

SELECTION AND ARRANGEMENT OF ANTERIOR TEETH IN COMPLETE DENTURE TREATMENT TO ENHANCE FACIAL ESTHETICS – A DESCRIPTIVE STUDY**Ruttonji Zarir^{1*}, Preethi Kusugal², Shruti Gundewar³, Sushma K⁴, Viraj N Patil⁵, Preeti Astagi⁶**

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ABSTRACT

Statement of Problem: Selection and arrangement of teeth in complete denture to achieve good esthetics have always been a challenge to the dentist. Although many methods have been employed over the years, non-have found to be satisfactory. **Aims:** To assess facial esthetics in selection and arrangement of anterior teeth in complete denture treatment. **Methods and Material:** Thirty completely edentulous patients were selected for the present study. 3 different teeth arrangement were carried out for each patient. And then full face photographs were made after every arrangement and these photographs were then showed to 4 investigators namely Prosthodontist, Orthodontist, Beautician and Artist. The investigators were are to mark the most pleasing and least pleasing photograph for every patient. **Statistical analysis used:** The statistical analysis was carried out using the Kruskal Wallis ANOVA and Mann-Whitney U test. **Results:** The results of the study concluded that no single photographs were selected as the most pleasing or the least pleasing photograph. **Conclusions:** Hence by the results and the different selection criteria's that the investigators used for the selection of the most pleasing and least pleasing photographs, it can be concluded that the esthetic perception of different individuals in different field differs and no one method of teeth arrangement can be ideal.

KEYWORDS: Artist, Beautician, esthetics.**INTRODUCTION**

Esthetics is defined from the Greek word *aisthetikos*. Physical attractiveness is an important social issue as our society places great emphasis on it, with facial attractiveness being the most important component. Facial appearance is of great concern to everyone, for it is a significant part of self-image.^[1] One of the major challenges faced in denture esthetics is selection and arrangement of artificial denture teeth. The selection of maxillary anterior teeth for complete denture has long posed a problem in clinical practice, and a controversy about the best method to employ still exists. Hence this

study was aimed to to assess facial esthetics in selection and arrangement of anterior teeth in complete denture treatment based on the observation of investigator and other observers like Prosthodontist, Orthodontist, Artist and Beautician. William claimed that the most pleasing appearance is one in which the outline form of the individual's face turned upside down and the outline form of the individual's maxillary central incisor are identical. William's method of harmonizing the face with teeth has been popular for more than 60 years.^[2] Young reviews 21 techniques, spanning from 1700 to 1951, despite the variety of techniques, he concludes that none is satisfactory.^[3]

MATERIALS AND METHODS

The study was carried out on 30 edentulous patients aged from 45-70 years age group.

All of the participants no gross facial asymmetry, no history of facial trauma. Informed consent was obtained from the patient before they participated in the study.

Data Acquisition

A photograph of the patient was taken before commencement of the treatment. This photograph was called as "PHOTO NO 1" Routine procedures of complete denture fabrication were carried out until tentative jaw relation recording. The jaw relation was then mounted on a Hanau vue semi adjustable articulator using a face bow transfer. Three sets of artificial teeth were selected for each patient. The first set of artificial teeth of a suitable mould, size and shade was selected as per the patient's facial form. After arraignment of teeth a photograph was taken of the patient. This photograph was labelled as PHOTO NO 2. Then, arranged anterior teeth were removed and another set of artificial teeth with the same make but of one grade lesser than that of the 1st one were selected and again arrangement of the anterior teeth was done and after waxing, carving, finishing, photograph was taken. This was labelled as "PHOTO NO 3". Arranged anterior teeth were again removed and another set of artificial teeth with the same make but of one grade higher than that of the 1st one was selected and again arrangement of the anterior teeth was

done and after waxing, carving, finishing, photograph was taken. This was called as "PHOTO NO 4."

Data Processing

The camera used in the present study was NIKON D5200 mounted on a tripod stand and maintaining same background, same lightning, same head position of the patient and patient to camera distance, for all the samples full face photographs with the patient full smile were made All the photographs once obtained were printed on a (8*12 inch) photo paper then arranged in a file format and were shown to 4 different investigators which comprised of Prosthodontist, Orthodontist, Beautician and Artist. All the 30 photographs were shown at a time to the above mentioned investigators and they were asked to rank the most esthetically pleasing teeth arrangement to the least pleasing. The 4 investigators to whom the photographs were shown were not informed about the procedure that was carried out for the study

RESULTS

The data collected was then statistically analysed by Kruskal Wallis ANOVA and Mann-Whitney U test. PHOTO 1 was not added in the analysis as no investigator had selected the photograph as the most pleasing or least pleasing as it was a preoperative photograph of the patient. The study concluded that there was significant difference between the four investigators.

Tables 1:- Comparison of four investigators with respect to their assessment on Photo 2.

Groups	Most pleasing	%	Least pleasing	%
Prosthodontist	14	46.67	3	10.00
Orthodontist	8	26.67	6	20.00
Beautician	7	23.33	12	40.00
Artist	17	56.67	1	3.33

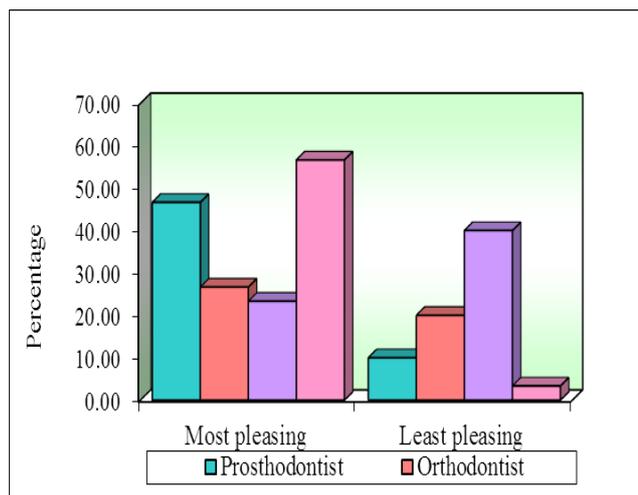
Table 2;- Comparison of four investigators with respect to their assessment on Photo 3.

Groups	Most pleasing	%	Least pleasing	%
Prosthodontist	6	20.00	11	36.67
Orthodontist	6	20.00	17	56.67
Beautician	5	16.67	12	40.00
Artist	11	36.67	11	36.67

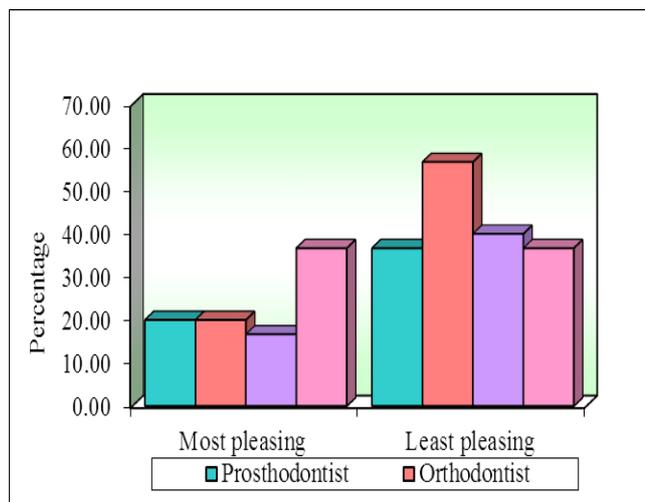
Table 3: Comparison of four investigators with respect to their assessment on Photo 4.

Groups	Most pleasing	%	Least pleasing	%
Prosthodontist	10	33.33	16	53.33
Orthodontist	16	53.33	7	23.33
Beautician	18	60.00	6	20.00
Artist	2	6.67	18	60.00

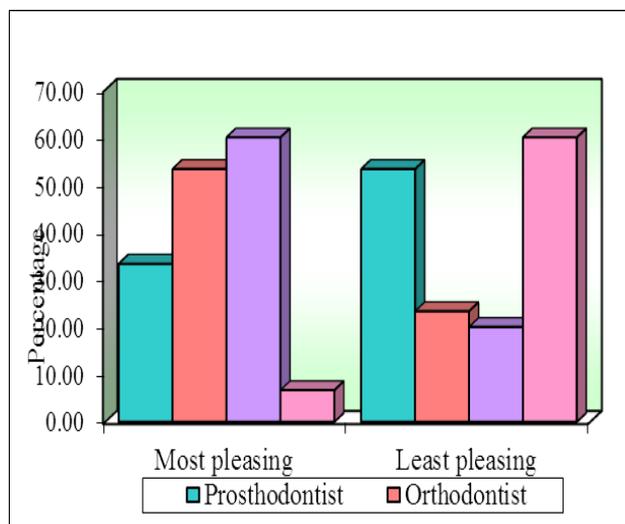
Figure Legends



Graph No. 1: Comparison of four investigators with respect to their assessment on Photo 2.



Graph No. 2:- Comparison of four investigators with respect to their assessment on Photo 3.



Graph No. 3:- Comparison of four investigators with respect to their assessment on Photo 4.

DISCUSSION

Leonardo da Vinci, a great Artist and anatomist of the fifteenth century, stated the face excels in beauty when compared with other anatomical divisions of the human being.^[4] The present study was undertaken to assess facial esthetics in selection and arrangement of anterior teeth in complete denture treatment based on the observation of four investigators namely Prosthodontist, Orthodontist, Artist and Beautician. The four investigators chosen to assess the study were selected because all of the four specialties are directly or indirectly related to beauty and esthetics. The study concluded that there was significant difference between the four investigator ($p=0.0010$). The Prosthodontist selected **PHOTO 2** i.e. the teeth arrangement that was carried according to the guidelines followed for teeth arrangement as most pleasing maximum number of times and **PHOTO 4** i.e. the arrangement of the teeth with the higher grade teeth set that were selected as the least pleasing maximum number of times. Prosthodontist selected the most pleasing and least pleasing photograph based on the form, colour and shape of the teeth used for the teeth arrangement. In an article published by Krajicek, the author has mentioned that the ability of a Prosthodontist is the most meaningful when arrangement of anterior natural teeth is copied than when he merely selects a tooth mold.^[5] In a study conducted by Khalil Al Ali, he concluded that most commonly used guide for selecting the mold of artificial anterior teeth was the patient's face form. This is in agreement with several previous studies. Patient's age and gender were the second most prevalent guides for selecting the form of the anterior teeth, which is in agreement with a similar study by Levin and Sauer. According to the author, most prevalent guide for selecting the shade of anterior teeth was the patient's complexion which is also in concurrence with results of previous studies. The second most prevalent guide was the patient's own personal preference which is not usually reliable, as the patient tends to select teeth that are whiter and brighter in colour".^[6]

The Orthodontist selected **PHOTO 4** i.e. the arrangement of the teeth with the higher grade teeth set that were selected as the most pleasing photograph maximum number of times and **PHOTO 3** i.e. the arrangement of the teeth with the lesser grade teeth set that were selected as the least pleasing photograph maximum number of times. Orthodontist selected the most pleasing and least pleasing photograph based on the coinciding dental midline to the facial midline and the teeth were in centric relation. A study was done by Lee W G, where the author has mentioned that the Orthodontist evaluates esthetics, based on good dental function, midline of teeth and centric occlusion.

The Beautician selected **PHOTO 4**, i.e. the arrangement of the teeth with the higher grade teeth set that were selected as the most pleasing photograph maximum number of times and **PHOTO 2** and **PHOTO 3** as the

least pleasing maximum number of times. Beautician selected the most pleasing and least pleasing photograph based on the facial appearance, wrinkles and hair styling.

The Artist selected **PHOTO 2** i.e. the arrangement of the teeth that were done following the guidelines for teeth arrangement as the most pleasing photograph and **PHOTO 4** i.e. the arrangement of the teeth with the higher grade teeth set that were selected as the least pleasing maximum number of times. Artist selected the most pleasing and least pleasing photograph based on the visibility of the teeth and the distance between the upper and lower teeth.

The Artist selected the most pleasing and least pleasing appearance of the patient based on the visibility of the teeth.

The Beautician selected the most pleasing and least pleasing appearance of the patient based on the facial appearance and did not give emphasis on the teeth.

CONCLUSION

Hence, by the results and the different selection criteria's that the investigators used for the selection of the most pleasing and least pleasing photographs, it can be concluded that the esthetic perception of different individuals in different fields differs. Hence, the dilemma still remains as to which method should be followed for the arrangement of artificial teeth so as to have a complete denture that is aesthetically pleasing.

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