

Materials and Methods

A sample of 46 volunteer dental students of the Faculty of Dentistry, Prince of Songkla University was studied. There were 16 males and 30 females in the age range of 20 to 23 years with a mean age of 21 years. The selection criteria was not based on anteroposterior dental and/or skeletal relationships. The dental student expressed as loss of more than one permanent tooth except for third molars and unstable centric occlusion is excluded from this study. All were asked to sign the consent forms to participate the study which was approved by the ethical committee of the Faculty of Dentistry, Prince of Songkla University.

A lateral cephalogram (LC) and a lateral skull film (LS) were taken in each subject. LC were obtained using the cephalometer (Asahi Auto III cm, Japan) with a cephalostat. The setting exposure levels were 0.25 seconds at 100 mA and 75 kVp. whereas source-film distance was 40 inches (Fig.1).⁽⁷⁾

LS were obtained using the x-ray unit (Shimadzu™, Japan) while each subject was seated in the chair and the head leaned on the x-ray cassette hung on the wall. The exposure levels used in this present study were 1.4 seconds with 14 mA and 78 kVp and the source-film distance was 76 inches (Fig. 2).⁽⁸⁾

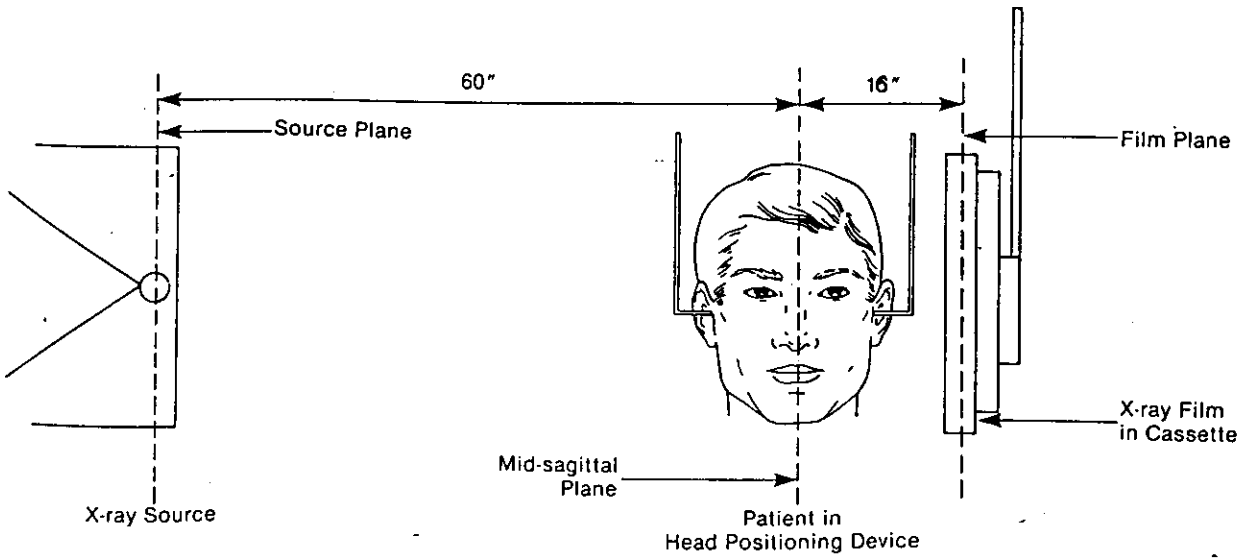


Fig. 1 Diagrammatic representation of the American standard cephalometric arrangement (From Proffit, W.R. et al. : Contemporary orthodontics. Second edition, 1993.)

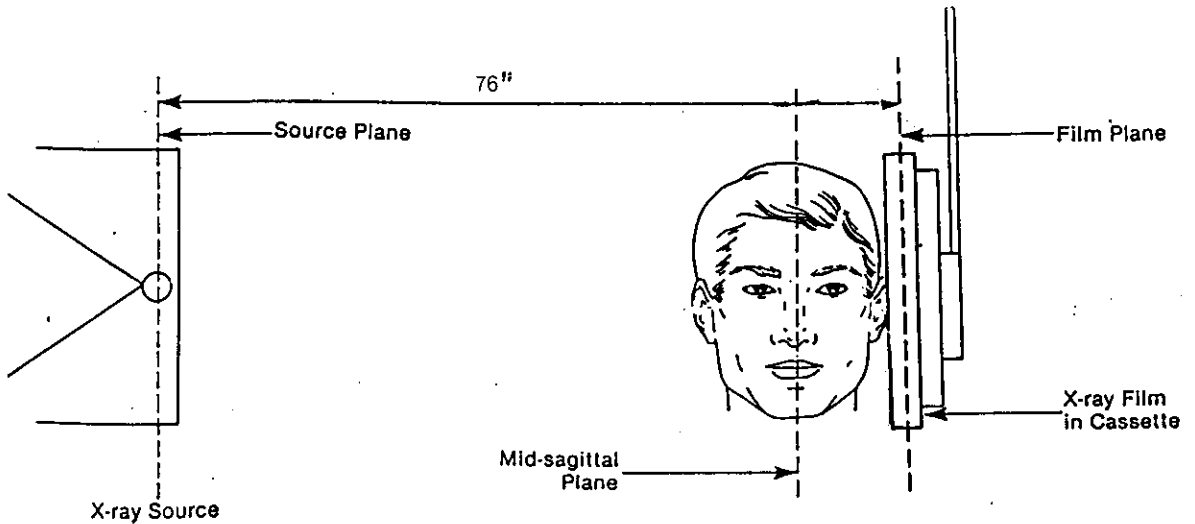


Fig. 2 Diagrammatic representation of lateral skull radiograph arrangement, (Modified from Proffit, W.R. et al. : Contemporary orthodontics. Second edition, 1993.)

For both techniques, all the patient's head were aligned as the Frankfort lines were totally paralleled to the horizontal plane. Each subject was subjected to have the maximum intercuspation at centric occlusion. The radiographs using in this study were taken by the same radiographer.

All radiographs were traced on an acetate paper by the two experienced orthodontists (together). Thirty-five bony landmarks were digitized using the digitizer and Dentofacial Planner Plus™ computer-aided cephalometric analysis and treatment planning software package (Dentofacial Planner Plus™ Version 2.0 Copyright ©1995 Dentofacial Software Inc., Toronto, Ontario, Canada). Thirty angular and linear measurements of Steiner, Ricketts, and McNamara analyses were calculated^(2,4,9).

Means for both techniques were calculated for all 30 measurements and the differences between the means were tested for significance using a paired t-test. Significance was established at $p < 0.05$ level. Standard deviations of the differences were calculated to assess variation within the sample. Correlations between both methods were calculated.