

## Smile Esthetic: A Review

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**Abstract:** An equipped and systematic method is required to evaluate, diagnose and get to the bottom of esthetic issues predictably. It is of prime significance that the ultimate end result is now not established solely on the looks alone. Our last goal as clinicians is to achieve eye-catching composition in the smile by using growing an arrangement of various esthetic elements. This article reviews the a number of concepts that govern the artwork of smile designing. The literature search was once accomplished the use of PubMed search and Medline. This article will furnish a basic expertise to the reader to carry out a practical steady smile.

**Key Word:** Elements of smile designing; esthetic smile; smile designing; smile proportions.

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### I. Introduction

“Peace begins with a smile” - Mother Teresa.

We could use a lot more smiles in this turbulent, barbaric world we live in.

"Smile is defined as “a pleased, kind, or amused countenance , typically with the corners of the mouth turned up and therefore the front teeth exposed [1]” by the Oxford Dictionary."

A person's capacity to function in society is also determined by their smile. A lovely smile will open doors and break down barriers that stand in the way of a fuller, more enjoyable life. An attractive or pleasing smile enhances a person's social recognition, and the character of the smile has a massive effect on the individual's attractiveness and personality.

Smile design principles necessarily require the integration of aesthetic ideas that harmonise facial aesthetics with dental facial and dental arrangements. The lips and smile as they relate to the face are also included in the dental facial composition. The size, shape, and position of the teeth, as well as their relationship to the alveolar bone, are all factors in dental composition.

It is essential not to isolate smile design from a comprehensive and holistic approach to patient care when planning treatment for cases of compromised aesthetics. Understanding the complex relationships among all supporting oral structures, such as muscles, bones, joints, gingival tissues, and occlusion, is essential for achieving a successful, healthy, and functional result. [2].

**GOALS OF SMILE DESIGNING:** The objective of an aesthetic makeover is to establish a calm and stable masticatory system in which the teeth, tissues, muscles, skeletal structures, and joints all work together through perfect harmony (Peter Dawson). Understanding the interrelationships among all the supporting oral structures, such as the muscles, bones, joints, gingival tissues, and occlusion, is essential in order to achieve a successful, healthy, and functional result. [3]

**COMPONENTS OF AN ESTHETIC SMILE :** A perfect integration of facial composition and dental composition is required to create an aesthetics smile. The evaluation and analysis of both facial and dental composition should always be included in a smile design. [4].

#### Facial composition :

Face aesthetics analysis, evaluation, and treatment planning often require a multidisciplinary approach that may include orthodontics, orthognathic surgery, periodontal therapy, cosmetic dentistry, and plastic surgery. As a result, the best dental and facial creativity comes from an aesthetic approach to patient care. [5]

There are two countenance which do play a serious role within the smile design:

1. the interpupillary line - The interpupillary line should be parallel to the occlusal plane and perpendicular to the midline of the face.

2. lips - Lips are significant because they define the limits of a smile.

If there are substantial differences in the above-mentioned two factors, we would first consider repairing the facial composition before moving on to correcting the dental composition.[6]

In classical terms, the horizontal and vertical dimensions for a perfect face are as follows:

1. Horizontal
2. Vertical

Vital elements of smile designing (dental composition): The vital elements of smile designing include the following

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

The role of each of the above-mentioned factors in smile designing is given below.

### **Tooth components of smile designing :**

#### **1. Dental midline**

The vertical contact interface between two maxillary centrals is referred to as the midline. It should be parallel to the midline of the face and perpendicular to the incisal plane. Minor differences between the midlines of the face and the midlines of the teeth are acceptable and, in many cases, barely noticeable. [9] A canted midline, on the other hand, would be more noticeable and therefore less appropriate. As long as the dental midline is perpendicular to the interpupillary line, the maximum permitted discrepancy is 2 mm, and sometimes more than 2 mm discrepancy is appropriate. The midline assessment can be guided by anatomical landmarks such as the nose's midline, forehead, chin, philtrum, and interpupillary plane. [10]

One of the most precise of these anatomical guide posts is the philtrum of the lip. It's always in the middle. To evaluate the midline, one must always consider

1. location and
2. alignment.

Midline should be

- a) parallel to the long axis of the face: the road angle that forms the contact between the centrals should be
- b) perpendicular to the incisal plane: the line angle that forms the contact between the centrals should be perpendicular to the incisal plane and
- c) over the papilla: the sheet ought to drop straight down from the papilla

In laboratory communication, a face bow transfer or even a reference stick aligned parallel to the interpupillary plane can provide useful information about midline inclination and the presence of a canted incisal plane. [11]

In 75% of cases, the maxillary and mandibular midlines do not align. As a result, using the mandibular midline as a reference point for assessing the maxillary midline is not encouraged. Because mandibular teeth are rarely noticeable when smiling, a mismatch between the maxillary and mandibular midlines has no effect on aesthetics.

**Incisal lengths (incisal edge positions)** Because it serves as a reference point for determining proper tooth proportion and gingival levels, the position of the maxillary incisal edge is the most important determinant in smile creation. The parameters used to help establish the maxillary incisal edge position are:

1. degree of tooth display,
2. phonetics and
3. patient input

#### **Degree of tooth display:**

In a young person, the incisal third of the maxillary central incisor should be visible when the mouth is relaxed and slightly open. As people get older, their muscle tone deteriorates, resulting in less tooth display. (10)

The pitch of the anterior teeth, labial contours, lip support, anterior guidance, lingual contours, and tooth display are all affected by incisal edge position. The combination of proper lip support and the lingual labial position of the incisal edge determines the pitch of each anterior tooth. The anterior guidance as well as the labial and lingual contours are influenced by this location. In a discussion, all of these factors have a significant effect on both aesthetics and functionality.

### Tooth dimensions

Correct dental proportion is linked to facial morphology and is necessary for achieving an attractive smile. The centrals must be the dominant teeth in the smile and have acceptable proportions, according to central dominance. They are the key to a happy face. The central proportions must be both aesthetically and mathematically correct. The centrals' width to length ratio should be around 4:5 (0.8–1.0), with a width of 75–80% of their length being the most acceptable range.[Figure1]. The appearance and placement of the laterals and canines are influenced or determined by the shape and location of the centrals.



**Fig 1: Teeth arranged in Golden Proportion**

"Various pointers for establishing correct proportions in associate aesthetically pleasing smile are"

1. golden proportion (Lombardi),
2. recurring esthetic dental proportions (Ward),
3. M proportions (Methot) and
4. Chu's esthetic gauges.

When viewed from the facial perspective, the important point to remember is that these proportions are based on perceived size rather than real size (in short, it is the distance between proximal line angles of the teeth)

These principles are used as a guide as a substitute than a rigid mathematical formula. Most authors propose creating harmony and stability via eye through suited adjustment and contrast of provisionals instead than any formulation.[15] The factors guiding individual tooth dimensions are as follows.

"Ultimately, there's no formula for anterior esthetics; instead, the ultimate esthetics may be a combination of"

1. tooth proportion guide lines,
2. patient's own perception,
3. cultural and social influences,
4. dentist artistic influences and
5. effective communication with laboratory.

### Tooth inclinations

The vertical alignment of maxillary teeth, visible in the smile line, is compared to the central vertical midline by axial inclination. Each subsequent anterior tooth should have a natural, progressive increase in mesial inclination from the central to the canine. It should be least noticeable with the centrals and slightly more noticeable with the laterals and canines. If the incisal plane is tilted, the axial inclination of the anterior teeth and therefore the midplane itself, if it's at right angle to the incisal plane, will be correspondingly incorrect.[16]

The analysis of axial inclination may be done on a photograph of the anterior teeth during a frontal read. A line is sketched on every tooth from the center of the incisal edge through the plane of the tooth at its animal tissue interface. Axial inclination may also check with the degree of tipping in any plane of reference. The guide for labiolingual inclination is as follows:

1. Jaw central tooth – positioned vertically or slightly labial  
Compare
2. Jaw lateral tooth – cervical is tucked in, incisal edge inclined slightly labially  
Compare
3. Jaw canine – cervical space positioned labially, cusp tip linguistically angulated

Compare

### **Interdental contact area and point**

1. Interproximal contact area (ICA):

- it's outlined because the broad zone during which two adjacent teeth bit.
- It follows the 50:40:30 degree relevance the jaw central tooth..

The increasing ICA helps to form the illusion of longer teeth by wider and conjointly extend apically to eliminate black triangles."

2. Interproximal contact point (ICP):

- it's the foremost incisal facet if the ICA.
- As a general rule, the ICP moves apically, the further posterior one moves from the midline.

Incisal embrasures:

The incisal embrasures ought to show a natural, progressive increase in size or depth from the central to the canine.

This may be a perform of the anatomy of those teeth and as a result, the contact purpose moves apically as we tend to proceed from central to canine. The contact points in their apical progression should mimic the smile line.[17] Failure to provide adequate depth and variation to the incisal embrasure will

1. make the teeth appear too uniform and
2. create the contact areas too long and impart to the dentition a box like look. The individuality of the incisors are lost if their incisal embrasures aren't properly developed. Also, if the incisal embrasures are too deep, it'll tend to form the teeth look by artificial means pointed." As a rule, a tooth distal to incisal corner is more rounded than its mesio incisal corner

### **Sex, age and personality**

Minor differences in the length, shape and positioning of the maxillary teeth allow for dramatic characterization.[19]

- Age – maxillary central incisor

Youthful teeth: uneroded incisal edge, outlined incisal opening, low vividness and high price Aged teeth: shorter; therefore less smile show, token incisal opening, high vividness and low value"

- Sex – jaw incisors feminine form: spherical sleek, soft delicate Male form: cubic , arduous vigorous
- temperament – jaw canine Aggressive, hostile angry: pointed long “fangy” cusp type Passive, soft: blunt, rounded, short cusp form

Soft tissue component of smile design

### **Gingival health**

Because the gingiva serves as a frame for the teeth, gingival health has a significant impact on the final aesthetic success of the case. Prior to beginning any therapy, it is critical that the gingival tissues be in perfect health.[20] Healthy gingiva is usually pale pink in color, stippled, firm and it should exhibit a matte surface; a normal healthy gingival sulcus should not exceed 3mm in depth.

### **Gingival level and harmony**

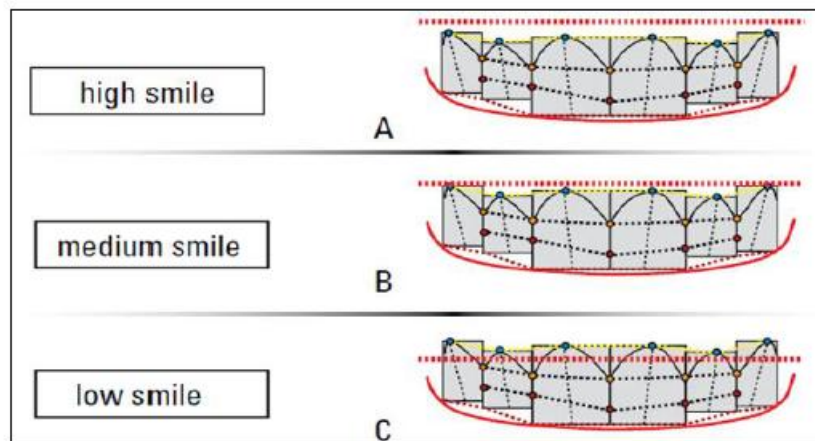
The key to creating a harmonious smile is determining the proper gingival levels for each individual tooth. The gingival height (position or level) of the centrals in the cervical region should be symmetrical. It can also match the canine's appearance. It's fine if the laterals have the same gingival level as the primary. However, the accompanying smile may be too uniform, so it's better to have the gingival contour over the laterals located toward the incisal compared to the tissue level of the centrals and canines.

### **Interdental embrasure (cervical embrasure)**

The darkness of the oral cavity have to no longer be visible in the interproximal triangle between the gingiva and the contact area. If the most apical issue of the restoration is 5 mm or plenty much less from the crest of the bone, then black triangles will be avoided. At times, this will require lengthy contact region that will be extended towards the cervical. This will motivate the formation of a healthy, pointed papilla as an alternative of the blunted tissue structure that often accomplishes a black triangle[22] . Conversely, an improperly developed cervical embrasure that entails overextended, cumbersome restorations will end end result in an improper emergence profile and swollen and infected gingival tissues. [23]

## Smile line

Smile line refers to an imaginary line alongside the incisal edges of the maxillary anterior tooth which must mimic the curvature of the most high-quality border of the lower lip while smiling. Another frame of reference for the smile line suggests that the centrals have to show up barely longer or, at least, now not any shorter than the canines along the incisal plane. This approach is specially useful in cases of lip symmetry or extreme lip curvature at some point of smile formation [Figure 2]. Reverse smile line or inverse smile line takes place when the centrals exhibit up shorter than the canines along the incisal plane.



**Fig 2: Smile Lines**

## II. Conclusion

It is vivid from the above discussion that the smile we create need to be esthetically appealing and functionally sound too. It is our responsibility to carefully diagnose, analyze and supply the pleasant to our patients, taking into account all of the mentioned factors. The smile designing achieved by means of us has to be as conservative as possible unlike the past. Our aim has to be much less reduction of enamel shape and increased esthetics and durability. This really skill that beauty dentistry has to be a multispecialty branch, wherein all treatments like orthodontics, periodontics, surgical approaches have to be performed on every occasion deemed necessary.

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