

COMPUTERS AND THE ORTHODONTIST

By G.W. Duncan, B.D.S. (Adel.), M.Sc. (Manitoba)

Quickceph Image® is a computerised cephalometric and video-imaging program that enables analysis of lateral and frontal cephalograms, submentovertex radiographs and study models as well as the storage and retrieval of facial, intra-oral and study model images. Lateral facial images are automatically modified in accordance with cephalometric treatment simulation of orthodontic and surgical and growth changes.

Computerised cephalometric analysis has been commercially available since the early 1980s. The advantage of the early systems was the quick and easy analysis of lateral cephalograms. Later improvements enabled computerised simulation of orthodontic and surgical treatments, as well as growth forecasting. The addition of video-imaging in the early 1990s provided quick and simple information storage and also clearer demonstration of the effects on the face of orthodontics, growth and surgery.

The following features are available on Quickceph Image®:

Radiographic Analyses

- lateral cephalometric analysis using 10 different analyses, four of which are programmable
- P-A cephalometric and submentovertex analysis
- digitisation of radiographs either on screen or through a digitising pad
- automated radiograph image enhancement for more accurate and easier landmark identification;

Measurements

- table for measurements of all analyses
- records of clinical deviations from normal
- records of up to 3 tracing measurements, norms and deviations on one table
- study model arch length discrepancy
- study model Bolton discrepancy;

Superimposition

- up to any 3 lateral cephalometric tracings
- five areas of Ricketts' superimposition

- full tracing superimposition on any user-defined landmarks;

Imaging

- all radiographs can be imaged and stored
- 3 facial views, 5 intra-oral views and 5 study model views can be imaged and stored;

Treatment Simulations

- orthodontic movements
- surgical procedures
- growth
- automated adjustment of lateral portrait to match treatment and growth tracings.

There are several advantages to the Quickceph Image® program, possibly the most significant being that it is "user friendly". It works within a "Windows" environment which is a built-in feature of Macintosh computers. A word processor and presentation software may be run concurrently for the easy transfer of text and image. It stores a full range of records, including study models which, if the program is to be used as a communication or marketing tool, may then be printed on a single page in a variety of formats.

Quickceph Image® has in excess of 400 users, which indicates the success of the program; and because of the financial support offered by current users who pay an annual update fee, its continual improvement is ensured.

The limitations of the program – beyond the normal limitations inherent in any form of cephalometric measurement and treatment simulation – are the quality of the on-screen image and its printed form. Quality is

important when more detailed intra-oral imaging is necessary; or in the production of presentation slides from the video images. Present indications are that improvements in either the software or the video card may be necessary in order to enhance the quality of the video image.

Hardware Requirements

The following hardware is suggested as a minimum:

- Macintosh II, centrus or quadra computer, colour monitor and keyboard
- RasterOps Video/Framegrabber board
- 20 Mb RAM
- 200 Mb Hard disc capacity
- Video colour camera (high resolution colour Camcorder Camera with S video output)
- Colour printer (Hewlett Packard Deskwriter 550C)
- Quickceph Image® Software
- A digitiser (Scriptel or Numonics) is optional if the lateral cephalogram is not to be imaged; or if there is a preference not to digitise on screen.

Address for Correspondence:

Dr G.W. Duncan
202 Kensington Road
Marryatville
South Australia 5068