

# TYPE OF ADJUNCT THERAPIES PERFORMED IN PATIENTS UNDERGOING TOOTH SUPPORTED FULL MOUTH REHABILITATION TREATMENT: A RETROSPECTIVE STUDY.

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## Abstract

Tooth wear is a multifactorial and variable aspect of dental problems. Successful management of tooth wear is a very important and upcoming topic of the dental field. Full mouth rehabilitation requires a combined orthodontic, prosthodontic and endodontic approach for successful treatment outcome. To evaluate the various types of adjunct therapies performed in patients undergoing tooth supported Full Mouth Rehabilitation treatment (FMR). This study was designed as a retrospective study. A total of 65 patient records who underwent tooth supported full mouth rehabilitation treatment were acquired by analysing records of 86000 patient data treated from June 2019- March 2020. Descriptive statistics were used to analyse the frequency and percentage of different types of adjunct therapies performed. Chi square test was used to find correlation between age and gender with the type of adjunct therapy performed. SPSS version 20 software was used to perform statistics. 30.8% of the cases undergoing tooth supported FMR treatment underwent RCT/ endodontic treatment. 10.8% of the cases underwent Periodontal therapy. 12.3% of the cases required both endodontic and periodontal therapy. 46.2% of the cases did not require any adjunct therapy. Age and gender did not have any significant correlation with the type of adjunct therapy that was performed. Their P values were 0.471 and 0.887 respectively. Within the limitations of the study, it can be concluded that among the adjunct therapies performed in tooth supported FMR cases, endodontic treatment was found to be the most frequently carried out. There was no positive correlation between age and gender with the type of adjunct therapy used.

**Key words-** Endodontic therapy; periodontal therapy; attrition; full mouth rehabilitation; multidisciplinary approach.

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## INTRODUCTION

Gradual occlusal wear of teeth is a normal phenomenon during a patient's lifetime. In the current times FMR has become a very important aspect of the prosthodontic field. There are various problems arising in patients requiring tooth supported FMR treatment. Most of them are endodontic and periodontal complications. Most of the patients requiring both tooth supported FMR mainly show attrition. Management of patients with severely worn out dentition is very difficult. It is necessary to restore the lost vertical dimension in order to avoid TMJ disorders and pulpal exposures due to continuing attrition. A vast number of factors contribute to tooth wear; the exact etiology of wear can never be explained. In multiple cases, the vertical dimension of occlusion is unaltered due to tooth eruption and downward alveolar bone growth. With the growth of the alveolar bone the body compensates for the lost tooth structure to maintain the vertical dimension (Dawson, 2006), (Dahl, Krogstad and Karlsen, 1975).

This will lead to a reverse smile and poor esthetic. Rehabilitation of severely worn out teeth is extremely challenging especially when space for restoration is insufficient. In such situations it is advised to treat the supra erupted and severely worn out teeth with endodontic therapy. Additionally, in order to alter the crown root ratio, it is necessary to undertake crown lengthening (gingivectomy) along with bone contouring procedure in order to achieve enough height

of the abutment tooth. Attrited teeth also develop wedge shaped defects (abfractions) due to increased occlusal loads cervically (Gallien, Kaplan and Owens, 1994), (Grippio, 1992), (Lambert and Lindenmuth, 1994), (Levitch *et al.*, 1994). Increased loads on the teeth due to various parafunctional activities can also lead to gingival and periodontal complications (Persson, 1981). Our team has extensive knowledge and research experience that has translate into high quality publications (Kamisetty *et al.*, 2015; Patturaja and Pradeep, 2016; Felicita, 2017; Jain, 2017; Kumar, 2017) (Neelakantan *et al.*, 2011; Jain, Kumar and Manjula, 2014; Kamisetty *et al.*, 2015; Varghese *et al.*, 2015; Azeem and Sureshbabu, 2018). This study mainly aims at evaluating the different types of adjunct therapies that are performed in a hospital setup for cases undergoing tooth supported FMR treatment.

## MATERIALS AND METHODS

This study was designed as a retrospective study. It was done in a University setup in the southern part of India. Ethical approval was received from the Ethical research committee SIMATS Chennai.

Data extraction was done by reviewing the patient data bases of 8600 cases performed between June 2019- March 2020. Out of these 65 patients had undergone FMR treatment (tooth supported). Among these cases, the cases that underwent adjunct therapies were observed.

Descriptive statistics were carried out to evaluate which adjunct therapy was carried out most commonly. The correlation between age and gender with the type of adjunct therapy performed was carried out using Chi square test. Statistics were carried out using SPSS version 20 software. Independent variables included pre-existing caries, pre-existing gingival conditions, unwilling patients. Dependent variables were tooth wear, supra eruption, reduced crown to root ratio.

## RESULTS AND DISCUSSION

Approximately, 30.8% of the study population had undergone endodontic therapy. 10.8% of the population had undergone periodontal therapy and 12.3 % underwent both endodontic as well as periodontal therapy. The remaining population did not require any kind of adjunct therapies (Table 1, Figure 1). P value obtained while correlating the age and gender with the type of adjunct therapies performed were 0.471 and 0.887 thus making them statistically insignificant (Figure 2 and Figure 3).

Endodontic and periodontal adjunct therapies were mainly carried out in the patients lying in the age groups between 50-70 years. Rarely any adjunct therapies were carried out in the age groups ranging from 15-30 years (Table 4 , Figure 2 ).

The results obtained are in line with the studies done by (Song, Park and Park, 2010) , (Turner and Missirlian, 1984) in 2010. These studies suggested that patients requiring adjunct treatments like endodontic or periodontal therapies mainly lied in the older age groups. With advanced age the progression of attrition will increase finally leading to pulpal pathology and increased requirement for endodontic treatment. This explains the fact that most of the adjunct therapies performed for the patient in this study lied in older age groups (50-70 years).

While correlating the gender with the therapies performed 70 % of the endodontic therapy performed was in male patients. Also, in case of periodontal therapies 57% of them were performed in male patients (Figure 3). This suggests that male patients are more prone to endodontic and periodontal issues. There have been many studies which suggest the relation of gender with the type of adjunct therapies performed (Mindiola *et al.*, 2006), (Scavo *et al.*, 2011). These studies also suggested that males were more prone to endodontic problems as compared to that of the females, additionally the development of caries in male patients was much higher as compared to that of the females. The development of periodontal problems are also related to age and gender of the population. In a study done by Faddy *et al.*, most of the periodontal therapies performed for the patients belonged to the male population especially in the middle age group population (Faddy *et al.*, 2000). The results were in line with the results obtained in the current study.

Limitation of the data is the reduced sample size and the limited amount of data available of patients undergoing tooth supported FMR. This study has a geographical limitation as it is a University based study. Data was collected only for tooth supported FMR cases eliminating the other types of fixed prosthetic treatment data. Only 2 types of adjunct therapy i.e endodontic and periodontal therapy was carried out. There was absence of any kind of orthodontic therapy that could have been done . This may be due to reduced awareness about adult orthodontics among patients and clinicians (Turner and Missirlian, 1984; Mahajan, 2017). It is necessary to carry out extended research on multidisciplinary approaches for treating FMR cases. With the increasing awareness about the importance of

multidisciplinary approach for FMR cases, future prospectus for the adjunct therapies performed while treating FMR cases seems to be positive. 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). We hope this study adds to this rich legacy.

## CHARTS AND FIGURES

Adjunct treatment	Frequency	Percent
Endodontic therapy	20	30.8
Periodontal therapy	7	10.8
None	30	46.1
Both therapies	8	12.3
Total	65	100.0

Table 1: This table shows frequency percentages of the different types of adjunct therapies that have been conducted in patients undergoing tooth supported full mouth rehabilitation treatment. Approximately 46.1 % of the population did not undergo any kind of adjunct therapy. 13.8% of the population underwent endodontic therapy. 10.8% of the population underwent periodontal therapy. 12.3% of the population underwent both endodontic as well as periodontal therapy. This signifies that among all the adjunct therapies performed for the patient endodontic therapy was most commonly executed.

age range	adjunct therapy				Total
	endodontic treatment	periodontal treatment	none	endo and perio treatment	
11-20	0.0%	0.0%	3.3%	0.0%	1.5%
21-30	15.0%	28.6%	30.0%	0.0%	21.5%
31-40	0.0%	0.0%	3.3%	0.0%	1.5%
41-50	10.0%	0.0%	16.7%	37.5%	15.4%
51-60	40.0%	57.1%	30.0%	25.0%	35.4%
61-70	25.0%	14.3%	13.3%	37.5%	20.0%
71-80	10.0%	0.0%	3.3%	0.0%	4.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4: This table shows the different types of adjunct therapies performed for patients lying in different age groups. It was observed that a maximum number of adjunct therapies were performed for patients lying in the age groups ranging from 51-70 years. This signifies that patients lying in the older age groups were more prone to undergo endodontic or periodontal therapies as compared to younger individuals.

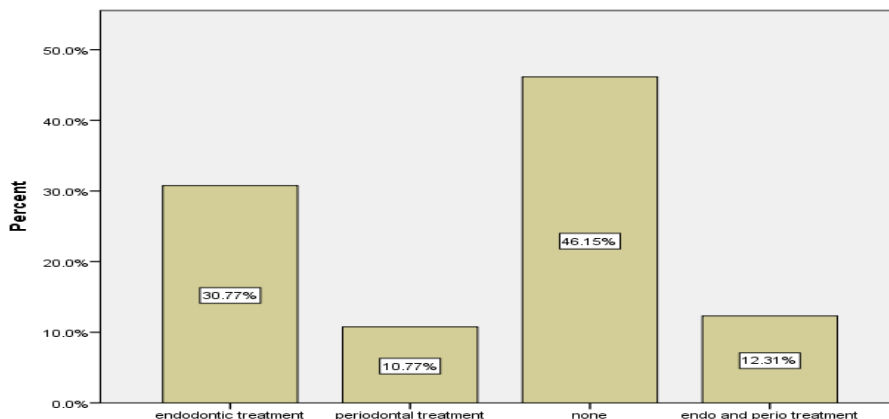


Figure 1: This bar chart shows the frequency percentage of the various adjunct therapies performed in the patients undergoing tooth supported full mouth rehabilitation treatment. The X-axis represents the various adjunct treatments performed and the y axis shows the percentage of occurrence. 46.15% of the population did not undergo any kind of therapies. 30.77% of the population underwent endodontic therapy and 10.77% of the population underwent periodontal therapy. Approximately 12.31% of the population underwent both endodontic as well as periodontal therapy.

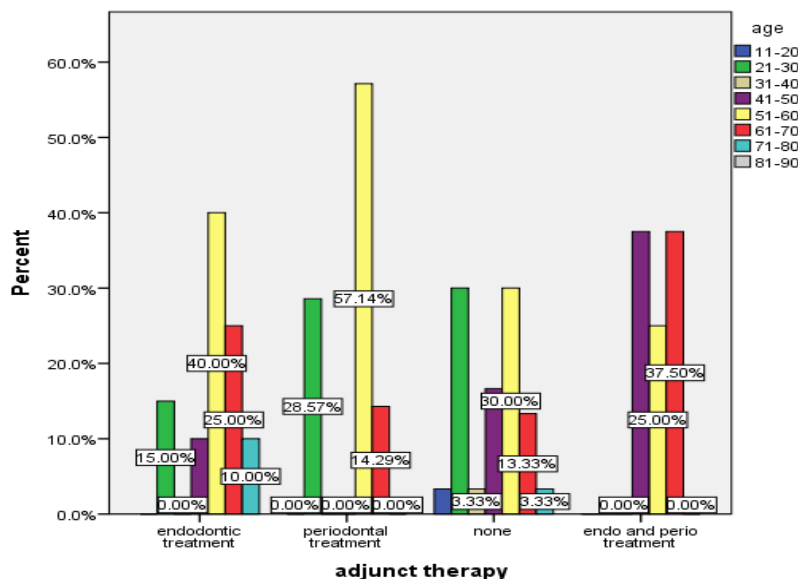


Figure 2: This bar chart shows the association between the different types of adjunct therapies performed with various age groups. The bars in blue signify age groups between 11 to 20 years, green colour signifies the age groups between 21 to 30 years, beige colour signifies the age group between 31 to 40 years, purple colour signifies the age group from 41 to 50 years, yellow colour signifies the age group from 51 to 60 years and red colour signifies the age group from 61 to 70 years, blue colours signifies the age group from 71-80 years. The x-axis represents the various treatments performed according to different age groups and the y axis represents the frequency percentage of the therapies performed. Most of the therapies were performed in the age group between 51 to 60 years. Approximately 57.14% of the therapies performed in the age group of 51 to 70 years were periodontal treatments whereas 40% of the therapies formed between the age group of 51 to 70 years were endodontic treatments. Both endodontic and periodontal treatments were mainly performed in patients lying in the older age groups that are from 40 to 70 years. The

association between age and the type of adjunct therapy performed was not statistically significant.(Chi square association value - 0.627)

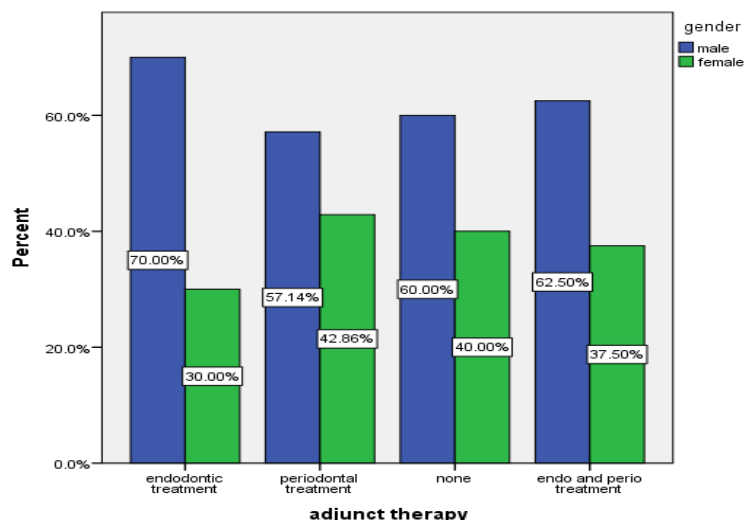


Figure 3: This figure shows association of different types of adjunct therapies performed with the patients of different genders. The x-axis signifies the type of adjunct therapy performed in the different genders whereas the y axis depicts the frequency percentage of the therapies performed. The blue coloured bars signify male population and the green colour bars signify female population. Around 70% of the patients undergoing endodontic treatments were males. 57.14% of the cases undergoing periodontal therapies were males. 62.5% of the patients undergoing both endodontic and periodontal treatments were males. This signifies that males had undergone more numbers of adjunct therapies as compared to females. The association between gender and the type of adjunct therapy performed was not statistically significant. (Chi square association value - 0.887)

## CONCLUSION

Within the limitations of the study, it can be concluded that among the different types of adjunct therapies performed for tooth supported FMR cases, endodontic therapy was performed most often followed by periodontal therapy. Very few cases required both the therapies. Patients of older age groups were mainly prone to undergo adjunctive therapy especially in the male population. There was no significant correlation between the age and the gender of the patient with the type of adjunct therapy performed for them.

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