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H. Pound formulae a conventional technique to improve anterior esthetics Running title : Esthetics in complete denture patient.

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ABSTRACT: Aesthetic replacement and physiological tooth arrangement have made the complete denture biologically compatible and desirable. Proper placement of tooth should be functional and aesthetically pleasing to enhance the psychology of the patient. In this article there is a clinical situation wherepatient is suffering from dwarfism and complete edentulism at the age of 22 where the aesthetic demand of maxillary anterior is quite critical due to small size of face. It becomes important to customize the dimensions of teeth used as per the patient's face. There are various methods described in literatures to determine the anterior tooth dimensions. H. Pound's formulae was used to determine the anterior tooth dimensions.H. Pound's formula is one of the methods of measurement to determine the width and lengthof central incisor using bizygomatic width and the length of the face respectively. In this case report we will step wise discuss how anatomical morphology plays an important role in anterior asthetics. The goal is to restore the maxillary anterior teeth in harmony with the facial appearance to boost patient self-confidence, well-being and social security.

Keywords- H. Pound's formulae, bizygomatic, anterior tooth

I. INTRODUCTION

Dental aesthetics is in high demand nowadays. A well-arranged anterior tooth with adequate size and shape always contributes to a beautiful smile. It is also a partof general health and well-being. Even the World Health Organisation recognised Oryol (oral health-related quality of life) as an important part of the Global Oral Health Program [4]. Hence dental aesthetics have a very importantrole inmaintainingour mental health [5]. Studies also showed that individuals that are satisfied with their own physical appearance tend to be more successful in social contact [15]. For dental PR actioners, the selection of anterior teeth is very important as the size, colour and form ofthe anterior teeth are the aspects that need tobe considered forthe anterior teeth selection, especially for the completedenture patient [6]. The wrong selection could lead to 'awkward' appearance of the teeth. Many formulae have been formulated for anterior teeth selection and one of them is H. Pound'sformula [7] given in year 1954.

II. CASE REPORT

A 22 year female was referred to Department of Prosthodontics for rehabilitation of upper and lower completely edentulous arches. She gave a history of aggressive periodontitis and mobility in all teeth from past 10 years, which eventually lead to loss of all teeth and complete edentulism. Patient also gave a history of dwarfism and fatty liver disease. Extra oral features revealed reduced facial height and width with short stature(fig.4a). Intra oral examination revealed completely edentulous upper and lower arches with high well rounded ridges class II [1] (fig. 1a,1b). Radiographic examination revealed normal anatomical bone landmarks with no evidence of root stumps or unerupted teeth. Patient was told about various treatment modalities for rehabilitation of teeth. Rehabilitation with Implantwas not possible due to very less inter arch space, which was less than 10 mm. Therefore, patient was planned for rehabilitation with upper and lower conventional complete denture with customized teeth dimensions.

PRELIMINARY IMPRESSION- Preliminary impression was made with irreversible hydrocolloid impression material (Zelman 2002, Dentsply) for diagnostic cast and poured in type II

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gypsum material (kalachi). Diagnostic cast was evaluated for undercuts and custom tray was fabricated using autopolymerising resin (DPI).

FINAL IMPRESSION- in the second visit bordermelding was done using low fusing impression compound and wash impression was made using ZOE impression paste (colleen). Impression was poured in type II gypsum material. Record base was fabricated using autopolymerising resin and Occlusal rims were made.

JAW RELATION- Orientation jaw relation was recorded using a Hanau spring bow and transferred to a semi adjustable articulator (Hanau wide-Vue -192 series, model# HANAU 014809-000). The vertical and centric jaw relations were recorded and casts were mounted on the articulator.

ANTERIOR TEETH SELECTION- Anterior teeth selection was quite critical for the patient due to decreased facial dimensions. So it was decided to use H Pound's formulae to select the dimension of maxillary anterior teeth. Anatomical facial dimensions were required to select an appropriate anterior tooth dimension .H pound formulae[2] was used which evaluate tooth width by "measuring the distance from zygoma to zygoma, one to one half inches back of the lateral corner of the eyes"

Width of the central incisor = b

Length is a measure of the distance from the hairline to the lower edge of the bone of the chin with the face at rest.

Length of the central incisor = l

The measurements were recorded and the acrylic teeth (Carrack, Ruthenium) were selected as per the required dimensions and anterior teeth setting was done.

The bizygomatic width came out to be 96mm and length of the face was around 128mm (fig.2a, 2b). After calculation the dimension required for maxillary incisors were 6mm width and 8mm length(fig.3).

TRIAL- Anterior teeth trial was done where evaluation for phonetics and aesthetics was carried out. Patient's satisfaction with the anterior teeth size and contour was considered

Posterior teeth setting was done, invested and cured using heat polymerising resin (Dentsply). Upper and lower dentures were finished and polished for denture delivery.

DENTURE DELIVERY- Prosthesis was delivered and post insertion care instructions were given to the patient.It was observed that patient's esthetics and speech were improved (fig. 4b).

III. DISCUSSION-

During prosthodontic rehabilitation, patients who present with unconventional conditions for replacement of missing teeth, planning should be done so that aesthetically and functionally acceptable prosthesis can be fabricated.

The development of a pleasing oral and facial expression for the patient depends upon the dentist ability to design the dentures, both in contour and colour [8,9]. Furans [10] stated, "esthetics in full denture construction, as employed by at least 90 per cent of the men in general practice, can only be said to be conspicuous by its absence."

With the aim to restore the maxillary anterior teeth in harmony with the facial appearance, there are various methods to shape and size of the anterior teeth which includes-

White's Concept-

A "bilious" individual would be expected to have short, broad, tapering incisor teeth, whereas a "sanguineous" individual would possess long, thin, and narrow teeth [11] in year 1872.

Lentogenic Concept [12]

Tooth selection using the concepts of lentogenic is based on the age, sex and personality of the patient putforth by Fresh and Fisher 1955.

Winkler's Concept [13]

This concept emphasises on three points. The biological-physiological, biomechanical and the psychological viewpoint. Biomechanical shows the mechanical limitations in placement of anterior teeth. Psychological view is based on esthetics and facial appearance.

Leon William's Concept [14]

William formulated a method called the law of harmony. He believed that a relationship exists between the inverted face form and the form of maxillary central incisor in most people. He described three typal forms of teeth as square, tapering, ovoid.

Whereas H Pound formulae was used due to its reliability among various races. The selection of maxillary central incisor by H. Pound's formulae might be useful as it was found that there was only a slight difference between the actual lengths of the tooth and the formulated ones. Therefore, H. Pound's formula is provenreliable [3].

IV. CONCLUSION-

Dental art does not occur automatically. It must be purposely and carefully incorporated into the treatment plan by the dentist. This artistry strives to soften the marks imposed upon the face by time and enables people to face their world with renewed enthusiasm and confidence. The selection of anterior teeth for the complete denture prosthesis is very confusing depending on the clinical situation. However, the selection of maxillary central incisor by H.Pound's formulae gave a much better aesthetic appearance.

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FIGURE LEGENDS

Fig 1: (Fig. 1a)Upper edentulous arch, (Fig. 1b)Lower edentulous arch
Fig 2: (Fig. 2a) measuring facial length using divider and scale.
(Fig. 2b) measuring bizygomatic width using divider and scale
Fig. 3: Measuring tooth morphological dimensions using Divider and Scale
Fig 4: (Fig. 4a) Pre-op frontal view of patient.
(Fig. 4b) Post-op frontal view of patient.

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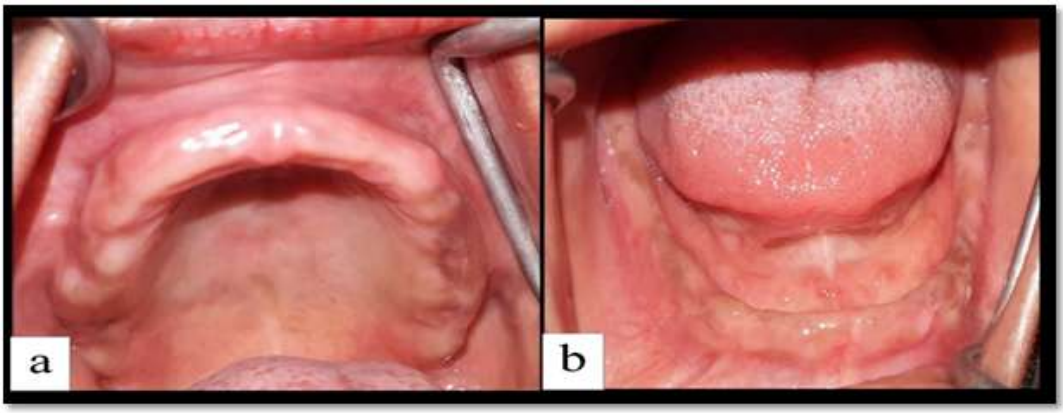
FIGURE



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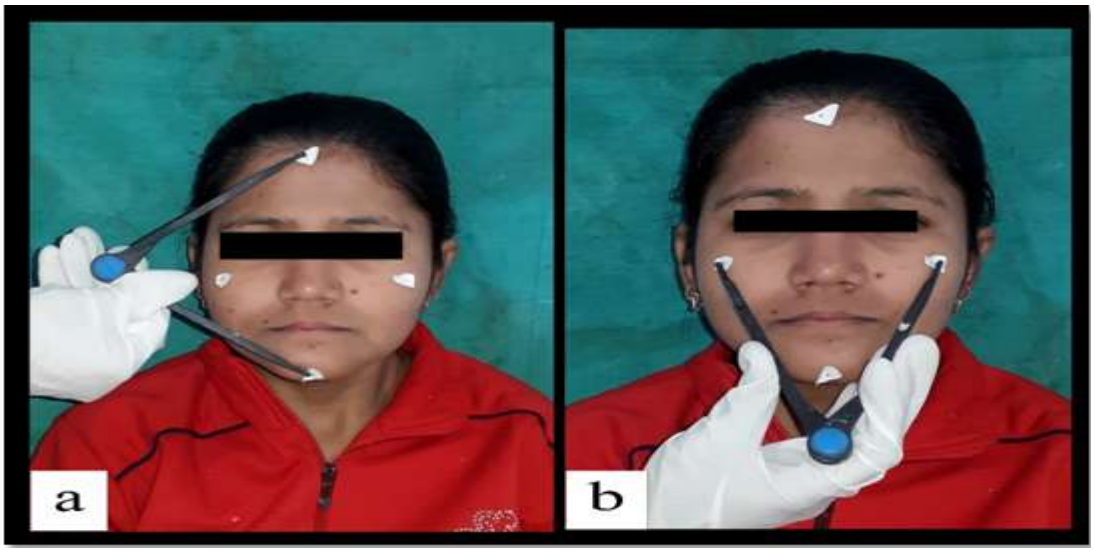

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Fig. 3: Measuring tooth morphological dimensions using Divider and Scale

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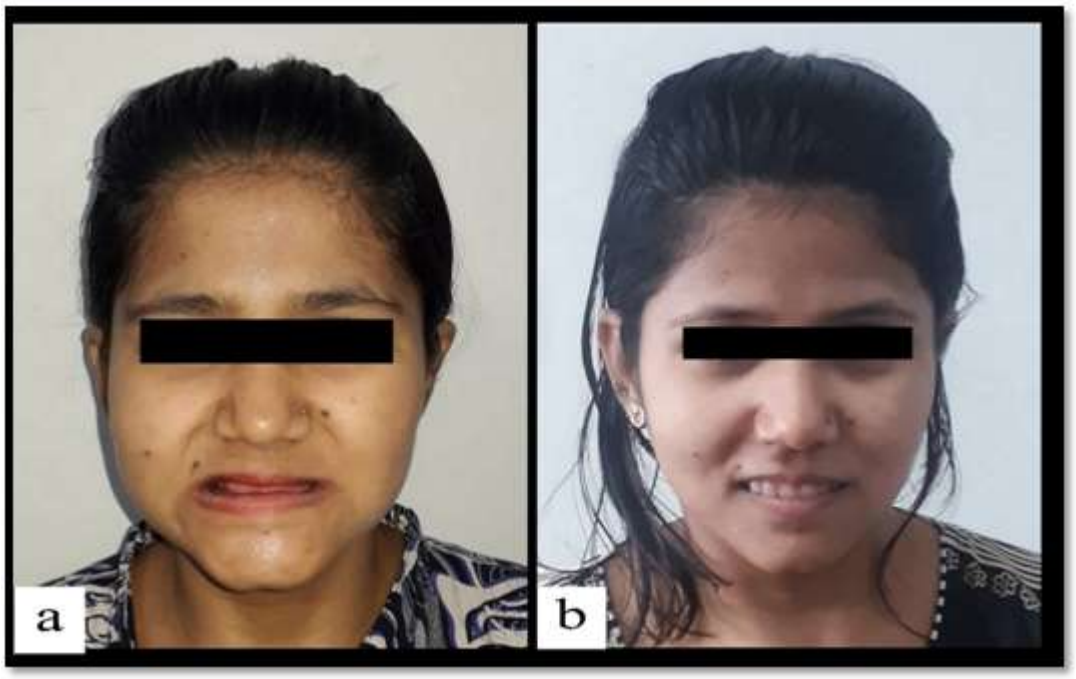

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