

Comparison of intubating laryngeal mask (Fastrach™) and intubating laryngeal tube (iLTS-D®) in normal and simulated difficult airways – a prospective manikin study.

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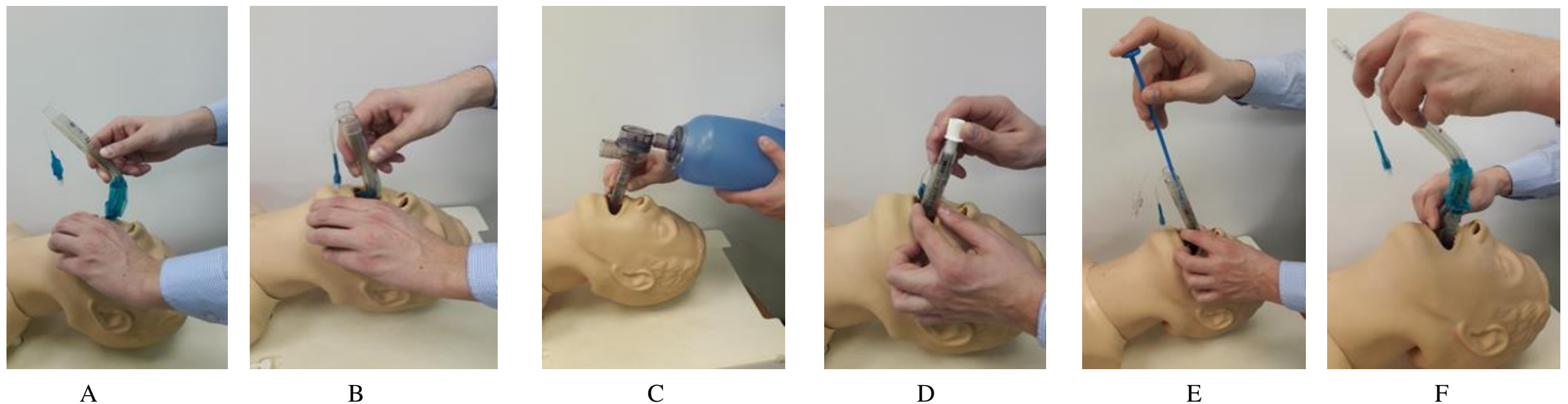


Fig. 1. A-jaw thrust and mouth opening, B- laryngeal tube insertion, C-ventilation, D-performance of intubation, E-stabilization of the ETT during extraction of the laryngeal tube, F-extraction of the laryngeal tube

Background: Modern supraglottic devices are helpful for inexperienced providers who perform ventilation in emergency situations. Only few supraglottic devices allow secondary tracheal intubation through the device. The intubating laryngeal tube (iLTS-D®) and the intubating laryngeal mask (Fastrach™) are devices that offer supraglottic ventilation and secondary blind and endoscopic tracheal intubation.

Goal of Study: to compare the effectiveness of using Fastrach™ and iLTS-D® on a manikin by novices resident anesthesiologists 1-st year of training in the conditions of normal and simulated difficult airways.

Materials and methods: The study included 2 stages. A total of 15 participants were enrolled. Participants used both devices alternately. At the first stage the participants conducted four consecutive trials on a manikin. Each trial included the following procedures. First, participants inserted and ventilated the manikin using iLTS-D® and Fastrach™. ‘Time to ventilation’, success rates and number of attempts were recorded for the supraglottic devices. Then participants performed blind intubation of the manikin through the previously inserted supraglottic device. ‘Time to tracheal ventilation’, success rate of intubation were recorded. At the second stage participants performed insertion, ventilation and blind intubation with both devices in the conditions simulated difficult airways (midline head stabilization and limited mouth opening 3 cm).

The primary endpoint was the difference between the Fastrach™ and iLTS-D® in ‘time to ventilation’ and ‘time to tracheal ventilation’ after trial 4 and at the second stage. Secondary endpoints were the differences in ‘time to ventilation’ using the supraglottic device in trials 1 to 4, differences in ‘time to tracheal ventilation’ through the particular device in trials T 1 to T 4, which mirrored the training effect and practice. Further secondary endpoints were differences in success rates, the ‘number of attempts’ required to properly applying the supraglottic device, and the need for and frequency of additional maneuvers to facilitate the installation of the device and tracheal intubation in trial 4 and at second stage.

Results and discussion: All of the participants successfully inserted both devices on their first attempt in trial 4. All participants successfully intubated through iLTS-D® in trial 4, it was 2 case of second attempt intubation through Fastrach™. There was no difference in ‘time to ventilation’ between either device in trial 4 (median ‘time to ventilation’: Fastrach: 14.7 s., iLTS-D: 13.2 s., $p = 0.14$). Also there was no difference in ‘time to tracheal ventilation’ by tracheal intubation between either device in trial 4 (median ‘time to tracheal ventilation’: Fastrach: 15.4 s., iLTS-D: 13.9 s., $p = 0.55$). Both devices were equally effective in a simulated difficult airway, ventilation and intubation at the first attempt was successful in all cases, there was no significant difference in ‘time to ventilation’ (Fastrach: 12.3 s., iLTS-D: 13.5 s., $p = 0.14$) and ‘time to tracheal ventilation’ (Fastrach: 12.6 s., iLTS-D: 12.5 s., $p = 0.77$).

It was revealed improving the skills of application of both devices from 1 to 4 attempts, there was a significant difference in ‘time to ventilation’ and ‘time to tracheal ventilation’ between 1 and 4 attempt to use both devices.

№ trial	Time to ventilation, sec*	First attempt success rate, %	Time to tracheal ventilation, sec*	First intubation attempt success rate, %
Normal airways				
Fastrach™				
Trial 1	26,2 (23,8;28,6) **	100	21,8 (19,8; 31)**	84,6
Trial 2	17,9 (16; 22,7)	92,3	17,2 (14,3;21,8)	76,9
Trial 3	16,5 (15,2;18)	100	16 (14,8; 19,8)	84,6
Trial 4	14,7 (12,5; 17,2)**	100	15,4 (13,5; 18,2) **	92,3
iLTS-D®				
Trial 1	18,1 (17,5;19,3)**	100	19,1 (17,1; 21,7) **	92,3
Trial 2	15,5 (13,4;16,6)	100	17 (15,4; 18)	92,3
Trial 3	14,9 (13; 17,1)	100	15,6 (12,8; 16)	92,3
Trial 4	13,2 (12; 15,5) **	100	13,9 (13; 15,2) **	100
Simulated difficult airways				
Fastrach	12,3 (10,6; 14,2)**	100	12,6 (10,8; 16) **	100
iLTS-D	13,5 (12,1;15,8)**	100	12,5 (11,6; 15,3)**	100
P-value	0,14	1	0,77	1

*- data are presented as a median (25% and 75% quartile)

** - the presence of statistically significant differences between 1 and 4 attempts when using each device

Conclusion: The iLTS-D® performed similarly to the ILMA Fastrach™ in insertion and intubation times in a manikin setting in noncomplicated and simulated difficult airways.

References: 1. Thomas Ott, Matthias Fischer, Tobias Limbach, et al. The novel intubating laryngeal tube (iLTS-D®) is comparable to the intubating laryngeal mask (Fastrach) – a prospective randomised manikin study. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine; 2015; 23:44.

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