

Definition

"The dentist who wants to create a smile design must closely observe the intact smile, the dominant position of the maxillary central incisors, and the art of the esthetic integration of the maxillary incisors in proper proportion to the face. The patient will exhibit a pleasing smile only when the quality and health of the gingival and dental elements, together with the relation between teeth and lips, are harmoniously adapted to the face."

Gurel G. The Science and Art of Porcelain Laminate Veneers. London: Quintessence; 2003

Components of the Smile

- Teeth
- Gingival Scaffold
- Lip Framework

Garber DA, Salama MA. The aesthetic smile diagnosis and treatment. Periodontol 2000 1996; 11:18-28

Classification of Upper Lip Lines



High



Medium



Low

Smile Design Principles

- Central incisors
- Mid-line
- Axial inclinations
- Arch form
- Smile arc
- Gingival height symmetry and zenith placement
- Contact points and Embrasure form
- Gradation
- Buccal corridors
- Golden proportion
- Balance and symmetry

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Evaluate principles individually and with respect to what would be:

- Ideal
- Acceptable
- Unacceptable (unaesthetic)

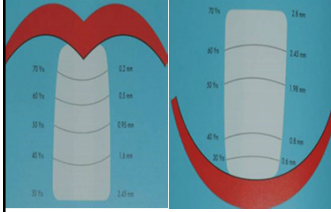
Central Incisors

- Incisal Edge Position
- Individual tooth proportion

“The incisal edge of the maxillary central incisor is the most important determinant in the creation of a smile. The position of the incisal edge acts as the parameter upon which the rest of the treatment is built.”

Gurel G. The Science and Art of Porcelain Laminate Veneers. London: Quintessence; 2003

Tooth Display at Rest



Vig RG, Brundo GC. The kinetics of anterior tooth display. J Prosthet Dent 1978;39:502-504

Evaluation of Intra-oral Mock-ups and Provisional Restorations

The Three F's

- Facial esthetics
- Function
- Fonetics (phonetics)

T-Scan

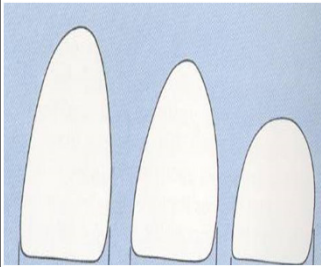


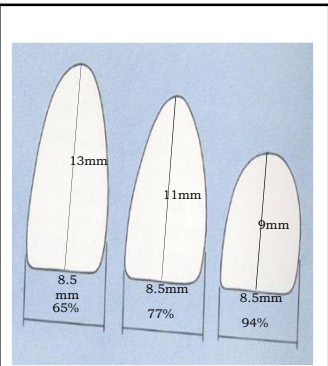
Individual Tooth Proportion




Shillingburg Jr HT, Kaplan MJ, Grace CS. Tooth dimensions. A comparative study. J. South Calif Dent Assoc 1972; 40: 830


Length to Width Ratio of Central Incisors






Reasons for Increasing Incisal Length

Worn incisal edges 

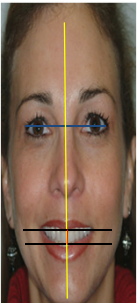
Inadequate tooth display 

Unesthetic tooth proportions 

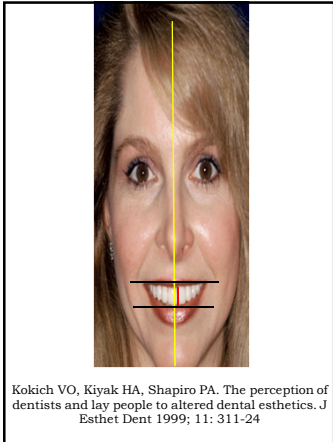
Smile Design Principles

- Central incisors
- Mid-line

Facial Midline



Dental Midline

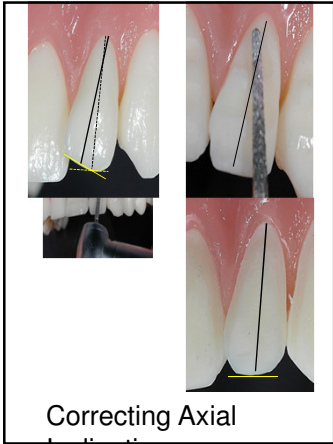


Smile Design Principles

- Central incisors
- Mid-line
- Axial inclinations

Axial Inclinations

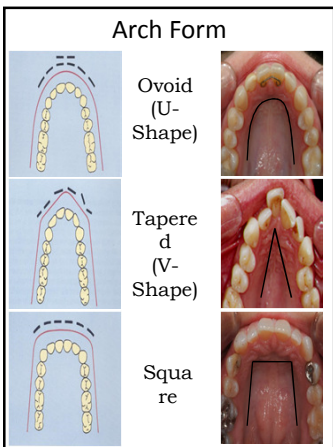
Lombardi RE. The principles of visual perception and their clinical application to denture esthetics. J Prosthet Dent 1973;29:358-382



Correcting Axial Inclination

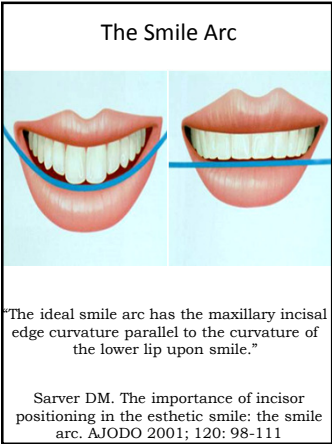
Smile Design Principles

- Central incisors
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- Axial inclinations
- Arch Form



Direct vs. Indirect Intra-oral
Composite Mock-up Technique

- Smile Design Principles
- Central incisors
 - Mid-line
 - Axial inclinations
 - Arch Form
 - Smile arc



Flattening of the Smile Arc in Orthodontically Treated Cases

- Intrusion of maxillary incisors
- Bracket positioning
- Proclination of anterior teeth to accommodate crowding without extraction
- Arch expansion to broaden the smile

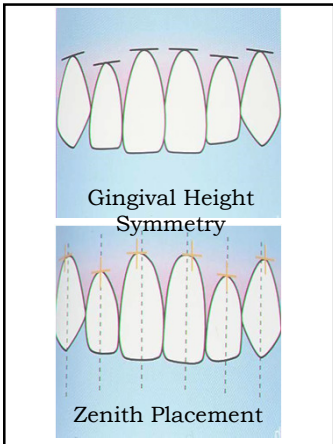
Ackerman J, Ackerman MB, Brensinger CM, Landis JR. A morphometric analysis of the posed smile. Clin Orthod Res 1998;1:2-11

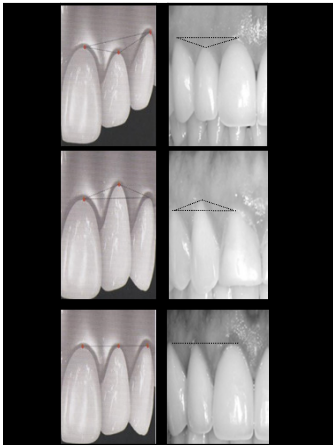
Flattening of the Smile Arc in Non-Treated Cases

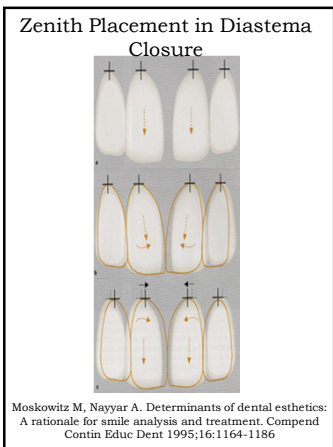
- More vertical growth in posterior maxilla
- Skeletal patterns
- Habits
- Anterior tooth wear

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- Gingival height symmetry and zenith placement



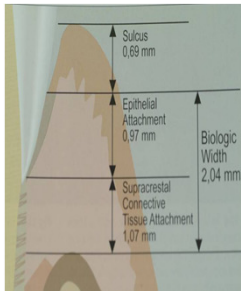




Options for Treating Gingival Asymmetry

- Gingival recontouring (gingivectomy)
- Crown lengthening with osseous surgery
- Orthodontic intrusion or extrusion
- Gingival graft

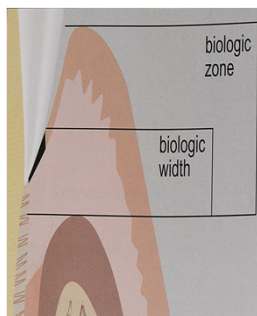
Biologic Width



Gargiulo AW, Wentz FM, Orban B. Dimensions and relations of the dentogingival junction in humans. *J Periodontol* 1961;32:261-267

Cohen DW. Periodontal preparation of the mouth for restorative dentistry. Presented at the Walter Reed Army Medical Center, Washington, DC, 1962.

Biologic Zone



Kois JC. New paradigms for anterior tooth preparation: Rationale and technique. *Contemp Esth Dent* 1996;2:1-8

Excessive Gingival Display (Gummy Smile)

- Short philtrum height
- Hypermobile lip
- Vertical maxillary excess
- Compensatory eruption
- Anterior dentoalveolar extrusion
- Altered passive eruption

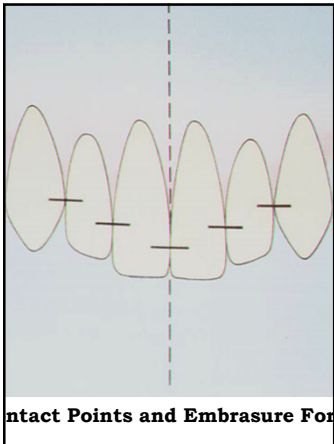
Benefits of a Mock-Up

- Can help determine incisal edge position
- Can help to establish proper arch form
- Can serve as a guide for gingival height symmetry, tooth proportion, and facial contours
- Will aid in evaluating aesthetics, function, and phonetics
- Can be used as a template for provisionals in the absence of a wax-up
- Can be beneficial for laboratory communication and patient feedback

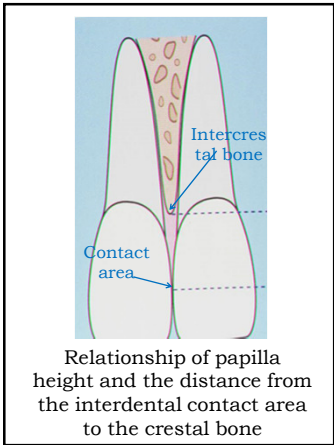


Smile Design Principles

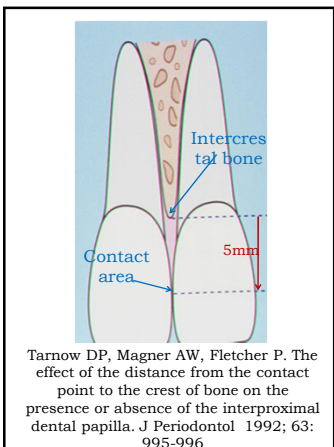
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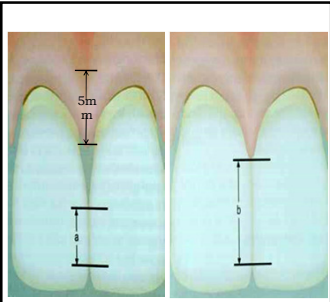
ntact Points and Embrasure For



Relationship of papilla height and the distance from the interdental contact area to the crestal bone



Tarnow DP, Magner AW, Fletcher P. The effect of the distance from the contact point to the crest of bone on the presence or absence of the interproximal dental papilla. J Periodontol 1992; 63: 995-996



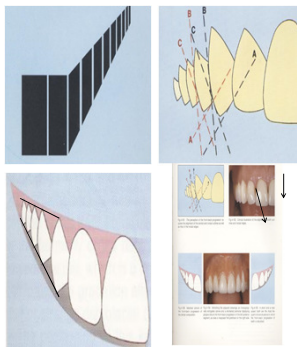
Lengthening the interdental contact area to close dark triangles

Goldstein RE. Esthetics in Dentistry, 2nd ed. Hamilton, On: BC Decker Inc, 1998: 133-186

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Gradation



Renner RP. An Introduction to Dental Anatomy and Esthetics. Chicago: Quintessence, 1985:125-166, 187-233

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Buccal Corridors



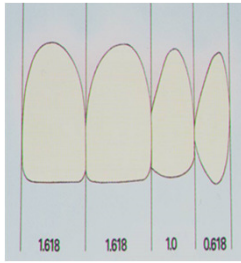
Frush JP, Fisher RD. The dynesthetic interpretation of the dentogenic concept. J Prosthet Dent 1958;8:558-81

Moore T, Southard JSC, Qian F, Southard TE. Buccal corridors and smile esthetics. Am J Orthod Dentofac Orthop 2005; 127:208-213

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Golden Proportion



Lombardi RE. The principles of visual perception and their clinical application to denture esthetics. J Prosthet Dent 1973; 29: 358-382

Levin EL. Dental esthetics and golden proportion. J Prosthet Dent 1978; 40:244-252

Recurring Esthetic Dental (RED) Proportion

The proportion of the successive widths of the teeth as viewed from the frontal aspect remains constant as you move distally in the arch. The dentist may use a proportion of their choice as long as it remains consistent while moving distally.

Ward DH. Proportional smile design using the recurring esthetic dental (red) proportion. Dent Clin North Am. 2001; 45: 143-154

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