

Case Report

Smile regeneration by prosthodontic way- a case report

Sunil D¹, Rajesh P², Neha D³

Abstract

The realization of esthetic objectives and functional demands in the reconstruction of severely compromised dentition represents considerable clinical problems. This clinical report represents the prosthetic management of a severe dentofacial deformity with compromised periodontal status. Treatment objectives were based on Aesthetics enhancement, sociopsychological support of the patient, restoration of form function, phonetics and comfort. Following which extraction of upper incisors and alveoloplasty done. An immediate removable partial denture was fabricated, considering aesthetics, phonetics and comfort of the patient followed by replacement of incisors by metal- ceramic fixed partial denture done. **Clinical relevance:** prosthetic management of severely malaligned natural maxillary anterior teeth by fixed partial denture, considering aesthetics and phonetics of the patient. **Treatment objectives:** Aesthetics enhancement, sociopsychological support of the patient, restoration of form function, phonetics and comfort.

Introduction

Mouth is the focal point of many emotional conflicts, the first source of human contact, and a means of alleviating or expressing discomfort, pleasures, or displeasure. Smile is the cynosure of one's attractiveness and personality.¹ People are concerned with their joyful smile, the way they feel about it, and its effect on other persons. A smile, when pleasing and attractive to observers, enriches not only the one who smiles, but those who view it.¹ It is an accepted fact that dentofacial aesthetics and psychological wellbeing is the dual maestro influencing everybody in day to day life. Visible dental characteristics that deviate greatly from the norm may stigmatize, impede career development and the peer group acceptance, have a negative effect on self-concept and encourage negative stereotype.¹ Vertical Maxillary Excess (VME)³, compounded with severe localized periodontitis with extreme proclination of incisors with or without other dentofacial deformity in middle aged patient is a clinical challenge for the orthodontist as well as to oral surgeon in terms of predictable aesthetics and stability. This clinical report documents the prosthetic rehabilitation of a

25-year-old woman, artist by profession having VME with severely proclined incisors.

Case report

A 30 year old female reported to the department of prosthodontics, AME's dental college and hospital with chief complain of severely proclined maxillary incisors and was totally unsatisfied with her appearance and desired for better esthetics. (Fig-I) There was no relevant medical history. Past dental history revealed occasional dental examination and oral prophylaxis. The temporo- mandibular joints, the muscle of facial expression and mastication were asymptomatic. Mandibular range of motion was within normal limits.

Intraoral examination

The patient presented with bilaterally Angle's class I molar relation with severely protruded maxillary incisor produced a large overjet, Grade II to III mobility, deep pocket, pathological migration and spacing between maxillary anterior teeth as well as mandibular anterior teeth with moderate to severe gingivitis on remaining dentition. The occlusion was Group function bilaterally. (Fig-II)

1. Dr Sunil Dhaded MDS, Professor and Head, Department of Prosthodontia. A.M.E's Dental College and Hospital, Raichur, Karnataka
2. Dr Rajesh prajapat MDS, Post Graduate student, Department of prosthodontia. A.M.E's Dental College and Hospital, Raichur, Karnataka
3. Dr Neha Dhaded MDS, Senior Lecturer, Department of Conservative Dentistry. KLE'S VK Institute of Dental Sciences, KLE University, Belgaum, Karnataka.

Corresponds to: Dr. Dhaded. Sunil MDS, Professor and Head of the Department, Department of Prosthodontia, A.M.E's Dental College and Hospital, Raichur, Karnataka. Affiliated to Rajiv Gandhi University of Health science, Karnataka, INDIA. **E-Mail:** sunildhaded2000@gmail.com



Radiographic finding

Panoramic and IOPA x-ray revealed the trabecular bone pattern was generally normal with severe bone loss around maxillary anterior. Root morphology of canines was favorable with crown-to-root ratio of 1:2. Lateral cephalogram revealed anterior dento-alveolar protrusion of jaw more prominent on maxillary central incisor region with class-I molar relation. Based upon clinical findings, articulated cast, radiographic examination,⁴ and considering patient's views objectives of the treatment was

- ◆ Aesthetics enhancement
- ◆ Socio- psychological support to the patient
- ◆ Restoration of function, phonetics and comfort
- ◆ Long term stability of treatment

So prosthetic rehabilitation of the case was decided in two phases as follow:

Phase I

1. Oral hygiene instruction and oral prophylaxis.
2. Mock-up of alveoloplasty on diagnostic cast.
3. Extraction of maxillary incisors and alveoloplasty.
4. Immediate removable partial denture.

Phase II

1. Fixed Prosthodontic restorations using PFM (porcelain fused to metal) full veneer retainer replacing maxillary incisors. After explaining treatment plan, including the risk and benefits of treatment consent was taken.

Treatment sequence

Three sets of study casts were made for records and treatment planning. Face bow transfer was done and casts were mounted on Hanau articulator (WaterPik Technologies Inc USA). The articulated casts were used for initial diagnosis and treatment planning. In the first phase of treatment, patient received oral prophylaxis and oral hygiene instruction. On diagnostic cast maxillary incisors were trimmed and tentative alveoloplasty mock-up with labiolingual

reduction of around 4mm was done. Surgical template cum RPD (Removable Partial Denture) was fabricated in heat cured clear acrylic resin (Lucitone Clear Resin, Dentsply) on the mock up cast for immediate insertion after alveoloplasty. Maxillary incisors were extracted full thickness mucoperiosteal flap was raised and alveoloplasty with labial reduction of 4mm was done under the guidance of surgical template cum-RPD. (Fig-III) The shade of the teeth was selected before extraction for future use. The Surgical template cum-RPD were evaluated for fit and contact with all tissue surface in patient mouth. Primary closure of the surgical site was achieved using nonresorbable 3-0 black silk suture material and the template was inserted immediately. (Fig-IV)



Post-operative instructions and medications prescribed. The patient was also instructed not to remove the denture till the next schedule 48 hours post-operatively. The patient was then instructed to wear the RPD for the next 4-6 weeks to allow complete healing of the site as well as to evaluate esthetic, phonetics and function with the prosthesis. Patient was comfortable from phonetics and functional aspects except the initial temporary phonetics, after that the patient readily adapted to the change made in the anterior teeth. The second phase of treatment procedure was initiated after six- weeks. (Fig-V)





Meanwhile the diagnostic wax-up were designed on the mounted cast to set up incisal guidance in harmony with aesthetics, phonetics and function and to create a template for the fabrication of provisional restoration.⁴ A new incisal edge positions and new length of the incisors were established to provide desired amount of overjet and overbite. Tooth preparations for metal ceramic restorations with sub-gingival finish line of radial-shoulder and chamfer design were done on the selected abutment teeth.⁵ (Fig-V) Gingival displacement was achieved using knitted cord (Ultradent products Inc, Salt Lake City, Utah) soaked in aluminium chloride (Visco Stat, ultradent products Inc, Utah). Definitive impression of the prepared maxillary teeth was obtained using vinyl polysiloxane impression material (Aquasil Putty and XLV, Dentsply, USA). Final casts were generated from type IV die stone (Ultrarock, Kalabhai Dental, India). Occlusal registration was made using Vinyl polysiloxane bite registration material.



Provisional restorations (Protemp, 3M, USA) were fabricated by indirect technique using diagnostic wax-up. They were evaluated intra-orally, adjusted for centric-eccentric contacts and cemented with zinc-oxide eugenol cement (Temp-NE, 3M, USA). The patient was recalled after 4 weeks to re-evaluate the aesthetic, phonetic, comfort and function with provisional restorations. Patient responded positively. The Maxillary final cast was articulated using face bow registration with provisional restoration as a reference to establish the functional occlusion and mandibular cast was articulated using the previously recorded occlusal registration on Hanau articulator. Metal ceramic FPD (Fixed partial Denture) were fabricated, tried in, and margins, proximal contact and occlusion were evaluated intra-orally, adjusted and cemented with glass ionomer cement (Fuji I, GC America, Inc).(Fig-VI-VIII)



Instructions to Patient

Oral hygiene instructions were given, emphasizing cleaning the restoration margins using dental floss. The patient was given the instructions to seek 6-months Prosthodontic and periodontal recall



appointments. The patient was seen at 2-weeks, 1-month, 3-months and 6-months follow up appoint-

ments. Oral hygiene instructions were reviewed. The patient maintained good oral hygiene stated that she was pleased with esthetics, function, and comfort of the prosthesis.

Summary and conclusion

This case illustrates the importance of proper diagnosis and treatment planning. At early age a team approach with the orthodontist, surgeon and restorative dentist can produce better results but because of age and compromised bone support to the affected dentition the best way to achieve stable, functional and aesthetic results is the prosthetic approach. Through this approach, the patient had a dramatic dentofacial improvement. The patient has reported confidence in self-esteem and is pleased with the appearance.

References

1. Shahi H, Banerjee A, Gupta T. Prosthetic rehabilitation: A wand to tame the ugly nature-A case report. *Clinical dentistry* 2010; 4(4): 23-28.
2. Matthews TG. The anatomy of a smile. *J Prosthet Dent* 1978; 39(2): 128-134.
3. Dowson PE: Functional occlusion from TMJ to Smile design. Mosby-Elsevier; 2007, 566-575.
4. Davis NC. Smile Design. *Dent Clin North America* 2007;51:299-318.
<http://dx.doi.org/10.1016/j.cden.2006.12.006>
PMid:17532914
5. Goodacre CJ. Designing Tooth preparation for optimal success. *Dent Clin North America* 2004; 48: 359-444.
<http://dx.doi.org/10.1016/j.cden.2003.12.015>
PMid:15172605