

Evaluation of the neck circumference to thyromental distance ratio as a predictor of difficult intubation-A prospective observational study

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Background and Aims: Preoperative identification of difficult airway and subsequent planning is of utmost importance for patient safety. Previous studies have identified neck circumference to thyromental distance ratio (NC/TMD) as a reliable predictor of difficult intubation in obese patients.^[1] But, there is lack of a reported study evaluating NC/TMD in the non-obese patients. The aim of our study was to evaluate the NC/TMD as a predictor of difficult intubation in both obese and non-obese patients.

Methods:: A prospective observational study was conducted after obtaining Institutional Ethics Committee clearance and written informed consent from each patient. Hundred adult patients undergoing elective surgeries under general anaesthesia with orotracheal intubation were included in this study. Difficulty in intubation was assessed using Intubation Difficulty Scale (IDS>5).^[2] The NC/TMD was calculated and was compared with other established parameters in predicting difficult intubation in both obese and non-obese patients. Statistical Package for the Social Sciences (SPSS) software (version 22.0) was used for statistical analysis.

Results:Univariate logistic regression analysis showed that sex, weight, body mass index, inter-incisor gap, Mallampati classification, neck circumference, thyromental distance, sternomental distance and NC/TMD had a significant association with difficult intubation. NC/TMD has a higher sensitivity, specificity, PPV and NPV with a large area under curve (AUC) ($P = 0.000$) in comparison to other parameters.

Conclusion: The NC/TMD is a reliable and better predictor of difficult intubation in both obese and non-obese patients in comparison to neck circumference, thyromental distance, sternomental distance alone

Key Words: Neck circumference;obesity;ratio;thyromental distance

References:

1. Kim WH, Ahn HJ, Lee CJ, Shin BS, Ko JS, Choi SJ et al. Neck circumference to thyromental distance ratio:a new predictor of difficult intubation in obese patients. Br J Anaesth 2011;106:743-8.

Predictor	Group	Sensitivity	Specificity	PPV	NPV	AUC	P
NC/TMD	Non obese (>4.950)	100.00	87.27	61.11	100.00	0.979	0.000
	Obese (>5.050)	94.74	73.33	81.82	91.67	0.912	0.000
BMI	Total	83.33	72.86	56.82	91.07	0.870	<0.001
Neck circumference	Non obese (>35.5 cm)	90.91	61.82	32.26	97.14	0.829	0.001
	Obese (>35.5 cm)	84.21	60.00	72.73	75.00	0.758	0.011
Thyromental distance	Non obese (<7.250 cm)	100.00	69.09	39.29	100.00	0.902	0.000
	Obese (<7.250cm)	89.47	73.33	80.95	84.62	0.828	0.001
Sternomental distance	Non obese (<14.5 cm)	81.82	80.00	45.00	95.65	0.783	0.003
	Obese (<15.5cm)	78.95	26.67	57.69	50.00	0.516	0.876

- Adnet F, Borron SW, Racine SX, Clemessy JL, Fournier JL, et al. The intubation difficulty scale (IDS): proposal and evaluation of a new score characterizing the complexity of endotracheal intubation. *Anaesthesiology* 1997;87:1290-7.