 5.5 mm ETT passed over the bronchoscope.
- Postoperative findings: confirmed idiopathic subglottic stenosis (iSGS).
- Definitive management: endoscopic CO₂ laser radial incisions with balloon dilation, restoring airway patency.
- Outcome: uneventful recovery; discharged with planned long-term follow-up.

Discussion

- ❖ Mild shortness of breath in late pregnancy is usually considered normal, which can hide serious fixed airway problems like subglottic stenosis.
- ❖ In this case, the stenosis was only discovered intraoperatively when multiple intubation attempts failed despite a perfect Grade I view.
- ❖ Using dual-modality visualization (direct laryngoscopy + fiberoptic bronchoscopy) helped identify the obstruction immediately and guided a safe intubation during an obstetric emergency.
- ❖ Very few reports describe undiagnosed iSGS first detected during cesarean delivery. This is the first reported case using dual-modality visualization in an emergency obstetric setting.
- ❖ This event led to institutional improvements:
 - Keeping flexible bronchoscopes readily available in obstetric ORs
 - Updating airway escalation pathways for unexpected failed intubation

Conclusion

- Maintain a high index of suspicion for fixed airway obstruction in parturients with unexplained dyspnea or unexpected resistance during intubation, even with a normal laryngoscopic view.
- Dual-modality airway visualization proved to be both a diagnostic and life-saving tool in this unanticipated airway crisis.
- Institutional preparedness—including ready access to fiberoptic equipment and multidisciplinary coordination—is vital to ensure safe outcomes in obstetric anesthesia.

References:

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