Lowest possible radiation exposure in paediatric dentistry: The 3D Low Dose Mode

By Dentply Sirona

In paediatric dentistry, clinicians need to pay special attention to the doses of radiation that are exposed to young patients. The following case study shows both the importance of 3D imaging to complete diagnosis while demonstrating that this can be achieved using the Low Dose Mode of the Orthophos SL 2D/3D X-ray unit.

Methods

In this case, the author took an initial two-dimensional panoramic image using the Orthophos SL 2D/3D hybrid X-ray unit. Due to an incidental finding and the suspicion of an additional problem requiring treatment, a 3D image was taken using the hybrid unit’s Low Dose Mode.

Case Study

A young patient presented with lower jaw symptoms. Tooth 26 had a difficult arrangement (Dentitio difficultia). A traditional panoramic image was taken using the practice’s Orthophos SL 2D/3D hybrid X-ray unit. The initial imaging showed several problems including that the mandibular canal was covering the root of tooth 38. It also showed that the roots of teeth 38 and 48 were in the process of breaking down and that tooth 28 was displaced.

I suspected that tooth 26 suffered from inflammation of the root tip. In order to confirm the diagnosis, the practice took a DVT but in Low Dose Mode with the Orthophos unit. By using a 3D image, it was clear that the mesial root of tooth 26 was indeed inflamed and infected. The 3D image also helped to show the positional relationship of tooth 38 to the mandibular canal and the inter-radicular position of tooth 28. It also showed osteolysis from tooth 27. In this case, the 3D image enabled a more complete diagnosis of the young patient’s symptoms and revealed several problems that were not immediately obvious.

Results

Even in Low Dose Mode, the 3D images enabled proper visualisation of the positional relationship of tooth 38 to the mandibular canal and enabled the author to determine which of the three roots of tooth 26 was infected.

According to the study’s results, by the end of titration, all indications of OSA had decreased compared with the initial baseline. Overall, patients also showed a reduction of vertical respiratory MM and sleep apnoea effort, as well as a dramatic decrease in obstructive hypopnoea. Scores from the apnoea-hypopnoea index and oxygen desaturation index also dropped, and the researchers found that MM monitoring also helped reveal the presence of central apnoeas.

With new technology on the horizon, the researchers believe that MM monitoring could potentially represent a cost-effective and easy-to-implement tool for sleep clinics to use when titrating oral appliances. “MM monitoring during sleep is practical and informative for measuring indices of residual respiratory events when OSA is treated by oral appliances,” commented Martinot.

Summary

In this case, 3D imaging in Low Dose Mode delivered a high enough quality image to make a full diagnosis of the patient’s symptoms in order to develop a complete treatment plan. Low Dose Mode offers a reduction of radiation of up to 85 percent in comparison with traditional 3D imaging which is a benefit particularly in paediatric dentistry as children are more vulnerable to radiation induced cancer.

Mandibular movement monitoring may help improve oral sleep apnoea devices

By Dental Tribune International

NAMUR, Belgium: To date, continuous positive airway pressure is still the industry standard when it comes to treating sleep apnoea. However, the cumbersome machines are not well tolerated by patients. In a new study, researchers have demonstrated that mandibular movement (MM) monitoring can be used to assess the efficacy of other oral devices.

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