ESTHETIC CONSIDERATIONS IN COMPLETE DENTURE

Esthetics: the branch of philosophy dealing with beauty.

Dental esthetics: the application of the principles of esthetics to the natural or artificial teeth and restorations.

Denture esthetics: the effect produced by a dental prosthesis that affects the beauty, attractiveness, character, and dignity of an individual.

Factors Influencing the Appearance of Dentures:

✓ Patient factors
✓ Tooth factors
✓ Denture base factors
✓ Tooth/Denture base factors

Patient Factors

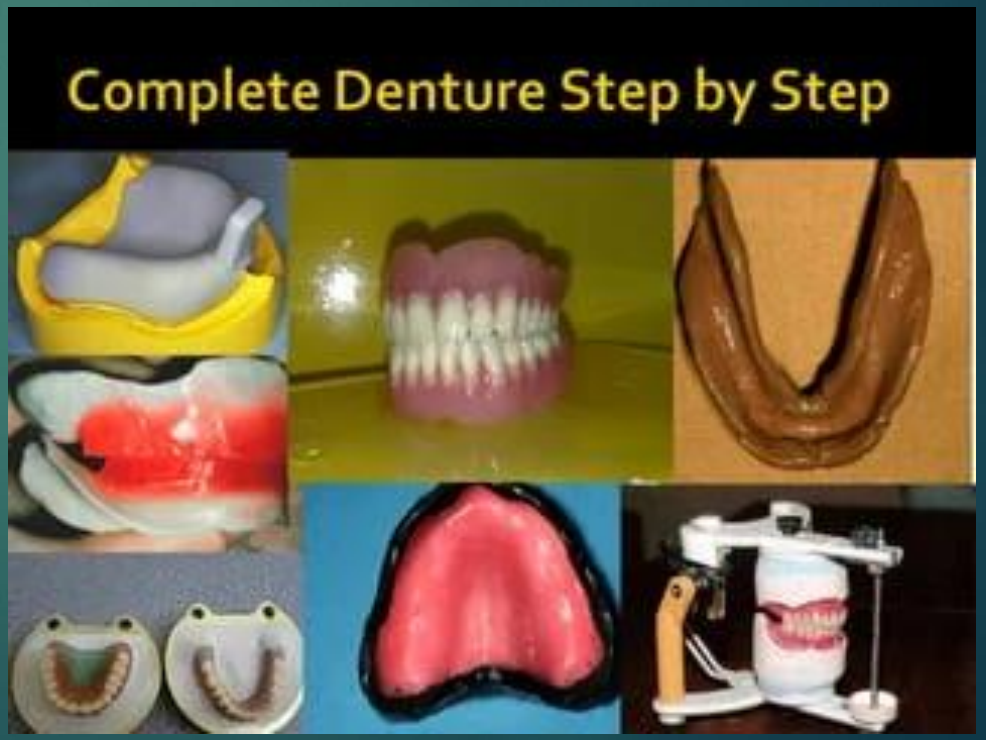
1. Sex 2. Age 3. Personality

Tooth Factors

1. Position 2. Color 3. Size 4. Form.

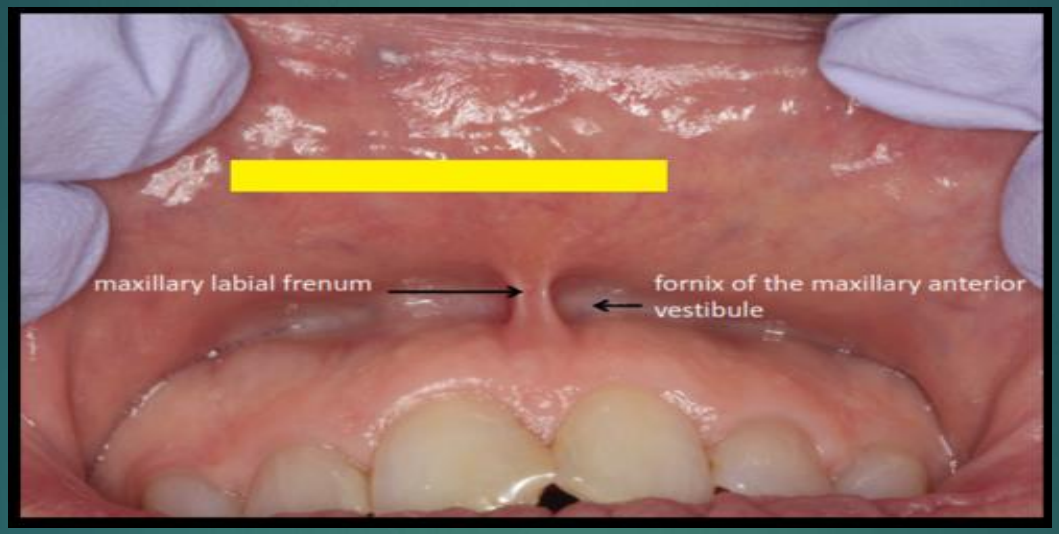
Steps in achieving esthetic complete denture:

1. An accurate impression
2. Jaw relation
3. Selection of teeth
4. Arrangement of teeth
5. Characterization



1- An accurate impression

Thickness of labial flange of both dentures.



2- jaw relation

- Proper vertical dimension of occlusion helps restore normal physiological length of muscles and allows normal facial expression.

- Re-establishing the appropriate vertical spacing will improve the patient's appearance by decreasing the *sunken and aging appearance*.

3. Selection of teeth:

Teeth selection is very important as the selection of the appropriate shade, size, and form of the artificial teeth determines the esthetic and function of the denture.

Objectives of tooth selection:

1. Function efficiently.
2. Normal speech.
3. Aesthetically pleasing.
4. No tissue abuse.
5. Should maintain the vertical dimension.

Anterior teeth selection: Anterior teeth selected primarily to satisfy esthetic while posterior selected for function.

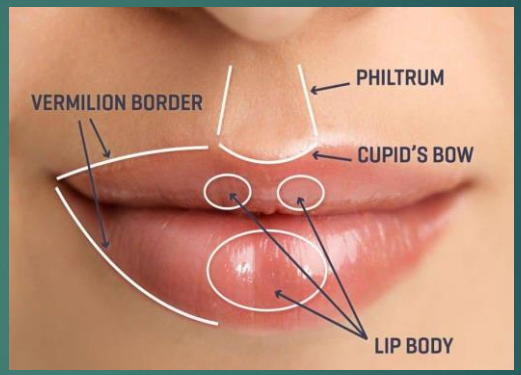
Guides for anterior teeth size:

Pre-extraction records:

Diagnostic cast, photograph, radiograph, extracted teeth, and previous denture.

Post extraction record:

1.Central incisors restore philtrum if possible.
2.Central incisors restore vermillion border.

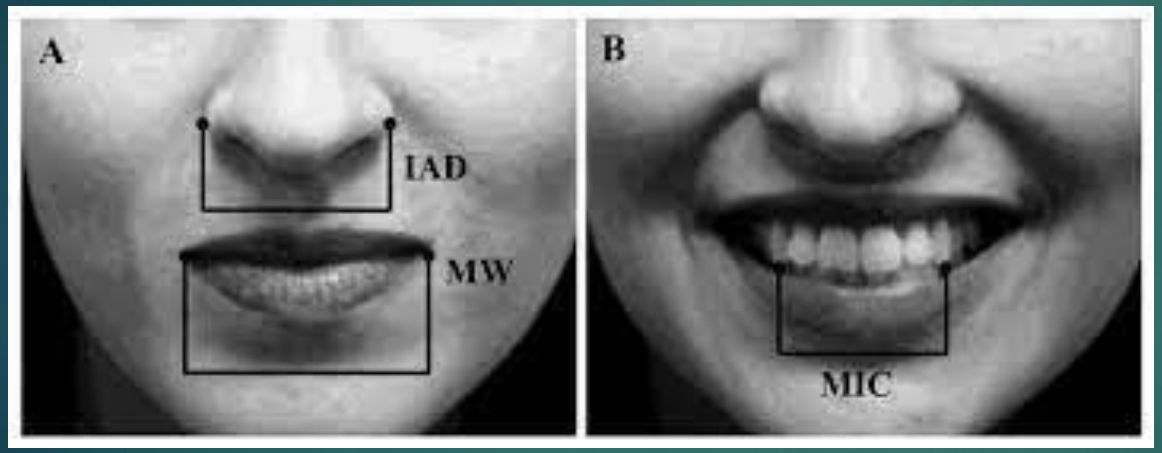


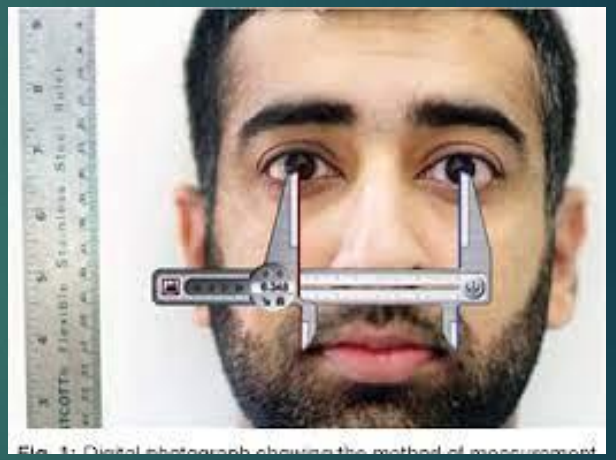
3.Incisal points and smile line determine height of tooth (age-related).

4.Position of canine points

A. *Relate to inter-alar width (smiling).*

B. *Relate to pupils (require pre-extraction photograph).*





Facial Anthropometry in an Arab Population

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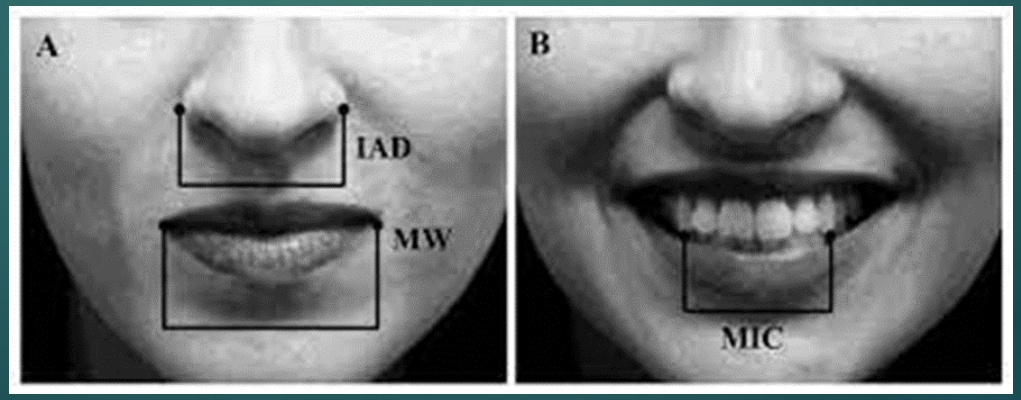
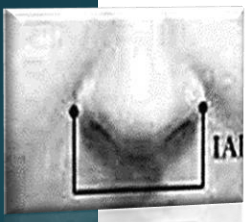
Objective: To measure the inter-alar width of the nose (IAD), the maxillary inter-canine (MIC) distance and mouth width (MW) of an Arab sample and evaluate the ethnic variations.



Results:



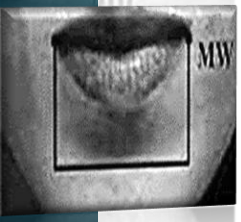
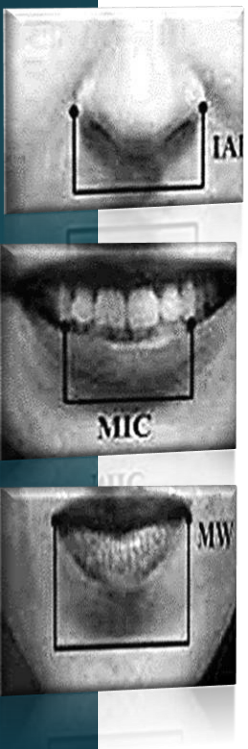


Table 2: The Mean and Standard Deviation of the Inter-alar Width of the Nose, the Maxillary Inter-canine Distance and the Mouth Width

Measurement	Nationality	Male		Female		Total	
		No.	Mean ± SD	No.	Mean ± SD	No.	Mean ±SD
Inter-alar Width of the Nose	Bahrain	17	39.69 ± 3.1	47	33.26 ± 2.26	64	34.97 ± 3.79
	KSA	10	36.25 ± 2.11	43	33.29 ± 2.34	53	33.85 ± 2.56
	Kuwait	20	35.45 ± 3.24	18	32.42 ± 2.74	38	34.01 ± 3.35
Maxillary Inter-canine Distance	Bahrain	17	40.41 ± 2.33	47	36.48 ± 2.90	64	37.53 ± 3.25
	KSA	10	39.67 ± 2.80	43	36.45 ± 2.27	53	37.06 ± 2.67
	Kuwait	20	38.78 ± 2.31	18	35.99 ± 2.33	38	37.46 ± 2.69
Mouth Width	Bahrain	17	53.59* ± 2.64	47	49.37 ± 3.56	64	50.50 ± 3.81
	KSA	10	52.62 ± 3.87	43	48.13 ± 3.35	53	48.97 ± 3.85
	Kuwait	20	52.53 ± 3.60	18	47.72 ± 3.58	38	50.25 ± 4.30

KSA = Kingdom of Saudi Arabia, No = Number; *p=0.034

Results:



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Results:

Table 3: Means of the Inter-alar Width of the Nose, Maxillary Inter-canine Distance and Mouth Width (Chelion to Chelion) in Different Populations[2,5,7,9-12]

Author and Year	Population	No. of Subjects	Inter-alar Width of the Nose (mean)		Maxillary Inter-Canine Distance (mean)		Mouth Width (chelion to chelion) (mean)	
			Males (mm)	Females (mm)	Males (mm)	Females (mm)	Males (mm)	Females (mm)
Keng (1986)	Chinese	118	39.60	36.41	35.60	34.96	-	-
Dharap et al. (1997)	Malays	266	39.80	36.20	36.70	36.20	-	-
Farkas et al. (2005)	North American Whites	-	34.70	31.40	-	-	-	-
Farkas et al. (2005)	Portuguese	-	36.60	31.90	-	-	-	-
Farkas et al. (2005)	Thai	300	40.80	40.20	-	-	-	-
Farkas et al. (2005)	Angolan	210	46.30	40.80	-	-	-	-
Gomes et al. (2009)	Brazilian	81	43.19	38.79	38.01	37.05	-	-
Stephan, Henneberg (2003)	Central/South East Asian	32	-	-	-	-	54.21	51.22
Stephan, Henneberg (2003)	European	64	-	-	-	-	55.01	51.41
Arslan et al. (2008)	Turks	173	37.00	32.70	-	-	50.02	47.30
Patnaik, Goel (2010)	North Indian	250	-	-	-	-	46.83	43.88
Dharap et al. (Present Study)	Arabs (Middle East)	168	37.14	33.21	39.66	36.38	52.86	48.63

5. If patient is already a denture wearer, the mouth should be examined with the dentures in the mouth giving importance to physiological and esthetic aspects.

Factors of selection of anterior teeth:

1. Color

Show your patients a complete shade guide and select the two lightest and darkest tabs. Delete the rejected color, and select another shade from the preferred half of the shade guide. Repeat this pair comparison.

2. Size: Depend on:

a) Existing dentures.
b) Models of previous teeth.
c) Photograph

Again use a method of pair comparison to assist patients to decide what size of tooth they prefer.

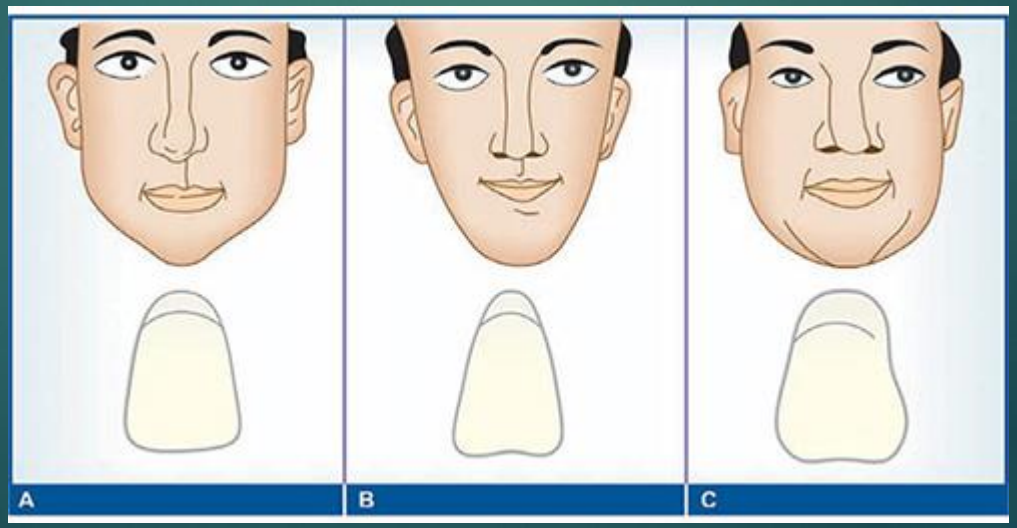
Factors that influence the size of anterior teeth are:

1. Size of the face.
2. Amount of available interarch space.
3. Measured distance between distal of right and left maxillary cuspids.
4. Length of the lip.
5. Size and relation of arches.

3. Mold

Allow your patient to select between molds of the same size but different shapes. Set two different molds on the right and left sides attach to a piece of wax and ask patients which they prefer.

There is a choice of mold: ***square***, ***tapering***, or ***ovoid***. In general terms, ***square molds*** suit patients with large square faces. Long and narrow faces may be best suited to ***tapering molds***, whereas ***ovoid molds*** tend to suit patients with small, round faces.



Form of the Anterior Teeth

The form or outline of the anterior teeth can be determined using the following factors:

1. Shape of the patient's face or facial form (previously mentioned).

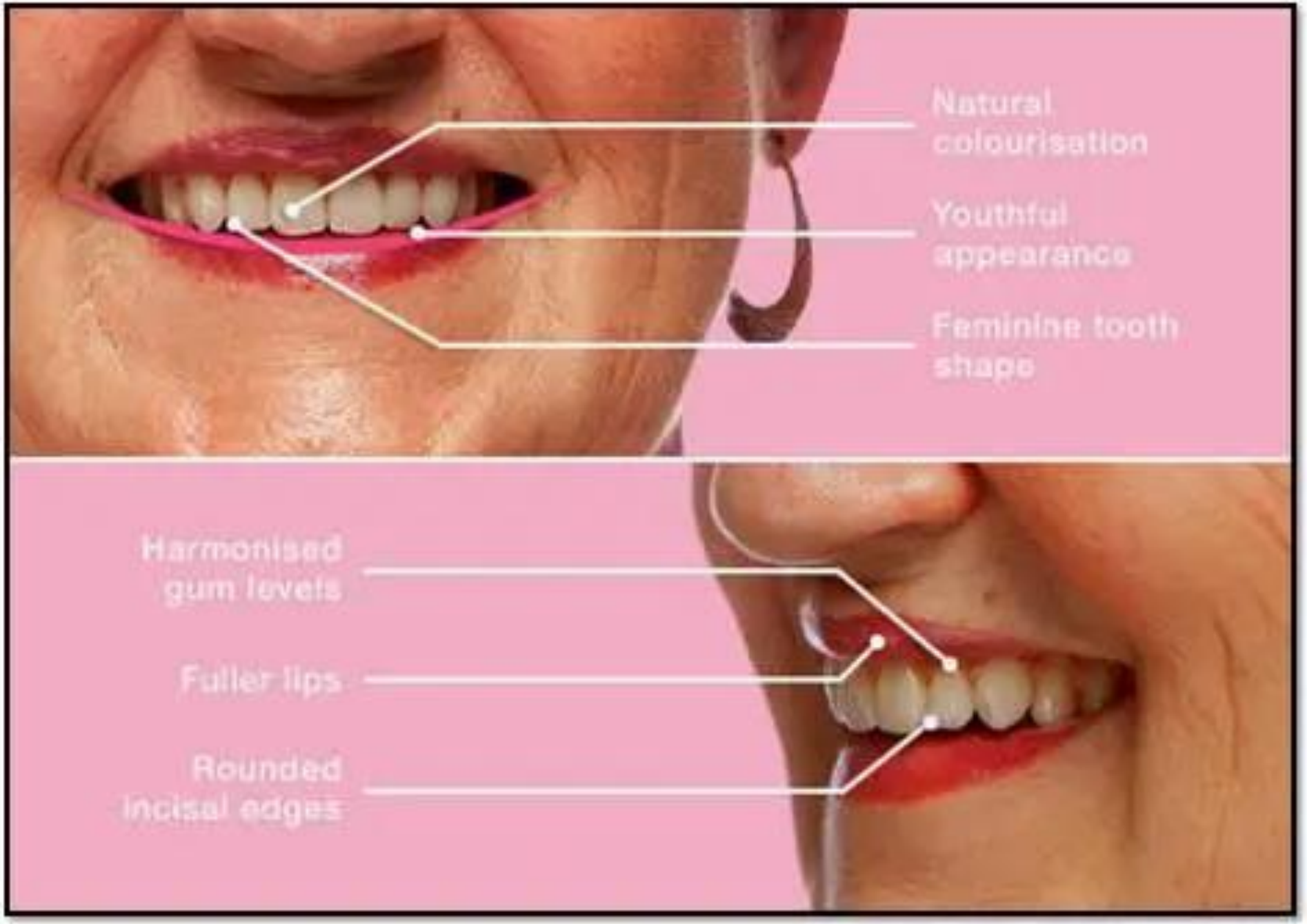
2. Sex, age, and personality factors.

Sex:

- In females, the incisal angles are more rounded and the teeth have a lesser angulation. In males, the incisal angles are rounded to a lesser degree and the teeth are more angular.

Sex:

- The incisal edge of the central incisors is parallel to the lips and the laterals are above the occlusal plane in males. But the incisal edges of the central and lateral incisors follow the curve of the lower lip in females.


Natural colourisation
Youthful appearance
Feminine tooth shape
Harmonised gum levels
Fuller lips
Rounded incisal edges


Masculine tooth form
Natural colouration
Masculine tooth position
Darker dominant canine
Dominant position of teeth
More masculine shape

Sex:

- The cervical regions are prominent in males than in females.

Age:

The age of the patient is important in teeth selection because of the ***physiological*** and ***functional*** changes that occur in the oral tissues. The following changes are observed with an advance in age of the patient:

- Due to decrease in muscle tone, sagging of the cheeks and the lower lips occur. To prevent cheek biting (due to sagging), the horizontal overlap of the posterior teeth can be increased.

- Inter-occlusal distance reduces with age. Hence, mandibular teeth are more visible than the maxillary teeth.

- Old patients have gingival recession. It can be reproduced in the dentures to provide a natural appearance.

- The color of the teeth also changes with age. In old people, the enamel is abraded and the dentine which carries a yellow color, is more visible.

Position of the Teeth

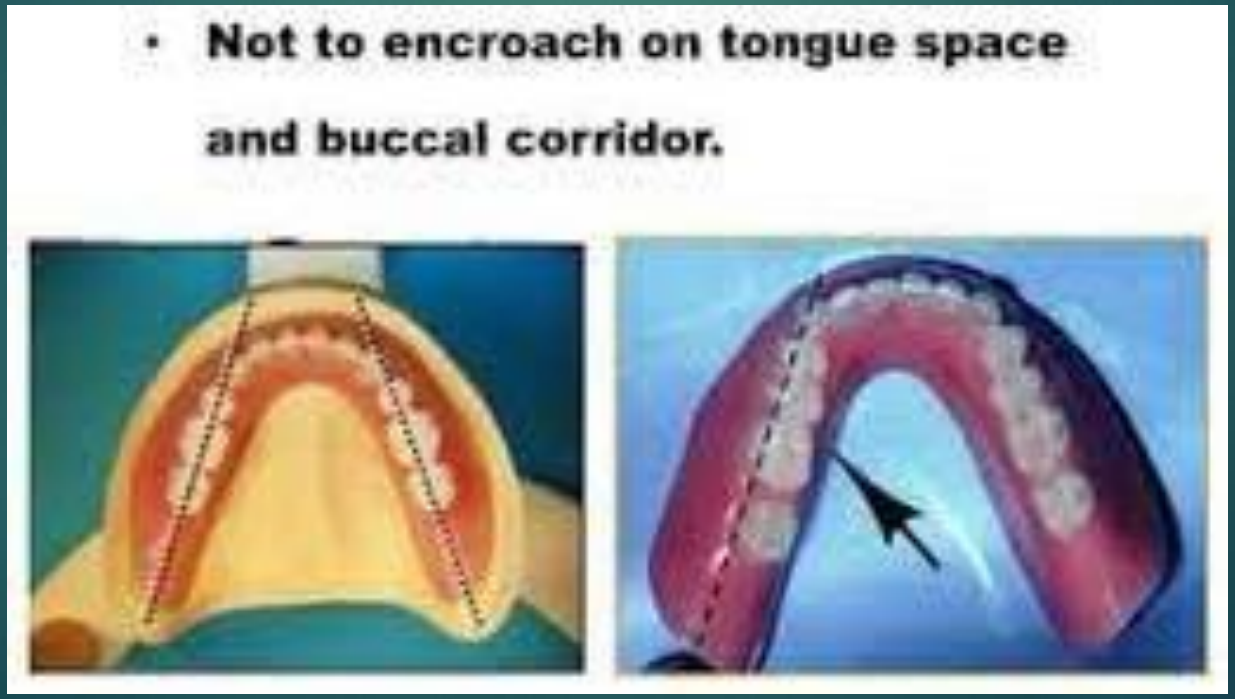
If the level of the occlusal plane is set too low, then the teeth will be too visible. This will be emphasized when the patient smiles, as the teeth will not follow the smile line of the lip. The orientation will also have an influence, and if is not approximately parallel to the interpupillary line, then the smile will look crooked.

The center line of the teeth is also critical, as this will have a negative effect on appearance if it is not coincident with the center line of the face The labial frenum should not be used to guide positioning of the center line.

The labiolingual position of the anterior teeth, in particular of the necks of the teeth, is critical in terms of lip support.

If the flange is thickened, then this will cause bulking out beneath the nose similar to a **gum shield**.

If teeth are moved away from the crest of the ridge, then this will cause instability of the denture. A further possibility is to place the necks of the teeth close to the alveolar ridge and tilt the incisal edges of the teeth labially. This will improve the lip support and is less likely to be unstable.



Arrangement of teeth with esthetics consideration

The clinician should attempt to create **the illusion of natural teeth** when finalizing the appearance.

If dentures are constructed with a ‘perfect’ arrangement, the risk of the resulting appearance seeming artificial is considerable.

As a general rule, imperfection in the anterior teeth arrangement is a basic requirement in creating the illusion of natural teeth.

Arrangement of the lower anterior teeth

In many patients, they will be displayed more during function than the upper teeth and therefore may be a dominant factor in determining the patient's dental appearance.

The following should be considered when arranging lower anterior teeth:

1. Vertical overlap.
2. Horizontal overlap.
3. Antero-posterior inclination in proximal view.
4. Inclination of long axes.

Incisal relationship

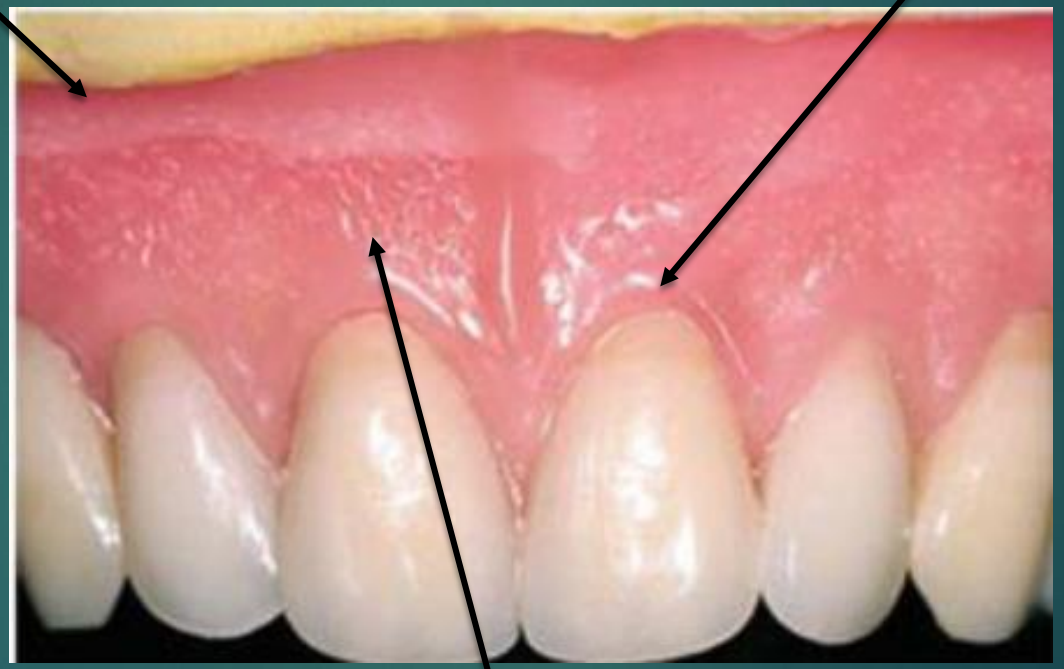
Determining the incisal relationship is important for edentulous patient's.

For example, a Class I incisal relationship on a marked skeletal Class II base, there is a risk that, in addition to problems with stability, the dentures will lack in harmony and the aesthetic result will be poor.

The Gingival Contour

The contour of the flange

contour of the gingival margin at the necks of the teeth



The color of the flange

The clinician must decide whether to provide a flange with a **smooth** or **anatomical** finish. In the case of the anatomical finishing, the dental technician is instructed to:

1 Shapes of the roots of teeth.

2. Stippled flange to reproduce stippling of the keratinized gingiva. The difficulty in keeping the flanges clean.

3. Finally, the appearance of the oral mucosa can be reproduced using color tints in the acrylic resin using a photograph of the oral mucosa.

Characterization

Characterization

Most dentists may give almost identical complete dentures to their patients to suit his/her wish and appearance.

Characterization

To alter by application of unique markings, indentations, coloration, and similar custom means of demarcation on a tooth or dental prosthesis thus enhancing the natural appearance.

Denture flanges mimicking gingival color along with Stippling

Tobacco staining on complete denture

Crowding and overlapping of the maxillary anterior teeth

Final Decision for Esthetics depends upon:

- Maxillomandibular relationships
- Patient's appearance
- Patient's mental attitude
- Functional requirements