

Background:

ET intubation aims to maintain airway opening and prevent suffocation. ET tube displacement occurred by the improper fixation cause aspiration, tracheal injury and aspiration pneumonia. To fix an endotracheal tube, many types of fixation tools are employed. Thomas tube Holder is one of the fixation tools widely used in many countries. However, it has not been used in Thailand because of high cost, fixation with adhesive tape is common.



Figure 1: ET-tube fixation tools; Thomas™ Tube Holders (Left) and Adhesive tape (Right)

Objective:

This study aims to compare the fixation of an ET tube using adhesive tape and Thomas tube holder.

Methodology:

Two types of fixation tool were put onto a manikin model and the model was being log roll, CPR by Automated CPR machine and transported to many places, confined space, lift and stairwell respectively for 90 times. The fixation tools were randomized, using the box of six randomizes. The time fixations and displacements were recorded.



Figure 2: Method that doing log roll, using Automated CPR and transporting in manikin model.

Results:

Thomas tube holder was more effective than the adhesive tape to hold and fix the ET tube. The data showed that the average time fixation was shorter when using the Thomas tube holder (33.0 ± 7.3 vs 52.6 ± 7.3 ; $P < 0.001$). The number and distance of the ET tube displacements which were fixed with Thomas tube holder were less than adhesive tape; log roll (16,35.6% vs 29,64.4%; $P < 0.011$ / 1.1 ± 0.3 vs 1.4 ± 0.6 ; $P = 0.096$), Chest compression with Automated CPR (23,51.1% vs 37, 82.2%; $P < 0.003$ / 1.6 ± 0.8 vs 1.2 ± 0.4 ; $P = 0.051$) and transporting (26,57.8% vs 40,88.9%; $P = 0.002$ / 1.2 ± 0.4 vs 1.4 ± 0.5 ; $P = 0.203$).

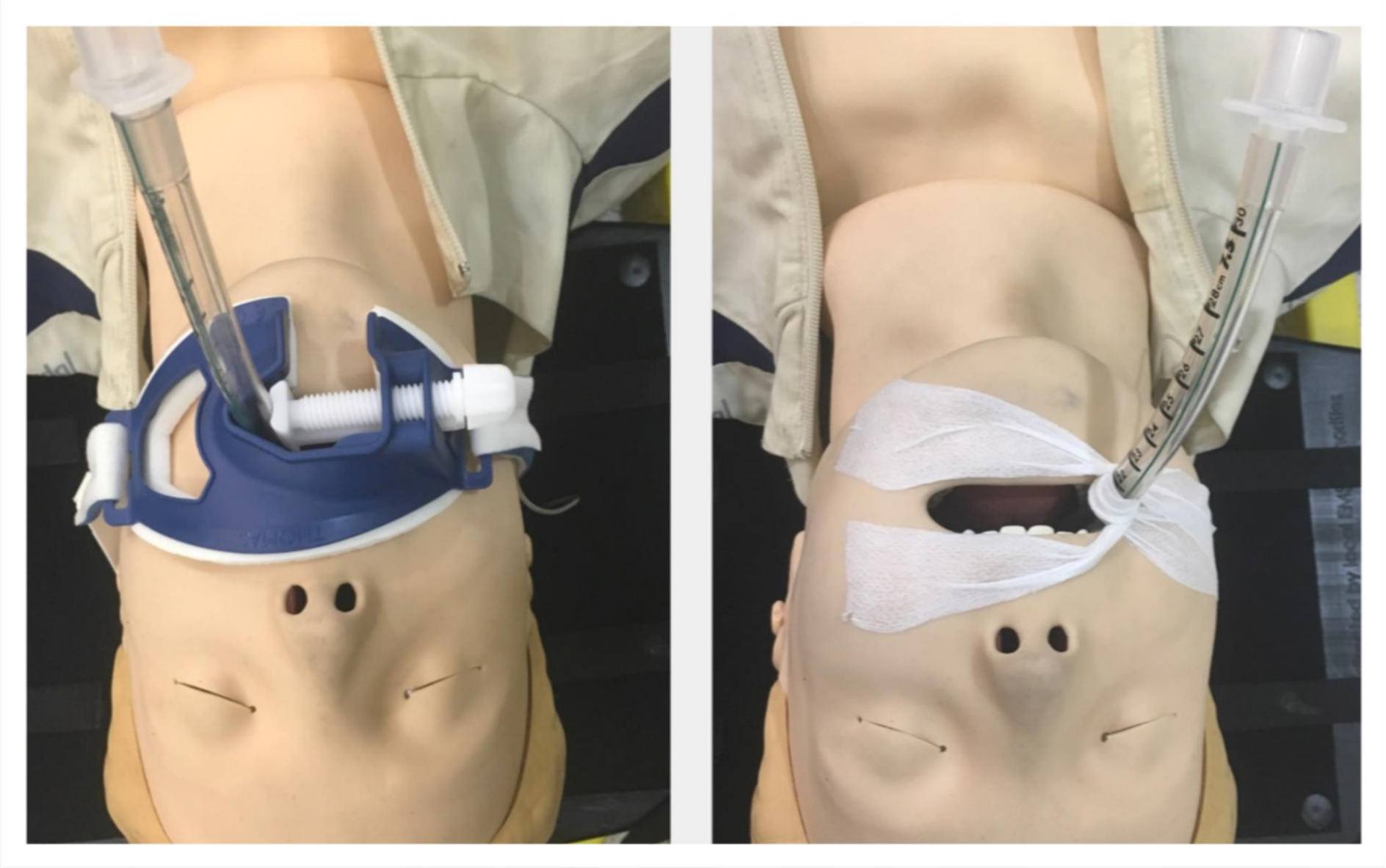


Figure 3: Fixation with Thomas™ Tube Holders (Left) and Adhesive tape (Right)

Factors	Fixation tools		P-value
	Thomas™ Tube Holders	Adhesive tape	
The average time to fix an ET-tube	33.0 ± 7.3	52.6 ± 7.3	< 0.001
The number and distance of an ET-tube displacement when:			
• Log roll	16 (35.6%)	29 (64.4%)	< 0.001
	1.1 ± 0.3	1.4 ± 0.6	0.960
• Chest compression with automated CPR	23 (51.1%)	37 (82.2%)	0.003
	1.6 ± 0.8	1.2 ± 0.4	0.051
• Transport	26 (57.8%)	40 (89.9%)	0.002
	1.2 ± 0.4	1.4 ± 0.5	0.203

Table 1: The results showed average time to fixation ET tube and the number and distance of ET tube displacement.

Conclusion:

Thomas tube holder is more effective than adhesive tape in prevent ET tube displacements cause by log roll, automated chest compressions and transportations.