MATHEMATICAL AND DESCRIPTIVE CLASSIFICATION OF MANDIBULAR DENTAL ARCH SHAPE IN AN EGYPTIAN POPULATION

Gamal Zul Hemma* and Mona M. Abou El Fotoh*

ABSTRACT :

The ability to describe dental arch shape is necessary for biomechanical studies of occlusion as well as for anthropological studies of human and primate dental variation. Mathematical method for describing and classification the human mandibular dental arch shape was used to assess the nature of individual variability. To determine the main mandibular arch forms 200 dental casts of untreated Egyptian adults 100 male and 100 female with normal occlusion were examined, Six measurements of mandibular arch were performed and five independent ratios were defined and an arch guide were developed in both male and female subjects. The proposed forms are narrow, wide, mid, pointed and flat dental arches. Some significant differences in these forms distribution between males and females were expected and the dental arches of females are smaller in dimensions than that of males.

INTRODUCTION:

The ideal form of the human dental arcade with subsequent prosthetic application has been variously described Mac Conaill and Scher, (1949). Many studies have sought to predetermine a mathematical geometric arch form on the basis of landmarks recorded on systems of co-ordinates Biggerstaff, (1972). Some authors tend to individualize the arch form to respect the original mandibular intercanine width during treatment, by using arch guides or by a computer assisted determination of an ideal dental arch form Richetts, (1978). Akpata and Jackson, (1979) believed that arch form studies could aid in the choice of artificial teeth and orthodontic manipulation. The dental arch form of American adults was studied by Be Gole, (1980) and he found that the dental arch form was either parabola, ellipse or catenary. In parabola form the premolars and molars form straight parallel lines while incisors and canines form nearly straightline anteriorly, in ellipetical form incisors, canines, premolars and molars form a smooth continued curve while catenary form is the curve which is formed by fine chain of many links. Effective arch shape description has been accomplished through the various curve fitting routines used by some researchers Rudge, (1981). Brown et al., (1983) studied the facial structures of extant Australian aborigines to show sufficient variation in shape as

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* Oral Biology Department, Faculty of Oral & Dental Medicine, Cairo University.