

Use of the Totaltrack® Video Laryngeal Mask Airway for Tracheal Intubation: A Feasibility Study

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Background

According to both national and international difficult airway guidelines, SADs can be used as either ventilatory devices or as intubation conduits, if tracheal intubation is desired. Numerous SADs are currently available for clinical use, including second generation devices that provide gastric access, while others are specifically designed for tracheal intubation. The Totaltrack® VLM was recently developed as a SAD that allows continuous visualization, uninterrupted oxygenation, and positive pressure ventilation during both intubation and extubation procedures.

Methods

Thirty adult (>18 y/o) patients, with Mallampati classifications I-III and mouth openings > 2 cm, scheduled for elective surgery requiring general anesthesia and tracheal intubation were included in this study. All study practitioners were attending anesthesiologists or senior anesthesia residents that received prior training with the Totaltrack® VLM (5 intubations on a mannequin and 3 intubations on non-study patients). A size 3 or a size 4 Totaltrack® VLM (**Image 1**) was used to facilitate the intubation, and numerous measurements were recorded to assess the performance of the device, including the lowest oxygen saturation (SpO₂) during the intubation procedure, number of attempts required to intubate, time until CO₂ detection and intubation, and a subjective assessment describing the level of difficulty of the intubation process (1 Very Easy - 5 Not Possible)

Results

Use of the Totaltrack® VLM resulted in adequate oxygenation and ventilation throughout both placement and intubation attempts in all patients. The Totaltrack® VLM was successfully placed and facilitated tracheal intubations in 25 patients (83.33%) during the first intubation attempt (**Figure 1**). More than one attempt was necessary in 5 patients (16.67%). Three of these 5 patients were successfully intubated with the Totaltrack® VLM on the second attempt. Failure to intubate (abort) with the Totaltrack® VLM occurred in 2 patients, despite POGO scores of 100 and bougie assistance. As a result, the Totaltrack® VLM provided an overall intubation success rate of 93.3% (95% CI: 77.9%-99.2).

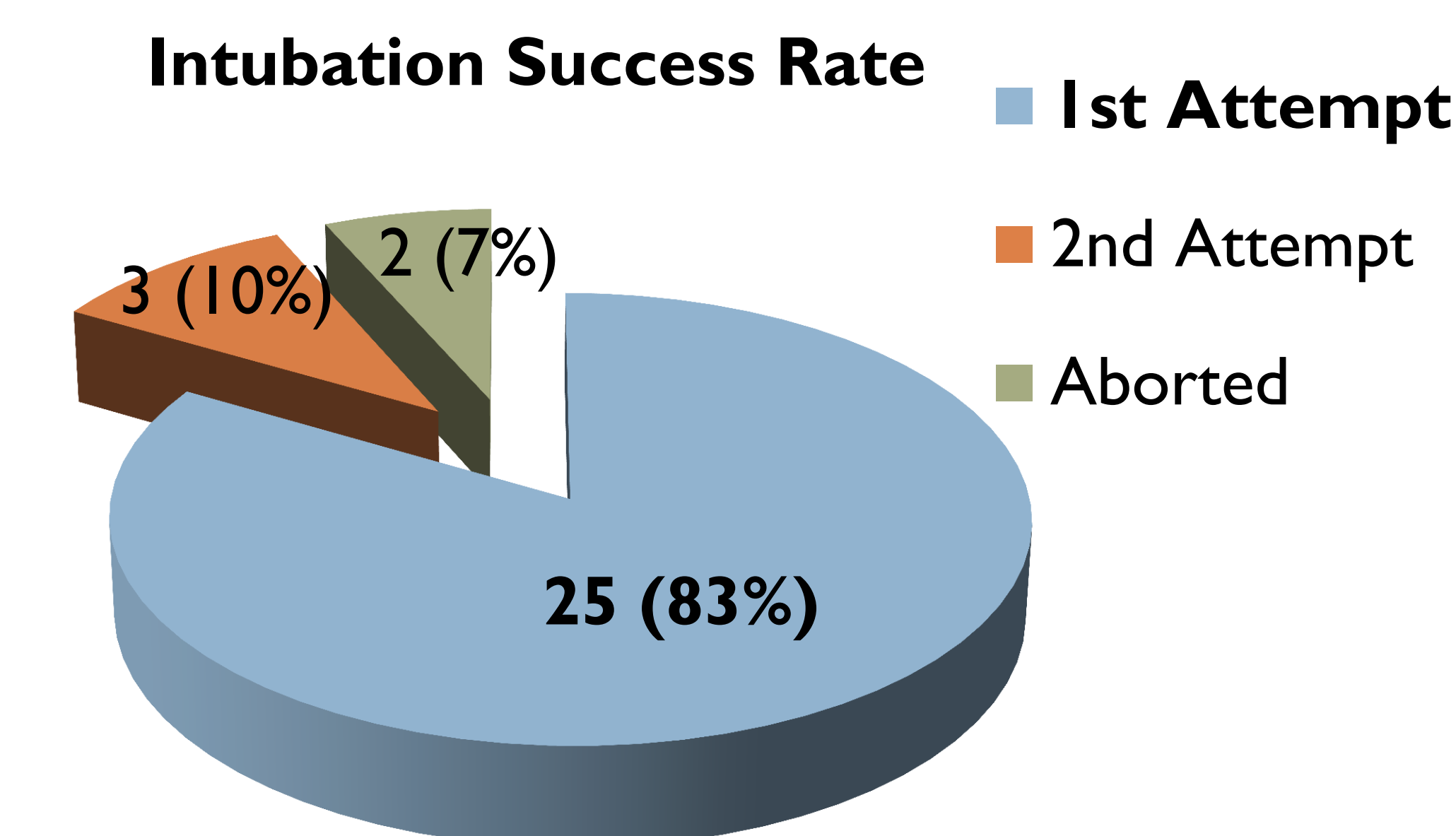


Image 1: The size 4 Totaltrack® VLM with bougie-guided assistance.

Figure 1: Graphical (Pie) illustration of intubation success rate.

Totaltrack® VLM Overall
Intubation Success Rate:

93%



Results (Cont.)

The average minimum oxygen saturation recorded during the entire airway procedure while using the Totaltrack® VLM was 98.5% ± 4.3 (mean ± SD) (**Table 1**). The time required for the entire intubation procedure was 41.4s ± 29.0 (mean ± SD).

Table 1: Oxygen Saturation (SpO₂) during intubation procedure.

Variables	mean ± SD
Minimum SpO ₂ During Airway Procedure	98.5 ± 4.3
Pre Totaltrack® VLM Insertion SpO ₂	99.8 ± 0.5
Post Totaltrack® VLM Insertion SpO ₂	99.3 ± 1.6
Difference Between Minimum SpO ₂ During Airway Procedure and Pre Totaltrack® VLM Insertion SpO ₂	1.3 ± 4.3 (p-value = 0.10)
Difference Between Minimum SpO ₂ During Airway Procedure and Post Totaltrack® VLM Insertion SpO ₂	0.8 ± 3.3 (p-value = 0.22)

Conclusion

This observational study demonstrated that the Totaltrack® VLM facilitates tracheal intubation while allowing adequate oxygenation and ventilation when securing an airway. However, considering the novelty of this particular device, further research is warranted to determine its usefulness in patients with known or predicted difficult airways.

Selected References

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SUMMARY

- The Totaltrack[®] VLM was recently developed as a SAD that allows continuous visualization, uninterrupted oxygenation, and positive pressure ventilation during both intubation and extubation procedures.
- The Totaltrack[®] VLM provided an overall intubation success rate of 93.3%.
- The lowest value of the minimum oxygen saturation recorded during the entire airway procedure while using the Totaltrack[®] VLM was 77%, with the highest value being 100%; averaging 98.5% ± 4.3 (mean ± SD).
- Use of the Totaltrack[®] VLM resulted in adequate oxygenation and ventilation throughout both placement and intubation attempts in all (30) patients.
- This observational study demonstrated that the Totaltrack[®] VLM facilitates tracheal intubation, with continuous visualization, while allowing adequate oxygenation and ventilation when securing an airway.