

# IMPACTED AND DISPLACED MAXILLARY CANINES TREATED BY FIXED AND REMOVABLE APPLIANCES

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## ABSTRACT

*The aim of the study was to determine the success rate of treatment of impacted and displaced maxillary canines treated with fixed and removable appliances. There were 42 study subjects, 30 female (71.5%) and 12 male (28.5%), with the age range 12 years to 33 years. The decision for selecting the patients for fixed or removable appliances was made after examination of patients, x-rays, model analysis and whether it was a simple or complicated impaction. The oral hygiene of all two groups was fairly good and almost at the same level. Complicated impactions were treated with fixed appliances and simple impactions with removable appliance. The total number of impacted canines treated with fixed appliances were 34 (80.9 %) and 8 (19.1%) with removable appliances.*

**Key words:** *Impacted and displaced maxillary canines, fixed appliances, removable appliances*

## INTRODUCTION

Teeth are moved from one place to another in the jaw by orthodontic appliances. When teeth are moved, there is resorption of bone on the pressure side and deposition of bone on the tension side. As a result the teeth move in the direction of pressure. During orthodontic treatment, the pocket depth is increased, because the resorption of the bone is faster than the deposition of the bone. CURTIS found a relation between impacted teeth and abrasion. Patients with impacted teeth had very little or no abrasion.

The most common impacted teeth are maxillary canines. Impacted and displaced teeth are usually the cause of infection and complication, for example, resorption of the neighbouring teeth (Figs 1, 5 and 6), neurologic pain and cancer. Impacted and displaced canines should be saved and brought into occlusion.

Extraction of the canine has an adverse effect on the development of the jaw and cause interruption in the growth and development of anterior and posterior alveolar processes during the mixed dentition stage. Hence, the importance of the preservation of the canine.<sup>1-3</sup>

Impaction could be simple. Simple impaction means the impacted tooth is under the gum and the space is available in the arch. This type of impaction can be treated with removable appliances after surgical exposure of the crown of impacted tooth (Fig 4). The complex impacted canines (Figs 1, 2, 5 and 6) displaced palatally, buccally, labially are first exposed surgically, and often require the extraction of the 1<sup>st</sup> premolar to make space in the arch. So the complicated impactions can only be treated by fixed appliances.

## DEFINITION

When a tooth is fully developed, but remains inside the jawbone and cannot erupt in time either because of its abnormal position in the jaw or because its space is occupied by neighbouring teeth or by a supernumerary tooth or because of a cyst or tumor in the path of eruption is called an impacted tooth.

A displaced tooth is fully developed, but deviates from its space and path of eruption. A displaced tooth may erupt or remains impacted.<sup>4-6</sup>

## METHODOLOGY

42 subjects formed the study group. Treatment of 34 was completed with fixed orthodontic appliances and

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8 were treated with removable appliances. (Females: 71.5%, males 28.5%).

The decision for selecting the patient for fixed and removable appliances was taken after Orthopantomogram (OPG) cephalometric, periapical X-rays and model analysis. The teeth that were impacted under the gum, were not displaced and space was also available in the dental arch, were selected for removable appliance treatment, because of the low cost of the removable appliances and the type of impaction (simple impaction).<sup>7-10</sup>

The patients with the bony impactions in ectopic position were treated with fixed appliances (Figs 1 to 4). Fixed appliances provide continuous controlled forces and non-dependence on patient cooperation. Sometimes the combined surgical and orthodontic treatment was done one after the other. At first, the crown of the tooth was exposed surgically by removing the bone and soft tissues over the crown, then treated orthodontically to bring the impacted and displaced tooth in its normal position in the arch by the fixed appliances. If the space for the canine was closed in the arch, then the first premolar was extracted to create a space and the impacted canines were brought into place.

The time needed to complete the treatment with fixed and removable appliances was almost the same. The Impactions treated with removable appliances were simple impactions, but took the same time as the treatment of complicated impactions with fixed appliances. The forces of removable appliances were not controlled, not continuous and also depended upon patient's cooperation but impactions were of simple type. On the other hand, forces applied with the fixed appliances for the treatment of complicated impactions were controlled, continuous and independent of the patient's cooperation.

**RESULTS**

There were 19.1% males and 80.9% females. The total number of maxillary teeth treated was 42. The treatment result was good for 32 (94.1%), the canines which were treated with the fixed appliances. The treatment results for two (5.8%) was compromised.

The number of teeth treated with removable appliances were eight. The treatment result was good for 5



Fig 1: X-ray of 14 years old patient, shows the direction of impacted maxillary canine

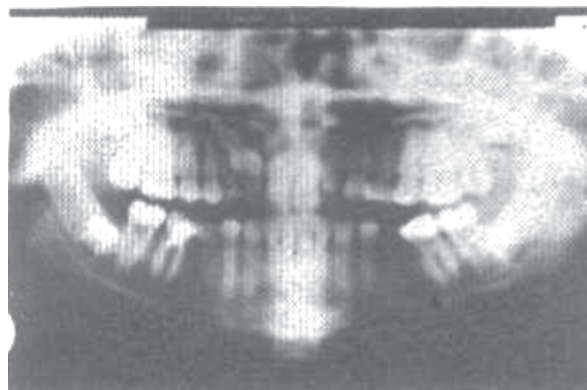


Fig 2: OPG of 13 years old patient with impacted maxillary canines

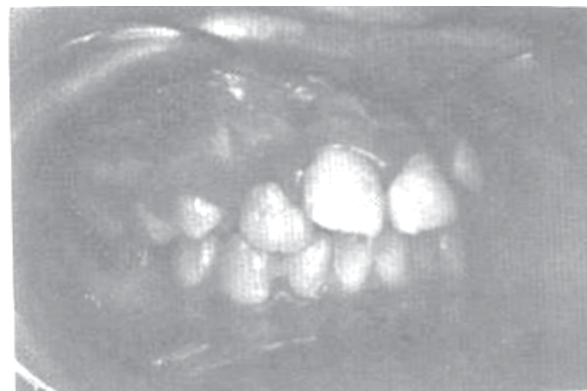


Fig 3: The space for impacted maxillary right canine was closed and canine was displaced labially

(62.5%). The result for 2 (25%) was compromised. There was a relapse in one case (12.5%) because the patient did not use the retainer.

**DISCUSSION**

The study shows that among the treated patients, 71.5 % were female and 28.5 % were male. The pocket depths of the patients treated with fixed orthodontic



Fig 4: Three Months after surgical exposure of impacted canine

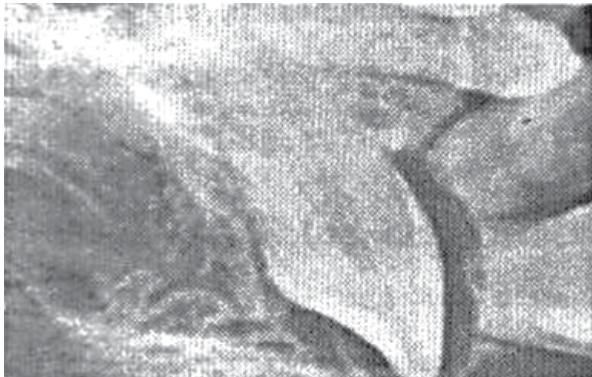


Fig 5: Root resorption of central and lateral incisor by an impacted canine

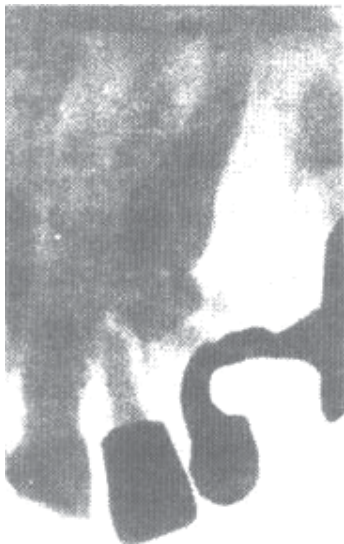


Fig 6. Impacted tooth with Odontom

appliances was more than that of the patients treated by removable appliances, because of the greater, continuous and controlled pressure exerted by fixed appliances, as a result bone resorption is more by the fixed appliances than by the removable appliances, that exert less and non-continuous pressure. The success of

the treatment depended also on patient cooperation. The movement of the teeth with fixed appliances is faster than with the removable appliances, though in physiological range. The pocket depth was about 2 to 3 millimeters more than the normal range as compared to the patients treated with removable appliances. The complicated impacted teeth cannot be brought into normal position and occlusion in the arch with the removable appliances, because of their long and thick roots and abnormal angulation. Therefore, the treatment should preferably be done by the fixed appliances. Impacted and displaced canines must be brought into occlusion as soon as the root is fully developed. If left untreated, complications may develop, for example infection, root resorption of the neighboring teeth, neuralgia, cyst, or tumor formation in the vicinity of the impacted teeth (Figs 5 and 6).

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