

Facial soft tissue paradigm in clinical orthodontics

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ABSTRACT

Background: A beautiful smile is not only aesthetically pleasing but also boosts self-esteem. Orthodontists aim for both functional occlusion and a balanced smile. While cephalometric analysis helps evaluate some aspects like lip relation and occlusal plane, other factors like arch form, stomodeum width, neuromuscular factors, and facial expressions are crucial. Clinical examination and full-face photographs are essential for proper evaluation before and after treatment, ensuring a harmonious smile that enhances the patient's overall appearance.

Keywords: Facial tissue, paradigm, orthodontics.

INTRODUCTION

Poets and authors write about them. Artists capture them in paintings and sculptures. Advertisers use them to sell products. A smile projects happiness, joy, humor, pleasure, friendliness, acceptance, or agreement. You cannot change the society, but can change the smile. As Wylie stated, "the goal of orthodontic treatment should be an attainment of the best possible esthetic result, dentally and facially. It is important for Orthodontists to make every effort to develop a harmonious balance that will produce the most attractive smile possible for each person being treated".

Hulsey noted that smile is one of the most effective means by which people convey their emotions. An attractive smile does much to improve a patient's appearance and consequently, self-esteem. To appreciate why a smile with harmonious dentition is considered attractive, the principles can be translated to the practice environment, where the successful clinician can apply them toward creating a clinical work of art, that is, a beautiful smile.

The "art of smile" lies in the clinician's ability to recognize the positive elements of beauty in each patient and to create a strategy to enhance the attributes that fall outside the parameters of the prevailing esthetic concept. The goal of enhancing patient appearance requires us to revisit fundamental concepts of art and beauty that were present during the early development of orthodontic doctrine.

The primary treatment goal, of course, is to produce maximum stability together with a well-balanced functional occlusion. However, a well-balanced smile should also be an additional important treatment objective. The majority of cephalometric analyses do not include soft-tissue considerations. Only a few have incorporated the assessment of soft tissue. It is not sufficient to consider only the dentition and the skeleton if one is to achieve stability, good perioral function, and total facial harmony.

Received: May. 8, 2024; Accepted: June. 22, 2024

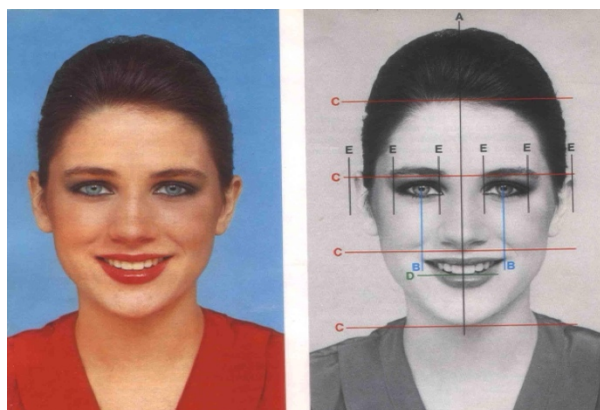
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The occlusal plane-lip embrasure relationship and the thickness and length of the lips can be evaluated cephalometrically and play an important role in a harmonious smile however, a well-balanced smile depends also on other factors which cannot be readily assessed cephalometrically. These factors are (1) arch form, (2) width of stomodeum, (3) neuromuscular factors, such as muscle tone and bilateral balanced innervation of the corners of the mouth, and (4) total facial- expression (a result of the combined action of all mimetic musculature of the face).

A proper evaluation of all these foregoing factors requires careful clinical inspection of the patient's smile before treatment is commenced. Full-face smile photographs are an invaluable additional clinical tool in assessing the patient's smile before treatment and, of course, are the only means by which favorable or unfavorable changes can be permanently registered.



SMILE CLASSIFICATIONS

According to David M Sarver and Marc B Ackerman

1. The social smile
2. The enjoyment smile

SMILE STYLES

Rubin

1. The commissure smile
2. The cuspid smile
3. The complex smile

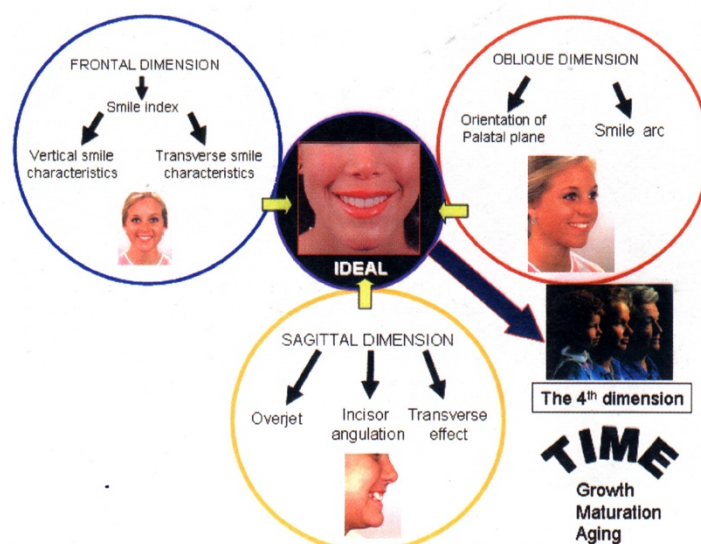
According to Tjan and colleagues,

1. High smile
2. Average smile
3. Low smile

Craig Kirkham Naylor proposed the use of "the Grid Analysis System".

SMILE ANALYSIS

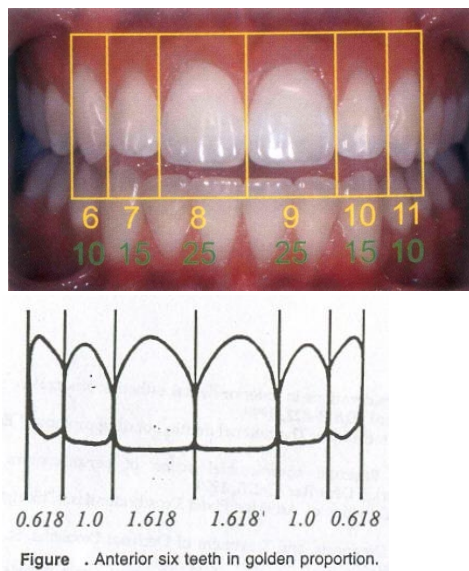
Sarver and Ackerman chose the social smile as the representation from which we will analyze the smile in 4 dimensions: frontal, oblique, sagittal, and time specific.



The concept of the "golden proportion" has often been offered as a cornerstone of smile design theory. Because of the variety in nature, esthetics in dentistry cannot be justified mathematically; individuals should not be standardized in the same way. It should be acknowledged that esthetics varies greatly from person to person. It is therefore important to consider the dento facial specificities of each individual and the wide variety of natural teeth proportions when treating the maxillary anterior teeth. In addition, individual cultural characteristics and perceptions of beauty must be considered.

Lombardi was the first to propose the application of the golden proportion in dentistry, but he also

stated, "It has proved too strong for dental use". In addition, he defined the idea of a repeated ratio, which implies that in an optimized dentofacial composition from the frontal aspect, the lateral to central width and the canine to lateral width are repeated in proportion.



Levin pointed out that "the width of the maxillary lateral incisor is in the golden proportion to the width of the central incisor and also the width of the maxillary canine to the lateral incisor when viewing from the front".

In problem-oriented treatment planning, we identify the problems that require improvement or correction and focus primarily on correcting those problems. We propose that the next fundamental component in treatment planning in the contemporary orthodontic analysis should include identifying and quantifying the positive aspects of the patient's esthetic arrangement. In this approach to problem-oriented treatment planning, we clearly want to fix what is wrong, but not at the expense of what is right about a patient's esthetic presentation.

Peck and Peck studied 88 private orthodontic patients, including retention patients, and found that the upper lip position on smiling was 1.5 mm higher in females than in males. Vig and Brundo found that there is a gradual decrease in exposure of the maxillary central incisor with age. The mandibular anterior teeth, in turn, show a gradual increase with age. Maxillary incisor exposure

decreases, on average, 3.4 mm from the second to the sixth decade of life, while mandibular incisor exposure increases an average of 2.4mm.

This position of the lip has also been defined as the smile line. Orthodontists have relatively good control over this line and can set treatment objectives to position the maxillary incisors in their most pleasing vertical position, both at rest and smiling.

SMILE DESIGN: A blend of Beauty and art

The dental profession has long been in pursuit of the ideal dentition. Recent advances in conservative restorative procedures, such as bonding and porcelain veneers, have opened the door to a wide variety of elective dental treatment for the purpose of enhancing appearance or reversing the visual signs of aging. However, the newfound popularity of cosmetic dentistry has only intensified the profession's long-standing desire to replicate nature when restorative dentistry is indicated.

In an effort to create natural esthetics, the clinician must give careful consideration to the patient in his or her entirety. Individual attributes of a tooth may represent only part of the story, because teeth do not exist individually and separate from the patient to whom they belong. Combinations of tooth forms when positioned together can create an effect that is greater than, equal to or less than the sum of the parts.

The principles involved in making "pretty smiles" have come to be known within the profession as the discipline of smile design. Smile design theory can be broken down into at least four parts: facial esthetics, gingival esthetics, microesthetics and macroesthetics.

CONCLUSION

The primary treatment goal in orthodontics is to produce a well-balanced functional occlusion. However, a well-balanced smile is an additional, most important treatment objective. A proper evaluation of facial esthetics requires careful clinical inspection of the patient's smile before treatment commences. Full-face smile photographs are invaluable additional clinical tools in assessing the patient's smile before treatment and are recommended as standard photographic records in

conjunction with the standard full-face and profile photographs.

REFERENCES

1. Terry DA, Pirtle PL. Learning to smile: The neuroanatomic basis for smile training. *J Esthet Restor Dent* 2001; 13:20-27. Peck H, Peck S. A concept of facial esthetics. *Angle Orthod* 1970; 40:284-317.
2. Tjan AHL, Miller GD, Josephine GP. Some esthetic factors in a smile. *The J Prosthet Dent* 1984 Jan; 51(1):25-29.
3. Moskowitz ME, Nayyar R. Smile analysis and principles of visualization. *Compend Contin Educ Dent* 1995; 16:1168-86.
4. Bisson M, Grobbelaar A. Esthetic Properties of Lips: A Comparison of Models and Nonmodels. *Angle Orthod* 2004; 74:162-166.
5. Ackerman MB, Brensinger C, Landis R. An evaluation of Dynamic Lip-tooth Characteristics during speech and smile in adolescents. *Angle Orthod* 2004; 74:43-50.
6. Zachrisson BU. Esthetic Factors Involved in Anterior Tooth Display and the Smile: Vertical Dimension. *J Clin Orthod* 1998;35(7):432-45.
7. Moskowitz ME, Nayyar R. Smile analysis and principles of visualization. *Compend Contin Educ Dent* 1995; 16:1168-86.
8. Burstone CJ. The integumental profile. *Am J Orthod* 1958; 4:01-25
9. Morley J, Eubank J. Macroesthetic elements of smile design. *J Am Dent Assoc* 2001 Jan; 132:39-45.
10. Ackerman MB, Ackerman JL. Smile analysis and design in the digital era. *J Clin Orthod* 2002; 36(4):221-36.
11. Monaco A, Streni O, Marci MC, Marzo G, Gatto R, Giannoni M. Gummy smile: clinical parameters useful for diagnosis and therapeutical approach. *J Clin Pediatr Dent* 2004; 29(1):119-26.
12. Mashid M, Khoshraghti A, Varshosaz M, Vallerei N. Evaluation of golden percentage in individuals with and esthetic smile. *J Esthet Restor Dent* 2004; 16:185-93.
13. Moore T, Southard KA, Casco JS, Qian F and Southard TE. Buccal corridors and smile esthetics. *Am J Orthod Dentofacial Orthop* 2005; 127:208-13.