

PERIO-ESTHETICS: AN OVERVIEW

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ABSTRACT

Esthetic dentistry has seen an evolution in last few decades with the improvement in materials, techniques and conceptual understanding. In terms of clinical evaluation and management in esthetic smile designing, the role of periodontics has seen an uprise over the years. This has helped in achieving not only esthetic but also biologic and functional precision in esthetic dental treatment. Periodontal treatment rendering to better esthetics comprises the establishment of health of the tissue along with a physiologic form and functionality. A variety of esthetic periodontal procedures have been developed which include correction of defects like gingival recession, osseous defects with or without formation of black triangles. Furthermore, correction of the relationship of the teeth and gingiva in frame of the lips has ensured more predictable and esthetic results in conjunction with restorative procedures. Hence, a precise implementation of these procedures in the esthetic management of the dentition is mandatory for better clinical outcomes. This article aims at emphasizing on the factors involved in esthetic evaluation and treatment goals of esthetic periodontal procedures

KEY WORDS

Perioesthetic, smile, periodontal surgery, gingiva, lips.

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INTRODUCTION

According to the Chinese proverb, “*While laughing is selfish, the smile is a gift to others that costs nothing. A truly beautiful smile is one that lasts.*” However, the perception of 'beauty' is subjective, with certain universal guidelines that transcend to its subjectivity and provide us with objective criteria as to what is pleasing to the human eye¹.

In the management of facial esthetics, the amalgamation of both art and science is important for achievement of balanced harmony and strong and durable smile. This helps in restoring aesthetics while still preserving form, function and biology.

A harmonious smile accounts for the facial proportions and symmetry, with an appropriate balance between the “white” and “pink” component of the mouth. This accounts for 60-70% of the visual perception of the face¹.

In smile redesigning, the clinician should evaluate the smile and integrate it to the harmony of the face. Esthetic dental treatment comprises of overall oro-facial complex composed of the hard and soft tissue around the teeth; depending largely on the gingiva surrounding the teeth encased within the perimeter of the lips. This includes, first and foremost, the maintenance of periodontal health, in addition to correction of any gingival disharmony to achieve a balanced and esthetic contour. PERIO-ESTHETICS comprises this aspect of periodontal therapy where-in periodontal plastic surgeries are designed to correct the morphology and position of the gingiva in relation to the tooth and the lips².

DENTAL AESTHETICS

For a majority of patients, facial aesthetics coincides with improvement related to teeth, missing teeth and whiteness of teeth. This dentofacial aesthetics is a determinant of the overall physical attractiveness. A beautiful smile is inclusive of fully designed lips, healthy and well-aligned dentition and a harmonious gingival contour.

The primary goal of smile designing is to develop a peaceful and stable masticatory system, which depends on the esthetic criteria in respect to horizontal, vertical and sagittal references¹.

Assessment of smile begins with a comprehensive facial analysis done “from outside in” and depends on several parameters including both:

- i. Extra-oral components - Facial elements
- ii. Intra-oral components - dental elements (hard and soft tissue).

The extra-oral component consists of facial elements like:

1. **Inter-pupillary line** parallel with the occlusal plane and perpendicular to the midline of the face.
2. Location of **facial midline** in relation to dental midline.
3. **Lip anatomy** : fullness of upper and lower lip in terms of symmetry to the face, prominent/ retruded lip. The degree of lip support helps determine if the case should be 'built out' facially or not.
4. **Tooth exposure at rest**: This is one of the most critical elements of facially directed treatment planning.
5. **Nasolabial angle** : assess facial profile with lips in repose.
6. **Rickette's E-plane** : Ideally, the upper lip is 4 mm from the E-plane and the lower lip is 2 mm away. Upper lip >6mm indicates a concave profile. If lips lie on the line, it is considered to be a convex profile.

As stated by Morley & Eubank (2001), the smile is part of **facial esthetics, macroesthetics, microesthetics and gingival esthetics**³.

Facial esthetics include the relation of lips and soft tissue frame of the smile during speaking, smiling and laughter.

Macroesthetics deals with the facial characteristics of the patient including the relationship between the teeth and the surrounding tissue

Microesthetics consider the anatomy, the colour and the location of teeth in the dental arch.

Gingival esthetics deals with the gingiva surrounding the teeth.

The smile is a dynamic position of the lips and varies with the degree of contraction of the muscles and the lip profile. There are different dynamic stages of smiling: **the natural smile, the spontaneous smile, and the exaggerated or forced smile**⁴.

THE SMILE LIPLINE:

The upper smile lip line, or smile line, is defined as the position of the upper lip, and the lower smile line is defined as the position of the lower lip in relation to the maxillary teeth. The smile line can be high, medium or low depending on the relationship between the lips, teeth and gingiva (Tjan et al. 1984)⁵.

The upper lip has to be assessed for its height, function, thickness and position of the lip upon smiling, in relation with the gingival display.

THE LOWER LIP:

* The incisal edges of the upper central incisors should be above and should follow the lower lip contour.

* The lower lip should follow the contour of the maxillary teeth incisal edges.

* The edges of the lower incisors should be level with the lower lip contour.

These unesthetic facial morphologies could be treated by:

- o Periodontal plastic surgery
- o Botox injection in the upper lip
- o Vestibuloplasty of the upper lip
- o Maxillary surgery, or orthognatic and orthodontic treatment, or
- o Rhinoplasty at the tip of the nose

MICRO-ESTHETIC EVALUATION:

The micro-esthetics of the smile should be evaluated keeping in mind:



Fig. 1: Upper smile line in patients with high (A), medium (B) and low (C) smile lines

i. **Maxillary incisal edge position:** The visibility of edge of the central incisor should be 2mm. This is the first step in smile evaluation and further treatment planning².

ii. **Height of the maxillary central incisor**

iii. **Width of the maxillary central incisor:** It should be 80% of the tooth height, following the principle of golden proportion.

iv. **Gingival zenith:** The zenith of the canine should be in line with that of the central incisor. The zenith of the lateral incisor should be placed 0.5-2mm coronal to the central incisor⁶.

Alteration or non-uniformity in these components result in an unaesthetic appearance and hence necessitate corrections for the same to achieve a form as ideal as possible, maintaining both form and function.

The gingiva has to be assessed for:

❖ **Frame:** harmony or disharmony, in relation to tooth eruption on the ridge

❖ **Color:** pink or pigmented, in relation to ethnicity

❖ **Texture:** normal or inflamed, in relation to oral hygiene

❖ **Biotype:** thick, medium, or thin, in relation to the cortical bone plate (Weisgold and Coslet, 1977)⁷.

❖ **Keratinized tissue width**

❖ **Interdental papilla**

ESTHETIC PERIODONTAL TREATMENT:

To achieve perfect esthetic in smile designing, efficient treatment planning is required to foresee the desired outcome followed by the clinician attempting to physically achieve that restoratively. Perio-esthetics provides proper maintenance of the restorative structure with a healthy underlying hard tissue and hence maintenance of the integrity of the soft tissue.

Esthetics in periodontics primarily starts with the establishment of a healthy periodontium and maintenance of the dentition. Hence the primary emphasis of periodontal treatment should be on the reduction of any clinically evident inflammation. The second link between periodontal treatment and esthetics is the establishment of proper contour, form and colour of both the teeth and the surrounding gingiva, a harmonious balance between the “pink and white” components of the smile. The third relevant association between periodontal treatments and esthetics is the establishment and maintenance of adequate attached gingiva around crowns, bridges and dental implants.

TREATMENT PROCEDURES IN PERIO-ESTHETICS:

Periodontal defects pose a clinical and esthetic challenge and are indicated for treatment to avoid functional disability. Advanced periodontal and perio-esthetic treatment should be attempted at only after reduction in inflammation and establishment of clinical health. Any disparity in the gingival form, function, contour and colour, elective periodontal procedures can be indicated for intervention for improvement in esthetics. The various clinical scenarios that serve as an indication for perio-esthetic procedures include:

Physiological scenario:

1. Asymmetric gingival outline and contour – usually by crown lengthening or gingivoplasty techniques.
2. Excessive gingival display/ gummy smile
 - ✓ Crown lengthening
 - ✓ Lip repositioning
 - ✓ Orthodontic/ orthognathic procedures
3. Gingival pigmentation : Depigmentation by scalpel, bur, LASER, electrosurgery or cryosurgery
4. Asymmetric lip : cheiloplasty/ lip fillers
5. Aberrant frenal attachment: indicated for frenectomy

Pathological scenario:

1. Gingival hyperplasia
2. Gingival recession
3. Post-surgical hard and soft tissue collapse
 - ✓ Ridge augmentation
 - ✓ Papillary reconstruction
4. Dental implant

A methodical and/or experimental strategy with a scientific approach should be adopted for better clinical results. The esthetic outcomes of smile designing can be evaluated by the pink/ white esthetic score (PES/ WES).

PINK WHITE ESTHETIC SCORE:

PWES or Pink White Esthetic Score is defined by the evaluation of the gingiva, tooth and implant restoration and is determined using certain parameters (Fuerhauser et al., 2005)⁸.

A higher score of PWES relates to a higher esthetic quotient and gives the standardization for esthetic evaluation.

PINK ESTHETIC SCORE

Score	The PES represents the final gingival contour defined by	Rate
1	Mesial papilla	0-2
2	Distal papilla	0-2
3	Level facial mucosa	0-2
4	Curvature facial mucosa	0-1
5	Root convexity	0-1
6	Soft tissue color	0-1
7	Soft tissue texture	0-1
Score (10 being the best)		0-10

WHITE ESTHETIC SCORE

Score	The WES represents the final tooth restoration/appearance defined by	Rate
1	Tooth form	0-2
2	Tooth outline and volume	0-2
3	Color (hue and value)	0-2
4	Restoration surface texture	0-2
5	Translucency and characterization	0-2
Score (10 being the best)		0-10

CONCLUSION

Esthetic dentistry has evolved in the last few decades. With better technology being developed in the improvement of the dental esthetics, more attention is being given to the establishment of an ideal and harmonious relation between the teeth and its surrounding hard and soft tissue in the provision of an esthetic smile. A clinician should have his expertise in adequately diagnosing and determining the osseous and gingival state, as well as in treatment planning that will improve both the esthetics and function. This should include the evaluation of not only the white, but also the pink component of the smile, that is the relation of the teeth with the gingiva and the lips, where-in the soft tissue defects can be treated or compensated for, thus making them invisible and esthetically pleasing.

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