

Contemporary Management of a Clinical Case by Multidisciplinary Approach – A Case Report

Zaid A. Al Jeaidi¹, Mohammed Mustafa²

¹Assistant Professor, Chairman, Department of Conservative Dental Sciences, College of Dentistry, Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia. ²Assistant Professor, Head of Endodontic Division, Department of Conservative Dental Sciences, College of Dentistry, Prince Sattam bin Abdulaziz University, Al-Kharj, Saudi Arabia.

Abstract

The purpose of this article is to show how to manage and treat a comprehensive case in advanced and modern ways. A 28 years old Saudi female, came to our specialty clinic at College of Dentistry(COD), Prince Sattam bin Abdulaziz University, AlKharj, complaining of ugly appearance of her upper front teeth that reinforced her to avoid smiling and she cannot eat properly with her teeth, she was asking to improve her look and fix her teeth with a reasonable cost. A detailed clinical examination and investigation was done to reach to our final treatment plan, in regard to periodontal data; probing depths were in the range of 1-3mm, with plaque score of 92% and bleeding score of 78%. This case was treated completely in our speciality clinics with results showing great improvement in patients' esthetic and functional condition. This case report illustrates the multidisciplinary approach of the different aspects of dentistry to achieve an esthetic, biologic and functional results.

Key Words: Esthetics, Smile, Dentition, Comprehensive treatment

Introduction

Esthetics has now become an important issue in modern Society and Today's dental patients are demanding a youthful, attractive smile. The esthetic rehabilitation of the patients with functionally compromised dentitions frequently involves a multi-disciplinary approach. The realization of esthetic objectives in multi-disciplinary cases represents a considerable clinical challenge due to the fact that esthetics is a subjective concept which may create disagreement between dentists and patients [1]. To a great extent, proper case selection and careful multi-disciplinary and treatment planning can govern the predictability of procedures. A team approach that includes the clinicians, the laboratory technicians, and the patient is essential to achieve the desired results.

The successful integration of esthetics and function does not emerge by chance, but rather as a result of meticulous development of clearly defined anatomical parameters and their subsequent incorporation into the design of the prosthesis [2-5].

This clinical case report demonstrates a successful multi-disciplinary approach in recreating an esthetic smile of a patient whose maxillary anterior dentition and even all her posterior teeth of both upper and lower jaws has been functionally and esthetically compromised.

Case Report

Patient description and examination

A healthy 28 year old Saudi female patient visited to our clinic with chief complaint that her upper front teeth looks ugly, she tries to avoid smiling, could not eat properly and wants to improve the appearance of her upper anterior teeth and also wants to fix the problem for all other teeth (*Figures 1-3*). She wanted her lower anterior teeth to be whiter but natural and all her anterior teeth to of "normal" size without spaces. She reported no pain symptoms related to the TMJs, musculature,



Figure 1. Patient wants to improve the appearance of her upper anterior teeth and also wants to fix the problems of all other remaining teeth.



Figure 2. Occlusal view of the maxillary arch demonstrating extensive decayed posterior and some missing teeth.

or other dental structures. Past dental history shows that patient has undergone root canal treatment for teeth # 47 & 48 one year back, composite restorations were done for few teeth some two years back and even extraction of multiple teeth

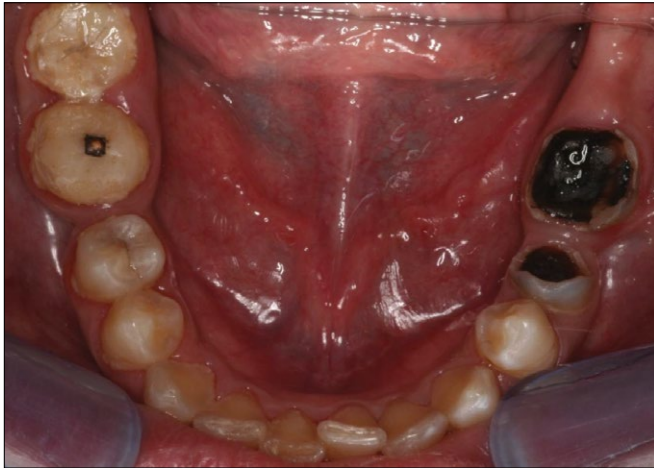


Figure 3. Occlusal view of the mandibular arch demonstrating extensive decayed lower left posterior teeth and one missing tooth.

were done seven years back. Patient is very cooperative and willing to come regularly on her appointment days.

Periodontal evaluation

On Intra-oral examination reveals generalized mild redness of the gingiva and interdental papillae, stippled with rolled gingival margins, localized swelling & blunting of interdental papilla, poor oral hygiene with generalized plaque accumulation, localized supra and sub-gingival calculus, pocket depth ranging between 1-3mm with localized gingival recession. No tooth mobility and no furcation involvement.

Occlusal evaluation

When it comes to patients dentition, there was a Class I canine relationship both on right side and left side, with canine guidance occlusion, Vertical & Horizontal Overlap of 1 mm each, with mild crowding in lower anterior teeth, few missing were teeth # 14, 26, 36, 38 & 46.

Diet analysis

- Patient is taking 3 main meals during the day.
- Snacks between meals every day.
- Sugar consumption is high.
- Meals contain mainly of rice, meat, bread and Pepsi.
- Minimal vegetable & fruit intake.

Diagnostic tools

Radiographs (FMX)

- Normal maxillary sinus.
- Generalized bone level ranges 1-3 mm from Cemento-enamel junction, with normal bone trabeculation.
- Multiple missing teeth # 14, 26, 36, 38 & 46.
- Multiple carious Teeth.
- Periapical lesion around teeth # 17, 16 & 15.

Mounted diagnostic casts (Figure 4)

- Class I canine relationship (Right & Left).
- Canine guidance.
- Vertical overlap 1 mm.
- Horizontal overlap 1 mm.

Diagnosis

Periodontium

- Generalized plaque induced gingivitis with localized gingival recession.

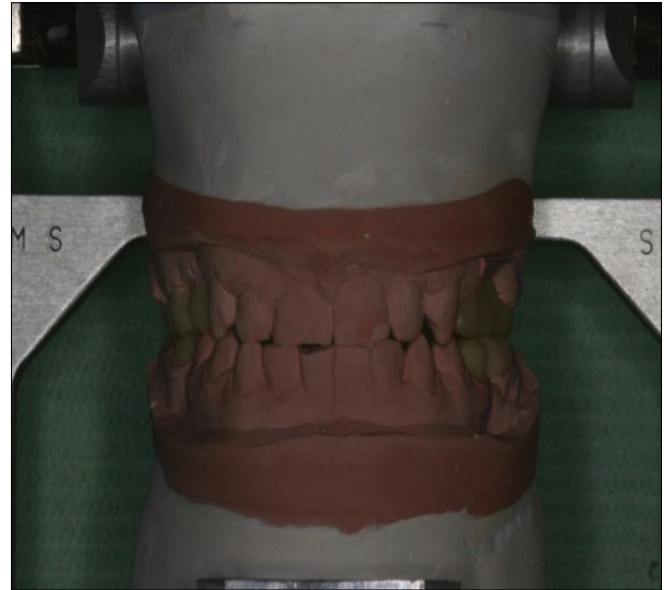


Figure 4. Mounted diagnostic casts.

Dentition

- Carious teeth: # 18, 17, 16, 15, 12, 11, 21, 22, 24, 25, 27, 28, 37, 35, 34, 45 & 47 (total=17).
- Missing teeth: # 14, 26, 36, 38 & 46 (total=5).

Etiology

- Diet imbalance.
- Poor oral hygiene.
- Faulty restorations.
- Pulpal and periapical pathosis.
- Unpleasing esthetics.

Treatment Objectives

- To motivate the patient to improve his oral hygiene & diet.
- To educate the patient & enforce his knowledge about oral & dental awareness.
- To eliminate pathology.
- To treat caries.
- To restore function.
- To improve esthetics.

Prognosis

Good if the patient maintains good diet control, oral hygiene and attends regular follow- up appointments.

Treatment Plan

Upon consultation with the patient the following treatment plan was formulated (Tables 1-3).

Table 1. Treatment plan.

Tooth No.	Clinical condition/s.	Recommendation/s.
18	Grossly decayed / carious.	- Extraction.
17	Grossly decayed / carious.	- Root canal treatment. - Crown lengthening. - Cast post & core. - Full Crown (Porcelain fused to metal).
16	Grossly decayed / carious.	- Root canal treatment. - Crown lengthening. - Cast post & core. - Full Crown (Porcelain fused to metal).

15	Grossly decayed / carious.	- Root canal treatment. - Crown lengthening. - Cast post & core. - Full Crown (Porcelain fused to metal).
14	Missing	- No replacement.
13	Short clinical crown	- Crown lengthening. - All Ceramic crown.
12	Mesial & distal carious lesions.	- Mesial & distal composite restoration. - All Ceramic crown.
11	Recurrent carious lesion (mesially with labial composite restorations).	- Root canal treatment. - Fiber (post & core) & composite restoration. - All Ceramic crown.
21	Recurrent carious lesion with labial composite restorations	- Mesial & distal composite restoration. - All Ceramic crown.
22	Mesial composite restoration and distal carious lesion.	- Mesial & distal composite restoration. - All Ceramic crown.
23	Short clinical crown	- Crown lengthening - All Ceramic crown.
24	Grossly decayed / carious.	- Root canal treatment. - Crown lengthening - Cast post & core - Abutment of FPD (Porcelain fused to metal).
25	Grossly decayed / carious.	- Extraction. - Replacement.
26	Missing	- Replacement.
27	Grossly decayed / carious.	- Root canal treatment. - Crown lengthening - Cast post & core - Abutment of FPD (Porcelain fused to metal).
28	Grossly decayed / carious.	- Extraction.
37	Grossly decayed / carious.	- Root canal treatment. - Cast post & core. - Full Crown (Porcelain fused to metal).
36	Missing	- Replacement.
35	Grossly decayed / carious.	- Root canal treatment. - Cast post & core. - Full Crown (Porcelain fused to metal).
34	Proximal (distal) carious lesion.	- Composite Restoration.
33, 32, 31, 41, 42, 43, 44.	Supra-gingival plaque & calculus.	- Scaling & oral prophylaxis. - Vital bleaching.
45	Occlusal carious lesion.	- Composite restoration.
46	Missing	- Replacement.
47	Sub-standard root canal treated, screw post & composite restoration with recurrent caries.	- Root canal treatment. - Cast post & core. - Full Crown (Porcelain fused to metal).
48	Composite restoration with recurrent carious lesion.	- Extraction.

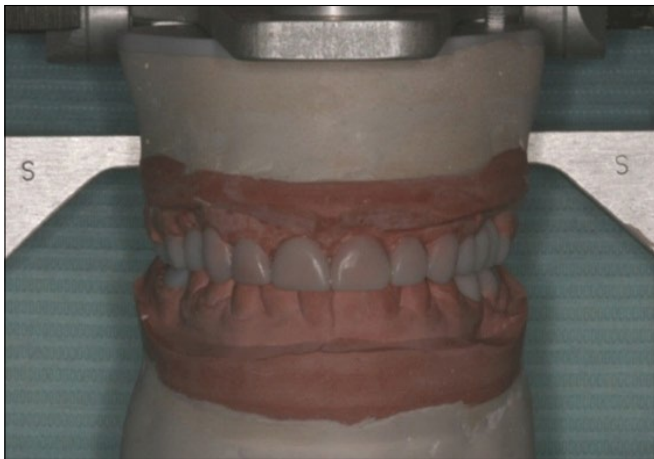
Table 2. Treatment phases.

Phase I :	Emergency/ Preventive treatment.	<ul style="list-style-type: none"> Scaling and oral prophylaxis done. Oral hygiene instructions given. <u>Diet advices and reassessment:</u> <ul style="list-style-type: none"> Encourage intake of 3 well-balanced meals per day. Increase fruits and vegetable intake (natural cleansing effect). Reduce the intake of refined carbohydrates. Reduce the sweet snacks and confine them to meal time. Reduce sugar intake. Reduce the amount of soft drinks. Oral hygiene assessment & reinforcement done. Fluoride application done, and prescribed chlorhexidine mouthwash.
Phase II	Operative treatment.	<ul style="list-style-type: none"> Composite restorations with teeth # 12, 11, 21, 22, 34, 45. <p>[Composite used: Filtek™ Z350 XT Universal Restorative Material, 3M ESPE Dental Products USA].</p>
Phase III :	Endodontic treatment.	<ul style="list-style-type: none"> Root canal treatment with teeth # 17, 16, 15, 11, 24, 27, 37, 35, 47. <p>[Single visit / sitting root canal treatment were done. The working length was determined with an electronic apex locator (Root ZX, J. Morita Corp., Kyoto, Japan) and was confirmed radiographically. The Cleaning and Shaping was done using rotary NiTi instrumentation (Protaper, Dentsply company), followed by gutta-percha obturation using endodontic sealer (Sealapex, Kerr, USA).</p>
Phase IV:	Pre-Prosthodontic / Surgical Treatment.	<p><u>I. Pre-Prosthodontic:</u></p> <ul style="list-style-type: none"> Diagnostic wax-up (<i>Figure 5</i>). Temporization (<i>Figure 6</i>). <p><u>II. Pre-Prosthodontic – Surgical Phase</u></p> <ul style="list-style-type: none"> Crown lengthening: # 17, 16, 15, 13, 23, 24, and 27. Cast post and core in Teeth: # 17, 16, 15, 24, 27, 37, 35, and 4 (<i>Figure 7</i>) Fiber post & composite core in Teeth # 11. <p>[Fibers post used: RelyX™ Fiber Post, 3M ESPE Dental Products, U.S.A).</p> <ul style="list-style-type: none"> Vital bleaching tooth #: 33, 32, 32, 42, 42, 43, 44 (<i>Figures 8 and 9</i>).

Phase V :	Prosthodontic Treatment.	<ul style="list-style-type: none"> Replacement of missing teeth: # 25 & 26 with four units fixed partial denture # 24 -- 27. Porcelain fused to metal Crowns of teeth: #17, 16, 15, 37, 35, and 47. <p>[Porcelain fused to metal Crowns: ProCeram PFM restorations, Glidewell Laboratories].</p> <ul style="list-style-type: none"> All Ceramic Crowns of teeth: # 13, 12, 11, 21, 22 & 23 (<i>Figures 10 and 11</i>). <p>[All Ceramic Crowns: IPS Empress 2, Ivoclar Vivadent].</p>
Phase VI :	Recall & Maintenance.	<ul style="list-style-type: none"> Recall visits after 24 hours, 1 week, and every 3 months until home care goals have been achieved for oral hygiene & fluoride therapy. Radiographic caries assessment every 6 months until the patient is classified as a low risk.

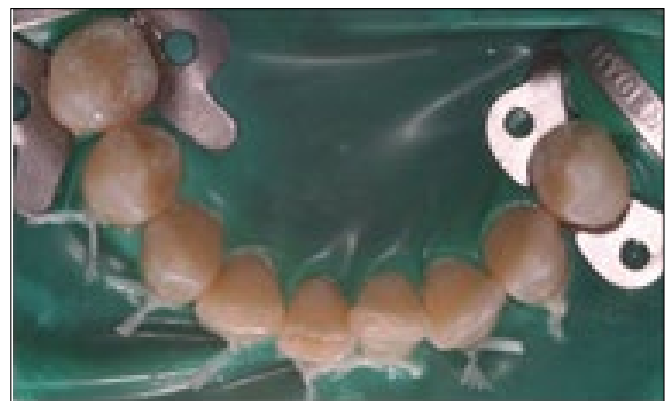
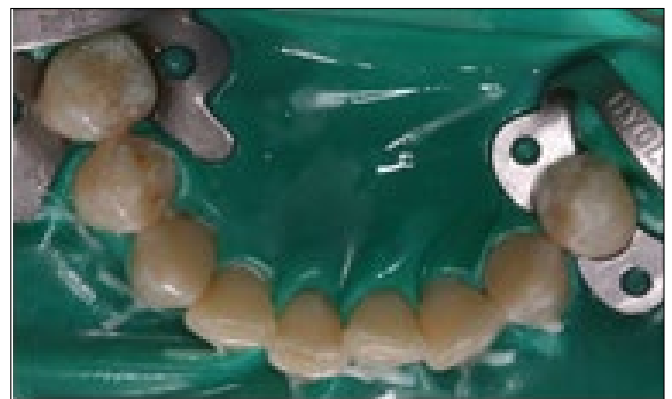
Table 3. Clinical time-table.

Date Started:	12/01/2014
Date Completed:	13/07/2014
Total Duration:	06 months.
Total Visits:	27 visits
Attended Visits:	25 visits
Cancelled Visits:	02 visits
Clinical Time:	Every Sunday from 9:00 - 10:30 am.

**Figure 5.** A diagnostic wax-up demonstrates esthetic potential.

Discussion

Clinicians used to consider esthetics far less important component than function, structure and biology for many years. However such perceptions are now changing and if a treatment plan does not include a clear objective of its esthetics impact on patient the outcome can be disastrous [6]. Patient's satisfaction both in relation to function as well as esthetics is gaining prime considerations in present scenario. Therefore clinicians should begin treatment plan with well-defined esthetic objectives and then should consider the outcome of such treatment on structure and function. Several times

**Figure 6.** Temporization of her upper and lower teeth.**Figure 7.** Cast post and core for teeth # 17, 16, 15, 24, 27, 47, 37 and 35.**Figure 8.** Vital bleaching of mandibular teeth # 45, 44, 43, 42, 42, 31, 32, 33 and 34 (before).**Figure 9.** Vital bleaching of mandibular teeth # 45, 44, 43, 42, 42, 31, 32, 33 and 34 (after).

such objectives may be achieved only by multidisciplinary approach to deliver a comprehensive care to dental patient



Figure 10. Maxillary anterior teeth prepared for all ceramic crowns and retraction cord was placed prior to final impression.



Figure 11. Die prepared.



Figure 12. Post-operative occlusal view of the maxillary arch.



Figure 13. Post-operative occlusal view of the mandibular arch.



Figure 14. Post-Operative right lateral view.



Figure 15. Post-Operative left lateral view.



Figure 16. Pre-Operative Intra-Oral (Frontal view).



Figure 17. Post-Operative Intra-Oral (Frontal view).



Figure 18. Pre-Operative photograph (Frontal view).



Figure 19. Post-Operative photograph (Frontal view).



Figure 20. Pre-operative OPG (ORHTOPANTOGRAM).

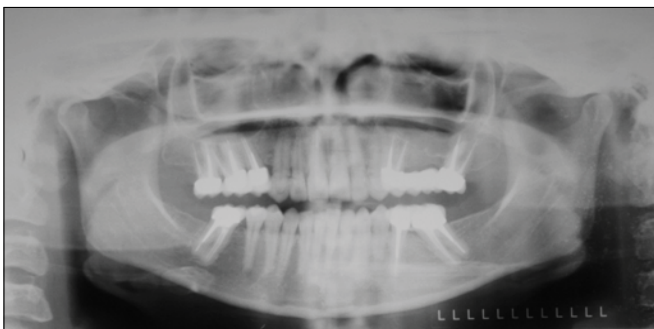


Figure 21. Post-operative OPG (ORHTOPANTOGRAM).

[7]. In our case as the patient was female it is quite common that women are more interested in their appearance than men. Female patients are usually found to be more concerned with their dental appearance as compared to males and they are more critical in judging their dental appearance and treatment outcomes consequently expectations are usually high [8]. In our case as there were multiple dental problems which we addressed in a systematic manner a comprehensive treatment was planned and implementation was formulated. The first goal of our treatment was to eliminate the etiologic factors. We performed diet evaluation and oral hygiene assessment followed by scaling and prophylaxis and strict maintenance of oral hygiene in order to achieve our primary goal which was to stop further deterioration due to dental caries and periodontal problem. When suitable goal and oral hygiene improvement was achieved we started our next stage of treatment which was designated as phase II treatment procedures which include Operative treatment of cavities with composite restorations. Then started the phase III treatment of Endodontics Single visit/sitting root canal treatment was done in this case as there is no significant difference in healing pattern between single sitting and multiple sitting endodontic treatment [9]. Next was the phase IV of pre-prosthetic / surgical treatment phase in which cast post and core was given on posterior teeth. Fiber post & composite core in tooth # 11 was chosen as it requires minimal amount of tooth reduction and ferrule was present which prompted use of a fiber post [10]. Vital bleaching (In-Office) with lower teeth # 33, 32, 32, 42, 42, 43, 44, using 35% hydrogen peroxide gel was done. Phase V of prosthetic treatment was done and replacement of missing teeth # 25 & 26 with four units fixed partial denture from teeth # 24 – teeth # 27. Porcelain fused to metal crowns of teeth #17, 16, 15, 37, 35 & 47 Porcelain fused to metal Crowns [ProCeram PFM restorations, Glidewell Laboratories]. All Ceramic crowns with teeth # 13, 12, 11, 21, 22 & 23 [All Ceramic Crowns: IPS Empress 2, Ivoclar Vivadent]. Phase VI of recall visit and maintenance which was to ensure good prognosis and overall success of treatment (Figures 12-18).

Conclusion

The esthetic restoration/rehabilitation of a patient with a functionally compromised dentition frequently involves a multidisciplinary approach. The realization of esthetic objectives in multi-disciplinary cases represents a considerable clinical challenge. The clinical challenge consists of ensuring that esthetic goals will be preserved through the various therapeutic phases leading to completion of a definitive restoration that satisfies all functional requirements. In this case, the patient's specific esthetic expectations were successfully met with a team approach that included the clinicians, laboratory technicians, and the patient, in which communication and co-ordination were crucial in achieving the desired esthetic result in the anterior maxilla. Patient was satisfied with the treatment she received (Figures 19-21).

References

1. Peck S. Introdução. Seção II: Relevância da estética facial na Ortodontia. In: Sadowsky PL, (Editor). *Atualidades em Ortodontia*. 1997: pp.250.
2. Lee EA, Jun Sk. Achieving esthetic excellence through an outcome-based restorative treatment rationale. *Pract Periodontics Aesthet Dent*. 2000; **12**: 641-648.
3. Lee EA, Jun Sk. Aesthetic design preservation in multidisciplinary therapy: Philosophy and clinical execution. *Pract Proced Aesthet Dent*. 2001; **14**: 561-569.
4. Reddy MS. Achieving gingival esthetics. *J Am Dent Assoc*. 2003; **134**: 295-304.
5. Lambardi R. The principles of visual perception and their clinical application to denture esthetics. *J Prosthet Dent*. 1973; **29**: 358-382.
6. Spear FM, Kokich VG, Mathews DP. Interdisciplinary management of anterior dental esthetics. *J Am Dent Assoc*. 2006; **137**: 160-169.
7. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' satisfaction with dental esthetics. *J Am Dent Assoc*. 2007; **138**: 805-808.
8. Gozalo-Diaz D, Johnston WM, Wee AG. Estimating the color of maxillary central incisors based on age and gender. *J Prosthet Dent*. 2008; **100**: 93-98.
9. Ashken ZPJ. One visit endodontics. *Dent clinics North Amer*. 1984; **28**: 853.
10. Soares CJ, Valdivia AD, da Silva GR, Santana FR, Menezes Mde S. Longitudinal evaluation of post systems- A Literature review, *Brazil Dent J*. 2012; **23**: 135-140.