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DENTAL PROSTHESIS POST ORTHODONTIC TREATMENT - A RETROSPECTIVE STUDY

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ABSTRACT:

With adults now comprising one-half of the orthodontic patients, now challenges are being presented to orthodontists. Mutilated dentition presents various challenges for treatment and requires a multi-disciplinary approach for treatment. This investigation aimed to calculate the prevalence of patients needing dental prosthesis post-orthodontic treatment in the south Indian population.Data for 665 case records were collected. The treatment plan for these cases was studied. A note of cases was made where the treatment plan mentioned the need for dental prosthesis post-treatment. The records were reviewed in detail and their treatment plan was evaluated. 31 cases were identified. The reason for tooth loss was recorded. The attending postgraduate for each case was interviewed. The collected data was reviewed by the second investigator. The data were tabulated into an excel spreadsheet. Pie charts were prepared and the prevalence was calculated. The investigation identified the prevalence to be 4.73%. Tooth loss is a major cause of tooth loss followed by periodontal disease. There was a small percentage of cases where tooth loss was a result of failed orthodontic treatment.In some cases, orthodontic treatment can utilize existing space and tooth material to close edentulous spaces. At times anatomic and other factors limit this approach. Thus at the end, the orthodontist's role reverts to aligning the existing tooth material and preparing the occlusion to receive the prosthesis.

INTRODUCTION

With adults now comprising one-half of the orthodontic patients, now challenges are being presented to orthodontists[1]. Adults primarily seek orthodontic treatment to improve smile aesthetics and characteristics [2]. Not only adults but the perception of aesthetics is also catching up among children and adolescents. Mutilated occlusion is a primary difficulty faced in most cases[3,4]. Tooth loss could be due to various reasons. This results in a multidisciplinary approach to plan the appropriate treatment for such cases[5,6]. The approach and coordination of the different specialties must be coordinated from the beginning. The formulation of a treatment plan must be undertaken with care and concern for the holistic well being of the patient and consideration to address the functional benefits for the patient. The type of prosthesis to be delivered post-treatment should also be considered from the beginning and the treatment approach should be built around this so as to preserve anatomical structures required for the success of prosthetic rehabilitation but also stability of orthodontic treatment. This investigation aimed to identify the prevalence of cases requiring dental prosthesis post orthodontic treatment in the south Indian population.

MATERIALS AND METHODS

The study was conducted with data acquired from a single center. The cases were those who sought treatment from the Department of Orthodontics, Saveetha Dental College and Hospital in Chennai, India. The cases that were considered were those being treated by the Postgraduates in the 3-year orthodontic Postgraduate program in the Department of Orthodontics. Data of 665 cases was sought.These patients had started undergoing treatment in the center from August 2019 March 2020. The data was studied and reviewed by the primary investigator(MTM). 31 cases were identified wherein the dental prosthesis requirement at the end of treatment was mentioned in the treatment plan. These cases were further reviewed and A note was made. The reason for tooth loss was collected. The attending postgraduate was interviewed in all these cases. The data collected was reviewed and evaluated by the second investigator(MNK). The data were tabulated into a Microsoft Excel spreadsheet (Microsoft Office Home and Student 2013; Microsoft Corporation, Redmond, Washington, USA). Pie charts were prepared and the prevalence data was calculated.

RESULTS AND DISCUSSION

The calculations made from the collected data show a prevalence of 4.73% for cases that require dental prosthesis post-orthodontic treatment(Fig 1). The major cause of tooth loss was tooth decay with a prevalence of 2.71%. This was followed by periodontal disease with a prevalence of 0.75%. Other causes include unfavorable impaction with a prevalence of 0.45%, congenitally missing permanent teeth and accidents/trauma both with a prevalence of 0.3%. The cause of tooth loss with the least prevalence is failed orthodontic treatment or retreatment cases with a prevalence of 0.15%. In the sample, 18 males (58.06%) required prosthesis post-orthodontic treatment and 13 females (41.94%) required prosthesis post-orthodontic treatment .

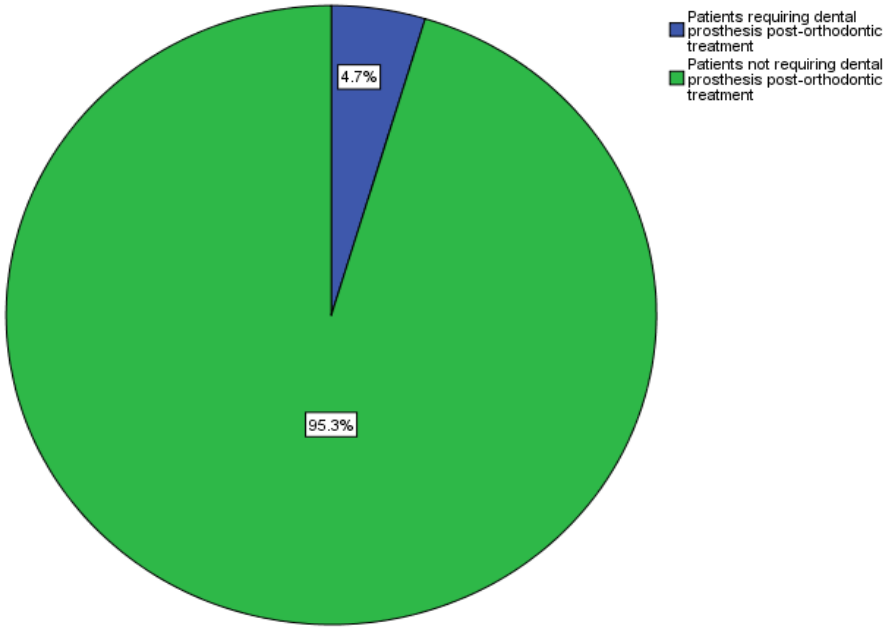

Figure1: Pie chart showing percentage distribution of patients requiring dental prosthesis post-orthodontic treatment. 4.7% of patients require dental prosthesis following orthodontic treatment(Blue) whereas remaining 95.3% patients did not require prosthesis post-orthodontic treatment(Green).

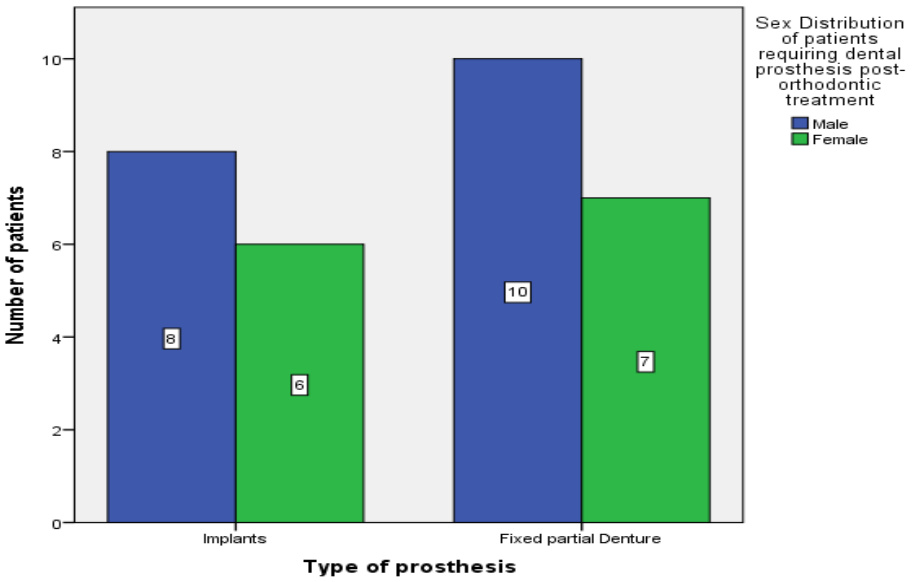

FiGURE 2. Bar-chart depicting the association between gender and type of dental prosthesis post-orthodontic treatment. X-axis represents the gender and Y-axis represents the number of patients with dental prosthesis post orthodontic treatment. Association between gender and type of dental prosthesis post-orthodontic treatment was done using Chi-Square test and was not significant. Implants were commonly used dental prosthesis following orthodontic treatment in males and Fixed partial denture was commonly used

dental prosthesis in females. Pearson chi-square p value = 0.925(>0.05) statistically not significant.

The prevalence of tooth loss, especially in adults, has been on the decline for some time since the 1970s [5,7–11]. Significant strides in preventive measures such as community water fluoridation, increased awareness of oral hygiene measures and increased self-focus on aesthetics have led to these marked achievements [12-14]. In most cases, orthodontic tooth movement can be utilized to change the position of teeth to close edentulous spaces [15-17]. In cases referred by prosthodontists, orthodontic tooth movement is utilized to align teeth to best enable them to receive the prosthesis [6,18,19]. In some cases due to prior tooth due to anatomic and biomechanical constraints limit the orthodontist's ability to solely depend on orthodontic and utilize existing tooth material to close edentulous spaces [20,21]. In such cases, the orthodontist has to utilize a multidisciplinary approach to treat the patient [22–25]. The Orthodontist must plan and discuss with his/her contemporaries on positioning teeth and adequate space and replacement[26]. The outcome of every orthodontic treatment is to improve the patient's occlusion and smile esthetics[27,3,28]. In some cases, the best approach is to resort to prosthetic replacement to satisfy both patient's expectations, increase stability, and improve function. The factors for tooth were identified to be tooth decay, periodontal disease, unfavorable impaction, congenitally missing permanent teeth, trauma, and finally, failed orthodontic treatment or retreatment cases [14,15,29,30].

CONCLUSION

For treating a case with missingteeth, careful consideration of factors such as esthetics, functional stability, and final occlusion have to be made while formulating a treatment plan [14,31]. There was 4.7% prevalence among the study population who required dental prosthetic replacement post-orthodontic treatment, so a multidisciplinary planning approach will ensure better outcomes and improve the prognosis[30].

CONFLICT OF INTEREST

The authors would like to inform you that there is no conflict of interest for this investigation.

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