# ABSTRACT

TITLE OF THE ABSTRACT: *"The importance of neck circumference to thyromental distance ratio (NC/TM distance ratio) as a predictor of difficult intubation in obese patients coming for elective surgery under general anaesthesia in a tertiary care hospital- A prospective observational study"*

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*Background and objectives*

This study was done to assess the ability of  neck circumference to thyromental distance ratio (NC/TM distance ratio) for predicting difficult intubation among obese patients coming for surgery under general anaesthesia. It enabled us to compare NC/TM distance ratio to routinely used Mallampati score and neck circumference as reliable tests for predicting difficult intubation.  This study also identified incidence of difficult intubation among obese individuals.

*Patients and methods*.

After approval of institutional review board and ethical committee of Christian Medical College Vellore, 250 obese patients (body mass index greater than or equal to 30) within time frame of September 2014 and March 2015 was assessed preoperatively with the help of performa after obtaining informed consent. Neck circumference / thyromental distance ratio (NC/TM distance ratio) was calculated from the performa.

Validated Intubation difficulty score (IDS score) for each obese patient was assessed intra operatively by the anaesthetist who performed intubation . The entire study population were divided into easy and difficult intubation groups based on the IDS score. IDS score greater than or equal to five was considered as difficult intubation.  NC/TM distance ratio greater than or equal to five was correlated with IDS score greater than or equal to five.

The study assessed the statistical significance of NC/TM distance ratio and difficult intubation by univariate and multivariate logistic regression analysis and its comparison with Mallampati score and neck circumference with respect to sensitivity / specificity/ positive predictive value and negative predictive value. The study also calculated the incidence of difficult intubation among obese patients.

### Results

Binary univariate logistic regression analysis of predictors of difficult intubation showed age greater than sixty, increased neck circumference, decreased thyromental distance, modified Mallampati test, NC/TMD ratio $\geq 5$ as statistically significant variables that were associated with a difficult intubation ($p \leq 0.05$). Binary multivariate logistic regression analysis showed only neck circumference ($p$=0.030 [odd ratio 2.519(1.094-5.802)] and NC/TMD ratio ($p$ <0.001 [odd ratio 23.680(10.638-52.713)] independently predicted difficult intubation. However NC/TMD ratio had higher specificity / PPV and larger AUC on an ROC curve compared to neck circumference. The incidence of difficult intubation among obese patients was 20.8 %.

### *Interpretation and Conclusions*.

Among obese patients, NC/TMD ratio can be considered as a better preoperative predictor of difficult intubation and incidence of difficult intubation among them was as high as 20.8 percent.