



Pre-operative evaluation of a patient with severe glottic stenosis

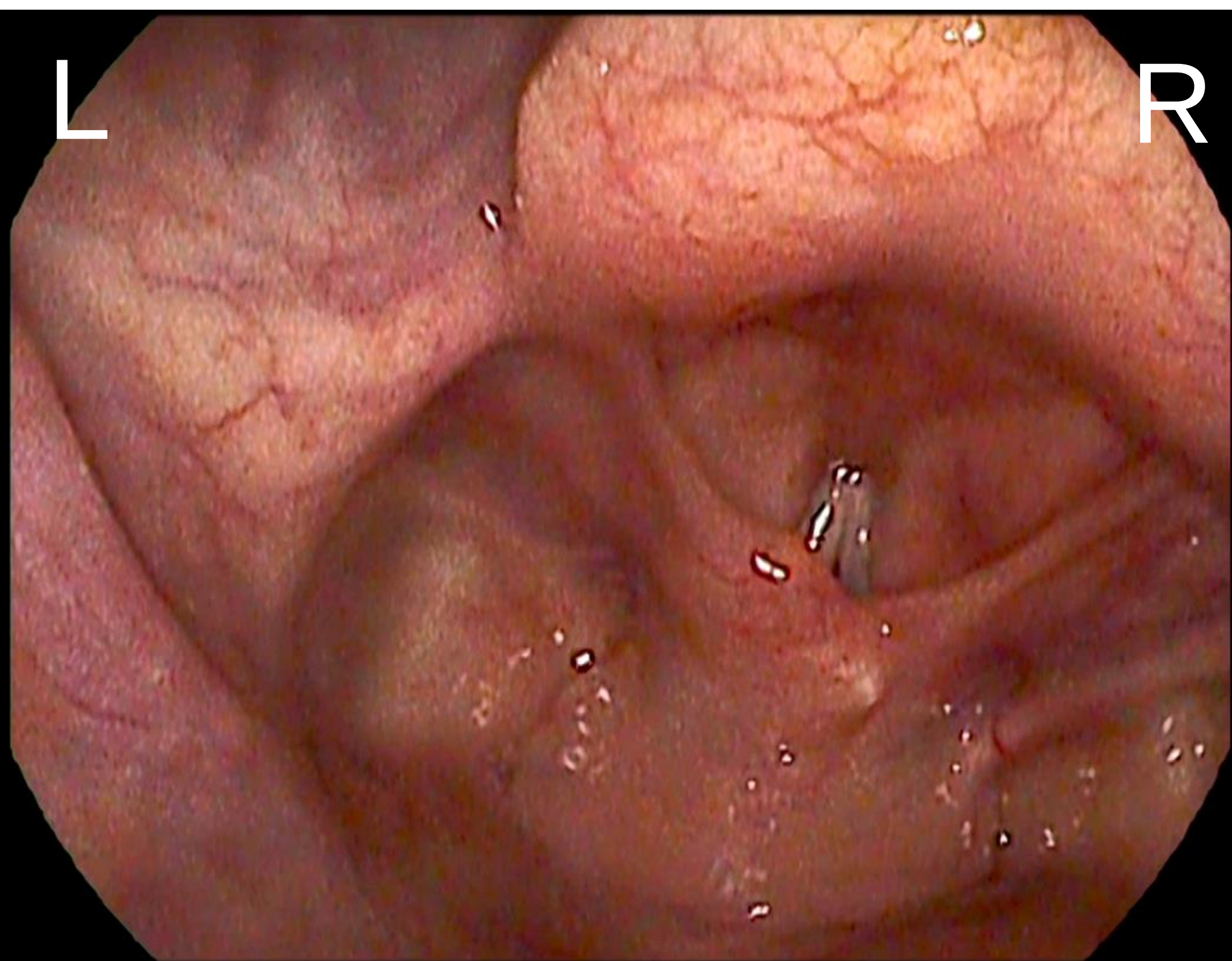
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Background

- A key component of the ASA difficult airway practice guidelines is performing a thorough airway risk assessment including a review of medical records, patient interview, and physical examination.
- Based on the above, an anticipated difficult airway can be further evaluated with pre-operative bedside endoscopy, virtual laryngoscopy/bronchoscopy, or three-dimensional printing.
- Acquired glottic stenosis is a serious complication of neonatal intubation with risk factors including prematurity, longer duration of intubation, multiple numbers of endotracheal tubes (ETT), and size of ETT.



Stroboscoped larynx in the outpatient ENT office: view of larynx

Case Presentation

A 40-year-old female with history of posterior glottic stenosis with cricoarytenoid and vocal cord involvement with paralysis. She presents to the Anesthesia Pre-Operative Clinic for evaluation prior to a cystoscopy with lithotripsy for an 8 mm left renal calculus.

On pre-operative evaluation, she had no anesthetic issues in the past, good exercise tolerance (swims regularly). On exam she is a Mallampati I and without a stethoscope has audible coarse breath sounds with normal respiration.

Past Medical History

- History of premature birth (28 weeks) requiring open cardiac surgery and intubation for first 4 months of life without tracheotomy.
- History of vocal cord laser surgery at age 14.
- History of C-Section at age 28.

Otolaryngology Consult

- Seen by Stony Brook ENT 7 months prior to anesthesia evaluation.
- Outpatient transnasal stroboscoped laryngoscopy:
 - Immobile left vocal fold (VF), impaired right VF adduction.
 - Normal right VF, Atrophied left VF
 - Suspected posterior glottic stenosis and bilateral cricoarytenoid joint fixation
- Due to the extent of stenosis, it was assessed that at most a 4.0 or 4.5 microlaryngeal intubation would be feasible.
- ENT recommended surgery to be performed jointly with a laryngologist present in the event that a surgical tracheotomy was required.

Pre-Operative Plan

Pre-Operative Anesthetic Recommendations:

- Recommended neuraxial anesthesia to avoid airway instrumentation
- In the event that neuroaxial anesthesia was contraindicated, recommended endotracheal intubation with a 4.0 or 4.5 ETT.
- ENT was to be present or immediately available for the duration of the surgery in the event of emergent airway compromise.
- Recommend coordination between ENT and anesthesia on day of surgery for possible awake fiberoptic, direct laryngoscopy, or video laryngoscopy.
- Recommend high dose steroids intraoperatively in the event of airway instrumentation

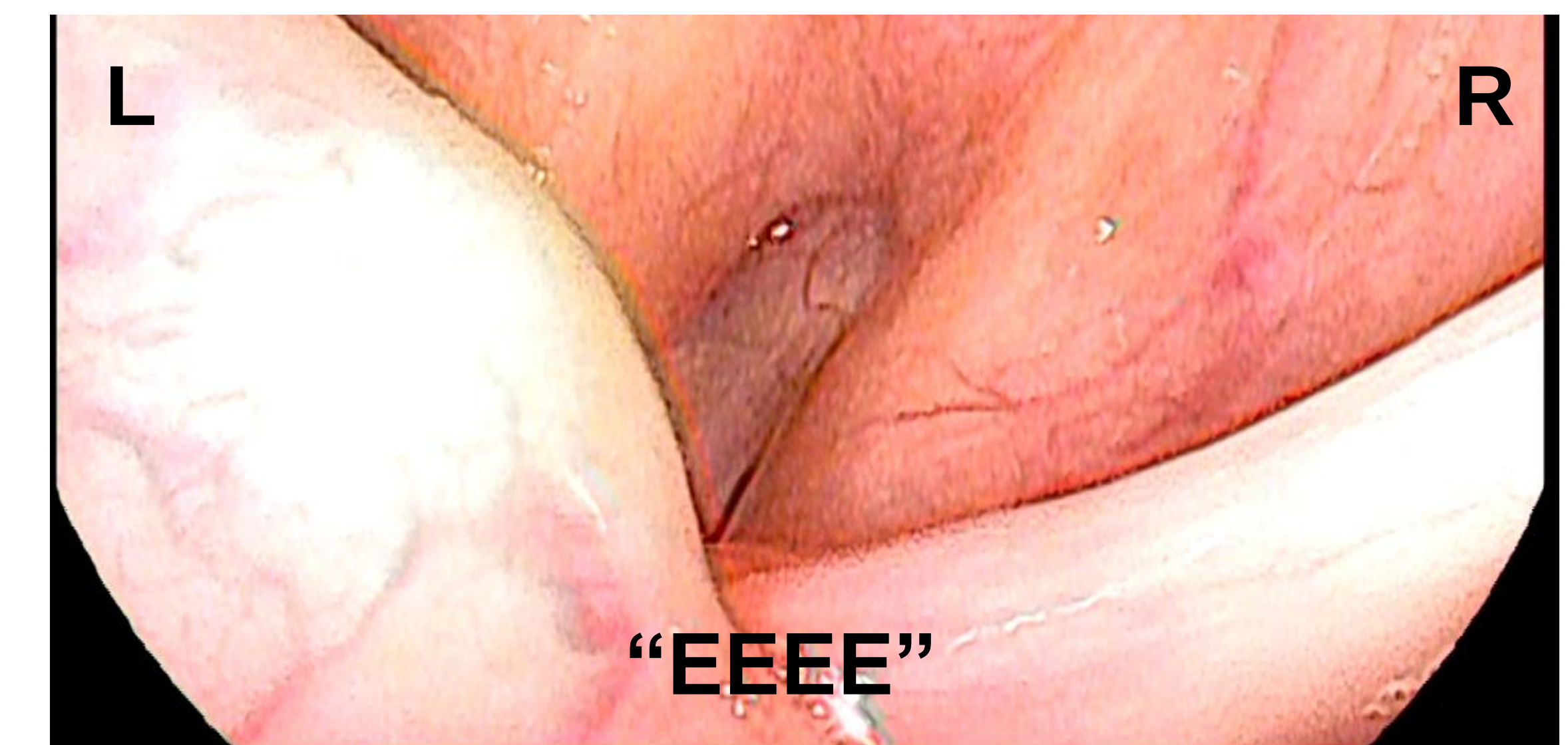
Intraoperative Events

Anesthesia Record and Surgical Outcome:

- Patient underwent the procedure under regional (neuraxial) and MAC sedation.
- Spinal was placed in-OR at the level of L4-L5 for a dermatomal coverage level of T10
- Spinal included 1.4 mL 0.75% hyperbaric bupivacaine with 10 mcg epinephrine.
- Maintained on dexmedetomidine 0.6 mcg/kg/hr. Given total of versed 4 mg, fentanyl 25 mcg.
- ENT surgeon on standby throughout duration of surgery in case of airway intervention.
- The surgery was uncomplicated with no intraoperative airway issues on room air and the patient was safely transported to PACU and discharged the same day.



Closest view of vocal folds: Maximal opening



Closest view of vocal folds: During Phonation of "EEE". Demonstrating L. vocal fold paralysis

Conclusions

- Pre-operative evaluation and planning plays a pivotal role in anesthetic and airway management. In this case, ENT evaluation and anesthetic planning allowed for a coordinated effort to safely undergo the procedure with preparation for an airway emergency.
- Difficult airway management involves not only preparing with video laryngoscopy, fiberoptics, and surgical airways, but also considering alternative modalities of anesthesia. In this case, spinal anesthesia as a method for avoiding any airway instrumentation while maintaining appropriate surgical anesthesia.

References

References available on request, correspondence to Devon.Patel@stonybrookmedicine.edu

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