Rationale

Different new medical devices have been recently developed specifically for ETT cleaning. Among them, the endOclear catheter (EndoClear, LLC, Petoskey, MI) has been recently reported to be an effective tool in relieving life-threatening ETT obstruction. We designed a randomized clinical trial to test the hypothesis that the implementation of routine ETT cleaning with endOclear prevents ETT luminal occlusion and reduces biofilm accumulation.

Methods

We enrolled in the study adult intubated patients expected to be ventilated for more than 48 hours. Random allocation to either treatment or control arm was performed with a 1:1 ratio. Control group consisted in institutional standard of care (suctioning every 4 hours or as needed), while treatment group received standard of care plus a single pass of the endOclear catheter, three times per day every 8 hours.

Results

526 patients were screened across different Intensive Care Units. 74 patients met enrollment criteria and were randomized. 37 ETTs were collected from the cleaning group and 40 ETTs from the control group. ETTs from the cleaning group showed reduced mucus accumulation (p=0.004). A significant difference was also recorded when mucus volume was calculated as “Overall occlusion” (p=0.04). “Maximum occlusion” was significantly different between the two groups (p=0.007). Although ETTs from both groups showed variable degrees of reduction of inner diameter (ID), only in the most numerous subgroup of ID size 7.0mm we were able to detect a significant difference (p=0.001). The degree of ETT occlusion did not correlate with the length of intubation.

Pathogenic bacteria were isolated in ETTs from both groups and no difference in antibiotic susceptibility was noted. However, there was a trend towards reduction of total microbial load in ETT biofilm.

References

