ESTHETIC CONSIDERATIONS
In fixed prosthodontics

Presented by
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SMILE LINE OR INCISAL CURVE

APPEARANCE ZONE
Factors affecting the esthetics of fixed restorations

I- SOFT TISSUE MANAGEMENT

FINISH LINE FORMATION

subgingival margins--------- every effort made -------- minimal soft tissue injury.

Retraction Cord Technique

Retraction cord ----- sulcus----- temporarily displace gingiva laterally and apically

The finish line lowered without soft tissue injury.
too large or too many cords  --------- excessive trauma.

healthy gingival tissue, one thin cord --------- anterior teeth

single medium-sized ------------- posterior teeth.

excessive instrument pressure exerted in placing the excessively large cords--------- gingival damage.

blanching (evidence of reduced blood supply) that is often observed immediately after placement of cord rapidly disappears.
Remove all cord from the sulcus as the impression material is syringed around the prepared teeth.

removal of an impression from the mouth, ------- check the gingival sulcus with an explorer and to remove any remnants of retained impression material.

Severe tissue reactions ---------------- impression material left in the sulcus.
THE TEMPORARY RESTORATION

properly contoured
well adapted to the preparation margin

should possess a very smooth surface

establish cervical embrasures to
provide access for oral hygiene aids.

not more than two to three weeks
laceration of the gingiva with rotary instruments + poor temporary restoration.

final restoration ------- fails to vertically reach the finish line of the prepared tooth

restoration overextended or underextended, --------- plaque accumulation at the margin of the restoration.
2- Tooth reduction
A uniform duplication of the form and contours of the natural dentition

Insufficient tooth reduction ------- poor esthetics

development of adequate color requires a certain thickness of porcelain

the facial reduction should be 1 to 1.5 mm.

The areas to be considered during preparation :
1- labioincisal aspects.
2- Cervical portion of the facial surface.
A uniform duplication of the form and contours of the natural dentition

The anatomic contour of the tooth should be followed, this is best accomplished by reduction of facial surface in 2 planes.
Insufficient reduction of the labioincisal area is generally caused by reduction of the facial surface in one relatively flat plane. The anatomic contour of the tooth should be followed, this is best accomplished by the use of depth cuts that follow the existing facial tooth contours.
inadequate facial reduction, the laboratory fabrication can be handled in one of two ways.

1- develop proper contour in the restoration, results in a lack of color vitality due to insufficient porcelain thickness: External and internal color modification to enhance the esthetics of the restoration.

2- over-contoured restoration to develop proper color leading to plaque accumulation which affects the gingival health.
A shoulder or deep chamfer finish lines facilitate adequate cervical reduction.

A chamfer provides a decrease in facial reduction.
3- SHADE SELECTION

Many factors can be responsible for poor color match:

1. A poor selection may have been made from available shades, or it may not be possible to match the natural teeth with the available porcelain colors.

2. The dental laboratory may have failed to reproduce the selected shade from the available materials or there may have been insufficient information to effect a satisfactory color modification.

3. The tooth reduction is insufficient in certain areas, or the metal framework or opaque porcelain, or both, may be too thick, leaving insufficient space for dentin porcelain.

4. Also, the porcelain may not have been handled in such a manner as to reveal its inherent coloration.
4- COLOR VARIATION

- VARIATIONS AMONG TEETH

1- Maxillary anterior teeth

- canines > pigm related to the dentine
- lateral incisor ---------slightly less pigmentation than the central incisor, related to the faciolingual dentine thickness, which is often slightly less on a maxillary lateral incisor.

2- Mandibular anterior teeth: The canines exhibit the greatest color intensity, with the incisors usually appearing the same. If a variation in the incisors exists, it is the opposite of that found in the maxillary incisors. The lateral incisor > pigmentation owing to the larger crown dimension.

3- Posterior teeth exhibit same degree of pigmentation, less than canine. Occasionally, the molars > pigmented than the premolars.
cervically > dentin than enamel. Incisally the enamel is thicker than the dentin, which increases the translucency.

Different areas of coloration within the same tooth-
Separate shade selection for each color zone to allow different colored porcelains to be used in the appropriate areas.
PERCEPTUAL BIASES

CULTURAL BIASIS

ARTISTIC BIASIS

AGE

SEX

OLDER TEETH

YOUNGER TEETH
CULTURAL BIASES

SEX

MASCULINE

FEMININE
enamel to dentin is high.

- Duplication of this feature —— ceramic restoration is to seem “alive.”
- Important during conversation or smiling. Patients with a low smile line, only the incisal portion of teeth is visible, need to have these characteristics duplicated
An anterior tooth sometimes has an area of slight incisal opacity. (enamel), an optical effect created by refraction of light as it strikes the incisal edge (halo effect). Reproduction of the effect = by shaping the incisal edge of the ceramic restoration so that it possesses the exact lingual slope and thickness of adjacent teeth. Little surface stain applied lingually or incorporated internally, can enhance the desired result. Surface stain located lingually may wear off during function.
Developing the desired light reflection on a restoration’s surface by meticulous duplication of the heights of contours and depressions on the facial surface. The number of depressions, their location, form, and depth can be recorded by close-up photographs taken from different angles and by the working cast.

When light strikes a restoration surface, it should create a reflection pattern similar to that of adjacent teeth, thus enhancing the color match.
VII- DEGREE OF GLOSS

1 - surface gloss on ceramic restoration affects the reflection of light, functions in conjunction with surface characterization to enhance the appearance of the restoration.

2 - Excessive gloss lightens the color

3 - Too long heating or heating at elevated temperatures during glaze firing can exhibit exaggerated gloss, in addition to excessive flowing of the surface and loss of surface characterization.

4 - Combining different degrees of gloss at different areas creates the desirable natural play of reflection of light.

5 - Introducing highly glazed wear facets in older patients improves esthetics.
8-Tooth form, size, inclination and arch position
restoration of a single maxillary central incisor is one of the most difficult esthetic situations. By contrast, if the restoration is slightly out of alignment with its contralateral counterpart, it is usually better for restorations to be shaped like their contralateral counterpart when they are located adjacent to unrestored teeth.

But if all of the readily visible teeth are being restored and there is no color-matching problem, it may be esthetically advantageous to create slight alterations in form and position to escape from artificiality.
The proximoincisal angles must be carefully verified as they affect the incisal embrasure size. Giving the proper size and form to each embrasure is very significant in creating a pleasing esthetic effect. A lack of incisal embrasure space causes restorations to visually appear as one unit, thereby producing an unnatural tooth appearance.
Esthetics depend on proportion. An object is considered beautiful if it is properly proportioned. Concepts of proportion are probably based on what is found in nature. A ratio of approximately 1.619 to 1 between succeeding terms is considered pleasant, and is known as the golden proportion. When a line is bisected in the golden proportion, the ratio of the smaller section to the longest section is the same as the ratio of the larger section to the whole line.

The golden proportion is helpful in designing a well proportioned prosthesis.
BALANCE
The concept of balance including the location of the midline is of particular importance in prosthodontics. The observer expects the left and right sides of the mouth if not to match precisely at least to balance out. An obvious restoration on one side may be balanced if there is a diastema or a large tooth on the other side. If something is out of balance, the brain infers that the arrangement is unstable; a balanced arrangement implies stability and permanence.
Lack of balance-------------poor esthetics
The difference in central incisor height
Misaligned midline contribute to lack of symmetry
Span length of missing teeth
Affects balance
Illusion is the art of changing the perception to cause an object to appear different than it actually is. This concept is particularly useful in solving problems associated with presence of space limitations (too much or too little space) or other problems that may make it impossible to duplicate the original form.

The principles of illumination and reflection can be manipulated by the dentist and the technician to change the apparent size and shape of a tooth through illusion.
Artistic bias

Principle of line

Horizontal  vertical

Cervical staining, white hypoplastic lines straight incisal edges ---- illusion of width

Stain lines, texturing ---- longer accentuated developmental grooves

These lines create illusions by breaking up the smooth reflecting surface causing ruptures in the continuity of the linear reading of the surface making the tooth appear longer or shorter, wider or narrower. Characterized or textured surfaces produces shadows and shadow position can determine how the mind will interpret the form.
The law of the face

The face of the silhouette of the tooth is the area on the facial surface of anterior and posterior teeth that is bounded by the transitional line angles as viewed from the facial (buccal) aspect.

In anterior teeth, the transitional line angles mark the transition from the facial surface to the mesial and distal surfaces, the incisal edge and cervically.

The tooth surface slopes lingually towards the mesial and distal approximating surfaces and towards the incisal edge and the cervical root surface from these line angles, producing light reflections in different directions corresponding to the sloping direction of each surface, thus creating shadows in these areas.
Only the face of the tooth or the silhouette will reflect the light forwards and anteriorly. By reducing or increasing the portion of the tooth reflecting light forwards (the face) we create the illusion of smaller or wider, shorter or longer teeth respectively.

Creating equal apparent faces in two dissimilar adjacent teeth, makes dissimilarly sized teeth look similar; as their faces reflect light in the same way.
The concept of the law of the face becomes apparent and more important when dealing with *canines and posterior teeth*. From the frontal view only a portion from the canine and posterior teeth are visible. In this view, the canine face is bounded by the mesial transitional line angle, the cervical transitional line angle and the midlabial ridge. The distal half of the tooth is usually not visible from the frontal view. Moving the midlabial ridge and the incisal tip mesially (a, b), will create the illusion of a narrower tooth. In addition, moving the distal transitional line angle more mesially (c) will give the illusion of equal mesial and distal faces and the tooth will look smaller both from frontal and side views.
The position or arrangement of teeth can create illusion of decreased width. When teeth are placed in linguo-version, not only its real width is masked by the more prominent approximating teeth, but the effect of increased shadowing also masks its size.
ARRANGMENT OF TEETH

Slight lingual rotation of anterior crowns may solve the problem of wide space by narrowing the areas that reflects light forward; thus decreasing the apparent width
THANK YOU

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