



Evaluation of Subglottic Irrigation in Conjunction with the Continuous Aspiration of Subglottic Secretions (CASS)

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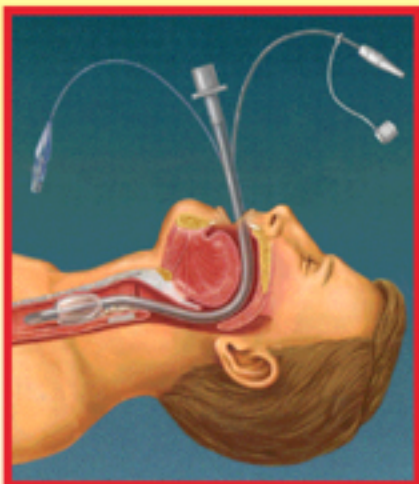
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PURPOSE

To determine the effect of irrigating and draining subglottic secretions on the bacterial load of the lower respiratory tract of mechanically ventilated patients.

METHODS

We performed a randomized study of subjects on mechanical ventilation in a critical care setting. One hundred and forty six patients were enrolled in the study. All patients were intubated with an endotracheal tube containing a dorsal lumen to allow for the aspiration of subglottic secretions (Mallinckrodt, Hi-Lo Evac.) as well as receiving precision suction at -20mmHg (Boehringer Laboratories, Model 3720). Patients in the control group had subglottic secretions removed by continuous suction (CASS). Patients in the experimental group had subglottic secretions removed by continuous suction and also received a 7ml sterile saline bolus to irrigate the subglottic space every four hours. Patients still intubated after 72 hours had a non-bronchoscopically obtained protected specimen brush (NB-PSB) sample taken from the lower respiratory tract. The NB-PSB was cut and placed into 1ml of sterile saline, and a 0.01ml aliquot was plated for quantitative culture.



RESULTS

NB-PSB samples from fourteen patients (7 experimental, 7 control) were evaluated. Patients in the control group showed an average growth of 840 cfu/ml (42% positive growth). Patients in the experimental group had an average growth of 15 cfu/ml (15% positive growth). None of the patients in this study developed Ventilator Associated Pneumonia (VAP).

CONCLUSION

Irrigation with CASS serves to reduce the bacterial load on the lower respiratory tract of mechanically ventilated patients. The small sample size limits the statistical power of this study.

CLINICAL IMPLICATIONS

CASS has been shown to be effective in reducing the bacterial colonization of the lower respiratory tract and the subsequent occurrence of VAP. Irrigation in combination with CASS may accentuate these benefits. Further studies should include more subjects and be geared towards subglottic irrigation's effect on VAP.

Experimental Group (Irrigation)	
Patient 1	No Growth
Patient 2	No Growth
Patient 3	No Growth
Patient 4	103cfu/ml Staphylococcus Aureus
Patient 5	No Growth
Patient 6	No Growth
Patient 7	No Growth

Control Group (Non Irrigation)	
Patient 1	No Growth
Patient 2	No Growth
Patient 3	500 cfu/ml Staphylococcus Epidermis
Patient 4	No Growth
Patient 5	5000 cfu/ml Klebsiella Pneumoniae
Patient 6	400 cfu/ml Yeast Species
Patient 7	No Growth

Total Count: 100 cfu/ml
Total Count: 5800 cfu/ml
Average Count: 15 cfu/ml
Average Count: 840 cfu/ml
% Positive: 15%