INTRODUCTION

1. The anterior loop of the inferior alveolar nerve is regarded as an inconsistent anatomical landmark in the premolar region which may affect the site of the implant osteotomy1.
2. The inferior alveolar and the mental nerve can be subjected to iatrogenic injury during various surgical procedures such as genioplasty and implant osteotomy2.
3. The current concept of “All-on-4” in placing implants in the mandible suggests two angled posterior implants to avoid the anterior loop3.
4. Therefore, more information about the location and length of the anterior loop of the inferior alveolar nerve is required so that the number and the location of the implant osteotomy sites can easily be planned.

OBJECTIVES

1. To measure the prevalence of anterior loop presence.
2. To measure the average length of the loop on the right and left sides.
3. To evaluate sex- and ethnicity-related variations in the length of the anterior loop in the study population.

INCLUSION/EXCLUSION CRITERIA

Inclusion criteria
- Dentate or edentulous patients of three ethnicities (Malay, Chinese and Indian) between the ages of 18 and 80 years.
- Healthy, medically compromised or even those previously radiated patients but not involving the interforaminal region of the mandible.

Exclusion criteria
- Patients with a history of trauma or pathology to the mandible.
- Syndromic patients and patients with congenital disorders.
- Patients with a history of surgical intervention to the interforaminal region like orthognathic surgery or chin bone harvesting procedures.
- Patients of mixed racial origins.
- Reformatted CBCT images that appear distorted or blurred due to patients’ movements.

STATISTICAL ANALYSIS

- All data were processed with software (SPSS statistics v24.0, IBM Corp.).
- The t-test was used to compare differences in the mean values of nerve lengths between the sex and between the left and right sides.
- One-way ANOVA was used to compare differences in mean length between ethnicity.
- Statistical significance was determined at the p<0.05 level.

RESULTS

- 100 CBCT DICOM image files were studied. An equal number of male and female subjects were obtained.
- The anterior loop was present in 94% of the subjects.
- The length of the anterior loop ranged between 0.73mm and 7.99mm.

DISCUSSION

1. The mean length of the anterior loop is found to be higher than reported in previous studies. This may be due to the difference in measurement techniques.
- Uchida et al. measured the loop from dry mandibles which allows more accurate measurement.
- Juan et al. isolated the nerve by eliminating other soft and hard tissue images, therefore providing a more accurate measurement.

2. Limitations:
- Measuring tool of the software were not sufficiently sensitive.
- 2D slices from cross sectional view was used to estimate the mesial boundary of the anterior loop and mental foramen.

CONCLUSION

- The mean length of the anterior loop in this study was 3.90±1.41mm on the left and 4.06±1.53mm on the right with no significant difference between sexes or ethnic groups.
- However, there were significant differences between the anterior loop of males and females on the left side (p=0.041) and males and females in Indians (p=0.019).
- Care should be taken when placing implants in the region around the mental foramen.
- A CBCT scan for a patient is necessary for an accurate determination and visualisation of the length of the anterior loop due to its variability.

REFERENCES