Comparison of Intubation Modalities in a Simulated Cardiac Arrest With Uninterrupted Chest Compressions

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INTRODUCTION

Background:
• Interruptions in chest compressions can negatively impact survival.
• Multiple endotracheal intubation (ETI) attempts and prolonged ETI attempts during CPR are associated with worse patient outcomes.
• Multiple airway adjuncts including video laryngoscopy and gum-elastic bougie have been advocated to help improve ETI success.
• Little evidence in the literature utilizing video laryngoscopy with a gum-elastic bougie for ETI.

METHODS

Setting: A community teaching hospital with an emergency medicine residency.

Design: Randomized, crossover study comparing methods of ETI during uninterrupted CPR.

Methodology:
Convenience sample of emergency physicians performed ETI in a simulated cardiac arrest with continuous chest compression.
Three ETI techniques in random order:
Glidescope Video Laryngoscopy (GVL)
Direct Laryngoscopy (DL)
Glidescope with bougie (GVL-B)

All providers were given a 1-hour training course on usage of GVL and GVL-B.

Primary outcome: Time taken to intubate (TTI) in seconds
Laryngoscope blade passed the lips until the first attempt.

Data were compared using non-parametric statistics, Mann-Whitney and Kruskal-Wallis.

Designed Kaplan-Meier estimates of TTI for each device.

RESULTS

Median TTI (IQR) in seconds over all devices was 28.5 s (20.6, 51).

GVL had the lowest median TTI’s in seconds for all providers (20.6, IQR 17.7, 27.1) followed by DL (27, IQR 20.3, 35.4) and GVL-B (60.1, IQR 39.1, 99) (p=0.0001).

Both GVL and DL had similar steep curves leading to 100% successful intubation attempts while GVL-B took longer for all providers to successfully secure the airway.

The GVL-B required the greatest TTI for both the junior and senior subgroups.

LIMITATIONS

• Simulated airway mannequin
• Learning the GVL-B technique, artificially elevating the median times for this device
• Assumption that clinical outcomes will improve with shorter TTI’s

CONCLUSIONS

In this simulated model cardiac arrest with uninterrupted chest compressions, GVL provided either equal or shorter median TTI’s than either DL or GVL-B across providers with a range of experience.

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