A proposal of a digital Cephalogram Standard using DICOM

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Abstract

Introduction

Unfortunately, the introduction of the orthodontic orofacial model and cephalometric system kept being determined. A cephalometric system based on the information age, a standard way of storing and retrieving computerized cephalometric records needs to be established.

Cephalophotos and cephalograms form the traditional cephalometric systems in orthodontics. The model is not available in digital systems. Patients data have not been digitized.

Orthodontists can’t easily exchange patient data because their different software don’t know how to talk to each other.

Digital Cephalograms

While DICOM can handle all necessities required by digital cephalograms, there are some issues that prevent the use of DICOM. DICOM elements are not designed for cephalograms, and they are not validated in clinical environments. One of the main issues of the present system is that the cephalograms are mostly stored in the patient’s record.

Digital Cephalogram Standard

A standard for the orthodontic electronic patient record should solve these problems.

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DICOM Project

DICOM-PAN is a standard effort of evolving interoperability problems that exist between orthodontic software and the clinical workflows of orthodontists, or all interoperability problems. Our goal is to improve upon the current DICOM standard for medical images and software development for orthodontic workflows.

DICOM-PAN Based Standards

The main purpose of this document is to propose a digital cephalogram standard. The proposed standard is based on an existing standard for medical images and software development for orthodontic workflows.

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Cephalograms are more than a simple radiograph of the skull. They are used for craniofacial growth studies as well as for orthodontic treatment planning.

Elements which necessity need to accompany all digital cephalogram systems

A Cephalogram pair is composed to be a set of at least two and cephalograms which are part of the same study. Laterodorsal and posteroanterior cephalograms are related by making use of the Reference Image Transformation (SRT) which is part of the Image SOP reference Reference Image.

Patient Demographics

Each patient dataset includes a set of the patient demographics, the patient name and identification. Such information should be patient name, gender, patient identifier, full address of patient, and telephone number.

Radiographic magnification

A radiographic magnification is an essential parameter of the cephalogram systems. This parameter is required to the patients study. The magnification is determined by the size of the patient head, which is fixed to the grid by a mandibular ray.

Head orientation

The orientation of the cephalogram film with respect to the x-ray

Currently, valuable cephalogram film series belonging to studies performed during the first half of the 20th century are starting to decay. The American Association of Orthodontics Foundation (AAOF) aims to digitize and store their cephalometric database, which can be used in various computer software programs, so as to be in a standard format. To date, no informatics standards have been proposed or adopted by the orthodontic profession.

Most of the times, even software within the same company can’t communicate with each other.

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