


Airway Management during Endoscopic Surgery for Laryngotracheal Stenosis




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Disclosures

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Objectives:


- Describe the airway management techniques commonly used during endoscopic surgical procedures for laryngotracheal stenosis.
- Identify patterns of airway management techniques based on patient and surgical factors.
- Compare outcomes associated with various airway management techniques.

Methods:

- Retrospective review of 128 endoscopic surgeries for treatment of laryngotracheal stenosis between 2015 and 2022
- Data of interest included:
 - patient demographics, comorbidities
 - surgical procedure information
 - airway management strategies utilized
 - intraoperative physiologic parameters
 - outcomes/complications

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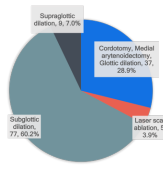
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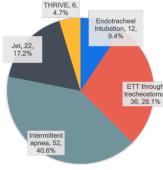
Results

- 128 cases for 57 unique patients
- 62.5% female-identifying
- Median age 60.5 years (IQR 51.8; 69)
- 81.25% ASA Class III or IV
- Median BMI 31.0 (IQR 24.7;35.2)
- Etiologies:
 - iatrogenic - 68, 53.1% (of these, 38 [52.9%] were COVID-19 related)
 - Idiopathic - 49, 38.3%
 - Radiation - 5, 3.91%
 - Granulomatosis with polyangiitis (GPA) – 5, 3.91%
 - Inhalation injury – 1, 0.78%

Surgical Procedure




Airway Management



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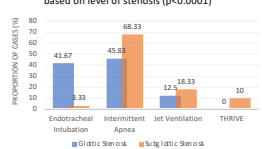
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Trends in airway management


- Excluding patients with tracheostomies at the time of surgery, 92 patients included
- Greater use of jet ventilation and THRIVE with head and neck anesthesiologists (p=0.0002)
- Different patterns in airway management based on level of stenosis (p<0.0001)

	Endotracheal Intubation	Intermittent Apnea	Jet Ventilation	THRIVE	p
Age, years	59.0 (57.2,61.5)	60.0 (41.8,68.0)	60.5 (49.5,67.0)	72.5 (65.8,74.0)	0.086
BMI	27.9 (24.5,35.2)	32.2 (25.2,38.0)	23.6 (85.2,96.0)	32.2 (24.8,35.0)	0.006
O2 Nadir	96.0 (82.5,97.5)	90.0 (84.5,95.0)	92.0 (85.2,96.0)	80.0 (74.2,92.2)	0.019
End Tidal CO2 Peak	44.0 (42.5,48.0)	50.0 (46.5,55.0)	45.5 (40.0,55.5)	56.5 (42.2,62.5)	0.007
Operative time, minutes	48.0 (43.5,68.5)	31.0 (25.0,48.5)	42.5 (34.2,51.8)	37.5 (30.5,53.0)	0.044
Length of Stay, days	1.0 (0.8,1.2)	0 (0,1.0)	1.0 (0,1.0)	0.5 (0,1.0)	0.047
Complications, N (%)	2 (16.67%)	3 (5.77%)	2 (9.09%)	0 (0%)	0.404
Rate of airway plan failure, N (%)	0 (0%)	1 (2.33%)	4 (15.38%)	6 (50.00%)	<.001



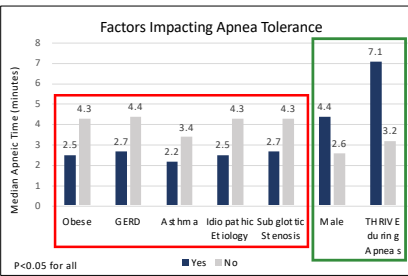
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Subgroup analysis for intermittent apnea

Factors Impacting Apnea Tolerance




Factors NOT associated with differences in apnea tolerance:

- ASA Class (p=0.19)
- Cardiovascular disease (p=0.73)
- COPD (p=0.07)
- OSA (p=0.39)

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Takeaways



- Level of airway stenosis, and thus planned surgical procedure, are important factors in airway management planning
- Patient factors including BMI, GERD, and asthma history also important
 - Particularly for predicting tolerance of apneic periods
- Anesthesiologists specializing in head and neck anesthesia may be more comfortable attempting advanced airway management techniques
 - However should be prepared to use backup airway plan when attempting jet or THRIVE
- Potential for the use of THRIVE to prolong apneic times

Limitations

- Sample size
 - Unable to perform subgroup analysis for jet ventilation and THRIVE patients
 - Unable to adjust for covariates
- Cannot account for anesthesiologist/surgeon preference

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Thank you!



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