

Poster Presentations

BEDSIDE PERCUTANEOUS TRACHEOSTOMY: A COMPARISON OF RETROGRADE AND ANTEGRADE SINGLE-STEP DILATOR TECHNIQUES

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Background: Recent developments in percutaneous tracheostomy include stoma dilation in either antegrade or retrograde fashion in one single step, thereby further decreasing the low risk for serious perioperative complications associated with multiple-dilator techniques. Because no investigation has yet compared the retrograde single-dilator technique of translaryngeal tracheostomy (TLT) with the antegrade Ciaglia Blue Rhino technique (CBR), we studied both techniques in terms of perioperative complications.

Methods: 100 adult ICU patients underwent elective percutaneous tracheostomy, either according to the TLT (n=50) or CBR (n=50) techniques. Tracheostomy was performed around day 7 of intubation when extubation within the next few days seemed unlikely. All procedures were performed by the same team of anesthesiologists at the patient's bedside under general anesthesia and with bronchoscopic control, using the Translaryngeal Tracheostomy Kit (Mallinckrodt Medical GmbH, Hennef, Germany) for TLT, while CBR was performed with the Ciaglia Blue Rhino Tracheostomy Introducer Set (Cook Deutschland GmbH, Mönchengladbach, Germany).

Results: All perioperative complications are listed in the table. With the exception of a posterior tracheal wall lesion, that occurred during cannula insertion in one CBR patient and required surgical repair, no serious complications were noted in both groups. Intraoperative periods of oxygen desaturation below 90% were short and did not result in adverse sequelae. Fractures of single tracheal cartilage rings were observed frequently during introduction of the Blue Rhino dilator ($P < 0.0001$). However, these fractures were not of clinical relevance.

	CBR (n=50)	TLT (n=50)	P value
Complete cannula extraction	-	2	n.s.
SpO ₂ < 90%	4	9	n.s.
Tracheal cartilage fracture	14	-	<0.0001
Posterior tracheal wall injury	1	-	n.s.
Paratracheal dilation	1	-	n.s.

Conclusions: CBR and TLT represent attractive and equally safe techniques for percutaneous tracheostomy. With regard to serious and potentially life-threatening complications, only one such complication was observed. Any other complications or technical difficulties were handled promptly and did not result in significant co-morbidity. The incidence of tracheal cartilage ring fractures during CBR seems high, however, it was as likely as during PDT (1, 2). Furthermore, long-term follow-up studies clearly demonstrated, that tracheal cartilage fractures after PDT are most unlikely to result in clinically significant tracheal stenoses or strictures after decannulation (2).

References:

- (1) Walz MK and Schmidt U, Intensive Care Med 1999;25:102
- (2) van Heurn LW, et al., Chest 1996;109:1466