“Those new dental weapons are a pain”

In the past few weeks, various media sources have published articles regarding high exposure to radiation from medical CT scans. Unfortunately, these have generated misconceptions about the dental CBCT, or 5-D CBCT, scans. The dental CBCT-imaging method allows dentists to obtain vital 3-D information without exposing patients to high levels of radiation that come from medical CT scans. An in-office imaging method is more convenient: it saves the patient travel time to and from the hospital and time for follow-up examinations after treatment.

Dentists and other medical professionals ascribe to the ALARA (as low as reasonably achievable) approach concerning radiation levels. This approach guides practitioners to expose patients to the least amount of radiation possible, while still gaining the most pertinent information for proper diagnosis. For example, for dentists placing implants, having this information beforehand is imperative to determining anatomical variations that can affect the procedure’s success or failure.

The differences between dental and hospital scans derive, in part, from the method of capturing the information. The average medical CT scan of the oral and maxillofacial area can reach levels of 1,200 to 5,300 micro-sieverts, the measurement of radiation absorbed by the body’s tissue. These significant levels are attributed to the method of exposing tissues to radiation. With the hospital scan, the anatomy is exposed in small fan-shaped or flat slices as the machine makes multiple revolutions around the patient’s head. In order to collect adequate information, there is overlapping of radiation. In contrast, the dental scan captures all the anatomy in one single cone-shaped beam rotation, decreasing the patient’s exposure to radiation by up to 10 times. For example, radiation exposure using the standard full field of view (an i-CAT CBCT machine | Imaging Sciences International) is 50 micro-sieverts. These machines are also available in different fields of view, thereby reducing radiation exposure even more, depending upon the needs of the patient.

For other comparisons of exposure, consider that a typical 2-D full-mouth series runs 150 micro-sieverts, while a 2-D digital panoramic image ranges between 4.7 and 14.9 micro-sieverts. The researchers who developed this technology have achieved the goal of allowing dentists to receive the same information gained from medical CT without the additional radiation exposure.

Dentists who do not own their own CBCT machines can take advantage of this imaging method by referring patients to imaging centres in order to acquire this valuable information.

The knowledge obtained from capturing 5-D scans can influence the effectiveness and efficiency of dental treatment. A dental CBCT scan offers the views and detail required to perform the latest procedures, while avoiding the unnecessary higher levels of radiation from hospital scans. As the technology continues to evolve, the possibilities for improved dental care can only increase. Increased software compatibility with surgical guides and orthodontic applications has made CBCT scanners an imperative for some dental offices.

As an oral and maxillofacial radiologist and an educator, I firmly believe that with knowledge comes responsibility to provide patients with the best dental care in the safest way possible—a dental CBCT accomplishes this goal without the additional risks involved with hospital scans.

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