

Difficult Airway Rescue in a Post-Tracheostomy Patient Undergoing EGD-Directed Gastrostomy: A Cautionary Sedation Case

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INTRODUCTION/BACKGROUND

- Airway management during procedural sedation remains a core responsibility of the anesthesiologist, particularly in patients with complex respiratory and neurologic comorbidities
- Although monitored anesthesia care (MAC) with deep sedation is frequently used for endoscopic procedures such as esophagogastroduodenoscopy (EGD)-directed gastrostomy placement, its application in high-risk patients can precipitate rapid respiratory decompensation
- Post-intubation and post-tracheostomy tracheal stenosis represent underrecognized contributors to airway difficulty
- Rates of tracheal stenosis are increasingly reported, particularly following prolonged intubation in the setting of critical illness, including COVID-19, where stenosis rates approaching 3% have been described.
- Neurologically impaired, oxygen-dependent patients, especially those recently extubated or decannulated, are uniquely vulnerable to hypoventilation and upper airway obstruction under sedation.
- This case highlights the importance of heightened vigilance and airway preparedness when caring for post-tracheostomy patients undergoing procedures commonly performed under MAC.

CASE PRESENTATION

- A 77-year-old male with a history of CVA, cognitive impairment, epilepsy, HFrEF, and prior tracheostomy was admitted for septic shock complicated by acute respiratory failure requiring intubation
- He then underwent esophagogastroduodenoscopy-assisted gastrostomy tube placement on day 20 of hospitalization for persistent dysphagia.
- Patient was decannulated for procedure but remained with supplementary oxygen via 2L/min nasal cannula and nasal airway
- Pre-anesthesia Evaluation:**
 - Anesthesia History: Denied personal or family history of anesthesia
 - Allergies: Abilify, Clonazepam, Lamotrigine, Lorazepam, Risperidal, Seroquel, Trazodone
 - Past Medical History: Bipolar Disorder, Epilepsy, Congestive Heart Failure
 - Physical Exam: Weak breathing, Mallampati Classification 2, Normal Neck ROM
 - ASA Class: 3
 - Preoperative planning: monitored anesthesia care and maintenance airway of nasal cannula with ET/CO2 spontaneous breathing

Labs:
WBC: 7.7 Plt: 121 Hgb: 11
Temp Oral: 37 BP: 99/76 HR: 80 RR: 20

Pre-Procedure Status:

- 77-year-old male with extensive medical history: CVA with severe cognitive impairment, epilepsy, dysphagia, T2DM, hypertension, HFrEF, and recent prolonged intubation for acute respiratory failure.
- Prior tracheostomy (now **decannulated**) with persistent respiratory compromise.
- Presented with chronic hypoxemia requiring **nasal airway + 2–4 L/min nasal cannula O₂** to maintain saturations.
- Preoperative exam: Mallampati II, normal neck ROM, midline trachea, visible tracheostomy scar, weak spontaneous respirations.
- Pertinent labs: Hgb 11 g/dL, Platelets 121k; ASA III.
- Planned anesthetic: **Monitored Anesthesia Care (MAC)** with spontaneous ventilation and ETCO₂ monitoring.

Post-Procedure Deterioration

- In recovery, patient experienced **continued desaturations** despite escalating respiratory support.
- Escalated to **high-flow nasal cannula**, but two further hypoxemic episodes prompted decision for emergent intubation and ICU transfer.

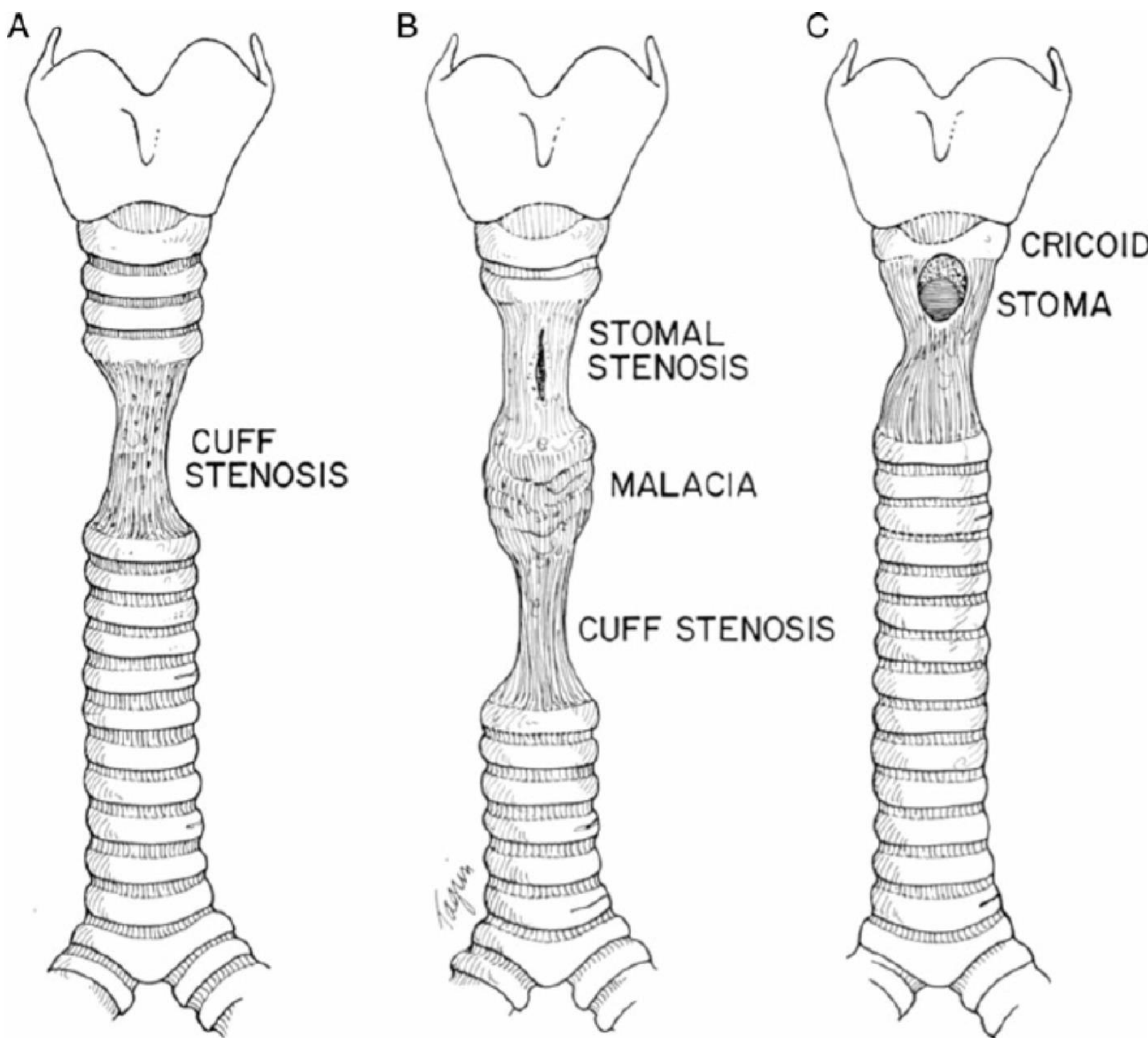


Intraoperative Course (EGD-Directed Gastrostomy):

- Sedation initiated but patient **poorly tolerated even minimal doses** due to compromised neurologic and respiratory reserve.
- Recurrent **desaturation episodes** despite nasal airway + O₂ via nasal cannula.
- Required repeated airway maneuvers: **jaw thrust** and temporary **oxygen mask** supplementation.
- Procedure completed; patient transported to GI recovery on supplemental O₂.

Emergent Intubation

- Preoxygenation performed; **rapid sequence induction** (RSI) with Etomidate 20 mg and Rocuronium 50 mg.
- Oral intubation attempted using video laryngoscopy.
- Grade 1 laryngoscopic view**, but **multiple attempts (three)** required due to unexpected resistance.
- Successful placement with **6.0 cuffed ETT**, consistent with **tracheal stenosis** from prior tracheostomy.
- Correct placement confirmed via bilateral auscultation, ETCO₂, and visualization of tube through the cords.
- Patient transferred to ICU



- Figure 1. Spectrum of post-intubation and post-tracheostomy airway lesions.** Diagram illustrating common sites and types of tracheal injury after prolonged intubation or tracheostomy. These include (A) cough- or tube-cuff-related stenosis (circumferential narrowing at cuff level), (B) stomal stenosis (narrowing or deformity at the tracheostomy stoma), and (C) stenosis of the intervening tracheal segment or tip-related injury, as well as potential complications such as tracheal wall softening or fistula formation.

DISCUSSION

- This medically challenging case highlights the complex interplay between chronic respiratory compromise, altered neurologic status, and airway pathology in the context of procedural sedation.
- In this patient, the presence of a nasal airway and oxygen dependence masked the extent of his vulnerability. Despite a reassuring preoperative airway exam and planned monitored anesthesia care, sedation precipitated desaturation, requiring emergent intubation.
- The difficulty encountered—despite a grade 1 laryngoscopic view—was attributed to tracheal stenosis, a recognized but often underappreciated complication following tracheostomy.
- Postintubation tracheal stenosis (PITS) is an iatrogenic complication and should always be considered in the differential diagnosis in patients with a history of intubation. One study revealed up to 3% of patients developed tracheal stenosis after prolonged intubation due to COVID 19.
- The need for a smaller tube and multiple attempts emphasized the value of early recognition and preparation.
- This case also illustrates that patients extubated following prolonged critical illness may not tolerate even minimal sedation without high risk. Anesthesiologists must weigh the risks of sedation versus securing the airway in advance.

CONCLUSION/TEACHING POINTS

- Learning Objective:** Recognize the risks of deep sedation in neurologically impaired, post-tracheostomy patients and anticipate the need for advanced airway management in the setting of occult tracheal stenosis.
- Post-tracheostomy or recently extubated patients may harbor unrecognized tracheal stenosis
- Deep sedation can quickly destabilize patients with impaired neurologic status or compromised respiratory mechanics
- A reassuring airway exam does not exclude distal airway pathology.
- This case demonstrates the significant risks associated with providing deep sedation to neurologically impaired, post-tracheostomy patients with residual respiratory compromise.

REFERENCES

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