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Case Report

Restoring smile: An integrated prosthodontic approach

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and experiences of the clinicians. This case report describes the prosthetic rehabilitation of 23-year-old male who was under psychological trauma due to his hesitation to smile because of mutilated and unesthetic anterior dentition.

Case report

A 23-year-old male patient had a fall from running train leading to multiple fractures.

He also had associated injuries of oral and maxillofacial region. Once his medical condition was stabilized, he was taken up by oral and maxillofacial surgeon for rigid internal fixation for the fracture of body of mandible right side and later referred to Prosthodontist for further rehabilitation of mutilated dentition (Fig. 1).

There was no gross facial asymmetry and no abnormality was detected in TMJ. Intraorally, patient had Cl I malocclusion with Ellis Cl III fracture in 11, Ellis Cl IV fracture in 21. Both maxillary lateral incisors were peg shaped. Left maxillary lateral incisor was buccally placed and had 3° mobility. Patient had retained deciduous canines in the maxillary arch. There were palatally erupted permanent maxillary canines that were completely out of occlusion. Diastema was present between right lateral and central incisor and left lateral incisor and deciduous canine through which palatally erupted canines were visible giving unesthetic appearance leading to psychological trauma and hesitation to smile (Fig. 2).

Introduction

Mutilated dentition results in functional and esthetic problems which may result in having an adverse psychological effect on the patient. It poses multiple challenges to the prosthodontist for restoration of missing teeth in the anterior esthetic zone. This challenge is underscored when the teeth adjacent to the edentulous area are unrestored and structurally sound deciduous teeth. Treatment of such cases requires integration of diagnostic, therapeutic and restorative prosthodontic procedures for the conservation of teeth thus dictating judicious treatment planning and decision making. There, always, exists an apprehension about success of complex rehabilitative procedures due to varying concepts

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Fig. 1 – Preoperative extra oral view.

Intraoral periapical radiographs were taken to confirm clinical findings along with the orthopantomogram.

Treatment plan was formulated with primary aim to conserve maximum number of teeth and restoration of optimum function and esthetics. In the preliminary phase, the teeth with poor prognosis i.e. maxillary left central and lateral incisor were extracted. This was followed by root canal treatment of right central incisor and complete oral prophylaxis. Extraction of malerupted canines was done on advice of Orthodontist. Radiographic evaluation of the patient was done by orthopantomogram after completion of

Fig. 3 – Radiological imaging after completion of preliminary treatment.

treatment of preliminary phase (Fig. 3). It was followed by rehabilitation phase.

Rehabilitation phase was to be completed in two parts. Ceramo-metal crown on root canal treated right central and lateral incisor and left deciduous canine for diastema closure followed by implant supported fixed restoration for missing maxillary left central and lateral incisor. During phase one of restorative treatment, crown preparation of right central, lateral incisor and left deciduous canine was done. Temporization of the same was done using fixed provisional prostheses extending from right lateral incisor to left deciduous canine. After 3 months post extraction of left central and lateral incisor, radiological investigation along with bone mapping of the site was done and diagnostic impression was made for fabrication of surgical stent. Two single piece one stage immediate loading implants (IHDE Implant company KOS) 4.1×10 mm, 3.7×12 mm were surgically placed in the site (Fig. 4). IOPA radiograph was done to check parallelism of implants. Impressions were made with addition silicone impression material for fabrication of ceramo-metal restoration for right lateral incisor,

Fig. 2 – Preoperative intraoral view.

Fig. 4 – Two single piece one stage implants surgically placed in the site.

Fig. 5 – Postoperative labial view.

central incisor, and over implant abutment in a conventional manner. After 48 h, cementation of the ceramo-metal crown on natural dentition was done and occlusion was assessed followed by crown cementation on implant abutments (Fig. 5). Implant protected occlusion with functional loading was given. Follow up was done after 3 weeks, 3 months and 6 months. Radiographic evaluation done at 3 weeks, 3 months and 6 months showed osseointegrated implants (Fig. 6). Patient was highly satisfied with the treatment and comprehensive rehabilitation resulted in boosting the morale of the individual (Fig. 7).

Discussion

In the present day scenario people are highly conscious of esthetics and the presence of an unesthetic appearance can have a deleterious effect on the psychologic make-up of an individual. Aim of prosthodontic rehabilitation in such cases is to conserve as much tooth structure as possible while restoring esthetics and function. In the present case, left central incisor was extracted because of CI V Ellis fracture. Left

Fig. 6 – Radiological Imaging showing osseointegrated implants at 6 months.

Fig. 7 – Postoperative extra oral view.

lateral incisor had 3° mobility due to trauma and had to be sacrificed. Esthetics was compromised because of peg shaped laterals and existing diastema, which was corrected by modifying shape of tooth by porcelain fused to metal restorations as advocated in several studies.^{1,2} As far as palatally placed permanent canines are concerned, studies have shown it is not always possible to bring them into occlusion and when possible also, it requires a time duration of average one year.³

Considering the replacement of missing anterior teeth, multiple solutions are available namely implant supported prostheses, conventional fixed partial denture and resin bonded fixed partial denture. Problem arises when teeth adjacent to edentulous span are deciduous in nature. The use of primary teeth as abutments has not been widely reported in the dental literature.² Long term prognosis of deciduous teeth as abutment is questionable due to unfavorable crown/root ratio and pericemental area. Most reliable option in such cases is implant supported prostheses. In this case, removable prostheses for replacement of missing teeth were ruled out seeing the age of patient. Moreover it would not address the problem of diastema. Giving fixed dental prostheses using deciduous canine as abutment was also ruled out due to compromised support and doubtful long term prognosis.

According to traditional Branemark protocols, 12 months healing period after tooth extraction before implant placement is recommended followed by subsequent healing period of 3–6 months. Although success rate is very

high with this protocol but there are lot of disadvantages as far as anterior region is concerned. Waiting period is very long which in our case, patient was not willing to wait. Literature has shown that there is substantial bone loss in the maxilla especially that of the labial plate following extraction. There is more than 50% reduction in width in a year and 3–4 mm reduction in height of alveolar ridge is seen. Soft tissue architecture also becomes aesthetically compromised over this period and hence some form of osseous grafting is often required when rehabilitating these defects.⁴ Nonconventional early/recent implant placement was carried out in this case. Immediate implant placement was not carried out as socket in the anterior region is wider labiolingually than mesiodistally, graft is usually required during implant placement.⁵ It has been documented that early placement should be considered as suitable alternative to immediate implant placement.⁶ As far as loading protocols are considered, literature suggests not much of difference in success rates between functional and nonfunctional loading.^{7,8} After a initial healing period of 3 months, immediate loading single stage implants were placed in extraction site followed by prostheses fabrication. Advantages of this technique are as mentioned below:

- a. Shorter treatment time;
- b. Reduced number of surgeries;
- c. Improved esthetics;
- d. Preservation of alveolar process;
- e. Psychological comfort.

Thus the patient described in the clinical report was successfully rehabilitated addressing his chief complaint of un-aesthetic appearance.

Conclusion

An effective and practical approach for esthetic rehabilitation includes integrating the field of implants and conventional

fixed prosthodontics. Successful results are best obtained when a coordinated and integrated team approach to the care of the patient is taken. Careful diagnostic and pre-treatment planning is essential to a positive outcome.

Conflicts of interest

All authors have none to declare.

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