

**Abstract of analysis of the
thickness of the cortices
along the course of the
inferior alveolar nerve**

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ABSTRACT

Introduction

Surgical procedures performed around the course of the inferior alveolar nerve (IAN) accounts for 63% of neuropathy reported². These surgical procedures include dental implant placement, surgical extractions around the lower molar area, internal fixation, mandibular ramus graft and bilateral sagittal split osteotomy. Failure to pay attention to detail while performing these surgical procedures may result in inferior alveolar nerve injuries, developing in neurological deficit which are characterized by either paraesthesia or anaesthesia.

Aim

The aim of this study was to analyse the buccal and lingual cortical bone thickness along the course of the inferior alveolar nerve.

Objectives

To analyse the thickness of the buccal-lingual cortical bone along the inferior alveolar canal (IAC). To determine whether there is association between position of the IAC and thickness of the cortices. To determine the factors (age and gender) associated with buccal-lingual position of the nerve.

Materials and Methods

This was a retrospective study based on analysing radiographic records of patients who took CBCT at Wits Oral Health Centre (W.O.H.C) from January 2015 up to December 2018. The estimated sample size was 132 quadrants of CBCT images which was determined with 95% confidence level, 5% margin of error, 50% population proportion and 200 population size. CBCT images were taken using SIDEXIS next Generation software. The IAN was identified and highlighted along its course to the mental foramen.

Results

The male and female buccal-lingual cortical measurements at all points were approximately the same. The lingual right cortical thickness increased with an increase in age, and the buccal right cortical thickness decreased with an increase in age. There was no association between gender and IAC position. The width of the buccal cortex was greater on the left than the right side and the lingual cortical thickness was also greater than the right. In the present study it was found that the males had a thicker buccal cortex posteriorly and a thinner cortex anteriorly compared to females. Females had thicker buccal cortex on the right side at point posteriorly whereas anteriorly it was thicker on the left. The left and right buccal cortices show the median increase in all age groups. The IAC was close to the lingual cortex at the molar region and buccal cortex at the premolar region. The position of the IAC whether buccal, lingual or inferior can be attributed to the type of the IAC as; straight projection, catenary-like projection and progressive descent. It was also determined by the type and depth of impaction, position of the roots of the third molar and the width or thickness of the buccal-lingual cortices.

Conclusion

CBCT play an integral role in diagnostic imaging due to details of the images. The position of the IAC that houses IAN is influenced by various factors including but not limited to gender and age as well as the surrounding anatomy. By understanding the surrounding anatomical influences on the position of the IAN, any surgery to the area would minimize complications associated with the IAN especially with the use of detailed imaging such as CBCT.