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Facial Profiles relevance in Dentistry

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Abstract

Facial profile is an important clinical diagnostic tool during patients pre-treatment evaluation for dental treatment. There are many studies which have been done regarding facial aesthetics. This article reviews about the importance of facial profile in dentistry.

Introduction

According to Angle 'the study of orthodontia is indissolubly connected with that of art as related to the human face. The mouth is a most potent factor in making or marring the beauty and character of the face'.¹ Tweed defined the normal facial contour as being "balance and harmony of proportion" considered by the majority of us as most pleasing in the human face'. Evaluation of facial esthetics is at best subjective, because balance and harmony of facial components do not necessarily mean an attractive face.

The human faces around the world have not popped out of a clone machine. The shape, the color, the size and the overall appearance differs based on the environmental influences of that area. Though a topographic subjectivity exists some similarities are present which can add objectivity to the study of the human face.

History:

Face height was used as the module of both the 'Sariputra' and 'Alekyalakshana' which reflected the natural relation of parts of the body to each other. Sariputra system –1200 AD – known for honoring sculptures of God Buddha. It entailed 139 highly specific written instructions to ensure attention to the smallest details during the execution of the Buddha' effigy. The idealized Egyptian of the Old Kingdom (ca.2,600-2,000 B.C.).Exhibited a round, broad face with a sloped forehead, weak brow ridge, prominent eyes, evenly contoured nose, thickened lips and a mild yet positive chin. In almost all the structures of those time bimaxillary dentoalveolar prognathism is evident in the lower face. Classical Greece emerges as the first to express sensitively the qualities of facial beauty through philosophy and sculpture. In sculpture the classic Greek face is oval, slightly tapering toward the chin. The basic facial features of male and female appear to be treated identically. In profile the face exhibits an anteriorly prominent forehead.

Studies related to facial profiles :

Burstone² studied the integumental profiles of forty young adult faces showing good or acceptable facial esthetics, as selected by three artists from more than 100 frontal and lateral photographs. He presented a method of direct integumental analysis.

Peck and Peck³ studied the faces of professional models, beauty contest winners, and performing stars. They concluded that the general public admires a fuller, more protrusive dentofacial pattern than customary cephalometric standards would like to permit. One must realize, however, that their sample consisted of forty-nine females and only three males.

Riedel⁴ traced the soft tissue outline from the cephalometric radiographs of 24 children and asked 72 orthodontists to rate them as good, fair, or poor. He found that there was greater agreement on poor profiles than those that were considered good. He concluded that the relation of the maxillary and mandibular apical bases in an anteroposterior dimension (ANB angle), the convexity of the skeletal pattern (N-A-Pog angle); and the relation of anterior teeth to the face and their respective apical bases were important influences in the soft tissue outline. In a follow-up study, Riedel⁵ evaluated the facial profiles of 30 Seattle princesses (mean age 13 years 10 mos) from cephalometric radiographs. These females were selected by opinion and were considered to be beautiful and have charming personalities. It was observed that the profile was closely related to the skeletal and dental structures.

Cox and Van der Linden⁶ compared the esthetic standards of 10 orthodontists and 10 lay persons. After grading full-head silhouettes for good facial balance in grades from best to worst, it was concluded that the cephalometric radiographic analysis did not show statistically different evaluations between the two groups. The persons with poor facial esthetics had convex faces.

Foster⁷ used six groups of professionals and lay persons to evaluate male and female faces at ages 8, 12, 16 years, and "adult." His results showed that there is a general agreement between the groups for age and gender of the full-face silhouette profiles. All groups related full profiles to the females and to the younger ages and straight profiles to males and to older age groups.

In a similar study by Lines,⁸ it was observed that males had larger noses and chins than the females. Fields et al⁹ reported on the reliability of soft tissue profile analysis in children using a sample of 20 children at age 8 years and 20 children at age 12 years. They found that at both 8 and 12 years of age, retrognathic children were identified more consistently in comparison with the prognathic patients. They concluded that the soft tissue outlines from profile radiographs with or without supplementary photographs did not provide enough information to reliably diagnose underlying skeletal patterns in children 8 and 12 years old.

Nanda et al¹⁰ observed from a longitudinal study, between the ages of 7 to 18 years, the changes in several thicknesses of the soft tissue integument of the face that major growth changes anticipated with largely in the $\frac{1}{9}$ area of the nose and lips. The change in the chin integument were minimal (2.7 mm in males and 2.0 mm in females). However, the compensatory skeletal growth changes in the mandible made up for the minimal changes recorded in the thickness of the chin integument. Growth in the length of the upper lip was nearly complete at age 7 years, indicating that the diagnosis of a short upper lip can be made at an early age.

Examination of profile

The examiner should stand on the side of the patient while the patient is asked to stand and look straight preferably into a mirror. The profile is evaluated in the natural head position which is determined by the visual axis. An imaginary line is drawn connecting the bridge of the nose, the base of nose and the chin. Nose can be a big distracter; smaller noses tend to mask retrognathic face to look straighter, while a very prominent nose gives a false feeling of a convex profile in an otherwise normal profile. The facial profile could fall in one of three types :straight , Convex and concave.

Three soft tissue points are taken into consideration – most prominent point on the forehead, soft tissue point A and soft tissue pogonion.

William Downs (1948)¹¹ felt that there are four types of faces as viewed on the lateral profile keeping **chin prominence** as a significant consideration and a major point of reference. His classification of profile type was given essentially in relation to cephalometric analysis.

- 1) Retrognathic with recessive chin (convex profile)
- 2) Mesognathic with straight profile normal chin (straight profile)
- 3) Prognathic - where chin is prominent
- 4) Prognathism when mandible is large (concave profile)

During the three decades after the introduction of Down's cephalometric radiographic analysis, emphasis was placed on the radiographic skeletal and dental images. In addition to Down's,¹¹ prominent among these analyses were those suggested by Margolis,¹² Tweed,¹³ and Steiner¹⁴ that were helpful in planning orthodontic treatment. However, sporadic attempts were made to include an element of soft tissue profile assessment, such as Ricketts esthetic plane,¹⁵ Holdaway line,¹⁶ and Burstone's soft tissue analysis.¹⁷ These were no more than passing references to establish harmony of facial profiles. The basic consideration among orthodontists was confined to the relationship that must be obtained in the position of teeth and their supporting bones.

Conclusion

Facial structures can be studied from the profile or frontally. Today, numerous methods are available for evaluation of facial changes and variations. With knowledge of the normal values for soft tissues and dental and skeletal structures, the treatment plan can be directed using various diagnostic tools clinically and cephalometrically, taking into account family and ethnic characteristics for a successful orthodontic treatment.

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