



Frequency of Class II Cavities in Molars Requiring Root Canal Treatment in Pakistani Population

Dr Huma Sarwar, MDS resident¹, Dr Fazal –ur-Rehman Qazi, Associate Professor¹, Dr Shahbaz Ahmed, Associate Professor¹, Mr. Abdur Rasheed, Senior Lecturer² and Dr Mashal Muhammad Naeem¹, MDS resident¹

1. Dow University of Health Sciences, Department of operative dentistry, Dr Ishrat-ul-Ebad Khan Institute of Oral Health Sciences, Ojha campus, opposite Sparco, Karachi, Pakistan

2. Department of research, Dow university Ojha campus, opposite Sparco, Karachi, Pakistan

Abstract: *The study is aim to identify the frequency of class II cavities in molars requiring root canal treatment in Pakistani population attending a tertiary care hospital. A descriptive cross-sectional study was carried out at Dow International Dental College. A total of 200 patients were examined. Data regarding age, gender, tooth involved for root canal treatment and class of cavity was collected on performa. There were 79 (34.3%) were male and 151(56.7%) were female. The mean age of overall patients was 34.57 with standard deviation of 13.11. Out of 230 teeth requiring root canal treatment there were 84 (36.5%) maxillary and 146 (63.5%) were Mandibular teeth. The most frequently involved cavity class in teeth requiring root canal treatment was class II (63%). It is concluded from this study that the class II caries was most commonly involved in molars requiring root canal treatment. Furthermore, there is an increasing trend of female patients requiring root canal treatment.*

Key words: Root canal treatment, Class II

Introduction

Endodontic treatment has a reported success rate of 95% as it restores the tooth to a biologically compatible and functionally healthy working oral unit¹. Literature of clinical trials on root canal treatments relating recent techniques produced satisfactory results with healing rates above 90%². Latest modifications in the techniques of executing root canal treatment is more proficient and have increased accuracy with better patient acceptance³.

Increased awareness and changing behaviors towards dental treatment has

brought a change in frequency of root filled teeth, which has increased significantly in contrast to tooth extraction which was previously a more opted choice by patients⁴. Also, it has been reported that the most common reason for patients to have a dental visit is the tooth ache which is a consequence of dental caries and dental abscess and generally these patients are recommended to go through root canal treatment⁵. Molars are more prevalent to have deep carious lesions resulting in the preparation of class I and II cavities.



Dental Caries is considered to be one of the main reasons for endodontic therapy in Pakistan⁶. However, pulpal injury may also be caused by trauma or infection as a result of any operative technique⁷. Pulpal exposure during deep cavity preparation is not an uncommon complication and class II cavity preparation is usually more critical in this context. However, what is the frequency of class II cavities that lead to a conduct of root canal therapy still remains unexplored.

Therefore, the objective of this study was to identify the frequency of class II cavities in molars requiring root canal treatment in Pakistani population attending a tertiary care hospital.

Methodology

This cross-sectional study was carried out in the operative department of Dow International Dental College, Karachi in 2014. Through purposive sampling a total of 200 consented patients requiring root canal treatment were included, total number of teeth involved were 230. In this study the recruitment of patients was irrespective of gender. Only permanent teeth were included in this study. Information, regarding age,

gender, affected tooth type i.e carious mandibular or maxillary first, second and third molar requiring root canal treatment were noted. Permanent carious molars were clinically and radiographically examined and classification of dental caries according to G.V Black was noted on the performa. Data were entered and analyzed using SPSS version 21. Descriptive statistics e.g., mean and standard deviations were calculated for age variable whereas frequency and percentages were calculated for gender and tooth type and class of cavity variables.

Result

Out of 200 patients, 79 (34.3%) were male and 151(56.7%) were female. The mean age of overall patients was 34.57 with standard deviation of 13.11. Male mean age was 35.60 (SD=14.18) and female mean age was 34.03 (SD=12.54). Out of 230 teeth requiring root canal treatment there were 84 (36.5%) maxillary and 146 (63.5%) were Mandibular teeth. Table 1 show the distribution of cavity classes of molars requiring root canal; it is obvious that most frequently involved cavity class in root canal treatment was class II (63%).

Table 1: Distribution of cavity class among molars requiring root canal

	Cavity Type		
	Class I	Class II	Class V
Frequency	70	145	6
Percentages	30.4	63	2.6

Table 2 depicts the distribution of cavity classes according to the gender. The most common cavity class of molars requiring root canal in male and female was also class II with percentages of 65.8 and 61.6 respectively.



Table 2: Distribution of cavity class according to gender

Gender		Cavity Type		
		Class I	Class II	Class V
Male	Frequency	23	52	3
	Percentages	29.1	65.8	3.8
Female	Frequency	47	93	3
	Percentages	31.1	61.6	2

Table 3 exhibits the percentages of cavity class according to tooth type, again the cavity class II was the most common class in both maxillary and Mandibular tooth with percentages of 59.9 and 65.1.

Table 3: Distribution of cavity class according to tooth type

Teeth		Cavity Type		
		Class I	Class II	Class V
Maxillary	Frequency	22	50	6
	Percentages	26.2	59.5	7.1
Mandibular	Frequency	48	95	0
	Percentages	32.9	65.1	0

Discussion

Protection of teeth affected by various pulp pathologies is the most substantial objective of endodontic treatment. Endodontic therapy may be indicated in teeth with caries, periapical periodontitis, fractures, tooth wear, prosthetic needs, endo-perio or perio-endo lesions and iatrogenic pulpal exposure of dental pulp. Amongst all these causes dental caries is the main reason for conducting root canal treatment in Pakistan. In this study the frequency and distribution of class II cavities in molars requiring root canal treatment, tooth type (mandibular or maxillary) gender and age in population attending Dr Ishrat-ul-Ebaad Khan

Institute Of Oral Health Sciences was analyzed.

Main causes of class II caries include diet, time, dental plaque and decreased host resistance. Gingival recession because of aging or periodontal disease leading to development of open cervical embrasures and missing opposite tooth causing overeruption which leads to disturbed contact points between adjacent teeth and food lodging interproximally which becomes difficult to clean. Most patients attending Operative Dentistry Department Of Dr Ishrat-ul-Ebaad Khan Institute Of Oral Health Sciences belong to lower socioeconomic status and have poor to



moderate oral hygiene, minimal regular visits to dental clinic and use of dental floss for interproximal cleaning of teeth is negligible.

This study exhibits that among all classes of dental caries according to GV Black, class II was most common in molars requiring root canal in both genders and tooth types. This study showed that more molar teeth in mandible than in maxilla required root canal treatment which agrees the result of Tareen et al ⁸ and Vohra et al ⁹. However a study of Gulsahi et al conducted in Turkey ¹⁰ showed that there was similar number of teeth with apical periodontitis requiring endodontic treatment in maxillary and mandibular teeth. Mandibular molar teeth are more affected by class II caries than maxillary and Mandibular first molar was found to be the most commonly affected tooth that required root canal treatment because mandibular molars erupt before maxillary molars hence longer exposure to cariogenic environment.

In our study female required root canal treatment more often than male which is correlates the results from studies of Molven ¹¹, Barbakow et al ¹² and Rosa et al ¹³. Females have higher prevalence of class II caries than in males. Reasons being early eruption of teeth in girls, pregnancy and frequent and easier snaking during food preparation.

The concept that caries occurs symmetrically is well accepted and suggests that when an increase or decline in caries activity occurs, it usually presents in increment of 2. However this study shows no such degree of symmetry regarding proximal caries in teeth requiring root canal treatment.

Conclusion

It is concluded from this study that the class II type of carious lesions were most prevalent in permanent molars requiring root canal treatment. Mandibular first molar was found to be the most affected tooth with class II caries. Furthermore, there is an increasing trend of female patients requiring root canal treatment than males.

This frequency of class II caries needs to be improved through proper dental education and prevention of dental caries.

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