Percutaneous dilatational tracheostomy: A decade of a tertiary care teaching hospital experience

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Introduction

One of the major indications of performing tracheostomy in ICU is anticipated prolonged mechanical ventilation. Tracheostomy for critically ill patients in ICU can be performed either by surgical approach or by Percutaneous dilatational tracheostomy (PDT) of which the later one has some clear advantage over the former one. PDT can be performed by securing the airway by the endotracheal tube (ETT) or replacing the ETT with laryngeal mask airway.

PDT is less time consuming procedure and it can be performed at bed side as well without the need of operation theatre. Although early complications in the peri procedural period reported to be life threatening events like hemorrhage, false passage, hypoxia, pneumothorax and death but the use of bronchoscopy during the PDT reduces the duration of procedure, morbidity and detects intra operative complications immediately which is missed by blindly performed PDT approach.

Objectives

Aim of our study was to find out the outcomes including early complications, impact of bronchoscopy guided procedure and to know efficacy and safety of airway secured with either endotracheal tube (ETT) or laryngeal mask during the procedure.

Patients & Methods

After obtaining the approval from the hospital medical research committee, (permission number: 13425/13) all patients who underwent percutaneous dilatational tracheostomy in surgical and trauma intensive care from 2010 to 2020 were included retrospectively into the study. Pediatric patients and patients with distorted neck anatomy were excluded from the present study.

All patients' demographic data, diagnosis, indications for tracheostomy, type of PDT, airway secured by ETT or laryngeal mask, hemodynamic parameters during tracheostomy, peri-tracheostomy complications and patients outcome recorded retrospectively.

SPSS version 23 was used to analyze data, and to compare the groups' t-test and chi square test were used. P value of <0.05 was considered statistically significant.

Results

A total of 342 patients were enrolled in the study. Majority of the patients undergone Blue rhino dilatational tracheostomy (252/73.7%). Most of the patient's airway during the PDT was secured by the ETT (316/92.4%). 75.4% of patients did not have peri operative complications. There was no significant difference in rate of complication whether airway was secured with ETT or laryngeal mask. When the PDT was performed under vision with bronchoscopy, the rate of peri operative complications was significantly lower (p=0.001).

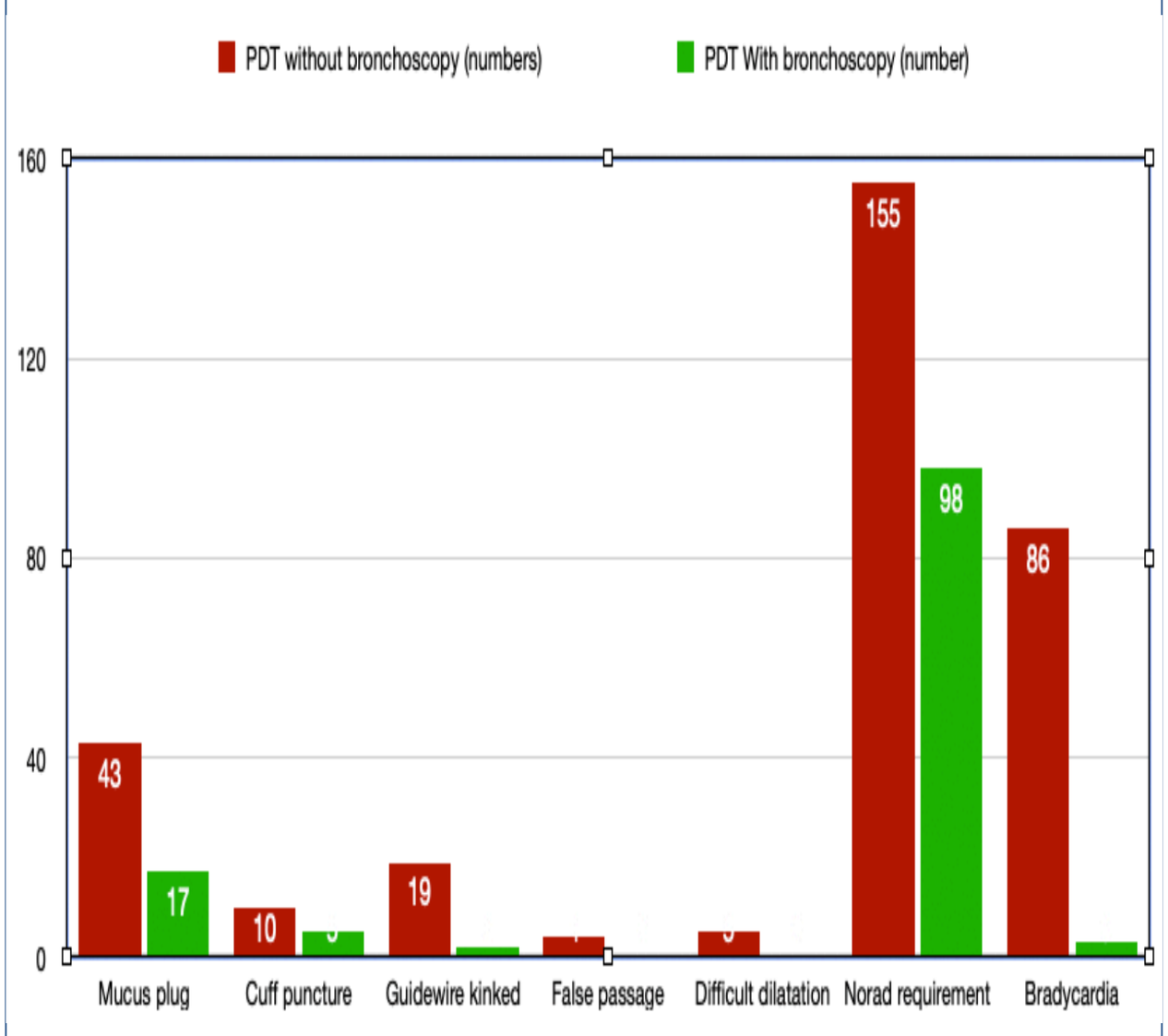

Chart 1. Comparison of complications

Variables		Without bronchoscopy (number; percentage)	With bronchoscopy (number; percentage)	P value
Complications	No complications	135; 56%	67; 66.3%	0.027
	Mucus Plug	43; 17.8%	17; 16.8%	
	Cuff puncture	10; 4.1%	5; 5.0%	
	Guidewire kinked	19; 7.9%	2; 2.0%	
	Bleeding	9; 3.7%	2; 2.0%	
	Hypertension	5; 2.1%	2; 2.0%	
	Desaturation	8; 3.3%	0; 0	
	False passage	4; 1.7%	0; 0	
	Difficult dilatation	5; 2.1%	0; 0	
	Others	2; 0.8%	2; 2.0%	
Hemodynamics	Required Noradrenaline	155; 64.3%	98; 97.0%	0.001
	Bradycardia	86; 35.7%	3; 3.0%	

Conclusions

Percutaneous dilatational tracheostomy is safe to perform with either ETT or laryngeal mask and the procedure should be done under vision with bronchoscopy for patient's safety.

References

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