# CBCT Analysis of the Sub-mandibular Fossa In Relation To Implant Planning

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## Rationale/Background

The submandibular fossa is a concavity present on the lingual side of the posterior mandible beneath the mylohyoid line. This concavity creates a potential risk of lingual plate perforation during implant surgery placement. Lingual plate perforation can lead to complications such as hemorrhage, nerve injury, and infection. The chances of lingual plate perforation are increased when the implant is placed freehand or with a surgical guide that does not consider the three-dimensional anatomy of the mandibular body.

## Objectives

This study aims to utilize the CBCT scans of UTSD patients with edentulous mandibular ridges and assess the prevalence and extent of lingual concavity present. Implants of different shapes and dimensions will be placed virtually using the implant planning software and the prevalence lingual plate perforation will be analyzed.

## Methods

Retrospective study utilizing pre-existing CBCT scans of patients enrolled in UTSD who are planned for mandibular dental implants. The CBCT images of the patients will be analyzed for the following:

- Relationship between the mandibular canal and deepest portion of the submandibular fossa
- Prevalence of lingual plate perforations with virtual implant placement for mandibular molars.
- Vertical and horizontal depths of the lingual concavity

## Results

Lingual Concavity has a prevalence of greater than 50% in the mandibular molar region. The wider and longer the implants are, the higher prevalence of lingual concavities they have. A deep position of the inferior alveolar nerve close to the basal cortical bone would be significantly associated with the presence of lingual concavity.

## Conclusion

Lingual concavities could be found commonly in the mandibular molar region. VIP with CBCT data would provide the ability to determine the presence of lingual concavities to prevent complications of lingual plate perforations.

*This study was supported by the UTSD Student Research Program*.