

Identification of Factors Related to an Increased In-Hospital Mortality Rate following Tracheostomy and Percutaneous Endoscopic Gastrostomy (PEG) Placement in Intensive Care Unit (ICU) Patients

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Introduction: Despite discussions regarding expectations and goals of care prior to trach/PEG placement, many of these procedures still end up being futile. Studies have shown hypoalbuminemia, increased age, mechanical ventilation, and presence of two or more comorbidities lead to higher mortality rates following trach/PEG. We aimed to evaluate predictors of in-hospital mortality post-trach/PEG to optimize procedure timing and help guide decision-making where the risk-benefit relationship is not clear.

Methods: A retrospective chart review at a single institution was conducted, including all non-trauma ICU patients who underwent trach/PEG placement by the Surgical Critical Care Team between January 2016 and December 2018. Patient demographics, clinical factors, timing, indications, complications, and discharge destination were collected. The primary outcome was in-hospital mortality and secondary outcomes included overall length of stay, 30-day readmission rate, complications, and 30-day, 60-day, and 6-month mortality rates. Demographic and clinical factors were summarized and compared according to patient’s discharge destination. Stepwise regression was used for variable selection. Then a multivariate logistic regression model was fit to calculate the adjusted odds ratios of selected covariates for in-hospital mortality.

Results: A total of 272 patients were included. After stepwise regression, four variables remained and were significantly associated with in-hospital mortality after trach/PEG (See Figure 1). Additionally, individuals > 65 had significantly higher mortality at each time point compared with younger patients, which has been found in other studies as well (See Figure 2).

Figure 1:

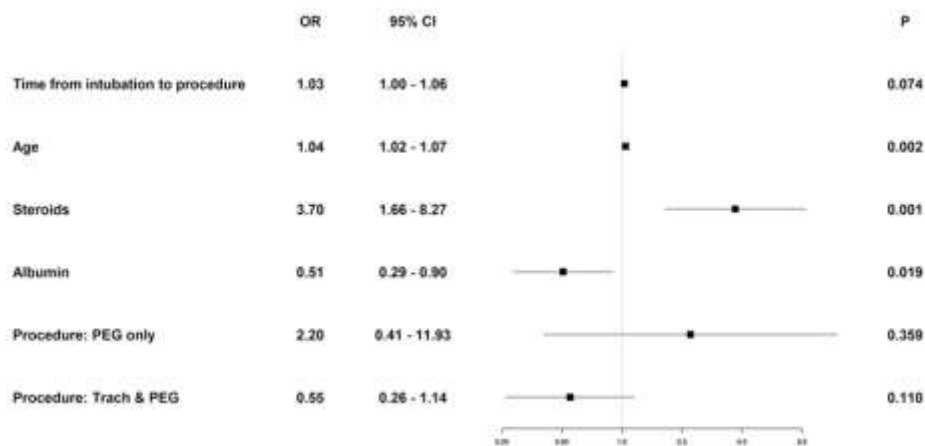
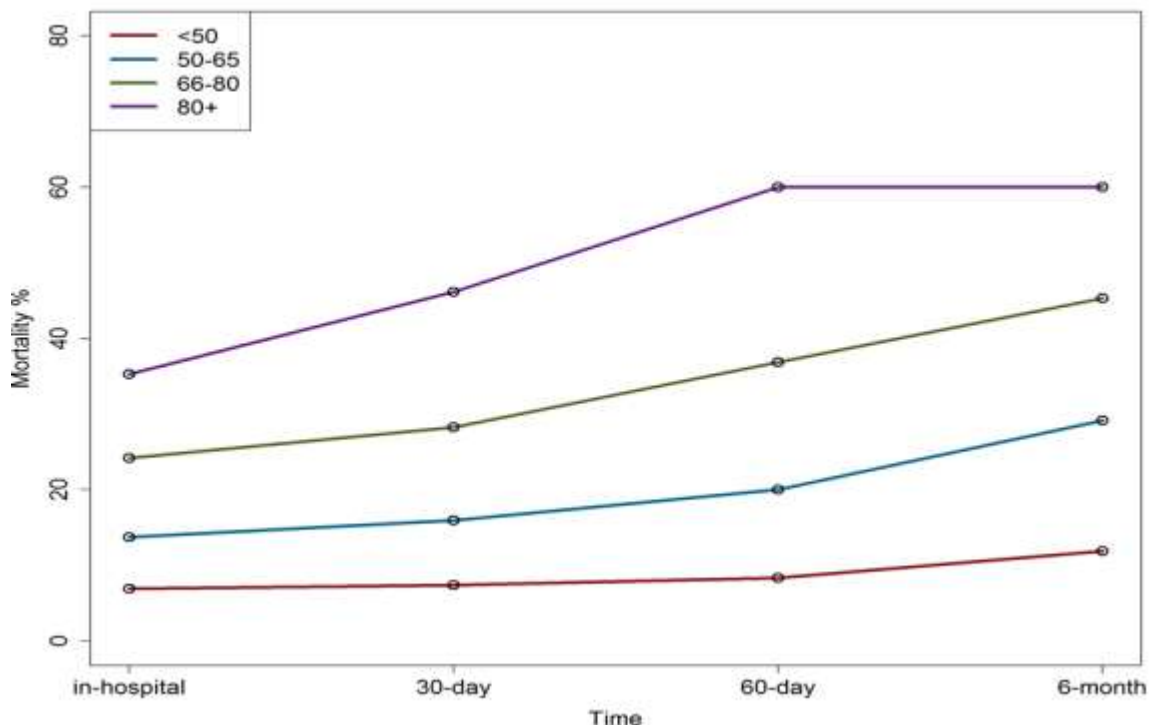


Figure 2:



Conclusions: Time from intubation to procedure, albumin level, age, and steroid use were all statistically significant in relation to in-hospital mortality following trach/PEG placement, and individuals > 65 had significantly higher mortality at each time point compared with younger patients. We plan to use these risk factors as a screening tool for those patients who may or may not benefit from trach/PEG. Additionally, as only 14% of our patients had palliative care involved preoperatively, we encourage earlier involvement of the palliative care team in patients who are considering trach and/or PEG, as this may affect the number of procedures being done and overall outcomes. In future studies, we plan to develop guidelines that facilitate triage when determining which patients are most likely to benefit from trach/PEG and to evaluate other outcome trajectories such as healthcare utilization and morbidity after trach/PEG, which may play significant role in family decision making.

	General	Pediatric	
Total Patients	254	539	
Age 5-7	17	92	
Age 8-13	92	286	
Age 14-18	145	161	
Total Charges	\$32,165.49	\$44,330.85	p < 0.01
Age 5-7	\$21,542.31	\$37,029.16	p=0.019
Age 8-13	\$29,126.34	\$44,585.51	P<0.01
Age 14-18	\$35,390.87	\$48,065.16	p<0.01
OR Charges	\$10,445.92	\$13,500.37	p < 0.01
Age 5-7	\$8,031.06	\$11,398.00	p=0.034
Age 8-13	\$9,509.30	\$13,459.85	P<0.01
Age 14-18	\$11,363.53	\$14,794.33	p<0.01
Radiology Charges	\$486.27	\$954.72	p < 0.01
Age 5-7	\$725.44	\$1,001.71	p=0.24
Age 8-13	\$641.25	\$1,029.58	P<0.01
Age 14-18	\$359.22	\$797.79	p<0.01
LOS (days)	2.38	2.83	p = 0.05
Age 5-7	2.56	2.85	p=0.61
Age 8-13	2.64	3.03	p=0.35
Age 14-18	2.17	2.44	p=0.38

Figure 1: Outcomes