



INTRODUCTION

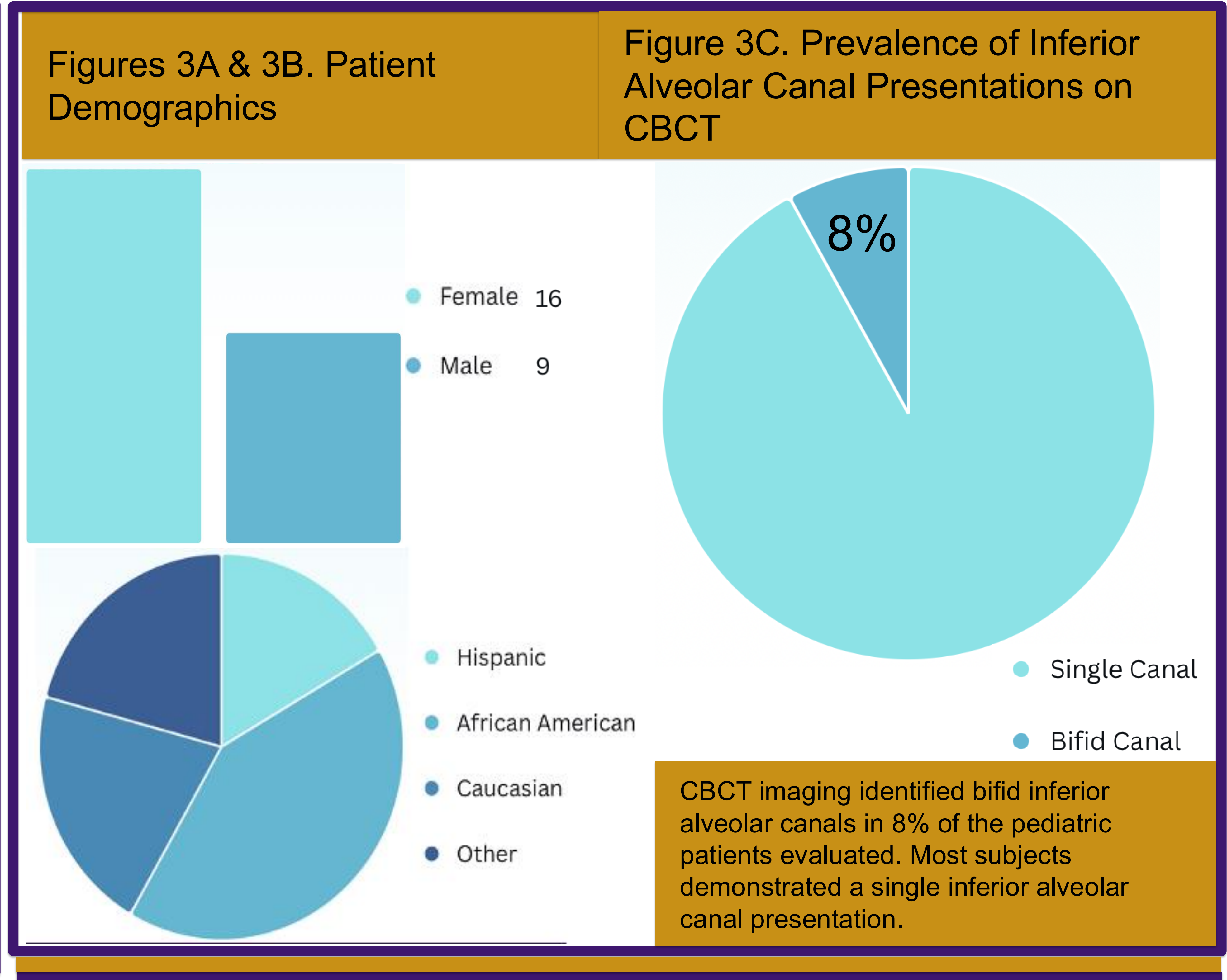
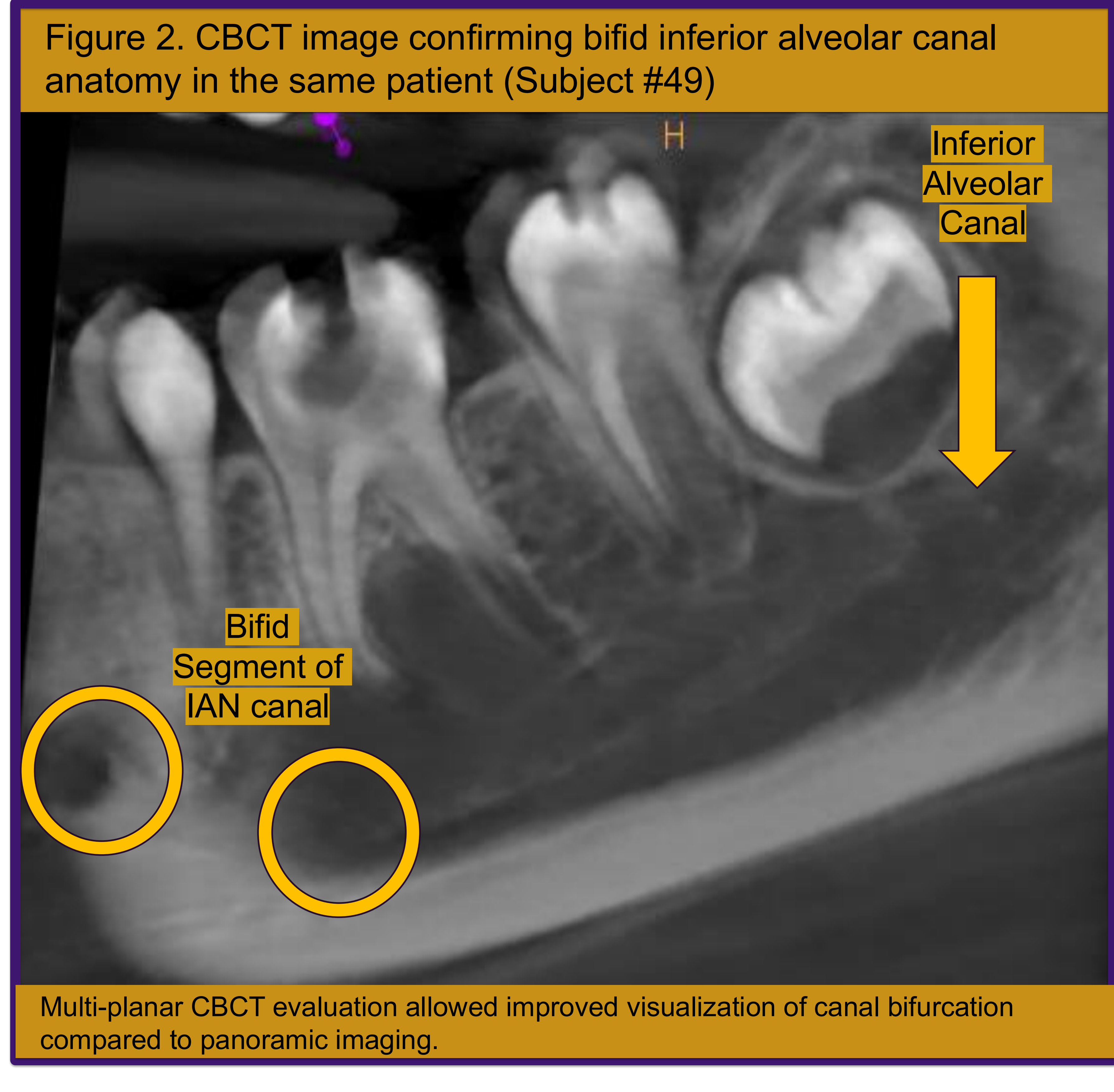
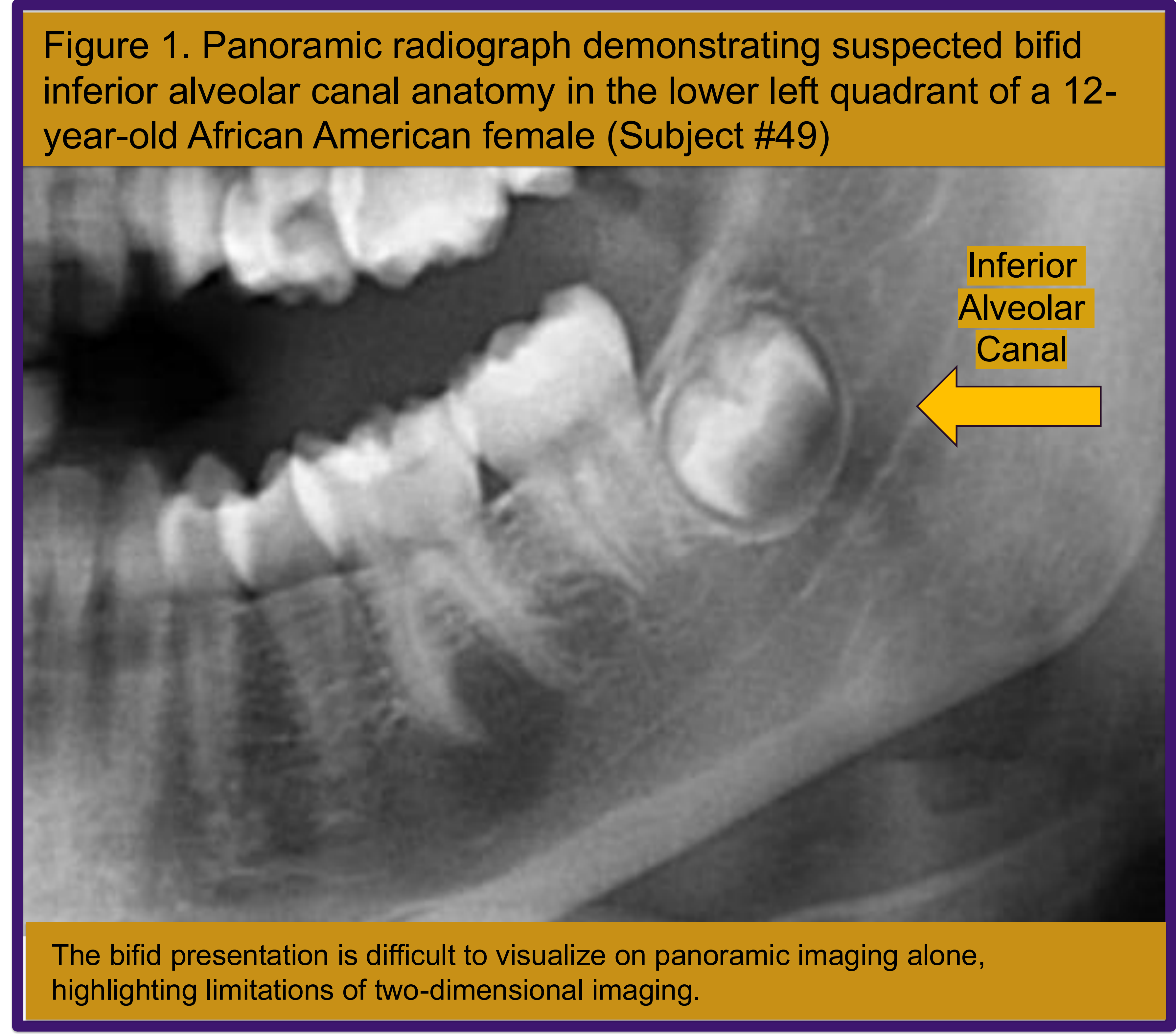
Successful inferior alveolar nerve blocks require accurate localization of the inferior alveolar canal. Anatomic variations such as bifid inferior alveolar canals may contribute to anesthetic failure, increased injection attempts, and negative behavioral outcomes in pediatric patients. Because bifid inferior alveolar canals may be difficult to identify on routine imaging, this study evaluated their prevalence in a pediatric population using panoramic radiographs and cone beam computed tomography (CBCT).

OBJECTIVES

To determine the prevalence of bifid inferior alveolar canals in pediatric patients and evaluate associations with age, sex, and race.

METHODS

This retrospective observational study evaluated panoramic radiographs and cone beam computed tomography (CBCT) images from patients 18 years and younger treated in the LSU Pediatric Dentistry and Endodontic clinics between July 2022 and December 2024. Images were assessed for the presence of bifid inferior alveolar canals. Demographic variables including age, sex, race, and number of visible canals were recorded. Data were de-identified prior to analysis, and binomial testing was performed to evaluate associations between canal variation and patient characteristics.



DISCUSSION

Bifid inferior alveolar canals were identified in a subset of pediatric patients using CBCT imaging. The prevalence observed in this study appeared higher than what has traditionally been reported in the literature, likely due to the improved visualization provided by CBCT compared to panoramic radiography alone. Because bifid inferior alveolar canals may be difficult to identify on two-dimensional imaging, these anatomic variations may be underrecognized clinically and could contribute to failed inferior alveolar nerve blocks, repeated injections, and increased patient anxiety. Accurate evaluation of mandibular canal anatomy may improve anesthetic localization in pediatric dental patients.

CONCLUSIONS

This retrospective study suggests that bifid inferior alveolar canals may be present in some pediatric patients and may be underrecognized on panoramic imaging alone. CBCT evaluation may improve visualization of canal anatomy and support more accurate anesthetic localization. Additional studies with larger sample sizes are needed to further evaluate clinical implications.