

Case Report

When Esthetic Becomes Challenging

Ahmed M Shamiyah*

Prosthodontist & Implantologist, SUNY @ Buffalo, Noble Smile Dental Care Clinic, Riyadh, Saudi Arabia

Introduction

Good appearance is considered literally a need, and dentistry has a fundamental role in obtaining it [1]. In the modern practice of dentistry, increasingly more patients are demanding a final appearance that is physiologically, mechanically and also esthetically pleasing.

Webster's Dictionary defines esthetics as (emphasizing the evaluative criteria that are applied to art), "the branch of philosophy dealing with beauty and taste".

Since the mouth is a prominent line in the face and considered an exposed area of the body [1]. Esthetics in dentistry has increasingly become a major concern for the patients and often serves as a reason for seeking dental care [2].

Dentofacial attractiveness is particularly important for the psychosocial well-being of an individual [2]. A non-harmonic smile reduces the beauty of the face and it will cause discomfort in the person's social life. It is one of the most important facial expressions that demonstrate friendship, pleasant sensation and appreciation [3].

Dentists must understand patient expectations; it is critical to develop a treatment plan that is esthetically pleasing and sound for the dental tissue [4].

Several factors contribute to the composition of a pleasing smile, which include: clinical crown dimensions, midline position, and amount of gingival display, gingival architecture and tooth position [5-7].

Esthetics is a primary consideration for patients seeking orthodontics, prosthodontics, and restorative treatment [2]. This emphasized the need for an interdisciplinary approach (a combination of orthodontic, periodontic, restorative and prosthodontic treatment) to evaluate, diagnose, and resolve esthetic problems [8].

One of the components that enhance dental esthetics is the coincident midline. It serves both as an esthetic component and an important functional component of occlusion [9,10]. It enhances esthetic especially when the maxillary central incisors midline coincides with the midline of the face [11].

To get an esthetic result and a smile that is in a harmony with function and health, dentists must understand and keep in mind the following principles:

Inter-pupillary line:

The inter-pupillary line passes through the center of the eyes. If it is parallel to the horizontal plane, it is the most

suitable reference for carrying out correct smile analysis [12]. It is often used as a reference to orient the incisal plane, occlusal plane and the gingival contours [13].

Intercommissural line (ICL):

The amount of maxillary tooth revealed below the ICL interacts with the viewer's perception of the patient's age. In a youthful smile, approximately 75% to 100% of the maxillary teeth would show below this line. This percentage will be reduced as the age of the patient advances [13].

The midline line:

Midline is a crucial vertical reference line. It does not only locate the position of the facial midline but also determines the direction of the midline.

It is traced by joining the glabella, the tip of the nose, the philtrum and the tip of the chin [13]. Miller and coworkers stated that the dental midline coincides with the philtrum midline in only 70% of the cases [14].

Furthermore, the results of several studies that attempted to determine the threshold of acceptability of dental midline deviation are conflicting.

Beyer et al. [15] and Johnston et al. [16] reported that the threshold for the public is 2 mm, and Pinho [17], concluded that shifts of up to 4.0 mm are not perceived by the public.

Smile line:

The amount of tooth display is very critical. The smile line is the position of the inferior border of the upper lip at maximum smile. On the basis of the amount of show of the teeth and the gingiva, Tjan and Dong divided smile lines into low, average and high smile lines [18,19].

A pleasing smile can be defined as one that exposes the maxillary teeth completely, along with approximately 1 mm of gingival tissue. Gingival exposure that does not exceed 2 mm to 3 mm is nevertheless considered esthetically pleasing, while an excessive display (more than 3 mm) is generally considered unattractive by most patients [20,21].

Size and proportion:

The size of the maxillary central incisors was found to have an average width of 8.3 mm to 9.3 mm and an average length of 10.4 mm to 11.2 mm [22].

While tooth width generally remains constant, the length, in contrast, can change considerably with age. Almost all studies of tooth proportion have concluded that the width of a central incisor is roughly 80% of the length within a certain variable range [13]. Chiche and Pinault consider a proportion between 75% and 80% to be ideal [23].

Toward this end, the size and form of the maxillary anterior teeth are important not only to dental esthetics, but also to facial esthetics.

Many techniques could be done to help during a consultation for an esthetic rehabilitation treatment which include: Before-and-after photographs, diagnostic models with wax ups, composite resin mock-ups on the patient and computer-imaging simulations. The computer-imaging simulations offer the best idea to the patient regarding the treatment outcomes [12].

Clinical Case

A 30 years old Asian female patient came to our office complaining of bad looking crown.

Extra-oral examination:

Findings were within normal limit.

The facial midline is not coinciding with the dental midline.

Intra-oral examination:

Patient had a defective crown on tooth number 21, with an exposed metal margin resulted in a gray band reflection on the marginal gingiva in relation to the same tooth (Figures 1-4).



Figure 1: Full smile before.



Figure 2: Midline shift.



Figure 3: Midline canting.

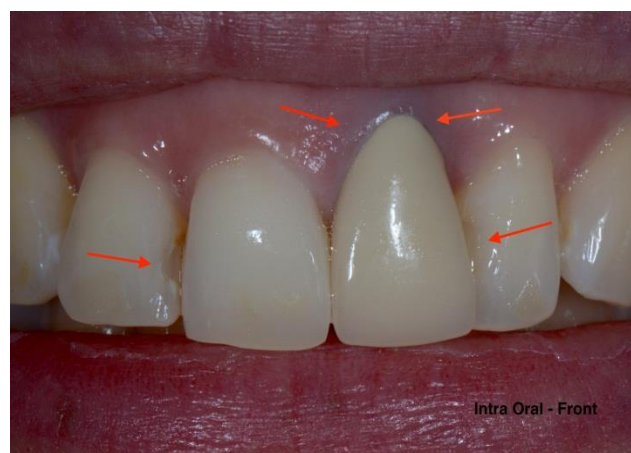


Figure 4: Intra oral-front.

The mesio-distal width of the crown does not match or even fall with the dimension of tooth number 11 (Figure 5).



Figure 5: Intraoral- before.

Width to length ratio does not fall in to the acceptable esthetic requirements for the maxillary central incisors form and shape.

Tooth number 21 is over contoured distally and overlapped the mesial side of the tooth number 22, the pulpal diagnosis shows an adequate previously treated root canal with normal periapical status.

Teeth number 12 and 22 had defective composite restorations mesially (Figure 4).

Dentolabial-smile analysis:

Maxillary teeth are following the inner curvature of lower lip (Figure 1).

Upper interincisal line had about 2 mm deviation to the left side compared with facial midline (Figure 2).

Midline canting existed (Figure 3). Patient is having an average smile line.

Occlusal plane is parallel to the commissural line.

Treatment completed as follow:

1. Smile design was performed on teeth number 11 and 21.
2. X-rays, primary impression and diagnostic wax-up were made.
3. Putty index and mockup were done.
4. Defective metal-ceramic crown was removed and temporary crown and veneer on teeth number 21,11 were fabricated respectively using (Bisacryl Systemp c&b II, Ivoclar) (Figure 6).



Figure 6: Temporary Crown 21 First phase.

5. Prefabricated fiber post (3M ESPE, Relyx fiber post) was cemented using Self-adhesive resin cement (3M ESPE, 56819 Relyx Unicem Resin Cement, A1 shade) (Figures 7-9).



Figure 7: Good temporary crowns-healthy tissue.



Figure 8: Final Teeth Preparation teeth number 11 and 21.



Figure 9: Teeth preparation.

6. Defective composite restorations were replaced on teeth number 12 and 22 using (3M ESPE Filtek Z350 XT) (Figure 10).



Figure 10: Closeup- Smile.

7. Ceramic veneer were made on tooth number 11 with a finish line extended beyond the mesial contact area to be able to adjust the width of tooth number 21 using (Lithium disilicate glass-ceramic IPS e.max,Ivoclar) (Figure 11).
8. Full ceramic crown on tooth number 21 using (Lithium disilicate glass-ceramic IPS e.max, Ivoclar) (Figures 12,13).



Figure 11: Side Profile-After.



Figure 12: Smile-After.



Figure 13: After Smile- Front.

9. Cementation were done using (Variolink Esthetic LC Neutral, Ivoclar) (Figure 10).

Each patient presents unique characteristics with respect to the patient's facial and dental esthetics. Effective communication helps the dentist and the technician to achieve these characterizations for individual patients [13].

Acknowledgement

Dr Ahmed Shamiyah would like to acknowledge and appreciate Dr. Al Joharah S. Mezied, Second Year Prosthodontics Post Graduate Resident. REU, Riyadh, KSA.

References

1. Cavalcante, Assad LA, Pepper, et.al. (2005) Aesthetic principles for a harmonic smile / Esthetics principles for a harmonic smile. *Rev ABO Nac* 13(2): 81-85.
2. Soares GP, Valentino TA, Nunes Leite Lima DA, et al. (2007) Esthetic analysis of the J Oral smile. *Braz Sci* 6(21): 1313-1319.
3. Simon J (2004) Using the golden proportion in aesthetic treatment: A case report. *Dent Today* 23 (9): 82,84.
4. Calamia JR, Levine JB, Lipp M, et al. (2011) Smile design and treatment planning with the help of a comprehensive esthetic evaluation form. *Dent Clin N Am* 55(2): 187-209.
5. Goldstein RE (1977) Esthetic principles for ceramo metal restorations. *Dent Clin North Am* 21: 803-822.
6. Levin EI (1978) Dental esthetics and the golden proportion. *J Prosthet Dent* 40(3): 244-252.
7. Chiche GJ, Pinault A (1994) Esthetics of anterior fixed prosthodontics. Chicago: Quintessence Publishing Co, Germany 1: 13, 61-64,68,180.
8. Claman L, Alfaro MA, Mercado A (2003) An interdisciplinary approach for improved esthetic results in the anterior maxilla. *J Prosthet Dent* 89(1): 1-5.
9. Kokich VO Jr, Kiyak HA, Shapiro PA (1999) Comparing the perception of dentists and lay people to altered dental esthetics. *J Esthet Dent* 11(6): 211-224.
10. Thomas JL, Hayes C, Zawaideh S (2003) The effect of axial midline angulation on dental esthetics. *Angle Orthod* 73(4): 359-364.
11. Cardash HS, Ormanier Z, Laufer BZ (2003) Observable deviation of the facial and anterior tooth midlines. *J Prosthet Dent* 89(3): 282-285.
12. Almog D, Sanchez Marin C, Proskin HM, et al. (2004) The effect of esthetic consultation methods on acceptance of diastema-closure treatment plan: A pilot study. *J Am Dent Assoc* 135(7): 875-881.
13. Bal A, Dugal R, Shah K, et al. (2016) Principles of esthetic evaluation for anterior teeth. *JDMS* 15(3): 28-38.
14. Miller EL, Bodden WR Jr, Jamison HC (1979) A study of the relationship of the dental midline to the facial median line. *J Prosthet Dent* 41(6): 657-660.
15. Beyer JW, Lindauer SJ (1998) Evaluation of dental midline position. *Semin Orthod* 4(3): 146-152.

16. Johnston CD, Burden DJ, Stevenson MR (1999) The influence of dental to facial midline discrepancies on dental attractive- ness ratings. *Eur J Orthod* 21(5): 517-522.
17. Pinho S, Ciriaco C, Faber J, et al. (2007) Impact of dental asymmetries on the perception of smile esthetics. *Am J Orthod Dentofacial Orthop* 132(6): 748-753.
18. Tjan AH, Miller GD, The JG (1984) Some esthetic factors in a smile, *J Prosthet Dent.* 51(1): 24-28.
19. Dong JK, Jin TH, Cho HW (1999) The esthetics of the smile: A review of some recent studies. *Int J Prosthodont* 12(1): 9-19.
20. Allen EP (1988) Use of mucogingival surgical procedures to enhance esthetics. *Dent Clin North Am* 32(2): 307-330.
21. Peck S, Peck L, Kataja M (1992) The gingival smile line. *The Angle Orthodontist* 62(2): 101-102.
22. Owens EG, Goodacre CJ, Loh PL, et al. (2002) A multicenter interracial study of facial appearance. Part 2: A comparison of intraoral parameters. *Int J Prosthodont* 15(3): 283-288.
23. Chiche GJ, Pinault A (1996) Replacement of defective crowns. In: *Aesthetics in anterior fixed prostheses*. Quintessence Books, Sao Paulo 64-68.

***Corresponding author:** Dr. Ahmed M Shamiyah, Prosthodontist, University at Buffalo, Noble Smile Dental Care Clinic, Riyadh, Saudi Arabia; E-mail: shamiyaha@noblesmile.com.sa

Received date: October 28, 2019; **Accepted date:** November 26, 2019; **Published date:** December 17, 2019

Citation: Shamiyah AM (2019) When Esthetic Becomes Challenging. *Front Med Health Res* 1(1): 107.

Copyright: Shamiyah AM (2019) When Esthetic Becomes Challenging. *Front Med Health Res* 1(1): 107.