

To Estimate and Compare the Incidence of Dentin Hypersensitivity Among Men and Women Before and After Tooth Preparation.

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ABSTRACT

Background: Dentin hypersensitivity following tooth preparation is a frequently encountered oral health problem. The present study was conducted to estimate and compare the incidence of dentin hypersensitivity among men and women in an adult population sample who required replacement of missing tooth/teeth with a fixed partial prosthesis. **Methods:** The present study was conducted among 32 participants in which 16 were male and 16 were females who want replacement of missing tooth/teeth with a fixed partial prosthesis. The informed consent of all the participants who participated in this study was obtained. Detailed clinical and radiographic investigations were performed on all participants to exclude conditions of teeth, which might have caused pain similar to dentin hypersensitivity. There was at least one vital abutment tooth in each FPD. Each abutment tooth received two stimuli: tactile stimulus and thermal stimulus. Sensitive teeth were identified with an explorer passed cervically over the abutment tooth. Immediately following stimulation, the participants were asked to grade their overall sensitivity using a 10 cm Visual Analogue Scale (VAS). After the VAS was recorded before tooth preparation, the subjects underwent tooth preparation of the abutment teeth for the fixed partial denture. The VAS was recorded immediately after tooth preparation. The data was compiled and subjected to statistical analysis. Statistical analysis was done by using SPSS, version 22 (SPSS, Inc., Chicago, IL) and $p < 0.05$ was considered statistically significant. **Results:** In the present study; total participants were 32, out of which 16 were male and 16 were females. The comparison of dentin hypersensitivity between men and women in which women reported more dentin hypersensitivity than men, although results were statistically non-significant. **Conclusion:** It was concluded that women reported more dentin hypersensitivity than men before and after tooth preparation.

Keywords: Tooth preparation, Dentin hypersensitivity.

INTRODUCTION

Tooth preparation may be regarded as a common dental operative procedure that might result into minor pulpal insult, but it may result in several pulpal reactions. Tooth preparation may disrupt odontoblastic processes, leading to irreversible damage of odontoblasts.^[1] Dentin hypersensitivity following tooth preparation is a frequently encountered oral health problem. Dentin hypersensitivity is a “short, sharp pain arising from exposed dentin in response to stimuli typically thermal, evaporative, tactile, osmotic or chemical and which cannot be ascribed to any other form of

dental defect or pathology.”^[2] Post cementation sensitivity following crown placement is as high as 23% and loss of pulp vitality approximately 1% per year.^[3] Pulpal injury can occur at any stages of tooth preparation and crown cementation. During tooth preparation, a large number of highly permeable dentinal tubules are exposed. Dentin is an excellent insulator because it is a poor thermal conductor,^[4] but the high surface temperature may expand the dentinal fluid immediately beneath poorly irrigated burs. If the rate of expansion of dentinal fluid is high, may create shear forces sufficiently larger to tear the cell membrane and induce calcium entry into the cell, possibly leading to cell death.^[4] The present study was conducted to estimate and compare the incidence of dentin hypersensitivity among men and women in an adult population sample who required replacement of missing tooth/teeth with a fixed partial prosthesis.

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MATERIALS AND METHODS

The present study was conducted among 32 participants in which 16 were male and 16 were females in the Dept. of Conservative Dentistry and Endodontics, MNDAV Dental College, Solan during the year 2018 among patients who wanted replacement of missing tooth/teeth with a fixed partial prosthesis (FPD). The informed consent of all the participants who participated in this study was obtained. Detailed clinical and radiographic investigations were performed on all participants to exclude conditions of teeth, which might have caused pain similar to dentin hypersensitivity. There was at least one vital abutment tooth in each FPD. Each abutment tooth received two stimuli: tactile stimulus and thermal stimulus (water jet at room temperature, 15°C and 40°C). Sensitive teeth were identified with an explorer passed cervically over the abutment tooth. Ten minutes following tactile stimulation, dentin hypersensitivity was elicited using a jet of water to approximately the same anatomical feature of the tooth as had received the tactile stimulus. Immediately following stimulation, the participants were asked to grade their overall sensitivity using a 10 cm Visual Analogue Scale (VAS) 5,6 labelled at the extremes with "no pain," at the zero cm end of the scale, and "severe pain," at the 10 cm end of the scale. Measurements from the scale were made in millimetres giving a scoring range of 0 to 10. After the VAS was recorded before tooth preparation, the subjects underwent tooth preparation of the abutment teeth for the fixed partial denture. The VAS was recorded immediately after tooth preparation. The data was compiled and subjected to statistical analysis. Statistical analysis was done by using SPSS, version 22 (SPSS, Inc., Chicago, IL) and $p < 0.05$ was considered statistically significant.

RESULTS

Table 1: Distribution of gender.

Gender	N	p-value
Male	16	<0.05
Female	16	
Total	32	

Table 2: Comparison of dentin hypersensitivity between men and women before and after tooth preparation, based on the VAS scale.

Gender	Mean before tooth preparation	Mean after tooth preparation
Male	0.32±0.802	3.59±1.423
Female	0.79±1.203	4.432±1.346

In the present study total participants were 32 in which 16 were male and 16 were females. Table 2 shows comparison of dentin hypersensitivity between men and women in which women reported

more dentin hypersensitivity than men, although results were statistically non-significant.

DISCUSSION

Dentin along with the dentinal fluid has excellent buffering capability to neutralize the acidic environment,^[7,8] and it also provides insulation to the pulp from the increasing temperature during tooth preparation.^[9] In vitro studies reported that 0.5 mm of the remaining dentin thickness reduces the toxic effect of the pulp by 75% and 1 mm of the remaining dentin thickness reduces it by 90%.^[10] Langeland et al. reported that the temperature rise during preparation of enamel and dentin combined is considerably greater than of preparing dentin alone.^[11] The present study had a total participant count of 32 in which 16 were male and 16 were females shows a comparison of dentin hypersensitivity between men and women. Women reported more dentin hypersensitivity than men, although results were statistically non-significant. Lockard MW performed a study of pulpal response in vital teeth prepared for full veneer crown restoration using only air coolant, suggested that the factors responsible for minimizing the need for post restoration endodontic therapy are; high-speed handpiece, light force (1- 3 Oz), new-burs, air coolant and intermittent water spray from the air-water syringe.^[12] During tooth preparation the heat generated by friction may cause burn lesion in the pulp and abscess formation.^[13] Yadav K et al conducted a study and results showed that women reported more dentin hypersensitivity than men before and after tooth preparation.^[14] Garg S et al conducted a study and the results showed that women reported more dentin hypersensitivity than men before and after tooth preparation.^[15]

CONCLUSION

It was concluded that women reported more dentin hypersensitivity than men before and after tooth preparation.

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