Selection of posterior artificial teeth

Posterior teeth are selected for color, buccolingual width, mesiodistal length, vertical height (occluso-gingival length) and occlusal form.

1- Shade (color):
Shade of posterior teeth should be harmonized to the shade of anterior teeth, maxillary first premolars are sometimes used for esthetic more than function, so it's advisable to select premolar teeth with lighter color than the other posterior teeth, but not lighter than anterior teeth. Generally the shades of posterior teeth are slightly darker than anterior teeth.

2- Buccolingual width:-
The buccolingual width of posterior teeth should be slightly narrower than natural teeth to decrease occlusal surfaces which direct less stress during function to supporting tissue, and also enhance the development of the correct form of polished surfaces of the denture.

3- Mesiodistal width:
The mesiodistal width of posterior teeth should be equal to the distance between canine line and anterior border of maxillary tuberosity for upper teeth. For lower teeth should be equal to distance between canine line and anterior border of retro molar pad area.
If the residual ridge anterior to retro molar pad area slopes upward, smaller teeth or even fewer in number must be used. Placing a tooth on an inclined plane should be avoided, otherwise dislodgment of denture occur.

4- The occlusogingival height
The occlusogingival height or length is controlled by the available inter-arch distance. The length of the maxillary first premolar should be comparable to that of maxillary canine to have the proper esthetic effect. The height of posterior teeth usually divided into long, short, medium. Long posterior teeth are generally more esthetic in appearance than are shorter teeth.

5- Occlusal form:
There are two forms:-
a) Cusp form (anatomical teeth): Anatomical teeth have cusp angles 33, 20, 5 degrees.
b) Non cusp (cuspless) form teeth: also called monoplane or zero degree teeth.

Advantages of cusp form teeth:-
1- More effect.
2- Can be arranged in balance occlusion in eccentric position.
3- The cusp fossa relationship between upper and lower posterior teeth form definite point for return to centric occlusion.
4- More acceptable esthetically.
5- More compatible with surrounding oral environment.

**Advantages of non-cusp form teeth:-**
1- Offer less resistance in non masticatory movement like bruxism, therefore less damaging to supporting tissue.
2- More comfortable.
3- Offer less resistance to lateral forces therefore, they are indicated in excessively resorped ridges.
4- Allow greater range for movement which is necessary in patients with mal-related jaw.
5- Can be used with less damaging effect than cusp form teeth in patients with uncoordinated neuromuscular control which jaw relation records are not repeatable.

Disadvantage of cusps on teeth is that alveolar resorption which cause reduction in vertical dimension and the interlocking of the cusps causes the lower denture to be displaced forwards and the upper backward causing damage to the underlying tissues. The use of flat inverted cusp teeth prevents or reduces this trauma.

Natural tooth forms with their interlocking cusps caused instability of the dentures, and investigations were begun on how this difficulty could be overcome.

We have two distinct ways
1. To alter the shape of the posterior teeth so that cusps could be eliminated without sacrificing efficiency.
2. To retain natural tooth forms and to prevent their causing instability; this was attempted by designing articulator which copied the mandibular movements of the individual patient.

The cusp angle and height of the cusps of all the posterior teeth should be accurately related to the paths of the mandible when functioning. Practically this is not possible, but certain teeth are available for which the manufacturers publish the cusp angle. E.g. 20 degree posteriors and the teeth of this type can be satisfactory employed with most adjustable or moving condyles articulators.