CLINICAL REPORT

The KPG Index – A Novel 3D Classification System for Maxillary Canine Impactions

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Introduction

The specialty of orthodontics is filled with a variety of challenges that require careful diagnosis and planning; one of these challenges involves impacted maxillary canines. To enact a treatment plan after diagnosis, it is necessary to correctly determine the exact location of the impacted tooth. Historically, 2-D radiographs were used to localize these teeth, and the prediction of treatment time was based purely on the orthodontist's experience. With the recent advancements of Cone Beam Computed Tomography (CBCT) imaging, a practitioner has access to an abundance of information regarding an impaction (2).

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Abstract

Introduction: Advancements in Cone Beam Computed Tomography (CBCT) have improved localization of impacted canines. The KPG index is the first 3-D classification system for classifying the position of canines based on their distance from the norm (1). The aim of this study was to determine if this index provides an estimate of the time necessary to treat an impacted canine using closed eruption.

Materials and Methods: CBCT scans of 28 impacted canines at The University of Texas School of Dentistry at Houston Department of Orthodontics were classified using the KPG index. The scores and categories were compared to the time from surgical exposure to proper positioning.

Results: Four canines were classified as "Easy," 11 as "Moderate," 9 as "Difficult," and 4 as "Extremely Difficult." Average treatment times associated in months were: "Easy" — 11.23, "Moderate" — 11.36, "Difficult" — 12.76, and "Extremely Difficult" — 13.23.

Conclusions: The KPG index currently cannot be confirmed as an accurate means of estimating treatment time for an impacted canine. Further verification studies should include larger sample sizes and compare differing mechanics. However, there are limitations to 2-D imaging; therefore, the 3-D CBCT images and the KPG index, with further validation, will become increasingly valuable to orthodontists.

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