Ten-Year Review of Tracheostomy Techniques and Related Complications in a Rural Health System

Richard Umstot, MD, FACS; Damayanti Samanta, MS; Emma Umstot, RN; Aous Jarrouj, MD, MBA, MHM

Charleston Area Medical Center

Background

- Tracheostomy is a frequently performed procedure that allows for definite airway access in critically ill patients
- 2020 data estimates over 121,000 tracheostomies performed in the United States
- Complications associated with tracheostomy have been well documented in the literature
- To the best of the authors' knowledge, the literature still lacks a robust study in a rural setting

Methods

- This is a descriptive retrospective review of adult patients admitted between June 2009 and June 2019
- Patients who underwent tracheostomy were identified using ICD9 and ICD10 codes from institutional data warehouse

Results

- 1,582 patients were included in the study, average age of 57.03 years and most were male (63.3%)
- Complication rate was 34.3%; average 1.37±0.65 ranging from 1 to 4
- Pneumonia was the most frequent (18.6%) followed by bleeding (4.0%) and accidental decannulation (3.8%)
- Open tracheostomy-93.6%; planned-94.9%
- Horizontal incision-55.2%; tube location between 2 rings-69.2%
- Tube size 8 Shiley-74.5%; securing technique of sutures-44.4%
- Transverse tracheotomy technique-38.4%
- No significant association with tracheostomy or tracheotomy technique, securing technique and tube location
- The rate of complications significantly varied by tube size (p=0.016)

Results

Tube size	N(%)	P-value
6 Shiley	84(15.7%)	0.016
6 Shiley long	5(0.9%)	
8 Shiley	385(72.0%)	
8 Shiley long	25(4.7%)	
7 Shiley	3(0.6%)	
7 Shiley long	12(2.2%)	
Other	21(3.9%)	

Conclusions

- Proceduralist experience and preference should continue to determine the best approach and technique for each patient
- Association of post-tracheostomy complication rate with tube size perhaps will guide clinicians with tube size selection

Correspondence: Richard Umstot, MD, FACS, richard.umstot@camc.org