

Content available at: <https://www.ipinnovative.com/open-access-journals>

IP Annals of Prosthodontics and Restorative Dentistry

Journal homepage: <https://www.aprd.in/>

Case Report

Aesthetic rehabilitation of severely proclined maxillary and mandibular anterior teeth with spacing using metal free restoration - A simple and structured case report

Remin Sarah George^{1*}, Nandha Kumar¹, Akshaya Das¹

¹Dept. of Prosthodontics, MES Dental College, Perintalmanna, Kerala, India



ARTICLE INFO

Article history:

Received 26-10-2023

Accepted 09-11-2023

Available online 04-12-2023

Keywords:

Aesthetics

Proclination

Alveoloplasty

Rehabilitation

Zirconia

ABSTRACT

Aim: This case report illustrates the simple and structured management of excessive maxillary and mandibular anterior proclination along with spacing.

Background: Excessive anterior proclination can be managed by simple alveoloplasty and prosthetic rehabilitation instead of sophisticated and technique-sensitive treatment procedures.

Case Description : This is a case report of a 40-year-old female patient with excessive anterior proclination with spacing. The periodontal condition was also poor. In such circumstances, the complicated surgical procedure was the option but still, the problem can't be tackled. Therefore, the only no-sweat procedures were extraction and Dean's alveoloplasty, which was carried out to remove the maxillary and mandibular excess followed by prosthetic rehabilitation with metal-free restoration.

Conclusion: Metal-free restorations are the best option for situations where the aesthetic concern is very high and also Dean's alveoloplasty procedure enhanced the positive outcome of the treatment.

Clinical Significance: Anterior proclination is the most common aesthetic concern and the situation becomes more complicated if the periodontal condition is poor. This case report elucidates how to deal with such difficult situations in simple treatment procedures.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

The most appealing facial expression is a smile, and the teeth are most noticeable element of a smile hence, anterior teeth play a key role. Whereas the modern world is so demanding in terms of aesthetics, and reconstruction of anterior teeth is a significant challenge. Proclined anterior teeth with spacing is a common problem that should be handled with caution without compromising esthetics. Some of the most efficient treatment modalities used by professionals are orthodontic therapy and orthognathic surgery. We must seek alternative treatment options when a patient refuses to undergo such time-consuming procedures

and demands instant results or when the periodontal condition restricts orthodontic treatment plans. There are several circumstances in which removal of the anterior teeth is the sole choice, followed by prosthetic rehabilitation. In these situations, the therapeutic strategy should be straightforward and persuasive.¹

The fixed dental prosthesis is an area of prosthodontics that merely focuses on aesthetics, function, and most importantly patient acceptance and comfort. Each and every aspect must be scrupulously attended to achieve foreseeable success in this technically challenging and demanding field. To accomplish the goal, proper diagnosis, evaluation, and treatment planning are critical, but the most important factor to consider before deciding on a treatment plan is

* Corresponding author.

E-mail address: sarah27692@gmail.com (R. S. George).

the patient's desires. Hence it is the responsibility of the clinician to prepare a treatment plan which would fulfil the patient's expectations without compromising the function.²

This basically presents a case report that deals with the management of proclined maxillary and mandibular anterior teeth with spacing.

2. Case Report

A 40-year-old female patient came to the department of prosthodontics with a chief complaint of unesthetic appearance. The patient does not have any medical history. Patient was having history of mouth breathing in childhood days. Extraoral examination showed incompetent lips and a convex profile (Figure 1). Intraoral examination revealed proclined maxillary and mandibular anterior teeth with spacing. The patient was advised to take radiographs for further evaluation (Figure 1). Radiographic evaluation revealed bone loss on the anterior segment especially the 11,12,21,22 teeth region (Figure 1). Orthodontic treatment was denied due to poor periodontic condition.

Before finalizing the treatment plan, a diagnostic impression was made with alginate impression material and the cast was poured using type III dental stone for case discussion. After the case discussion two treatment plans were opted.

First: Orthognathic surgery followed by prosthetic rehabilitation

Second: Extraction of maxillary and mandibular anterior teeth followed by alveoplasty and then prosthetic rehabilitation.

The patient was recalled for the second appointment for the discussion of the treatment plan. The treatment plans were explained to the patient. The patient opted for the second treatment plan because she desires faster results. Hence, we finalized the second treatment plan with the patient's approval.

On the next appointment alveoplasty procedure was performed hence prior to that mock surgery was carried out for better visualization of the final result (Figure 2). Dean's alveoplasty was the procedure that was performed to reduce the excessive prominence of alveolar bone and the bony prominence was reduced according to the stent which was fabricated during the mock surgery. Alveoplasty was planned under general anaesthesia and an immediate denture was given till healing (Figure 2).

After four weeks the patient was recalled for the evaluation of healing and was found satisfactory. On the subsequent appointment, tooth preparation was done and provisional restoration was given. The final zirconia prosthesis was fabricated once the patient was completely satisfied with the appearance of the temporary restoration. Final cementation was done on the next appointment (Figure 3). When the patient was recalled for review after six months, the patient was completely pleased with the

appearance. Later follow-ups were carried out and the patient was very happy with the profile change.



Figure 1: Extraoral view and radiographic examination

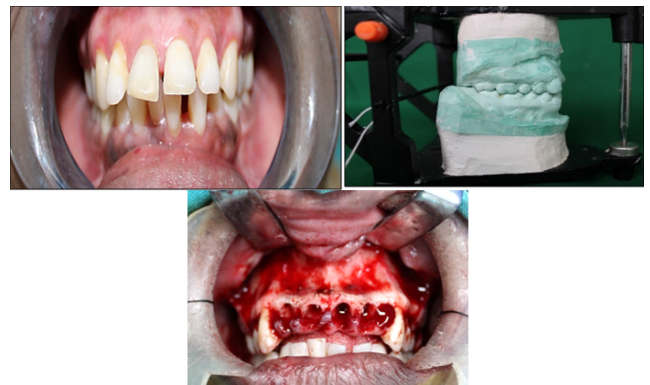


Figure 2: Intraoral view, Mock surgery, Deans alveoplasty



Figure 3: Permanent cementation

3. Discussion

Anterior proclination is frequently associated with spacing, which generates an unattractive appearance that not only detracts from one's beauty but also has a detrimental effect on one's sense of self-confidence. Such individuals will always make an effort to avoid social occasions. These

insecurities compel people to seek professional dental care. The first alternative is always orthodontic treatment, but it takes longer and may not produce the desired outcomes in terms of appearance, as in the case of extreme proclination.

In this present case, it is not possible for orthodontic treatment because of increased proclination of upper and lower anterior teeth with excess labial alveolar bone. Radiographic examination also reveals the poor periodontal condition. “The success of this treatment depends on the aesthetic integration between soft and hard tissues”. Various treatment options were discussed with the patient but she was very much concerned about her age hence she demands a quick solution. So, finally we planned extraction of 11,12,21,22,31,31,41,42 followed by alveoloplasty and then prosthetic rehabilitation. To achieve better results, we chose Dean’s alveoloplasty because the patient had an excess protrusion of alveolar bone.

Dean, in 1936, performed alveoloplasty by removing interseptal bone and collapsing buccal cortical plate which helps in the reduction of prominent alveolar bone without compromising the alveolar bone height.³ This procedure helped in the reduction of alveolar excess on the anterior region and faster recovery of the patient. Only after proper healing the prosthetic rehabilitation procedures were carried out.

Newer generations are more beauty conscious, economically independent, and more demanding, especially about their appearance.⁴ In this present case, as the patient was concerned about her aesthetics, hence instead of metal-ceramic restorations patient opted for zirconia crowns for replacing anterior teeth. Zirconia crowns, often known as “ceramic steel,” have been used in dentistry for over a decade and provide “tooth-like aesthetics and its strength is close to available metal crowns.”⁵ Compared to the traditional porcelain fused to metal restorations, zirconia restorations have better aesthetics, due to their excellent optical properties and the absence of the black line, caused by metal in the cervical line of the traditional restorations.⁶ Zirconia as a restorative material is well-placed to satisfy aesthetic requirements and to fulfil functional requirements.⁷ Zirconia crowns are thermostable, with low heat conductivity, low thermal expansion, and stable chemical resistance. This is a very biocompatible material that can withstand cyclic loads.⁸ Unlike composite crowns, zirconia has a highly polished surface that prevents discoloration and plaque collection. It is suitable for aesthetically challenging clinical instances, especially for replacing anterior teeth. Zirconia-based restorations can handle a wide range of clinical conditions due to the excellent blend of strength, accuracy, and translucency.⁹

Zirconia is the best option for rehabilitating maxillary and mandibular anterior teeth. With regard to the functional aspect fixed prosthesis with zirconia substructure have survival rates similar to the metal infrastructure

and therefore an excellent substitute.¹⁰ However this is contraindicated if the patient is having bruxism or inadequate space for occlusal corrections. In this present case, the patient was not a bruxer and was having adequate space for anterior rehabilitation hence zirconia was the best option. Tooth preparations were done on 13,14,23,24,33,34,43,44. Impression was made using alginate impression material and provisional restoration was given. The provisional restoration was modified to meet the patient’s preferences. When finally, when the patient was satisfied with her provisional restoration, final impressions were made with putty light body impression material for the fabrication of a definite prosthesis. Final cementation was done. The patient was extremely happy with her appearance. During her recall appointments, the patient was completely satisfied with the treatment.

4. Conclusion

For a prosthodontist, aesthetic rehabilitation is a very challenging endeavour. In the realm of dentistry, metal-free restorations are a boon because they improve the patient’s overall appearance. Selection of felicitous material and surgical procedure like zirconia and alveoloplasty respectively created an astounding result.

5. Clinical Significance

The real success is managing difficult situations with simple procedures which can give greater patient satisfaction and positive outcome. Dean’s alveoloplasty is an uncomplicated surgical procedure that assisted the management of anterior proclination without perplexed surgeries. The metal-free restoration is in great demand as it provides a natural-looking smile and also, they work well with the human body. A combination of logical thinking and simple procedure can create miracles in aesthetic treatments.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Mabrouk-Aguir Y, Labded A. Management of Severely Protruded Anterior Teeth with Fixed Partial Denture: A Case Report. *Smile Dent J.* 2017;12(1):14–7.
2. Rosenstiel SF, Land MF, Fujimoto J. Walter. In: Contemporary Fixed Prosthodontics. 5th edn. Elsevier, St. Louis, Missouri; 2016.
3. Dean OT. Surgery for the denture patient. *J Am Dent Assoc.* 1936;23(11):2124–8.
4. Lloyd PM. Fixed prosthodontics and esthetic considerations for the older adult. *J Prosthet Dent.* 1994;72(5):525–31.
5. Daou EE. The zirconia ceramic: strengths and weaknesses. *Open Dent J.* 2014;8:33–42. doi:10.2174/1874210601408010033.

6. Nistor L, Grădinaru M, Rică R, Mărășescu P, Stan M, Manolea H, et al. Zirconia Use in Dentistry - Manufacturing and Properties. *Curr Health Sci J*. 2019;45(1):28–35.
7. Ashima G, Sarabjot KB, Gauba K, Mittal HC. Zirconia Crowns for Rehabilitation of Decayed Primary Incisors: An Esthetic Alternative. *J Clin Pediatr Dent*. 2014;39(1):18–22. doi:10.17796/jcpd.39.1.t6725r5566u4330g.
8. Al-Amleh B, Lyons K, Swain M. Clinical trials in zirconia: a systematic review. *J Oral Rehabil*. 2010;37(8):641–52.
9. Chang YY. Maximizing esthetic results on zirconia-based restorations. *Gen Dent*. 2011;59(6):440–5.
10. Soleimani F, Jalali H, Mostafavi AS, Zeighami S, Memarian M. Retention and Clinical Performance of Zirconia Crowns: A Comprehensive Review. *Int J Dent*. 2020;p. 8846534. doi:10.1155/2020/8846534.

Author biography

Remin Sarah George, Resident

Nandha Kumar, HOD and Professor

Akshaya Das, Resident

Cite this article: George RS, Kumar N, Das A. Aesthetic rehabilitation of severely proclined maxillary and mandibular anterior teeth with spacing using metal free restoration - A simple and structured case report. *IP Ann Prosthodont Restor Dent* 2023;9(4):244-247.