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RESEARCH ARTICLE

PREVALENCE OF CANINE IMPACTION IN MAXILLARY AND MANDIBULAR ARCH IN PATIENTS REPORTING FOR ORTHODONTIC TREATMENT

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ABSTRACT

Aim: The aim of the study was to evaluate the prevalence of impacted maxillary and mandibular canine

Objective: The objective is to investigate for the incidence of maxillary and mandibular canine impaction in patients reporting to orthodontic treatment.

Material and method: A total of 100 patients in the age range of 13-40 yrs, who visited for orthodontic treatment. The canine impaction was diagnosed from the Orthopantomogram (OPG).The criterion for assessing the radiographic favorability of maxillary canine impaction for orthodontic traction was angulations of impacted canine to the midline.

Result: A total of 100 patients were examined, out of which 7 patients has canine impaction. single canine impaction was more prevalent than the multiple canine impaction .

Conclusion: The prevalence of maxillary canine impaction was found to be higher than the mandibular canine canine impaction.

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INTRODUCTION

Dental impaction is defined as a condition in which a tooth is prevented from eruption by some physical barrier in the eruption path (Shafer *et al*., 2009). Canine play a role in functional occlusion and form the foundation of an esthetic smile. Impaction of maxillary canine is a common anomaly; however impaction of mandibular canine is less frequent. The various causes of impaction of canine include disturbance in the dental lamina, precocious development of the canine in the maxilla, microform of the cleft lip and palate, long path of eruption, crowding, non resorption of the root of deciduous canine, trauma, soft tissue pathology, abnormal morphology of lateral incisor and heredity (Adrian Becker, 1998; Bass, 1967). The aim of this study was to determine the prevalence of canine impaction in the maxillary and mandibular arch in patients reporting for orthodontic treatment. Impaction of maxillary and mandibular canines is a frequently encountered clinical problem, the treatment of which usually requires an interdisciplinary approach. Surgical exposure of the impacted tooth and the complex orthodontic mechanisms that are applied to align the tooth into the arch may lead to varying amounts of damage to the supporting structures of the tooth, not to mention the long treatment duration and the financial burden to the patient. Hence, it seems worthwhile to focus on the means of early diagnosis and interception of this clinical situation.

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Sequelae of Canine Impaction

- Labial or lingual malpositioning of the impacted tooth,
- Migration of the neighboring teeth and loss of arch length,
- Internal resorption,
- Dentigerous cyst formation,
- External root resorption of the impacted tooth, as well as the neighboring teeth,
- Infection particularly with partial eruption, and
- Referred pain and combinations of the above sequelae.

Since impacted or transmigrated teeth are important, especially in terms of orthodontic treatment planning, these teeth must be diagnosed clinically and radiographically. Clinically, over-retention of the primary canine, proclination of the mandibular teeth, and an enlarged symphyseal area are signs of transmigration.

MATERIALS AND METHODS

A total of 100 patients in the age range of 13-40 yrs, who visited for orthodontic treatment and Dentofacial Orthopedics were included in the study. The nature of canine impaction was diagnosed from the Orthopantomogram (OPG). Patients who had a history of fracture of any of the jaws, medically compromised patients, patients with significant health histories, any pathology or with any other craniofacial syndromes were not included in the study. The criterion for assessing the OPG favorability of maxillary canine impaction for orthodontic traction was angulations of impacted canine to the midline. Studies have shown that angulation of upper canine to midline plays an important role in influencing the orthodontist's decision to expose or remove an impacted upper canine.

RESULTS

A total of 100 patients were examined, out of which 7 patients has canine impaction (Table 1). The maxillary canine impaction is more than that of mandibular canine impaction (Table 1). Out of 7 patient, 2 patient had upper right mesioangular impaction, 1 patient had upper right distoangular impaction, 3 patient had upper left mesioangular impaction and 1 patient had lower left horizontal impaction (Table 1). No patient had multiple impaction.

Table 1. Cases of canine impaction

	Horizontal	Mesio-angular	Disto-angular
Maxilla- first quadrant	0	2	1
Maxilla-second quadrant	0	3	0
Mandibular third quadrant	1	0	0
Mandibular-fourth quadrant	0	0	0

DISCUSSION

There are many reasons why canines fail to erupt. (Wright, 1995) Most surgeons agree the reasons may include a suspected pathological condition, infection, interference with prosthetic devices, disturbance of the existing dentition, pain, and ectopic eruption. Many authors have also speculated about the cause of impacted mandibular canines. (Milano *et al*., 1996) These causes include inadequate space, supernumerary teeth, premature loss of the deciduous canine, excessive crown length, hereditary factors, functional disturbances of the endocrine glands, tumors, cysts and trauma. (Brezniak *et al*., 1993) In this study of the 100 patients only 6 cases of single canine impaction in maxilla were observed. Three were on the right side and three were on the left side. Of the 3 on the right side, 2 were mesioangular and 1 was distoangular and 3 on the left side was mesioangular. However, Takahamain his study found more impactions on the maxillary left side. Out of the 11 unilateral mandibular canine impactions 7 were on the left side and 4 on the right side (Treatment effect of combined maxillary impaction as a possible microform of cleft lip & palate, 1982). Cases of mandibular canine impaction are rare. Yavuz *et al* found only 6 patients with bilateral mandibular canine impactions among 65 patients of mandibular canine impactions (Yavuz *et al*., 2007). In this present study, one mandibular canine impaction was found among 100 patient.

Some authors believe asymptomatic impacted teeth can be left in place, but in these patients a series of successive radiographs should be taken periodically.19 Observation of impacted mandibular canines may be indicated in the following circumstances:

- A systemic contraindication to a surgery exists.
- There is a deeply impacted asymptomatic mandibular canine with no associated pathology, particularly in an older patient.2
- Whenever the patient has a satisfactory dental appearance and does not want surgical intervention. (Fonseca, 2000)

If the deciduous canine has a good root length and it is esthetically acceptable, observation of an asymptomatic mandibular canine can be recommended. (Bishara, 1992)

Surgical extraction is necessary in the following situations:

- The existence of infection, cyst, or tumor related to the impacted canine.
- The impacted tooth causes the periodontal disturbances of the adjacent teeth.
- The presence of neuralgic symptoms.
- Crowding of the mandibular arch requiring therapeutic extractions to correct crowded incisor teeth.
- The impacted canine is ankylosed and cannot be transplanted.
- There is evidence of root resorption affecting the adjacent teeth.
- The root of impacted canine is severely dilacerated.
- Severe impaction of canine tooth.
- Patient rejection of orthodontic treatment or transplantation.

The incidence of impacted canine was found to be more in maxilla than in mandible. However, most of the studies also described more impacted canine found in maxilla.

Conclusion

This present study concluded that single impaction cases were more common than the multiple impactions. Maxillary canine impaction were more prevalent than the mandibular canine impaction.Upper mesioangular canine impaction were common than the distoangular canine impaction.

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