

# Improving the Quality of Life of a Partially Edentulous Patient: A Case Report

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## Abstract

Prolonged edentulism affects an individual's life by creating disharmony with aesthetics and masticatory function. Prosthetic rehabilitation is a contributory factor for improving the nutrition which thereby helps to maintain the general health of an individual. A 55-year-old lady patient presented with the chief complaint of several missing teeth and discolored anterior teeth. She demanded that the teeth to be replaced should not be removable. Improvement of the masticatory function and esthetics were achieved with multiple treatment modalities like dental implant treatment and fixed dental prosthesis. Regardless of the number of treatment options available in prosthetic dentistry, a successful dental restoration demands thorough treatment planning, including the patient's chief desires about the prosthesis, and a systematic stepwise approach. This case report showcases a multistage maxillary arch rehabilitation which in turn improves the life quality of the patient.

**Keywords:** Dental Implants, Maxillary arch reconstruction, Quality of life.

## INTRODUCTION

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.<sup>1</sup> The three dimensions affecting the quality of life is the political well-being, social well-being and maintenance of health of the individual.<sup>2</sup> If any one of the factor is mildly or grossly affected, he/she may have to compromise the normal pattern of living some or the other way which may affect the psychological well-being of the person. Understanding the patient's true concerns, chief desires, attitude towards the treatment and accepting their viewpoints might help to achieve the goal of a successful prosthetic rehabilitation to the ultimate restoration of the quality of life for the beneficiary. Congenital malformations, discolorations and disproportions can lead to unaesthetic appearance of an anterior teeth, whereas caries, periodontal incompetencies, or any episodes of recurrent infections may lead to the state of complete or partial edentulism. Compromise in the health of periodontium ultimately leads to tooth loss affecting the patient's esthetics which may have an effect on the confidence level leading to limited social interactions. The most important part of losing tooth being incompatible with the masticatory function leading the patient to a state of nutritional deficiency.

Teeth are of utmost importance not only for aesthetics, phonetics and masticatory function, but also contributes immensely to the psychological well-being of the individual. In this flourishing era of prosthetic dentistry, there exist numerous treatment options, techniques and promising dental materials for a successful dental restoration. This case report depicts how the esthetics along with the func-

tional integrity was restored to bring back the lost quality of life where multiple treatment modalities were incorporated for creating a successful restoration.

## CASE REPORT

A 55 year old partially edentulous Arab lady came to the Department of Prosthodontics with a chief complaint of missing 13,16,26,36,37,45,46 and 47. She was also presented with discolored 11,12,21 and 22. She also had endodontically treated 14,15,17,21,24,25 and 44 where fixed dental rehabilitation was not carried out as seen in figure number 1 and 2.

A thorough case history was done where it was elicited that the patient was edentulous for the past 7 years, had no relevant medical history or habit related history including the existence of any parafunctional habits. Careful clinical examination was carried out and the periodontal health of existing tooth were found to be satisfactory and there was no carious tooth too. The diagnostic impressions of both maxillary and mandibular arches were made in irreversible hydrocolloid material and study models were made. Record bases were fabricated and the maxillomandibular relations were recorded. Maxillary casts were orientated with the help of facebow transfer. The casts were then articulated for diagnostic purposes to evaluate the functional outcome. Radiographic evaluations were done with panoramic radiographs and cone beam computed tomographies (CBCT). From the CBCT, it was analyzed that the patient had varying bone densities where it was difficult to carry out implant procedures for 27,37 and 46 regions.

Various treatment options like removable den-



Figure 1  
Preoperative intraoral view-Maxillary arch



Figure 2  
Preoperative intraoral view-Mandibular arch

tal prosthesis, restoration with fixed dental prosthesis were explained to the patient and patient wished to continue with a fixed restoration which is aesthetically appealing. Preoperative routine blood examinations were done for the patient and found to be satisfactory. Informed consent was taken from the patient. All the universal sterilization protocols were followed and implant placements were planned. Implant surgeries were done on 13 and 45 regions together followed by 26 and 36 regions on the next day. Under local anesthesia, vertical releasing incisions were placed on 13, 45, 26 and 36 regions. Full thickness

periosteal flaps were elevated. Implants of size 3.5mm x 11.5mm, 3mm x 10mm, 4.2mm x 6.25mm and 3 x 11.5mm implants were placed respectively as seen in figure numbers 3,4,5,6 respectively. Simple interrupted sutures were placed and the patient was prescribed with antibiotics, analgesics and mouth rinse. After a week, patient was reviewed and sutures were removed. Since the bone density was found to be D4 in the posterior maxilla and D3 in the posterior mandible, delayed loading was preferred. After a healing period of four months, orthopantomograph was made to confirm the osseointegration as



Figure 3: Implant placed on 13



Figure 4: Implant placed on 26



Figure 5: Implant placement on 35



Figure 6: Implant placements on 46

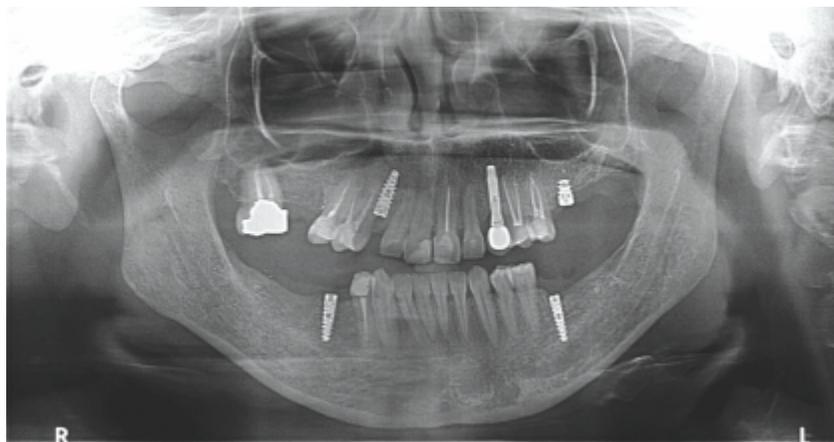


Figure 7 : Orthopantomograph after four months

seen in figure number 7. Second stage surgery was done and corresponding gingival formers were placed as seen in figure numbers 10 and 11. After a healing period of three weeks, patient was reviewed. Implant stability was checked with Ostell ISQ device and it was found to be more than 60 ISQ and hence loading was planned. At this stage, patient wished to continue with the aesthetic correction of maxillary anteriors with discoloration.

Intentional endodontics were carried out for 11,12 and 22. Tooth preparations were done in relation to 11, 12, 14, 15, 17, 21, 22, 24, 25, 44 as seen in figure numbers 12 and 13. The impression of the prepared teeth and the implant were done with the open tray impression technique. (Fig no:14) Temporization was done with CAD/CAM provisional crowns as seen in figures 15 and 16. Final individual Zirconia crowns were cemented to



**Intraoral view after 4 months**

Figure 8: Maxillary arch



Figure 9: Mandibular arch



**Second stage surgery**

Figure 10: Maxillary arch



Figure 11: Mandibular arch



**Crown preparations done and Impression copings placed for:**

Figure12: Maxillary arch



Figure 13: Mandibular arch

11,12,14,21,22,24,25,44. Screw retained implant crowns were fixed to 13,26,35 and 45. Fixed dental prosthesis was cemented in the 15,16, 17 region as seen in figure number 17. Resin modified glass ionomer cement was used for cementation purposes and occlusion was verified. Review was done at regular intervals.

## DISCUSSION

Restoration of the form, function, contour, comfort and aesthetics are the prime concern of prosthetic dentistry along with the maintenance of a healthy stomatognathic system. This task becomes tedious as a greater number of tooth loss occurs.<sup>3</sup> The span of edentulism is



Figure: 14  
Final Impression made for both arches

Figure:15  
Temporization



Figure 16: Intraoral view of Maxillary arch and Mandibular arch with provisional restoration



Figure 17: Final Prosthesis cemented for maxillary arch and Mandibular arch

also important while considering rehabilitation since the physiologic changes occurring post extraction is many a times challenging for a successful prosthetic rehabilitation. Many treatment modalities are available for restoring edentulism which is case dependent. When multiple treatment modalities are presented to the patient, the definitive treatment plan can be chosen by the patient considering his/her desires too.<sup>4</sup> In the present case, the patient was reluctant for a removable partial denture and preferred a fixed treatment modality. Since it was a Kennedy's Class II modification<sup>2</sup> situation in the maxillary arch and Kennedy's Class I situation in the mandibular arch, the patient had to choose dental implant as the fixed treatment modality. In the left maxillary arch, since the terminal abutment was present and both the abutments required fixed dental restoration post endodontic treatment, the patient preferred a conventional fixed dental prosthesis. Implant restoration on 27,37 and 46 regions were not planned due to inadequate bone quantity and quality. This is in accordance with Misch et al.<sup>3</sup> where he explains the poor quality of bone in the posterior mandible and in the posterior most maxilla.

Titanium implants have been used successfully in the dental implantology field due to the formation of surface oxide layer and excellent biocompatibility. This property of titanium proves it as a superior implant biomaterial and led to choose titanium implants as a restorative implant biomaterial.<sup>5</sup>

In the 26 region, the available bone volume was only 9mm since the sinus floor was pneumatized due to prolonged edentulism. Indirect sinus lift was planned for this region, but the patient did not prefer more invasive

procedures and thus the plan was dropped limiting the length of implant to 6.25mm. According to Lee et al.<sup>6</sup> there is no linear relationship between the length of the implant and the success rate. Misch et al.<sup>7</sup> suggests that implant length does not affect the success rate. The length of implant and the relationship between primary stability is a controversial one. Albrekston et al.<sup>8</sup> reports that primary stability is a key factor for successful osseointegration. Georgiopolos et al.<sup>9</sup> indicates a stress reduction in the implant when the length of implant was increased. Taken into account about the relation between primary stability and short implants, the loading was chosen to be a delayed one which was in accordance with the fact that immediate implants failed 2.7 times more than delayed loaded implants.<sup>10</sup>

Narrow platform implants were used in the 46 and 35 regions where the available bone width was less which is in accordance with the study conducted by Woo et al.<sup>11</sup> where he suggests that narrow platform implants with conical connection can be compared to regular platform implants, and can be safely used in cases of narrow ridges where bone augmentation procedures are mandatory for implant placements. Bone augmentation may fail if the grafted bone does not possess potential for optimal osteogenesis.

Volumetric computed tomographies were not done for this case in order to lessen the radiation exposure to the patient. Suttapreyasri et al.<sup>12</sup> suggests that CBCT can be used as a diagnostic aid in determining bone density, even though the use of micro CT is considered to be more accurate.

Since the anterior esthetic correction was not planned in the initial phase of treatment plan-



Figure 18: Preoperative view-Extraoral view

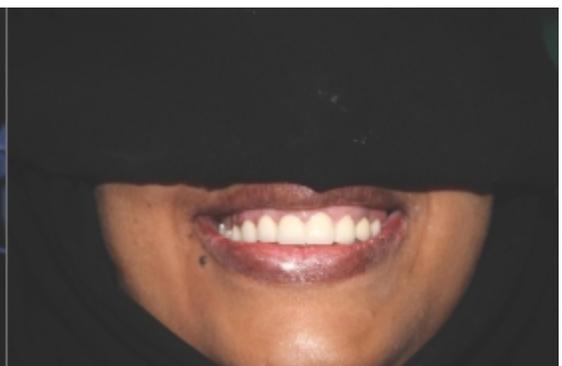


Figure 19: Post-operative view-Extraoral view

ning, diagnostic mockup procedures were not attempted and if were, could have helped in the better understanding of the aesthetic outcome to the patient. Ceramics are considered as aesthetic restorative materials due to the superior color matching with its natural counterpart. Yttria stabilized Zirconia has better mechanical, esthetical and metal like radiopaque properties as described by Nistor et al.<sup>13</sup> In the present case, due to the high aesthetic expectations of the patient, Zirconia was used for the restorative purpose.

## CONCLUSION

Dental implants have been proven as a successful treatment modality for restoring a missing tooth. Fixed dental prosthesis have also been a viable treatment modality for restoration of missing teeth. Final treatment plan has to be chosen depending on the risk vs benefit ratio, patient desires, anatomy of the prosthesis bearing area etc. This case report showcases an interdisciplinary approach for a maxillary arch rehabilitation which helped in restoring the quality of life by improving her esthetics, function and well-being of the patient.

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