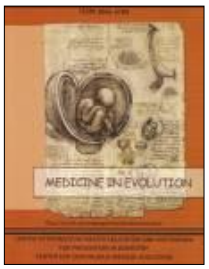
DIGITAL VERSUS CLASSIC IN DENTAL RETRO-ALVEOLAR RADIOGRAPHIES



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ABSTRACT

Digital sistems ocupies from now on a grand place in general medicine, inclusive in dental medicine. The objective of this paper is to compare the dental digital radiographie with the dental retro-alveolar radiographie on the support of dental x-ray and to identify the different aspects of using corectly the digital sensor. Using digital images but also dental films, having a 10 years experience in realising dental radiographies, we can share our experience to other dentists. In the near future digital dental radiographie will replace the dental radiographie on film support. Digital radiographie is easy to be done, pacients will be less iradiated and the quality of the image is excellent.

***Key words**: digital dental radiographie, dental radiographie, image quality, iradiation, radiovisiography.*

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INTRODUCTION

The twenty-one century will be digital or it will not exist! The digital systems will take place, slowly but sure, to the classic systems, the dental radiography on film will be successfully replaced with the radiography on digital support. And we, always, live in this reality!

OBJECTIVE

Digital sistems ocupies from now on a grand place in general medicine, inclusive in dental medicine [1, 2, 3, 4, 5, 6, 7].

The objective of this paper is to compare the dental digital radiographie with the dental retro-alveolar radiographie on the support of dental x-ray and to identify the different aspects of using corectly the digital sensor.

MATERIAL AND METHODS

In order to follow the main purpose, we used the following equip-ment:

- Dental Roentgen Aparatus Gendex Oralix A.C. from Dentsply
- Sensor CCD Gendex Vix Win 2000, also from Dentsply
- Computer

The radiographies which were done are realised by using the parallelism technique.

We used the positioners in order to realise the digital radiographie, thus: blue for anterior teeth and yellow for posterior teeth.

Fig. 1. Sensor CCD Visualix from Gendex

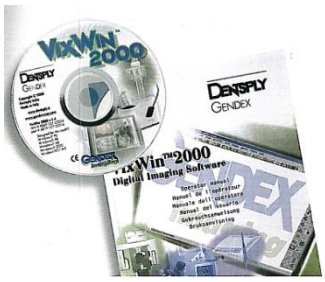

Fig. 2. Soft Programs: Vix Win 2000

Fig. 3. The positioners in order to realise the digital radiographie: blue for anterior teeth, yellow for posterior teeth, red for bite-wing and white for endodontics.

RESULTS

In the daily work from the dental medical office we use the dental radiographies realised in our own radiology laboratory. Using digital images but also dental films, having a 10 years experience in realising dental radiographies making over 13.000 of exposures of which 1600 were realised using CCD sensor, we can share our experience to other dentists. Comparison between dental radiographie on film and dental digital radiographie [8, 9, 10, 11, 12]:

Dental radiographie on film support:

- It is done on film support.
- It is necessary a technique which respects 2 principles: isomerism and ortoradiality.
- Time of exposure is ~0.5 sec.
- Dimensions are ¾ cm.
- The development takes ~ 6 min.
- If it is under or over exposured, it must be repeated.
- You can not measure anything on the retro-alveolar film, the image being always increased. (like 1:1,1)
- It needs development and obscure room.
- To duplicate the image, it needs re-exposure.

Dental digital radiographie:

- It is realised using the digital sensor, reusable thounsands of times.
- It needs the paralelism technique and the help of 4 positioners.
- The iradiation dose is less 10 times.
- Dimensions are 2/3 cm.
- Economy of time, it disappears those 6 min. of developing
- It can be modified from computer: the contrast, the brightness.
- The educational value for pacient.
- Increase the trust of pacient in the doctor and his credibility. We present to the pacient an increased and cleare image, on which we can explicate the patology easier and with familiar terms on a TV screen or on a computer.
- We can measure the extension of the canal and the angles on these.
- Eliminating the equipments for developing and the obscure room.
- Better control of sterilisation.
- The image that results can be duplicated, without losing quality or re-exposure.
- The possibility of storing up the images in the electronic paper of the pacient.

The soft used for manufacturing the radiographies presents the following facilities [13]:

Saving the obtained *images*, writting the name of the pacient, the tooth and the date when the radiographie was done; the possibility of *printing* the obtained images; *measuring the angles* of the curved canals and *the radicular canals extension*; *the rotation* of the obtainned images; Choosing different *contrasts*; Choosing the best *brightness*; The *"zoom"* function: increasing or decreasing; *Sending* the obtained images through the internet.

The advantages of using RVG are the following:

1. The image's quality is excellent in what concerns the contrast and the resolution.
2. The pacient's iradiation is reduced with 90% compared to the classic one.
3. Digital radiographie uses as an information receptor a phosphor photostimulable plague unstead of the film which is reusable thousands of times. Therefore, we can eliminate the costs of developing equipment,

the chemical substances and the obscure room.

4. The results images can be easy manufactured in contrast and brightness can be seen on a computer screen, archived on disks or CDs, they can be also transfered on paper or film, stored up in the electronic paper of the pacient or sent through the internet.
5. We are allowed to increase parts of the digital images (zoom effect), to relieve different contours and to modify the grey effects of the contrast which allows details' relieve.
6. Increase doctor's credibility and the trust of pacient, to whom we present an increased and clear image, on which we can explicate the patology easier and with familiar terms on a TV screen or on a computer.
7. Economy of time, it disappears those 5-6 min. of developing.

Fig.4. Digital radiographie for the front superior zone.

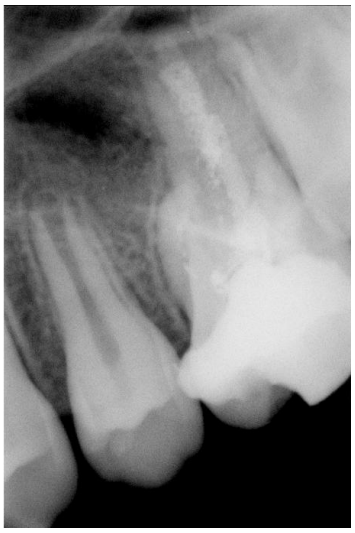

Fig.5. Digital radiographie for the lateral superior zone.

Fig.6. Digital radiographie for the front-lateral inferior zone.

Fig.7. Digital radiographie for the lateral inferior zone.

CONCLUSIONS

- In the near future digital dental radiographie will replace the dental radiographie on film support;
- Digital rx is easy to be done;
- Pacients will be less iradiated;
- And the quality of the image is excellent.

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