
Association of age and gender distribution of patient undergoing class II inlay

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Abstract: Inlay restorations are one of the intracoronal restorations which is used commonly in dentistry in this era. Inlay restorations are known to be highly retentive compared to composite restorations in restorative procedures. This study was aimed to evaluate the gender prevalence and age distribution among patients undergoing class II inlay restorations who visited saveetha dental college in Chennai. From the record of 86000 cases (June 2019 - April 2020), all cases of class II inlay restorations were used for data analysis. A total of 40 case sheets were retrieved and cross checked for patients age and gender. The collected data was analysed through SPSS 2.0. Pearson correlation test was used for age and gender distribution for patients undergoing class II inlay restoration and Chi square test was done to evaluate the significance between the variables. Results were recorded. The highest age distribution was seen in 34-41 years old (frequency 35.5%) lowest age range for underwent class II inlay restoration was 58-65 years old (frequency 2.5%). The gender distribution showed predominantly male with a frequency of 67.5% (27 patients out of 40 in total), whereas female patients were only 32.5% who had undergone this treatment. Within the limitation of present study, it is concluded that in Saveetha Dental College, statistically no significant difference was seen in age and gender of the patients undergoing class II inlay restoration.

Keywords: Age; Gender; Indirect restoration; Inlay

INTRODUCTION

Inlay is defined as the entirely intracoronal restorations most commonly with occlusal and proximal extensions. Whereas, class II inlay is an indirect restoration that caps one or more cusps of a posterior tooth but not all the cusps (Ashy, Marghalani and Silikas, 2020).

In 1897, Dr. Phil Brook was the first to introduce inlay restoration in dentistry. The features of class II inlay restorations relies on the outline and occlusal portion. The dovetail shaped cavity has to be at the proximal portion and boxed shaped. The cast restoration is an integral link dental restoration chain which demands situations. The principle of tooth preparation for inlay class II intricacies cast restoration, enabling the dentist to optimally utilise this option (Simsek and Derelioglu, 2016).

Usually for inlay class II preparation uniform tapered walls, smooth pulpal and gingival wall will be achieved for a success rate. Tungsten carbide bur will be used to prepare class II inlay cavity. Initial penetration in occlusal outline with fossa with the edge of the tip of non dentate tapered fissure bur. Drag the bur through the central groove of the occlusal surface. Followed by isthmus, distinct dovetail and flat pulpal floor (Tanner, 1970).

Moreover, based on GV Black's tooth preparation designs proposed for posterior inlay restorations are recommended for cast metal and amalgam, resulting in considerable tooth structure removal, parallel opposing walls, and steep internal line angles. The preparation design for an indirect restoration must satisfy a balance between preserving tooth structure and maximizing the strength of restoration. Removal of marginal ridges, increased depth and width of the inlay cavity, and increased preparation in proximal box formation are main reasons for decreased resistance to fracture (Thompson, Thompson and Swain, 2010).

In India, the prevalence of inlay usage is high. In addition, it has a good and long life span. Preservation of tooth structure is high in this restoration compared to other restorations. Majority of patients were satisfied from

previous studies. Masticatory loads in the posterior area are much higher than those in the anterior area of dentition. Among posterior teeth, maxillary premolars suffer the most from vertical fractures, leading to loss of dental element (Tunac, Celik and Yasa, 2019).

Conservation of healthy tooth structure is an important objective of restorative dentistry. However, from a mechanical point of view, protecting the remaining tooth structure from undesirable occlusal loading should be considered even if removal of additional dental tissue is necessary. Due to their unfavorable anatomical structure, maxillary premolars with extensive MOD cavities have a large risk of fracture if they are restored without obeying the principle of protection. Some have reported that MOD preparations can weaken their abutment teeth by about 59% and concluded that bonded MOD inlay restorations cannot restore the original strength of teeth. Resistance to breakage of restored teeth with inlay or onlay is very complicated. It is not possible to incorporate all variables found in the oral environment into computer simulation (Ausiello *et al.*, 2004).

Previously our team had conducted numerous studies which include in vitro studies (Ramanathan and Solete, 2015; Noor and Others, 2016; Teja, Ramesh and Priya, 2018; Rajendran *et al.*, 2019; Siddique and Jayalakshmi, 2019; Teja and Ramesh, 2019), review (Kumar and Antony, 2018; Nandakumar and Nasim, 2018; Ravinthaar and Jayalakshmi, 2018; Rajakeerthi and Ms, 2019), survey (Manohar and Sharma, 2018; Jose and Subbaiyan, 2020), clinical trial (Ramamoorthi, Nivedhitha and Divyanand, 2015; Hussainy *et al.*, 2018; Janani, Palanivelu and Sandhya, 2020). Now we are focusing on retrospective studies, the aim of the study is to assess the association of age and gender of patients undergoing class II inlay treatment procedure. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

Therefore, present study was conducted with the aim of evaluating the correlation of age and gender distribution of patients, undergoing class II inlay restoration.

MATERIALS AND METHODS

The patient records of the department of Conservative Dentistry and Endodontics, Saveetha Dental College were collected and data was assessed from the time period of June 2019 - April 2020. From the record of 86000 cases, all cases of class II inlay restorations were used for data analysis. Inclusion criteria - Patient undergoing class II inlay restoration. Exclusion criteria - Direct restorations, Root canal treatment etc. Ethical clearance was obtained from the Institute Ethics Committee of Saveetha Dental College. The cross checking of data including digital entry and intra oral photographs was done by an additional reviewer. A total of 40 case sheets were retrieved and cross checked for patients age and gender. The collected data was analysed through SPSS 2.0. Pearson correlation test was used for age and gender distribution for patients undergoing class II inlay restoration and Chi square test was done to evaluate the significance between the variables. The Independent variables are age and sex of the patient whereas dependant variable is patient undergoing class II inlay restorations.

RESULTS AND DISCUSSION

According to graph 1, in age distribution high age range was seen in 34-41 years old (frequency 35.5%) lowest age range for underwent class II inlay restoration is 58-65 years old (frequency 2.5%). The second highest age range for this treatment is known to be 26-33 years old, which is a frequency of 9 patients (22.5%). It is also shown that the frequency of young patients who are 18-25 years old was only 20%.

Gender distribution has also been evaluated in this study. Patients undergoing class II inlay restoration in Saveetha Dental College were predominantly male with increased significant frequency of 67.5% (27 patients out of 40 in total). Whereas, female patients were only 32.5% who had undergone this treatment, as shown in graph 2. A correlation graph (graph 3) shows that the highest age range in patients undergoing class II restorations was 34-41 years old with predominantly male patients in that age range.

Table 1 shows results of the chi test done using SPSS 2.0 software. It showed that correlation of age range and gender distribution is statistically no significant differences was seen in gender and age with a p value of 0.238 which is more than 0.05 ($p > 0.05$)

In present study it has been proven that in Saveetha Dental College, the number of patients making class II inlay restorations are 40 patients in total, within the duration mentioned above. Most common age range was 34-41 years old, which shows gender prevalence as male. The mean age of the overall patient was 36 years. Most

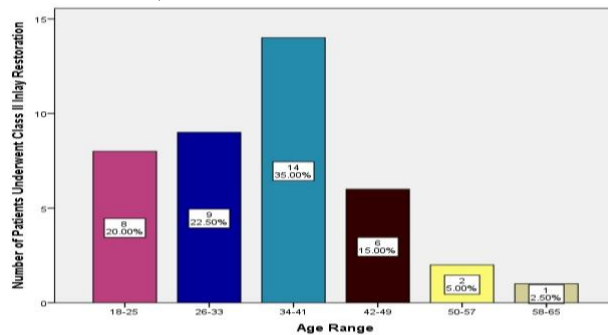
common tooth number which was treated with class II inlay restoration was 26. The chi square test showed p value was less than 0.05 which is not significant in age distribution of patients undergoing this treatment.

No relevant studies was seen correlating present study. However, contradicting study by Yilmaz D(Yilmaz and Gemalmaz, 2003) in 2003 showed their mean age was 25.5 and predominantly female. Another previous study by Erkut et al,(Erkut *et al.*, 2013) in 2010 shows female patients are more than male patients who underwent class II inlay restoration. The consensus of this study was disagreed due to smaller sample size and had limited geographic centre. There is no variant in ethnic group also in this study. Moreover, this study is a unicentric study.

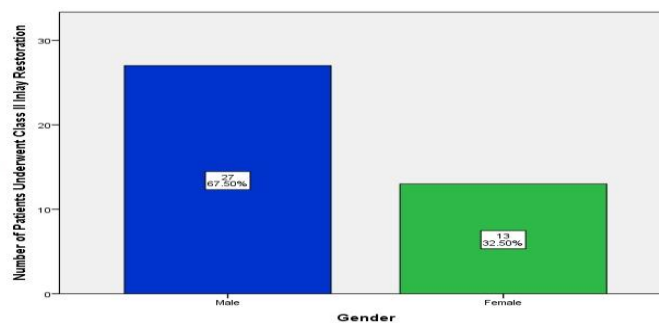
According to Prasad et al,(Prasad *et al.*, 2017) in 2007, class II inlay cases were predominantly with male patients. However, the study was limited to 100 participants and conducted only in Karnataka region. Another similar study, by Asprose(Aspros, 2015) 1996 revealed that predominantly male patients with a median age of 34 years had inlay restorations(class II).The data was collected from only one private dental clinic.

Present study has a limitation of limited sample size with only 40 patients. It is a unicentric study and only single centered which is in Saveetha Dental College. And only one specific ethnic was witnessed in the study sample.

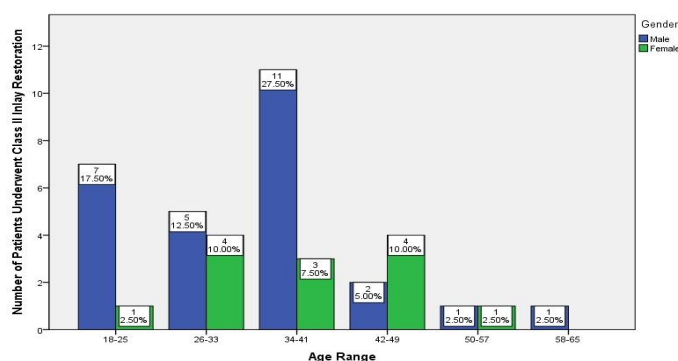
In furthers scope, similar study with larger sample size and multi centered study has to be conducted. To increase the number of cases of class II inlay restoration, the practitioner should improve the ways to treat and convince patients for class II inlay restoration. Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Mathew *et al.*, 2020)



Graph 1: The bar chart depicts the age range distribution of patients who had undergone class II inlay restoration. X axis represents age group and Y axis represents the number of patients underwent class II inlay restoration. The majority of the patients were aged between 34-41years.



Graph 2: The bar chart depicts the gender distribution of patients who had underwent class II inlay restoration. X axis represents the gender and Y axis represents the number of patients who underwent class II inlay restoration procedure. The majority of the patients were males.



Graph 3: Bar chart shows association between age and gender distribution of patients undergoing class II inlay restoration. X axis shows the age range and Y axis shows the number of patients who underwent class II inlay restoration. The highest number of patients who underwent class II inlay restoration was male patients(blue) compared to female patients(green) in between the age range of 34-41. However, the association between gender and age distribution among patients who had undergone class II inlay restoration showed statistically not significant (Pearson Chi Square Test Value= 6.780; df=5; p value=0.238 (>0.05)) - not significant. Implying no association between age and gender of patients

Table 1: shows the Chi Square Test results which shows the p value is more than 0.05 (p>0.05/Not significant)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.780	5	.238
Likelihood Ratio	7.094	5	.214
Linear-by-Linear Association	1.119	1	.290
N of Valid Cases	40		

CONCLUSION

Within the limitation of present study, it is concluded that in Saveetha Dental College, statistically no significant difference was seen in age and gender of the patients undergoing class II inlay restoration. However understanding the principles of tooth preparations and the intricacies of cast restorations will enable the dentist to optimally utilize this excellent option, when the clinical situation demands.

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AUTHORS CONTRIBUTION

Kausalya Krisna Malay contributed to the study design, data collection and preparation of the manuscript

Deepak Selvam contributed to the study design, data collection and preparation of the manuscript

Jayanth Kumar Vadivel contributed to the study design, data collection and preparation of the manuscript

Conflict of interest

This research project is self funded. There is no conflict of interest.

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