



THE PREVALENCE OF IMPACTED CANINES IN KASHMIRI POPULATION: A SINGLE CENTER STUDY

Dental Science

Dr. Afreen Nadaf* Consultant, Deptt. of Oral and Dental Pathology *Corresponding Author

Dr. Shahid Farooq Registrars, Deptt. Of Oral Surgery

Dr. Tajamul Hakim Registrars, Deptt. Of Oral Surgery

ABSTRACT

Aim: The purpose of this study was to investigate the prevalence of impacted canines in Kashmiri population.

Materials and Methods: The study consisted of a retrospective analysis of the records of 2000 patients for impacted canines treated in the Government Dental College & Hospital, Srinagar between August 2017 to December 2018.

Results: The prevalence of impacted canines was found to be 11.5%. Age were in the range from 10.5-41.5 years, with a mean age of 16.2 years. Of the 230 impacted canines, 143(62.17%) were females and 87(35.80%) were males. Maxillary canines (93.04%) were impacted more than the mandibular canines (06.95%). Among the 230 impacted canines 195(84.78%) were unilateral impactions and 35(15.21%) were bilateral impactions among which 130(56.52%) were palatally placed, 9 (3.91) were lingually placed and 91 (39.56%) were placed buccally.

Conclusion: The prevalence of the present study was found to be 11.5%. Knowledge about prevalence of canine impaction is crucial before treating the patients for impacted canines as canines play a vital role in aesthetics and function.

KEYWORDS

impacted canine, maxilla, mandible, prevalence

INTRODUCTION

Tooth impaction (TI) is a condition in which a tooth is embedded in the alveolus and is locked-in due to malposition or obstruction in the eruption path into oral cavity.¹ Tooth is considered impacted when its eruption is delayed for a minimum of 2 years after the corresponding mean age of eruption.² Causes of TI includes several systemic and local factors; however, the exact mechanism is not well-known.³ TI is common in dental practice between teenagers and adults, with the third molar TI being the most common.^{4,5,6}

Impaction of canine teeth is a well-documented phenomenon, particularly in the recent literature. The occurrence of maxillary canine impaction is considerable and its frequency increases with other genetically associated dental anomalies. The etiology of impacted canines is still unknown.^{7,8} Possible causes may include one or more of the following local factors and systemic conditions: inadequate space for eruption or early loss of primary canines, abnormal position of the tooth bud, the presence of an alveolar cleft, a cystic lesion or neoplasm, ankylosis, dilacerations of the root, endocrine deficiencies, malnutrition, fever, irradiation and iatrogenic or idiopathic cause.⁸⁻¹¹ Peck et al.¹² suggested that palatal canine impaction is genetic in origin, where as labial impaction is due to inadequate arch space.¹³

Impacted canines are more commonly seen in female than in male patients, and there is wide variation among different racial populations.^{14,15} Both the maxillary and mandibular canines may be impacted, although maxillary canine impaction is considerably more common.^{9,10,16} Unilateral impaction is more prevalent than bilateral impaction⁸⁻¹⁰, and impaction is ~50 times more frequent in the palate than in the buccal vestibule.^{9,10,13,17}

However, despite information from other ethnic groups, studies on impacted canines have not yet been performed in Kashmir. The purpose of this study was to determine the prevalence of impacted canines in Kashmiri population.

MATERIAL AND METHODS

This study was conducted on a Kashmiri population that had been treated in the Oral Surgery Department at the Govt. Dental College and Hospital, Srinagar from August 2017 to December 2018. The study consisted of a retrospective analysis of the records of 2000 patients. These records were examined to reveal any evidence of impacted canines (i.e., visual inspection, palpation, and/or radiographs). Clinical examination was done by conventional methods and included whole-arch inspection, palpation to identify any retained deciduous canine, visualization of the canine "bulge," splaying of the lateral incisors, lost space, crowding, fibrous tissue overlying the canine region, mobility of the primary canines and a review of the patient's chronological age and history of dental eruption/ exfoliation patterns.

Other radiographs, including anterior occlusal radiographs, were used to determine the position of the impacted canine by parallaxing. All radiographs were assessed by an experienced oral surgeon and an oral pathologist. Data were processed in a Microsoft Excel 2007 worksheet. Descriptive analyses were carried out and were represented as frequency and percentages.

RESULTS

A total of 2000 data sheets were analyzed. A total of 230(11.5%) cases had impacted canines. In this study the age ranges from 10.5-41.5 years, with a meanage of 16.2 years. Among the 230 patients having impacted canine 87(35.80%) were males and 143(62.17%) were females which is indicative of a female predilection (table 1). Majority of patients 214(93.04%) had maxillary canine impaction and 16 (06.95%) had mandibular canine impaction which shows predilection for maxilla (table 1). Among the 230 impacted canines 195 (84.78%) were unilateral impactions and 35(15.21%) were bilateral impactions. Impacted canines in 130 subjects (56.52%) were palatally placed, 91 (39.56%) were buccally placed and 9 (3.91) were placed lingually (table 1).

Table 1: Distribution of impacted canines

Characteristics		Frequency	Percentage
Gender	Female	143	62.1
	Male	87	35.80
Jaw location	Maxilla	214	93.09
	Mandible	16	6.91
Laterality	Unilateral	195	84.78
	Bilateral	35	15.21
Canine position	Palatally	130	56.52
	Lingually	9	3.91
	Bucally	91	39.56

DISCUSSION

Any permanent tooth in the dental arch can be impacted, but the teeth most frequently involved in a descending order are the mandibular and maxillary third molar, the maxillary canines, the mandibular and maxillary second premolar, and maxillary central incisors.¹⁸ Canine impaction is a commonly encountered problem in orthodontic practice. Literature review suggests many studies have investigated the prevalence of canine impaction with percentages ranging from 0.8% to 8.8%.¹⁹ To the best of our knowledge, this is the first study in the Kashmir valley, which discusses canine impaction. This study sample size is similar to many international studies.^{2, 6,13,20, 21} It is also notable that the rate of accumulation of cases varies widely in different reports. This may reflect regional factors such as race distribution, hereditary and environmental conditions.

In our study, the prevalence of canine impaction was 11.5% of the total population. Variations in the prevalence were found with different studies. The finding of the present study is concordance with the study conducted by Anastasia et al²² whose prevalence was found to be 8.8%. The studies conducted by Ali Murat et al²³, Jason Cooke¹⁴, U. Aydin²⁴ et al had much lower prevalence of 1.74%, 2.5% and 3.5% respectively.²⁵ The present study found that there was a female predilection for canine impaction with male to female ratio of 1:1.7. Female patients have been reported to be more commonly affected¹³ and our results support this. It is possible that this higher frequency in female patients is associated with the smaller cranium in female patients, which may lead to diminution of the facial skeleton¹⁴ and the jaws. Other authors have hypothesized that the higher female incidence may simply reflect a trend whereby female patients are more likely to seek orthodontic treatment and thus have their impacted canines discovered^{13,24,26}

The present study also reveals that maxillary canine (93.04%) is more commonly impacted than the mandibular canines (06.95%) and among the 230 patients none of the patients had impaction of both maxillary and mandibular canines. Ali Murat Aktan et al also reported with a predilection of 1.74% for maxillary canine. Study done by Sandeepa NC et al²⁷ also shows predilection for maxillary canine which was found to be 77.5% and is very much in accordance to our results.²⁶ Some studies show that impaction occurring in both sides is more usual²⁸ while others present a higher prevalence of unilateral impaction.¹³ Our present study shows a prevalence of 15.21% of patients with bilateral impaction and 84.78% unilateral impaction. In this study, we found that 56.52% of the impacted canines were located palatally while 39.56% were located buccally. Our findings are in disparity with the study conducted by Omar et al, they reported canine impaction locations to be more palatally (50.5%) than buccally (49.5%).²⁹ In a European population, palatal canine impaction was around five times more frequent than in an Asian population.¹³

CONCLUSION

The incidence of the present study was found to be 11.5%. The maxillary canines were more commonly impacted than the mandibular counterparts. Knowledge about incidence of canine impaction along with parameters such as gender predilection, jaw predilection is crucial before treating the patients for impacted canines as canines play a vital role in aesthetics and function.

REFERENCES

1. American association of oral and maxillofacial surgeons. Impacted teeth. *Oral Health* 1998;88:31-2.
2. Patil S, Maheshwari S. Prevalence of impacted and supernumerary teeth in the North Indian population. *J Clin Exp Dent* 2014;6:e116-20.
3. Grover PS, Lorton L. The incidence of unerupted permanent teeth and related clinical cases. *Oral Surg Oral Med Oral Pathol* 1985;59:420-5.
4. Dachi SF, Howell FV. A survey of 3, 874 routine full-month radiographs. II. A study of impacted teeth. *Oral Surg Oral Med Oral Pathol* 1961;14:1165-9.
5. Roberts-Harry D, Sandy J. Orthodontics. Part 10: Impacted teeth. *Br Dent J* 2004;196:319-27.
6. Melha SB, Alturki S, Aldawasri G, Almeshari N, Almeshari S, Albadr K. Canine impaction among riyadh population: A single center experience. *Int J Oral Health Sci* 2017;7:93-5.
7. A. Alqerban, R. Jacobs, P. Lambrechts, G. Loozen, and G. Willems, "Root resorption of the maxillary lateral incisor caused by impacted canine: a literature review," *Clinical Oral Investigations*, vol. 13, no. 3, pp. 247–255, 2009.
8. M. M. Bedoya and J. H. Park, "A review of the diagnosis and management of impacted maxillary canines," *The Journal of the American Dental Association*, vol. 140, no. 12, pp. 1485–1493, 2009.
9. P. Ngan, R. Hornbrook, and B. Weaver, "Early timely management of ectopically erupting maxillary canines," *Seminars in Orthodontics*, vol. 11, no. 3, pp. 152–163, 2005.
10. R. H. Schindel and S. L. Duffy, "Maxillary transverse discrepancies and potentially impacted maxillary canines in mixed dentition patients," *Angle Orthodontist*, vol. 77, no. 3, pp. 430–435, 2007.
11. Y. Shapira and M. M. Kuflinec, "Early diagnosis and interception of potential maxillary canine impaction," *The Journal of the American Dental Association*, vol. 12. S. Peck, L. Peck, and M. Kataja, "The palatally displaced canine as a dental anomaly of genetic origin," *Angle Orthodontist*, vol. 64, no. 4, pp. 249–256, 1994.
13. Ali Gashi, Blerim Kamberi, Resmije Ademi-Abdyli, Ferijale Perjuci, and Arjeta Sahatçiu-Gashi, "The Incidence of Impacted Maxillary Canines in a Kosovar Population," *International Scholarly Research Notices*, vol. 2014, Article ID 370531, 4 pages, 2014.
14. J. Cooke and H.-L. Wang, "Canine impactions: incidence and management," *International Journal of Periodontics and Restorative Dentistry*, vol. 26, no. 5, pp. 483–491, 2006.
15. W. R. Proffit, H. W. Fields, and D. M. Sarver, *Contemporary Orthodontics*, Mosby, St. Louis, Mo, USA, 4th edition, 2007.
16. M. S. Yavuz, M. H. Aras, M. C. B'uy'ukkurt, and S. Tozoglu, "Impacted mandibular canines," *The Journal of Contemporary Dental Practice*, vol. 8, no. 7, pp. 78–85, 2007.
17. C. Marzola, *Fundamentos De Cirurgia BucoMaxilo Facial*, CDR, Independente, Bauru, Brazil, 2005.
18. Al Fawzan, Ahmed & Alruwaithi, Moatazbellah & Alsadoon, Sultana. (2017). Prevalence of Maxillary Canine Impaction in Orthodontics At Eastern Riyadh Specialized Dental Center. *IOSR Journal of Dental and Medical Sciences*. 16. 72-74.
19. <https://www.econicon.com/ecde/pdf/ECDE-13-00464.pdf>
20. Tassarra G, Lopez L, Hanke R, Tumanyan S, Picon F. Prevalence of impacted maxillary canines in Puerto Rican adolescents. *Int J Health Sci* 2015;3:135-8.

21. Kramer RM, Williams AC. The incidence of impacted teeth. A survey at Harlem hospital. *Oral Surg Oral Med Oral Pathol* 1970;29:237-41.
22. Fardi A, Kondylidou-Sidira A, Bachour Z, Parisi N, Tsirlis A. Incidence of impacted and supernumerary teeth—a radiographic study in a North Greek population. *Med Oral Patol Oral Cir Bucal*. 2011 Jan 1;16(1):e56-61.
23. Aktan AM, Kara S, Akgnülü F, Malkoç S. The incidence of canine transmigration and tooth impaction in a Turkish subpopulation. *Eur J Orthod*. 2010 Oct;32(5):575-81.
24. U Aydin, HH Yilmaz and D Yildirim. Incidence of canine impaction and transmigration in a patient population. *Dentomaxillofacial Radiology* 2004 33, 164–169.
25. Sharmila.R. Incidence of Impacted Canine Using Orthopantomogram. *J. Pharm. Sci. & Res.* Vol. 8(8), 2016, 921-922
26. R. G. Oliver, J. E. Mannion, and J. M. Robinson, "Morphology of the maxillary lateral incisor in cases of unilateral impaction of the maxillary canine," *British journal of orthodontics*, vol. 16, no. 1, pp. 9–16, 1989.
27. Sandeepa NC, Ajmal M, Deepika N (2016) A Retrospective Panoramic Radiographic Study on Prevalence of Impacted Teeth in South Karnataka Population. *J Oral Hyg Health* 4:197
28. L. Walker, R. Enciso, and J. Mah, "Three-dimensional localization of maxillary canines with cone-beam computed tomography," *American Journal of Orthodontics and Dentofacial Orthopedics*, vol. 128, no. 4, pp. 418–423, 2005.
29. Omar H Alkadhi, et al. "Prevalence of Different Impacted Maxillary Canine Locations in a Saudi Population in Riyadh City". *EC Dental Science* 13.6(2017): 261-265.