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Prosthetic Rehabilitation Of Maxillary Anterior Teeth With Fixed Prosthesis : A Case Report

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Abstract: *This case report involves the process of esthetic restoration in the maxillary anterior region, highlighting the careful planning and precise execution needed to achieve optimal results. Traumatic injuries in the maxillary anterior teeth usually lead to loss of teeth by means of avulsion or extraction due to fracture. Rehabilitation of such case is complex due to the involvement of various anatomical and esthetic challenges. The use of conventional endosseous implants in the maxillary anterior esthetic zone is much popular. This case report with a one-year follow-up period describes the rehabilitation of lost teeth in the maxillary anterior region caused due to trauma following a Road Traffic Accident using conventional implants with immediate loading.*

INTRODUCTION

Rehabilitation of esthetic zone with dental implants is a considerable challenge. Compared to traditional methods of tooth supported bridges, implants offer distinct advantages as they allow for the creation of restorations that closely mimic natural teeth without the destruction of the adjacent natural tooth [1] Management of the edentulous maxillary anterior region following trauma possesses anatomic and esthetic considerations, including the condition of the buccal plate of the bone and the need for immediate prosthesis for esthetic purpose. The importance of the immediate rehabilitation of maxillary anterior region is amplified due to its prominent visibility. With a high lip line, the smile becomes more exposed, demanding for esthetic perfection. Achieving an ideal outcome here not only restores functionality but also significantly enhances the individual's confidence and overall quality of life. [2,3,4,5] Conventional endosseous implants are a two-piece implant placed in the cortical bone through the crestal approach after thorough radiographic analysis. [6]. Apart from conventional implants, basal implant-supported prosthesis are also used in resorbed ridges and complete arch edentulous cases. This case report describes a clinical scenario of the rehabilitation of missing teeth in the maxillary anterior region following trauma caused due to Road Traffic Accident using conventional endosseous implants with immediate temporization and a one-year follow-up.

CASE REPORT A 25-year-old female reported with the chief complaint of missing teeth in her upper front region of the jaw. Her past medical history was of trauma due to a RTA that occurred two months ago. She also gave the history of tooth exfoliation at the time of accident. The patient had no history of deleterious or parafunctional habits. Extraoral examination revealed haematoma under the right eye and collapsed lips. Intraoral examination revealed edentulous maxillary right and left Central Incisors, fractured maxillary left lateral incisor and Grade I mobility with maxillary right and left lateral incisor.

The patient demonstrated overall good periodontal health with slight soft deposits accumulation. Radiographic findings depicted periapical radiolucency with 12 and 22. All the possible treatment options discussed with the patient included rehabilitation using conventional implants, tooth-supported fixed dental prosthesis, basal implant-supported fixed prosthesis and removable prosthesis. All the pros and

cons of the treatment were explained to the patient and it was decided with the patient's consent to proceed with conventional implant-supported fixed dental prosthesis in 11,21 region and root canal treatment in 22,12 followed by fixed prosthesis.Following this, an incision was given in the region and flap was raised which was followed by sequential preparation of osteotomy for placement of implant. Two implants of size 4*10mm were placed in 11 and 21 regions. Abutments were attached to load the temporary prosthesis. This was followed by flaps approximation and closure with sutures. Temporary crowns were cemented with noneugenol cement. Excess cement was removed and the occlusion was checked. Post-operative radiograph revealed ideal positioning of Implants. 16 weeks post-implant placement the patient was recalled for further evaluation. Intraoral Periapical Radiographs were taken to assess the osseointegration status of the Implants. After thorough assessment, temporary crowns were removed and cleaned. Implant level impressions using open tray impression copings was made for definitive prosthesis using Polyvinylsiloxane material. Shade selection was done Implant supported fixed prosthesis were made for 11, 12 and Fixed prosthesis was made for 12 and 22 of Zirconia with Lithium Disilicate layering. Cementation was done using resin modified glass ionomer cement. Occlusion was checked and excess cement was cleaned. Post-cementation and oral hygiene maintenance instructions were given to the patient. The patient expressed satisfaction with both the aesthetic and functional outcomes.

Figure 1: Intra-oral Photograph of the patient depicting missing 11,21 and root canal treatment with 12 and 22.

Figure 2: Immediate post-operative photograph showing implants with attached abutments.

Figure 3: Intra-oral photographs showing immediate provisional restoration in 11,12,21 and 22

Figure 4: Intra-oral photograph showing definitive prosthesis in 11,12,21 and 22

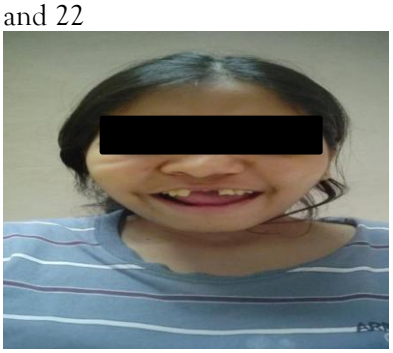

Figure 5: Pre-operative Extra-oral Photograph of the patient showing missing 11,21 and fractured 22.

Figure 6: Post-operative Extra-oral Photograph of the patient depicting final prosthesis with 11,12,21 and 22.

DISCUSSION

This report highlights the importance of meticulous planning and precise execution in achieving a better esthetic outcome in maxillary anterior region. Opting for dental implants in this region offers significant benefits, with fixed implant-supported prosthesis showcasing multiple advantages over conventional crown and bridge or removable tooth-supported options.[7]The use of conventional implant systems results in more esthetically pleasing restorations with a better emergence profile. The single-piece basal implants presents few advantages over conventional implants as they required no bone augmentation, thereby avoiding additional surgical procedure, reducing treatment cost and duration, However, Basal cortical implants are available as single-piece implants with no scope of adjustments. Thus, they eliminate micro-gaps between the abutment and implant. [8,9]Studies have consistently shown high survival rates and patient satisfaction with conventional implants in the esthetic zone. For instance, Askary highlighted the significance of site development and timing of placement in maximizing the esthetic success of anterior implants [1]. Funato et al. proposed a four-dimensional approach to implant placement—considering time, position, volume, and tissue support—for predictable esthetic results [2]. Such protocols emphasize the importance of soft tissue management, proper abutment selection, and provisionalization in achieving harmony between the implant restoration and adjacent natural dentition.Therefore, in esthetically demanding cases, particularly in patients with a high smile line or thin gingival biotype, the use of conventional implant systems supported by digital planning and provisional restorations can provide the ideal blend of esthetics and long-term stability [3,4].

CONCLUSION

The maxillary anterior region is a complex zone. When the rehabilitation of missing teeth is planned, localized trauma and avulsion of the teeth resulting in a thin labial cortical bone add to the complexity. This case of rehabilitation in the maxillary anterior region post trauma was received with great patient acceptance and satisfaction. Achieving desired aesthetics relies on careful prosthetic design especially in the maxillary anterior region.

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