



## CBCT Localization of Impacted Maxillary Canines - Case Study

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### Abstract

Impacted maxillary canines are commonly encountered in orthodontics. The permanent maxillary canine is the second most frequent impacted tooth after the third molar.

Cone Beam Computed Tomography (CBCT) is as an effective method to localize and evaluate the exact position of the maxillary impacted canines.

In this case report, Initial conventional radiographs were taken. CBCT was performed to localize the actual position of the impacted

**Keywords:** Impacted Maxillary Canine; Conventional Radiographs; CBCT; Orthodontics

### Introduction

The maxillary permanent canine is second only to the third molar in frequency of impaction, with a prevalence of approximately 2 per cent of the population [1]. 8% of all patients who have impacted maxillary canines have bilateral impactions [2].

In the late 1990s, CBCT was introduced [3]. CBCT can be used for the localization of impacted canine teeth and its use is increasing for more complex cases. Studies showed that CBCT has lower radiation dose when compared to the conventional CT and it has the advantage of optimal visualization of each tooth [4].

The performance of CBCT is significantly better than the conventional two dimensions (2D) radiography. However, in comparison to the 2D radiography, the effective radiation dose is much higher. As a result, CBCT should not be used as a routine tool in orthodontic practice [4].

It is crucial to diagnose and localize the impacted canine in 3D with respect to its relation with adjacent structures in order to proceed with accurate treatment plan.

### Case Report

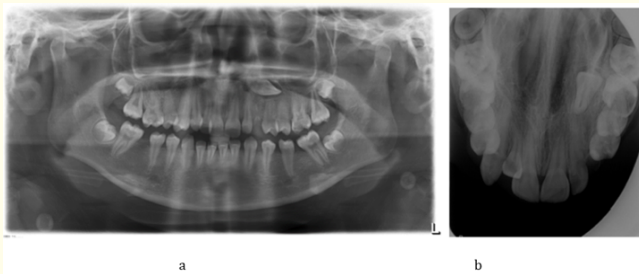
A 14-year-old female patient reported to the clinic with a chief complaint of crooked teeth. Intraoral oral clinical examination

showed poor oral hygiene with retained upper deciduous canine roots, single tooth crossbite, lower arch spacing and clinically missing left permanent maxillary canine (Figure 1).



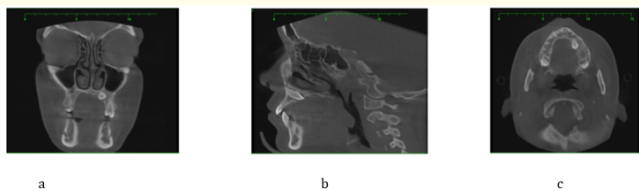
**Figure 1:** Intraoral photos.

Initial Orthopantomogram and occlusal radiographs showed impacted upper left maxillary permanent canine but the exact position and angulation of the tooth were not revealed (Figure 2a and 2b).



**Figure 2:** a- Orthopantomogram. b- Occlusal view.

CBCT was performed to locate the exact position of the canine, along with its angulation (Figure 3a-3c).



**Figure 3:** a-Coronal View. b-Sagittal view. c- Axial view.

The evaluation of 3D CBCT was useful mainly in terms of labio-lingual relationships of the impacted tooth with the roots of neighboring teeth. CBCT confirmed that the maxillary left permanent canine was impacted within the maxillary arch with the crown

positioned palatally and the root apex toward the labial surface of the arch (Figure 3c). On sagittal view (Figure 3b), the maxillary left canine appeared to be inferior to the maxillary sinus in close approximation and away from the root of the neighboring tooth. As the impacted canine was in an unfavorable position extraction was required (Figure 4).



**Figure 4**

### Discussion

CBCT images were accurate and helped in determining the exact location of the impacted maxillary left canine making it convenient for the surgical removal of the tooth.

A successful treatment requires a Proper diagnosis. In this case report CBCT localization of the impacted maxillary left canine was more beneficial than the conventional radiographs since more accurate images of the location and angulation of the tooth were obtained with fewer imaging artifacts.

### Conclusion

The proper diagnosis of impacted maxillary canine is important to determine the prognosis of the tooth and the treatment plan. Unlike the conventional radiographs, CBCT can provide more valid and accurate information in regards to the 3D positioning of the teeth.

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