

User Case Abstract

Digital intraoral X-ray: precise, safe and tooth-conserving treatment

The author describes her experiences with intraoral X-rays and the Xios XG Supreme intraoral sensors from Dentsply Sirona on the basis of a case history.

Methods

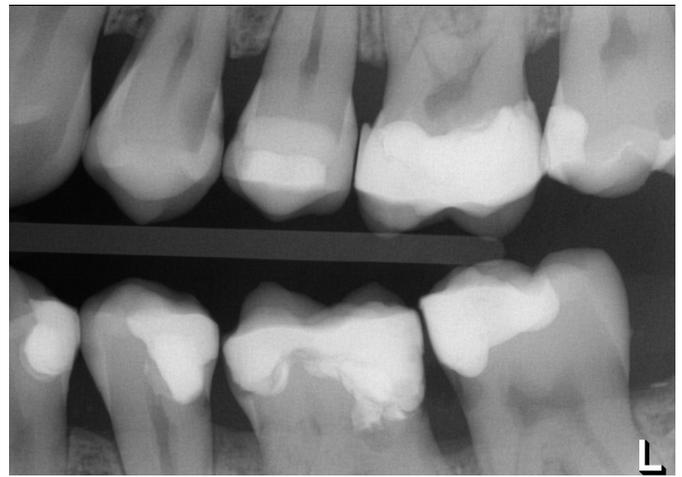
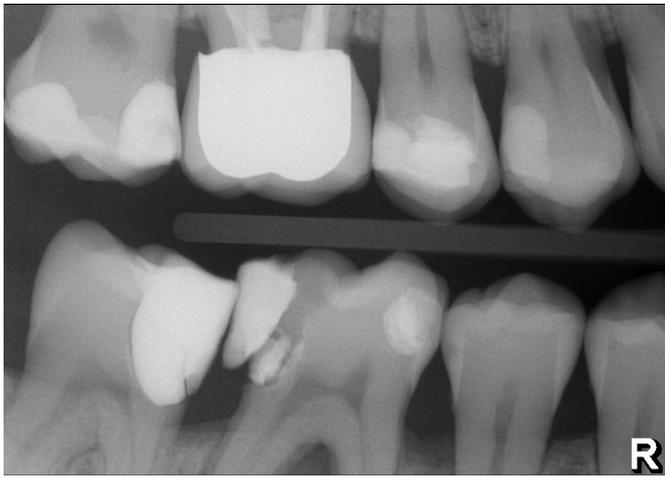
Since July 2016, the author has been using the XIOS XG Supreme intraoral sensors by Dentsply Sirona for improved diagnostics and treatment of damage to the tooth structures and the periodontium and for obtaining an innovative solution with best image quality for anamnesis. The author describes the changes and advantages resulting from this investment.

Result

The image quality of the Xios XG Supreme sensors is rated by the author as being outstanding: the HD technology achieves a theoretical sensor resolution of 33 LP/mm and the CsI scintillator material on the sensors delivers exceptionally low noise and contrast-rich images at great sharpness. The additional option of optimizing the images in terms of sharpness, brightness



Fig. 1: Panorama image for assessing the oral situation



Figs. 2a and b: Bite wing images of the carious teeth left and right.

and contrast with the post-processing function is regarded by the author as a further major positive feature. The sharpness and contrast settings help her to identify even the smallest defects on the image of the carious lesions. Furthermore, the brightness and darkness settings define structures considerably clearer and make the enamel-dentine border more recognizable.

The intraoral images, which are created at a comparably low dose, can be used as bite wing images of high quality to monitor the progress of dental health and to document the course of treatment. The author uses this feature on occasions where the patient history has to be reconstructed precisely and to illustrate recommendations during consultancy, which she values as being state-of-the-art patient communication.

As the system is mobile, the dentist can alternate between treatment rooms without difficulty. Following the X-ray process, the data can be transmitted to the practice network via WiFi or USB connection from any location so that the images can be viewed and processed immediately. The author highlights the saved time as the images no longer need to be developed.

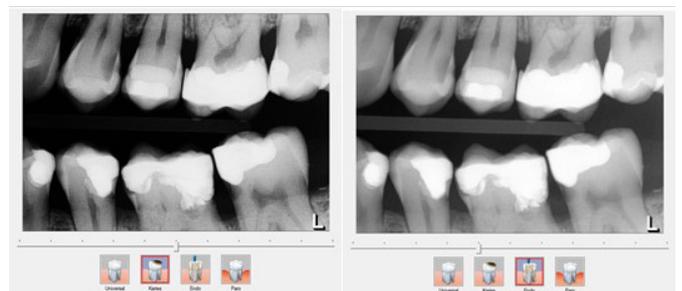
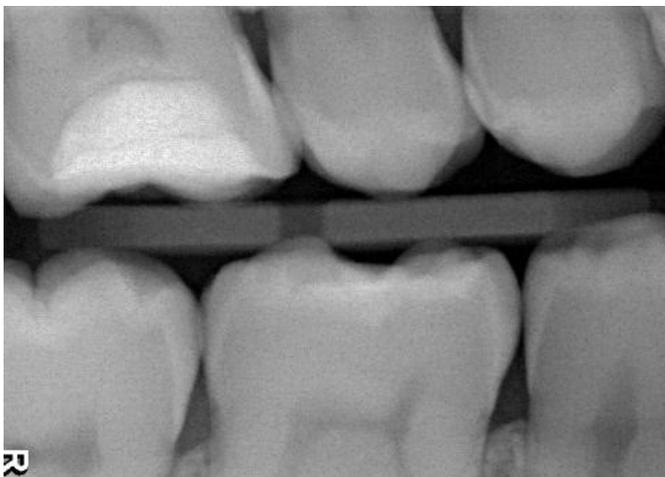


Fig. 3: Bite wing images left side with different contrast and sharpness settings

Changing the sensor cable is also regarded as fast and uncomplicated. If necessary, one simply removes the old cable by oneself and connects a new one. Furthermore, the sensor size can be varied according to the anatomy of the patient, which is a major advantage in patients with narrow jaws, high or flat palates or other anatomical characteristics.



Figs. 4a and b: Comparison of bite wing images right side with an old sensor (left) and the new Xios XG Supreme sensor (right).

Case history

A 28-year-old female patient who had not consulted a dentist for some time, presented new in the practice. To obtain an overview of the overall situation and as the anamnesis indicated tooth defects, a panoramic image was taken with the Orthophos XG Plus (Dentsply Sirona) (Fig. 1). To obtain a precise picture of the position and size of the individual lesions and to detect initial caries, the next step was to take bite wing images with the Xios XG Supreme (Dentsply Sirona) (Figs. 2a and b). The left side bite wing image (Fig. 2b) shows demineralization at 45 which could not be seen on the panoramic image. The brightness control of the sensor was employed here and the program additionally offers pre-set control options for identifying caries, which can be refined even more individually.

The image on the left shows the presetting for identifying carious lesions (Fig. 3a). Using the controls, the author was able to refine the image even more and give it an individual setting. The increased contrast emphasizes the differences in color, making even the smallest defects visible. In comparison, the endo pre-setting (Fig. 3b) defines the tissue and tooth structures more clearly at an image angle that is optimal for the indication.

Fig. 4 gives a direct comparison with a bite wing image from the year 2012 taken with an old sensor (Fig. 4a) and an image taken this year with the Xios XG Supreme sensors (Fig. 4b). The sharpness of the new image gives far better information on the condition of the teeth. This can be seen very clearly in the region of the pulp and the enamel of the lower middle tooth.

Summary

By imaging with the Xios XG Supreme sensors, damage to the tooth structure was already detected at an early stage in this case. Demineralization on tooth 45 was contained through fluoridization. This allowed the author to prevent greater damage and avoid invasive treatment.



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