



REHABILITATION OF PINK AND WHITE AESTHETIC WITH AN INTERDISCIPLINARY APPROACH-A CASE REPORT

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ABSTRACT

Smile is a curve that sets everything straight. The goal of an esthetic makeover is to develop a peaceful and stable masticatory system, where the teeth, tissues, muscles, skeletal structures and joints all function in harmony (Peter Dawson). Harmony of smile can be created and maintained by balancing vital component of it i.e. facial components and dental components. Facial components were natural in this case but there was imbalance between dental components i.e. teeth and gingiva. Gingiva and tooth contribute pink and white esthetic to smile respectively. This case report explained the problem and management of it to established aesthetic smile.

KEYWORDS : Aesthetic smile, Gingiva, Teeth, Facial component, Dental component.

Introduction:

Smile is a curve that sets everything straight. A smile is a facial expression formed primarily by flexing the muscles at the sides of the mouth¹. One's smile displays teeth and gingiva in oral cavity that makes a sense of having importance of these tissue aesthetically for a person. Microscopic and macroscopic component of teeth and gingiva gives characteristics of white and pink aesthetic to it respectively.

Vital component of aesthetic smile composed of facial and dental component. Dental components further include hard and soft tissue components. Teeth contribute white while gingiva makes pink aesthetic to smile. This case report describes the effort of rehabilitation of pink and white aesthetic with interdisciplinary approach.

Case report:

A 29 years old male patient came to the department of periodontics with a chief complaint of mobile front teeth since 6 months. Moreover patient was more concerned about his smile as he was getting married after 7 months. In dental history patient gave information that he had visited 2 private dentists and all suggest him for extraction but he wanted to save his natural teeth. Medical history was not significant. Patient was smoker and used to smoke 5-6 cigarettes per day.

Intraoral examination:

Grade II mobile right maxillary central incisor with pathological tooth migration. Tooth was tender on percussion and having pus discharge. Diastema present between central incisors. Gingiva was showing heavy melanin pigmentation. Probing pocket depth was of around 14mm with 11 [Fig.1]. IOPA examination showed severe bone loss on mesial aspect of 11 [Fig.2].



Fig.1: showing deep periodontal pocket & pathologic tooth migration with 11 unaesthetic diastema & black pigmented gingiva.

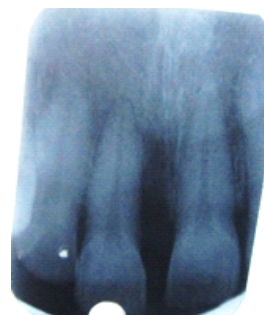


Fig. 2: Pre-operative IOPA showing severe bone loss around 11

Management:

After explaining all possible treatment options patient gives consent for one that we have done. Patient was advised to stop smoking before start of treatment as it could affect healing. In first phase non-surgical periodontal treatment was done i.e. scaling and root planning and antibiotic [Cap. Amoxicillin 500mg TDS for 5 days] and analgesic [Tab. Diclofenac 50mg TDS for 3 days] was prescribed. Then patient was referred to department of endodontics for root canal treatment with 11. Root canal treatment was completed with rotary endodontic instruments [Fig.3].



Fig. 3: Root Canal Treatment done

Follow up was done after 3 weeks to check condition of soft tissue before surgery. As inflammation and mobility was reduced we decided to attempt for periodontal regeneration. After evaluating haematological components, patient's consent was taken.

Papilla preservation flap design was consider in this case as diastema was present and attempt for regeneration was made. Surgical area was anaesthetised with local infiltration and nasopalatine nerve block by using 2% lignocaine with 1:200000 adrenaline. After anesthetizing papilla preservation flap was made. Scaling and root planning was done. Granulation tissue was debride to remove inflammatory component and to prepared defect for regeneration [Fig.4].



Fig. 4: Papilla preservation Flap surgery done to remove granulation tissue.

Regeneration of periodontal defect with respect to 11 was decided to be done by PRF+DFDBA bone graft and Chorion membrane.

PRF Procedure:

10ml blood was withdrawn from patient and distributed equally in 2 test tubes. Both the test tubes were centrifuged at 2700 rpm for 12 min to obtain PRF [Fig.5]. PRF- Platelets Rich Fibrin was then mixed with DFDBA- Demineralized Freeze dried allograft graft to prepare sticky bone graft [Fig. 6]. It was then introduced into periodontal defect with 11 on palatal and mesial side [Fig. 7]. Chorion membrane was placed to avoid epithelial cell migration inside defect and to achieve regeneration [Fig. 8]. 3-0 black silk suture and periodontal dressing coe-pak was given to protect wound area [Fig. 9, 10]. Suture removal was done after 7 days. The healing was uneventful. Periodontal splinting was considered after suture removal as patient was in discomfort and demand for the same. Gingival recession and uneventful healing can be appreciated in postoperative view after 1 month [Fig. 11].



Fig. 5: Platelet Rich Fibrin

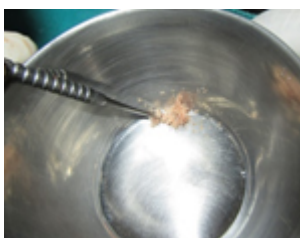


Fig. 6: PRF+DFDBA Bone graft



Fig. 7. Graft placement done

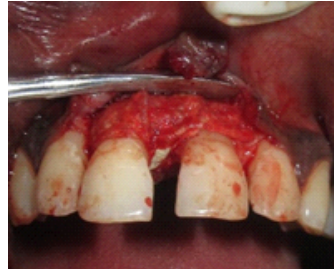


Fig.8. Membrane placed



Fig.9 sutures placed



Fig.10. periodontal dressing(Coe-Pak) given



Fig. 11. Postoperative view after one month.

Gingival depigmentation:

Gingiva is a soft tissue component of aesthetic smile which defines pink aesthetic to it. Heavy melanin pigmentation in this patient affects his smile drastically. Patient also seeks treatment for the same so it was decided to do gingival depigmentation.

Two method i.e. bur and scalpel technique was consider to compare its effect on depigmentation. Both techniques were effective but bur technique was less technique sensitive and more comfortable

for the patient. Depigmentation was done with scalpel from 14 to 11 and by bur technique from 21 to 24 [Fig. 12, 13 & 14]. Periodontal dressing was given to protect wound [Fig. 15]. The healing was uneventful. Postoperative view of patient after 6 month showed pink aesthetic of gingiva [Fig. 16].



Fig.12. scalpel method in 11 to 15 region.



Fig.13. Bur method in 21 to 25 region



Fig.14 After depigmentation procedure



Fig.15. Periodontal dressing was given to protect wound.



Fig. 16. Postoperative view of depigmentation after 6 months and correction of midline diastema and pathologic tooth migration with prosthodontic treatment.

Prosthetic rehabilitation:

4months after periodontal regeneration patient was considered and referred to prosthodontist for correction of pathological tooth migration with 11 and smile designing. Prosthodontics approach was considered over orthodontic for pathological tooth migration as patient demands to complete treatment before his marriage.

Prosthodontist designed bridge of E max crown from 12 to 22 to rehabilitate smile properly. Postoperative view of patient after prosthetic rehabilitation explain aesthetic smile with patient satisfaction within expected time by patient [Fig. 16].

Discussion:

Smile, a person's ability to express a range of emotions with the structure and movement of the teeth and lips, can often determine how well a person can function in society. Since earliest civilization like Phoenicians (app 800 BC) and Etruscians (app 900 BC) importance has been given to the beautiful smile. Pierre Fauchard (1678–1761) of France, the father of dentistry along with other modernized and promoted dentistry and also advocated esthetic practices².

The goal of an esthetic makeover is to develop a peaceful and stable masticatory system, where the teeth, tissues, muscles, skeletal structures and joints all function in harmony (Peter Dawson). To achieve a successful, healthy and functional smile designing requires an understanding of the interrelationship among all the supporting oral structures, including the muscles, bones, joints, gingival tissues and occlusion³.

Harmony of smile can be created and maintained by balancing vital component of it i.e. facial components and dental components. Facial components were natural in this case but there was imbalance between dental components i.e. teeth and gingiva.

The vital elements of smile designing include the following⁴:

- 1. Tooth components** a. Dental midline b. Incisal lengths c. Tooth dimensions d. Zenith points e. Axial inclinations f. Interdental contact area (ICA) and point (ICP) g. Incisal embrasure h. Sex, personality and age i. Symmetry and balance.
- 2. Soft tissue components** a. gingival health b. gingival levels and harmony c. Interdental embrasure d. Smile line.

All these components were in imbalance in this patient. Tooth components were disturbed as presence of diastema and pathological tooth migration in maxillary right central incisor as well as proclined central incisors. Soft tissue components affected by inflammation of gingiva, presence of periodontal pocket and presence of heavy melanin pigmentation of gingiva.

Construction of any beauty required strong pillars and that requires healthy ground. Following this principle establishing a healthy periodontium is most important before rehabilitation of teeth components.

Non-surgical periodontal therapy along with antimicrobials was considered in this case as first line treatment as pus discharge was present. Nonsurgical therapy eliminates both living bacteria in the microbial biofilm and calcified biofilm microorganisms from the tooth surface and adjacent soft tissues. In addition, to create an environment in which the host can more effectively prevent pathogenic microbial recolonization using personal oral hygiene methods⁵. Also it reduced inflammation of gingiva to make its handling favourable for periodontal regeneration.

Present case was endo-perio lesion with poor prognosis. Endodontic management was very important in treatment consideration to achieve successful regeneration around tooth. It is difficult to measure the extent of loss of supporting tissue around tooth caused by endodontic or periodontal infection. Disinfection of

root canal system is important to achieve successful periodontal regeneration therefore; the treatment strategy must be first to focus on the pulpal infection and to perform debridement and disinfection of the root canal system. The second phase includes a period of observation, whereby the extent of periodontal healing resulting from the endodontic treatment is followed⁶.

Periodontal regeneration is effective means in vertical bony defect around tooth to established lost periodontium. Platelets can play a crucial role in periodontal regeneration as they are reservoirs of growth factors and cytokines which are the key factors for regeneration of the bone and maturation of the soft tissue⁷. The PRF clot forms a strong natural fibrin matrix, which concentrates almost all the platelets and growth factors of the blood harvest^{8,9} and shows a complex architecture as a healing matrix with unique mechanical properties which makes it distinct from other platelet concentrates. PRF enhances wound healing and regeneration and several studies show rapid and accelerated wound healing with the use of PRF than without it^{10,11}.

Melanin hyperpigmentation was concerned for the patient as it was affecting his smile and creating aesthetic problem. Gingival depigmentation can be considered by different ways Conventional scalpel and bur technique was followed in this case as it is cost effective¹². Layer of epithelium and connective tissue was removed in both the procedure¹³. Raw wound was covered by periodontal dressing to avoid postoperative complications like bleeding and infection.

After establishing a healthy periodontium and pink aesthetics it was Important to establish white aesthetic by rehabilitation of smile. Ideally orthodontic treatment could have established it more naturally in this case but as patients demands to establish it in short period prosthodontics rehabilitation was preferred.

Conclusion:

Interdisciplinary approach is essential to established balance between hard and soft tissue components of smile. Aesthetic smile can be achieved only by harmonising white and pink aesthetics. It is important to diagnose, analysed and then planned proper treatment in such cases by considering all factors especially cost and time. The Smile we create for this patient was aesthetically appealing and functionally sounds too. Simply to conclude smile designing is art and science which need contribution of multispeciality branches like periodontics, endodontic, prosthodontics, orthodontics to achieve successful outcome.

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