Repeatability of Cephalostat Based and Natural Head Positions in Young Iraqi Adults (A Comparative Clinical Photographic Study)

A thesis submitted

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Abstract

Natural head position (NHP) was introduced into orthodontics in the late 1950's. This position is used to orient the patients head during diagnosis and radiographic exposure. NHP as a craniofacial reference system has been advocated mainly because of its good intra-individual reproducibility to a true vertical plumb line on two or more occasions. However, the use of NHP is not widespread, perhaps due to practical constraints such as equipment and staff training.

The purpose of this study was to determine whether this position is repeatable in Iraqi individuals and to compare it with Cephalostat based head position (CBHP).

For this study, 129 Iraqi adult subjects (61 males and 68 females) with an age ranged between 18-25 years having normal occlusion and no facial deformity were chosen. NHP was obtained by asking the subject to look straight into his eyes in a mirror 1 meter away after performing neck bending exercises. A digital lateral photograph was taken for each subject at NHP and CBHP at three time intervals (Day 1, 2 weeks and 4 weeks). The photographs were analyzed using AutoCAD program to measure nine angles formed by lines connecting different soft tissue landmarks and N'-A'/TVL angle was chosen to represent the rotational position of the head.

The results showed that:

- 1. The rotational position of the head showed high individual variations at both NHP (SD=4.779) and CBHP (SD=3.782).
- 2. Males showed more extended head position than females in both head positioning techniques at all time intervals, also females have a wider individual variation in head positioning than males.

- **3.** There was a significant difference between head position in CBHP and NHP at all time intervals where, subjects tipped their heads downward an average of 2-4° during NHP relative to CBHP.
- **4.** N'-A'/TVL angle continued to decline in value with successive time intervals for both CBHP and NHP.
- **5.** The mean differences for NHP between successive time intervals were much smaller than those for CBHP meaning that NHP is more repeatable.