INTRODUCTION

“A smile is an inexpensive way to improve your looks”. A beautiful smile and harmonious facial esthetics are attributes that contribute to the well-being of any patient. Smile esthetics are related to the form, texture, color, and alignment of the anterior teeth as well as to intraoral soft tissues, lips, and facial esthetics. An important objective of an esthetic treatment is that the final result should be as close as possible to the patient's expectations, improving his/her facial esthetics and smile. An individuals facial and dental appearance influences their personality and self confidence to a great extent. Teeth spacing and cleft palate is a common anomaly which is corrected by orthodontic treatment and surgery respectively. Modern society has pushed us to a stage where people prefer immediate treatment results rather than time consuming orthodontic treatment or surgical intervention. This is where maxillofacial prosthesis play a major role in transforming peoples life. Prosthetic correction of teeth spacing using full and partial veneer crowns and artificial closure of cleft palate using an obturator is very common treatment modality that we come across nowadays.

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Teeth spacing is a dental anomaly characterization by interdental spaces and lack of contact point between teeth. There are various dental procedures to enhance smile and comfort the patient compared to the normal surgical intervention.

ABSTRACT

Teeth spacing and cleft palate is a common anomaly which is corrected by orthodontic treatment and surgery respectively. Modern society has pushed us to a stage where people prefer immediate treatment results rather than time consuming orthodontic treatment or surgical intervention. This is where maxillofacial prosthesis play a major role in transforming peoples life. Prosthetic correction of teeth spacing using full and partial veneer crowns and artificial closure of cleft palate using an obturator is very common treatment modality that we come across nowadays.

Case report: A 23 year old female patient reported to Department of Maxillofacial Prosthodontics and Implantology, Kannur Dental College, with a chief complaint of relapse of surgically corrected cleft, upper front teeth spacing and a shift of teeth to the her right side. Here the teeth spacing was corrected using 6 unit splinted PFM crowns and cleft was artificially closed by an obturator. This prosthetic approach of closing teeth spacing is less time consuming than long term orthodontic treatment and the artificial closing of the cleft with obturator is more acceptable and comfortable for the patient compared to the normal surgical intervention.

Case Report

A 23 year old female patient reported to Department of Maxillofacial Prosthodontics and Implantology, Kannur Dental College, with a chief complaint of relapse of surgically corrected cleft, upper front teeth spacing and a shift of teeth to the her right side.

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Past medical history revealed that the patient had undergone surgical correction of cleft lip and Rhinoplasty 5 years back. Past dental history revealed that the patient had undergone surgical treatment for cleft closure 5 years back and followed by orthodontic correction for upper front teeth spacing. Past dental history also revealed that patient had a relapse of cleft palate and failure of orthodontic treatment since past 1 year.

Patient was explained about the reason for her relapse of cleft and spacing. Various treatment modalities were explained to the patient such as:

1. Surgical correction for cleft
2. Orthodontic correction for spacing
3. Prosthodontic treatment

Treatment cost, time and outcome were explained to the patient and it was her choice to go for a prosthodontic correction for her complaints. The patient's diagnostic models were made, studied and keeping in mind her basic concerns an initial treatment plan was suggested. She was given an option of surgical correction of cleft followed by correction of the spacing and midline shift with orthodontic therapy. Prosthodontic correction of midline shift was not possible in this case since there was 5mm of shift to the right side, and was informed the same to the her. She, however, was strictly against surgery and a long-term orthodontic therapy. She desired an alternative approach which could address her complaints within a definitive time frame. Considering the patient's requirements and her time constraints an alternative treatment was planned.

Combining the findings and clinical examination, study of the diagnostic models, photographic analysis, a complete aesthetic evaluation was done and the following observations were noted:

1. Presence of a cleft in the maxillary anterior region (Figure: 1)
2. Deviation of maxillary midline towards the right side (Figure: 2)
3. 12, 13, 22, 23 where found to be missing (Figure: 2, 3, 4)
4. Spacing was found between 11-14, 15-16, 21-24, 25-26 (Figure: 2, 3, 4)

After the aesthetic evaluation, the following treatment goals were set:

1. Fabrication of an obturator for the cleft
2. Correction of spacing using canine to canine all ceramic FPD

The proposed treatment was carried out in two modules:

**Dealing with the cleft**

As per design principles described by Aramany in 1978 for a maxillectomy defect, a linear design for a class-VI defect was selected for this case, in which remaining palatal tissues provided the support and retention was achieved from the embrasure clasp made on the remaining intact dentition.

A sterile gauge which was tied to a floss was inserted into the cleft and an impression was made in a stock tray with alginate irreversible hydrocolloid impression material (Figure: 5). The cast was made of die stone. A C-clasp was placed on second premolar on both the sides for better retention. Curing was done and the obturator was finished and polished (Figure: 6, 7, 8, 9).

**Towards esthetic rehabilitation**

A 6 unit splinted PFM crowns was the proposed treatment. Upper and lower diagnostic impression were made with irreversible hydrocolloid, alginate impression material and poured with type iv die stone. Diagnostic wax up was done over maxillary anterior teeth to get proper idea of the size, form and proportion of the teeth. This was finally presented to the patient and approval was taken.

Intentional RCT was done in relation to 11, 14, 21, 24. Tooth preparation was carried out in right central incisor and first molar and left central incisor and first premolar (Figure: 10). Both the first premolars where designed to prepare in the form of canine by modifying the buccal cusp into the form of a...
canine. A slice preparation was done on the distal aspect of right central incisor and from the mesial side of the left central incisor to obtain a better emergence profile and to get more room for placing the missing lateral and canine on both sides. The corrected smile was then verified with a new set of temporaries. The shade selection was done using both Vita Classical and Vita 3D Master shade guides (Vident). All the above information was then communicated to the laboratory, and the final 6 unit splinted PFM crowns were fabricated (Figure: 11).

The procured restorations were then tried in the patient’s mouth. During the try-in procedure, the marginal fit of the restorations, shade match, incisal display, smile line, and arch form were all evaluated. As the patient was well satisfied with the aesthetic outcome, the restorations were cemented using GIC luting cement (Figure: 12). Six month follow-up of the case shows complete functionality.

**Pre and Post Operative Photographs**

**DISCUSSION**

Absence or loss of some or all of the hard palate or soft palate results in insufficient structure or altered function of the remaining tissues. These defects can cause obstruction of airflow during speech production and also nasal reflux during deglutition. Patients after surgical resection have altered anatomy due to scaring, tissue contracture, lack of bony support and tissue edema. These patients have problem of regurgitation of water and food through nose and difficulty in speech. These changes require the fabrication of an obturator, which help the patient in deglutition and speech. Patients with cleft lip and/or palate require palatal expansion to develop normal speech and fully functional occlusion. In 1978 Dr. Mohammed Aramany classified the postsurgical maxillary defects into 6. This case falls under Aramany’s Class VI defect which is a rare surgical creation. Most often it results from a congenital anomaly or trauma leaving a bilateral defect located anterior to the remaining teeth. However, the expanded palate has a strong tendency to rebound to its original shape due to the patient’s congenital lack of bone and diminished capability of bone regeneration in the cleft site.

In an event of loss of teeth, in anterior esthetic regions of oral cavity for a young patient, conventional fixed partial dentures or implant-supported prosthesis can successfully rehabilitate the defect and restore the patient's lost esthetics and function, simply not having the proper number of healthy teeth, these esthetically challenging cases of spacing and midline shift, the approach of using a traditional removable prosthesis in these situations has always been met with severe compromises. The fixed restoration is a modality of treatment that can solve many of the problems of the removable restoration and at the same time provide better esthetics, comfort to the patient. Despite many recent advances in aesthetic dentistry techniques and materials, certain cases remain difficult to restore. In this case correcting her midline shift was not possible without a surgical correction of cleft and orthodontic treatment.

**CONCLUSION**

The importance of interdisciplinary treatment planning to achieve optimal esthetics and long term predictability should be analysed and evaluated. Replacing tooth with inadequate intra abutment space is challenging for the operator. In this case space management was done by altering the preparation design of the teeth present. As the patient had cleft, it was as important to give a comfortable retentive obturator for the patient to improve her speech and other functional mouth movement. Finally, as aesthetic dentists we need to apply the right balance of prudence and wisdom with knowledge and progress to enhance our patients smile.

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