



Correspondence

Simple and effective methods to protect the photostimulable phosphor storage plate sensor



KEYWORDS

photostimulable
phosphor storage
plate;
longevity;
protection;
intraoral digital
radiography

Intraoral digital radiographic images are captured by a digital sensor and shown on a monitor using a direct [charge-coupled device/complementary metal oxide semiconductor] or indirect [photostimulable phosphor storage plate (PSP)] technique.^{1,2} Since the direct technique possess disadvantages of the rigidity of the sensor and the need of a cable connecting the sensor and computer, which produces discomfort to the patients and trouble in insertion the sensor into the oral cavity, indirect technique of PSP system has been more widely implemented in dental clinic.³ PSP is usually reusable; however, it is worth noting that PSP, which is relatively expensive, has quite often needed to be substituted due to various damages to the sensor including scratches, pressure from teeth, or tooth marks, resulting image artifacts or permanent degradation of the images.³ Here, two methods to protect the PSP are recommended and are described as below: Method 1: The non-exposed silver halide emulsion film of size #2 is removed from the plastic film packet and is chemically processed with an automatic processor to produce a transparent film (Fig. 1A), which is then put on the surface containing the small letter 'a' of the PSP (Fig. 1B). Subsequently, the transparent film together with the PSP is placed within the sealed plastic barrier envelope for taking an intraoral image (Fig. 1C). The transparent film can shield the PSP surface but does not hinder the sensor surface to capture the X-ray beam. Method 2: The outer whitish slip cover of the empty plastic packet of the conventional film of size #2 is removed (D), PSP is inserted into the empty plastic packet (E); the assembly of plastic packet and PAP is placed into the plastic barrier envelope (F).

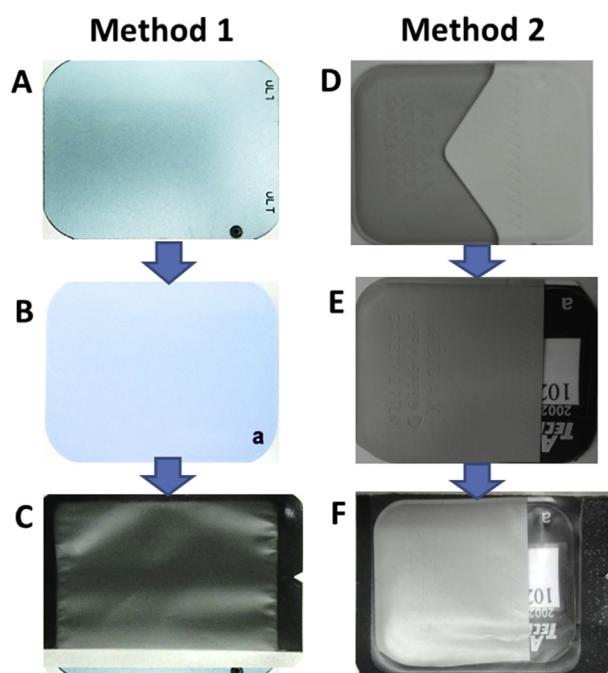


Figure 1 Method 1. The non-exposed conventional silver halide emulsion film of size #2 is chemically processed to obtain a transparent film (A), which is then put on the surface containing the small letter 'a' of the PAP (B); the transparent film and PSP are placed within the sealed plastic barrier envelope (C). Method 2. The outer whitish slip cover of the empty plastic packet of the conventional film of size #2 is removed (D), PSP is inserted into the empty plastic packet (E); the assembly of plastic packet and PAP is placed into the plastic barrier envelope (F). PSP: photostimulable phosphor storage plate.

cover of the empty plastic packet of the conventional film of size #2 is removed with a scissor (Fig. 1D); the PAP is then inserted into the empty plastic packet (Fig. 1E). The package of plastic packet containing the PSP is put into the plastic barrier envelope when it is required to capture an intraoral image (Fig. 1F). The plastic packet not only protects the sensor surface and also does not affect PSP to capture the X-ray beam.

Comparison of the two methods, both are useful to protect the PSP and could lengthen the longevity of the intraoral sensors. Additionally, the two methods have the merit that the materials (the conventional X-ray film or the plastic film packet) employed to protect the PSP are cheap and are likely to be reusable because they are protected within the sealed plastic barrier envelopes. On the other hand, it should be noted that the first method could have potential drawback to cause the patient's discomfort during insertion the sensor into the oral cavity because the PSP becomes a little more stiffness with the inclusion of the transparent film. By contrast, for the second method, the empty plastic packet used to contain the PSP appears not to cause any patient's discomfort on placement into the oral cavity. In conclusion, two methods to provide simple and effective protection to the PSP from damages are suggested to dental practitioners; moreover, regarding the potential patient's discomfort of the first method, the second method would be superior to the first one.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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Hui-Lin Chiu
Ya-Wen Wei

*Division of Oral Pathology & Maxillofacial Radiology,
Kaohsiung Medical University Hospital, Kaohsiung, Taiwan*

Wen-Chen Wang
Yuk-Kwan Chen*

*Division of Oral Pathology & Maxillofacial Radiology,
Kaohsiung Medical University Hospital, Kaohsiung, Taiwan*

*School of Dentistry, College of Dental Medicine, Kaohsiung
Medical University, Kaohsiung, Taiwan*

*Oral & Maxillofacial Imaging Center, College of Dental
Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan*

*Corresponding author. Division of Oral Pathology &
Maxillofacial Radiology, Kaohsiung Medical University
Hospital, Kaohsiung, Taiwan.
E-mail address: k0285@ms22.hinet.net (Y.-K. Chen)

Received 8 August 2017
Available online 19 October 2017