



Thyromental Distance Of Adult Nigerian Population: A Pilot Study

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ABSTRACT

The thyromental distance (TMD) is a predictive indicator of the ease of endotracheal intubation. Studies in Caucasian populations have established a cut-off point whose positive predictive value can be improved upon when combined with other anthropometric indicators such as mallampati score, inter-incisor gap and atlanto-occipital extension. We determined the thyromental distance of 533 adult Nigerian subjects of different tribes and locality who were recruited by simple random sampling technique.

The range of thyromental distance (TMD) was 6-11.5cm. The mean value for males was 8.72 ± 1.03 cm and 8.23 ± 1.10 cm for females ($P < 0.01$). 1.3% of the sampled population had a TMD of less than 6.5cm.

Keyword: Thyromental Distance, Nigeria, Adult.

The clinical usefulness of predicting difficult endotracheal intubation cannot be over emphasized. As much as 13% of patients requiring general anaesthesia for surgery may have a difficult airway (Jacobsen et al., 2004). One factor responsible for the difficulty is the inherent characteristic anatomy of the upper airway (Thomas et al., 2004) hence the creation of morphometric indices as predictive indicators of risk of difficult tracheal intubation.

One such index is the thyromental distance (TMD) also called patil test, which is the distance of the lower mandible in the midline from the mentum to the thyroid notch with the neck in full extension (Patil, 1983; Tse et al., 1996; Thomas et al, 2004). In combination with other predictive variables, the TMD significantly improve overall predictability for difficult intubation (Wong et al., 1999; Suyama et al. 1999; Frerk et al., 1996, Ayoub et al. 2000).

A recent report has validated the clinical usefulness of the thyromental distance in adult West Africans (Merah, 2005). However, published baseline data on the TMD have not been documented in adult Nigerian population.

MATERIALS AND METHOD

This is a prospective study involving adult subjects randomly selected from some major cities in Nigeria. These cities include

Port-Harcourt, Lagos, Warri, Enugu, Owerri, Aba, Onitsha. The subjects were of different tribe among which are Yoruba, Hausa-Fulani, Ibo, Ijaw, Efik, Annang, Obolo, Ogoni, Ndoni, Bini, Etsako, Esan, Urhobo. The thyromental distance (TMD) of the subjects were measured as the midline distance between the mentum and the thyroid notch of the thyroid cartilage of the larynx using a non-stretchable tape measure calibrated in centimeter with the neck in full extension and the mouth closed (Patil, 1983). Data analysis was done using the SPSS data analysis software.

RESULT

The number of subjects recruited for this study was 533. Males were 314 (59%) and females were 219 (41%). The range of thyromental distance of the sampled population was 6-11.5cm. Table 1 show the percentage frequency distribution of the TMD in relation to gender of subjects. Mean value of TMD for males was 8.72 ± 1.03 cm and for females 8.23 ± 1.10 cm ($P < 0.01$). Subjects who had a TMD of equal or less than 6.5cm were 7 (1.3%) while subjects with TMD equal or greater than 6.5cm were 526 (98.7%).

Table 2 show the age distribution of TMD of the sampled population. Significant association was not demonstrated between TMD and age of the subjects.

Table 1: Percentage frequency distribution of the TMD in relation to gender of subjects.

Range of TMD (cm)	Males (%)	Female (%)	Total (%)
5 - 5.9	1(0.3)	(-)	1(0.2)
6 - 6.9	13 (4.1)	18 (8.2)	31 (5.8)
7 - 7.9	52 (16.6)	67 (30.6)	119 (22.3)
8 - 8.9	124 (39.5)	82 (37.4)	206 (38.7)
9 - 9.9	80 (25.5)	30 (13.7)	110 (20.6)
10 - 10.9	40 (12.7)	21 (9.6)	61 (11.4)
11 - 11.9	4 (1.3)	1(0.5)	5(0.9)
Total	314 (100)	219	533 (100)

Table 2: Age related distribution of TMD of sampled population

Age (yrs)	n = 533 (%)	Mean TMD (cm)	SD	P value
<20	79 (14.8)	8.20	1.21	
20 - 25	341 (64.0)	8.50	1.09	
26 - 30	103 (19.3)	8.73	0.98	>0.05
30 - 35	7 (1.3)	8.50	0.52	
> 35	3 (0.6)	8.30	0.01	

DISCUSSION

The thyromental distance is a correlation of craniocervical angulation at the atlanto-occipital joint. Maximum angulation brings the laryngeal and pharyngeal axis into alignment ensuring an adequate space for displacement of the tongue and visualization of the glottis. A shortened TMD will make this angulation acute and achievement of alignment more difficult (Thomas 2004). Suggested cut-off point of TMD that best discriminate between patients in whom glottic visualization may be easy or difficult vary according to the population studied. The 6.5cm mark appears to give the best combination of sensitivity, specificity, positive and negative predictive values (Patil 1983, Merah, 2005) hence its use in this study. In this report, adult Nigerians were demonstrated to have a thyromental distance that varied with gender and that was well above the discriminant point for risk of difficult tracheal intubation. Although no significant association was noted between thyromental distance and age, it is noteworthy that the sampled population consisted of young adults at the point of optimal growth. A cohort-controlled study involving a wider range of age will be required to assess the correlation between age and thyromental distance.

CONCLUSION

This study document, probably for the first time, the thyromental distance of adult Nigerian population.

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