

Incidence of Canine impaction & Transmigration in Kanpur orthodontic population

Sujit Panda¹, Karuna Sharma², Neha Agarwal³, Karuna Singh⁴

¹Professor &HOD, Department of Orthodontics &Dentofacial Orthopaedics, Rama Dental College Hospital and Research Centre Kanpur,.

² Reader, Department of Pedodontics& Preventive Dentistry, Rama Dental College Hospital and Research Centre Kanpur,.

³⁻⁴ Professor, Department of Orthodontics & Dentofacial Orthopaedics, Rama Dental College Hospital and Research Centre Kanpur,.

Abstract

Introduction: The purpose of the present study was to investigate the incidence of canine impaction &transmigration in Kanpur Orthodontic population.

Materials & Methods: A retrospective study was designed in which records (dental casts, OPG, IOPA) of consecutive 2730 patients who visited department of Orthodontics, Rama Dental College, Hospital & Research Centre, were evaluated.

Results: The overall incidence of canine impaction was 7.2%. The number of patients with maxillary canine impaction was 125 (50 male & 75 female, incidence 4.57%) and mandibular canine impaction was 27 (male 12 & female 15, incidence 0.98%) and with both maxillary & mandibular canine impaction was 15 (male 6 & female 9, incidence 0.54%). The incidence of mandibular canine transmigration in our study was found to be 0.219%.

Conclusion: The overall incidence of canine was found to be 7.2%.The incidence of maxillary canine impaction was found to be 4.57%.The incidence of mandibular canine impaction was found to be 0.98%.The incidence of mandibular canine transmigration in our study was found to be 0.219%. No case of maxillary canine transmigration was found.

Keywords: Periodontal disease, risk factors, smoking, diabetes.

Introduction

An impacted tooth is one that fails to erupt into dental arch within the specific time.[1,2,3] Migration of a tooth across the jaw midline without the influence of any pathological entity is called as transmigration.[4] Maxillary canine impaction is a common dental anomaly, with an incidence of 0.8% to 3.6%.[5,6]

Mandibular canine impaction is less commonand the reported incidence is 20 times lower than maxillary canine impaction. [6]

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. [7-12]

The cause of transmigration is obscure but possible causes may be hereditary, premature loss of the deciduous teeth, small root fragment, incorrect position of the dental lamina, hyperdontia, crowding, spacing in the dental arches, odontoma and alveolar crest trauma. [13-16]

The purpose of the present study was to investigate the incidence of canine impaction &transmigration in Kanpur Orthodontic population.

Materials & Methods

A retrospective study was designed in which records (dental casts, OPG, IOPA) of consecutive 2730 patients who visited department of Orthodontics, Rama Dental College, Hospital & Research Centre, were evaluated. All the patients were in full dentition phase with fully developed canine root. The mean age of the patient was 20.74 years & age range was 16 to 30 years. 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. Two investigators evaluated the records at the same time.

Results

A total of 2730patients were examined (M=1110, F=1620).167(68 males & 99 females) patients had one or more canine impactions. The overall incidence

of canine impaction was 7.2%.The number of patients with maxillary canine impaction was 125 (50 male & 75 female, incidence 4.57%) and mandibular canine impaction was 27 (male 12 & female 15, incidence 0.98%) and with both maxillary & mandibular canine impaction was 15 (male 6 & female 9, incidence 0.54%) (Table: 1)

A total of 6 canine transmigration cases were found (2 males & 4 females, incidence 0.21 %).All 6 cases were found in the mandible and no case with bilateral transmigration was found. (Table: 2)

Table 1: Cases of Permanent Canine Impaction

	Male	Female	Total
Maxilla	50	75	125
Mandible	12	15	27
Maxilla & mandible	6	9	15

Table 2: Cases of Transmigration

	Cases	Males	Females
Canine Transmigration	6	2	4
Maxillary Canine Transmigration	0	0	0
Mandibular Canine Transmigration	6	2	4

Discussion

The incidence of maxillary canine impaction varies from 0.27% to 5.9% as shown in various studies. [17-22] it has been noted that earlier studies showed lower incidence rate as compared to recent studies. In our study the overall incidence of canine impaction was found to be 7.2%.The incidence of maxillary canine impaction was found to be 4.57%.The incidence of mandibular canine impaction was found to be 0.98%.

Mandibular canine impaction is less frequent & its incidence was reported to be less frequent than maxillary canine impaction.[22]

The overall male to female ratio for canine impaction in our study was found to be 1:1.45.The male to female ratio for maxillary canine impaction was found to be 1:1.5 & male to female ratio for mandibular canine impaction was 1:1.25.The male to female ratio for both maxillary and mandibular canine impaction was 1:1.5.

Male female ratio varies from study to study. Dachiet al [22] found the ratio to be 1:2.3 & Becker et al [23] found the ratio to be 1:2.5.Oliver RG [24], Johnston [25], Sacerdoti R & Baccetti T [19] in separate studies found the ratio to be 1:3

The incidence of mandibular canine transmigration in our study was found to be 0.219%.No case of maxillary canine transmigration was found.The male to female ratio was found to be 1:2.

Aydin et al reported an incidence of 0.13% (maxillary) & 0.18% (mandibular)for transmigrated canine. Celikogu [26] in their study found the frequency of transmigrated canine to be 0.3%.

Various treatment modalities of transmigrated canine have been suggested depending on stage of development of the tooth, distance of migration, angulation when they are identified and symptoms associated with transmigrated canine.[16] Treatment modalities for impacted transmigrated canine are observation, surgical exposure with orthodontic alignment, transplantation and surgical extraction.[16, 27, 28, 29]

Conclusion

Following conclusions were drawn from the present study:

1. The overall incidence of canine was found to be 7.2%.The incidence of maxillary canine impaction was found to be 4.57%.The incidence of mandibular canine impaction was found to be 0.98%.

The incidence of mandibular canine transmigration in our study was found to be 0.219%.No case of maxillary canine transmigration was found.

References

1. Hellman M. Our third molar teeth: Their eruption, presence and absence. Dent Cosm. 1936;7:750–62.
2. Hup EE, Jr, Tucker MR. Peterson: Contemporary Oral and Maxillofacial Surgery. 9th ed. St. Louis: Mosby; 2002.
3. Prajapati VK, Mitra R, Vinayak KM. Pattern of mandibular third molar impaction and its association to caries in mandibular second molar: A clinical variant. Dent Res J (Isfahan). 2017;14(2):137-142
4. M. R. Joshi, Transmigrant mandibular canines: a record of 28 cases and a retrospective review of the literature. Angle Orthod 2001; 71(1):12–22.
5. Aydin U, Yilmaz HH, Yildirim D: Incidence of canine impaction and transmigration in a patient population. Dentomaxillofac Radiol 33:164, 2004
6. Kramer RM, Williams AC: The incidence of impacted teeth: A survey at Harlem Hospital. Oral Surg Oral Med Oral Pathol
7. Adrian Becker, the Orthodontic treatment of impacted teeth (Ed 2), published by Martin Dunitz Ltd 1998.
8. Bass TP. Observation on the misplaced upper canine teeth. Dent Pract Dent Rec, 18:25-33, 1967.
9. Miller BH.The influence of congenitally missing teeth on the eruption upper canine. Dent Prac Dent Rec, 13:497-504, 1963.

10. Marsh W. Aberrant canines. *Dent Pract* 16:124-126, 1965.
11. Takahama T, Aiyama Y. Treatment effect of combined maxillary impaction as a possible microform of cleft lip & palate. *Eur J orthod*, 4:275-277, 1982.
12. Brin I, Becker A, Shalhav M. Position of the maxillary permanent canine in relation to anomalous or missing lateral incisors: a population study. *Eur J Orthod*, 8:12-16, 1986.
13. Nodine AM. Aberrant teeth, their history, causes and treatment. *Dent Items of Interest*. 1943; 65:440-451
14. Ando S, Aizawa K, Nakashima T, Sanka Y, Shimbo K, Kiyokawa K. Transmigration process of the impacted mandibular cuspid. *J Nihon UnivSch Dent*. 1964; 6:66-71.
15. Peck S. On the phenomenon of intraosseous migration of nonerupting teeth. *Am J OrthodDentofacialOrthop*. 1998; 113(5):515-517.
16. Camilleri S, Scerri E. Transmigration of mandibular canines- a review of the literature and a report of five cases. *Angle Orthod*. 2003; 73(6):753-762.
17. Cramer HC. Dental survey of one thousand adult males: a statistical study correlated with physical and laboratory findings. *J Am Dent Assoc* 1929; 16: 122.
18. Mead SV. Incidence of impacted teeth. *Int J Orthod* 1930; 16:885-90.
19. Sacerdoti R, Baccetti T. Dentoskeletal features associated with unilateral or bilateral palatal displacement of maxillary canines. *Angle Orthod* 2004; 74:725-32.
20. Rozsa N, G Fabian G, Szadeezky B, Kaan M, Gabris K, Tarjan I. Prevalence of impacted permanent canine & its treatment in 11- 18 year old orthodontic patients. *FogorvSz*, 96:65-69, 2003.
21. Montelius GA. Impacted teeth. A comparative study of Chinese and Caucasian dentitions. *J Dent Res* 1932; 12:931-8.
22. Dachi SF, Howell FV. A survey of 3874 routine full mouth radiographs: II. A study of impacted teeth. *Oral Surg Oral Med Oral Path* 1961; 14:1165-1169.
23. Becker A, Smith P, Behar R. The incidence of anomalous lateral incisors in relation to palatally – displaced cuspids. *Angle Orthod* 1981; 51:24-9.
24. Oliver RG, Mannion JE, Robinson JM. Morphology of the maxillary lateral incisor in cases of unilateral impaction of the maxillary canine. *Br J Orthod* 1989; 16: 9-16.
25. Johnston WD. Treatment of palatally impacted canine teeth. *Am J Orthod* 1969; 56:589-96
26. Celikoglu M, Kamak H, Oktay H. Investigation of transmigrated and impacted canine maxillary and mandibular canine in an Orthodontic population. *J Oral Maxillofac Surg* 68:1001-1006, 2010
27. Vichi M, Franchi L. The transmigration of the permanent lower canine. *Minerva Stomatologica*. 1991; 40(9): 579-589.
28. Wertz RA. Transmigrated mandibular canines. *Am J OrthodDentofacialOrthop*. 1994; 106(4):419-427.
29. Howard RD. The anomalous mandibular canine. *Br J Orthod*. 1976; 3(2):117-119

To cite this article: Incidence of Canine impaction & Transmigration in Kanpur orthodontic population: Sujit Panda, Karuna Sharma, Neha Agarwal, Karuna Singh, Rama Univ. J. Dent. Sci. 2022 December; 9(4): 18-20