Aesthetical guidelines for dentures that are natural-looking

In this article, I consider the morphology of the anterior teeth in particular. Tooth shapes vary enormously between individuals and to the untrained eye, a system of defining these shapes probably seems remote. However, if you look at the face as a whole, you will very quickly understand how nature constitutes the relationship between tooth shape and facial physiology through human genetic development (Figs. 1–3). This article will help you to identify the corresponding characteristics of tooth shape through a systematic approach suitable for each case.

First of all, it may help to peruse the illustrations in order to understand the system and the connections between the illustrations. Consider general anterior tooth morphology and you will recognise, in addition to the obvious characteristics, further specific individual features, like the difference between a central incisor and a canine. Although the variety of different shapes of the anterior teeth appears to be immense, this can be quiet deceiving. If one leaves aside the tooth positions and the colour of the tooth, the general morphology consists of two factors (Figs. 4–6):

1. the basic shape of the tooth, i.e. definite width; and
2. the marginal ridges or line angles of the tooth, which defines the optical width.

This correlation of optical width and definite width leads to the different shapes of teeth. This morphological variety can be subdivided into three basic principles:

1. the marginal ridges or line angles
2. the contact area between the teeth
3. the occlusal surfaces

In 1914, Leon Williams suggested a now famous classification system of tooth shape, theorising that these three fundamental archetypal shape types are reflected in the “Kretschmeric Construction Types” (facial outline types). The shape of the tooth is equal to the horizontally inverted shape of the face (Figs. 7–18). For example, an athletically built person with an angular face would have square-shaped teeth (Figs. 7, 8, 13 & 16). A thin person with a peaked chin (leptosome) would have triangular-shaped teeth (Figs. 9, 10, 14 & 17).

Today, this classification of the tooth shapes based on the shape of the face is considered to be anticipated. Hence, it only serves as a very rough general guide when selecting a set of anterior acrylic teeth for a patient case. In the future, the “dentogenic concept” by Frush and Fisher spread across the US and then to other parts of the world.

According to this concept, a “personality spectrum” can also be added to hold up the shape of the tooth. Next to the clinical, intra-oral and facial relation considerations, the age, sex, and other characteristics of the patient are also considered.

Today, taking all of these factors into account, one will most likely derive some sort of hybrid shape based on one of the three original basic shapes.

The concept of the three basic shapes with regard to the labial effect of a tooth can be demonstrated when viewed from the incisal perspective. A study by Yammamoto demonstrates this well (Figs. 19–23). From the incisal perspective, the relative flatness of the square shape, the concavity of the triangular shape and the convexity of the ovoid shape is apparent.

Another decisive aspect of a successful natural reproduction is the design of the marginal ridges or line angles, which has an effect on the 5-D appearance of the tooth.

Besides the shape and the width of the tooth crown, the width of the root is also a decisive factor. Up to now, I have restricted the consideration of the tooth to the labial and incisal view. In order to be able to replicate the 5-D appearance of the tooth, we must also consider the labial curvature of the tooth (Figs. 24–28). From this point of view, the incisal triangle features can also be divided into the three basic components. For each individual case, it is then necessary to derive the respective hybrid shape.
The square anatomy type
• The two well-developed labial marginal ridges are the key characteristic feature of this anatomy type.
• A strong labial depression and a wide labial transitional surface are present. The difference between the mesial- and the disto-approximal surface is noticeable. The distal face is wider than the mesial.
• The growth lobes are generally not very prominent with this tooth shape type.

The three-angled anatomy type
• The mesial and distal marginal ridges are again distinct but not as strong as with the oval anatomy type.
• The labial surfaces are relatively wide, without a noticeable difference in width between the mesial and the distal.
• The labial and proximal growth lobes are prominent.

The oval anatomy type
• The characteristic feature of this anatomy type is the indistinct marginal ridges, which can sometimes cause a rather plain look.
• A well-developed central marginal ridge is present, which appears quite prominent when viewed from the incisal edge.
• The labial and approximal depressions are somewhat strongly developed, although not as strongly as with the triangular type.

The labial and approximal depressions are strongly developed in the oval type. The characteristic feature of this type is the indistinct marginal ridges, which can sometimes cause a rather plain look. A well-developed central marginal ridge is present, which appears quite prominent when viewed from the incisal edge. The labial and approximal depressions are somewhat strongly developed, although not as strongly as with the triangular type.

The growth lobes are generally not very prominent with this tooth shape type.