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By badruddinghazali@iium.edu.my | January 17, 2023 | Uncategorized

Cone Beam Computed Tomography (CBCT) can be regarded as a revolutionary technology in dental imaging. It has many applications in dentistry including endodontics, implant dentistry, orthodontics, oral and maxillofacial surgery, pathology, and TMJ imaging. Previously, three-dimensional, multiplanar imaging can be achieved by using the hospital-based computed tomography (CT) machine. Before we move on to the technical and interpretation of CBCT images, let's have a look at the history of this technology.

CBCT technology has been used for imaging of cardiac and pulmonary imaging purposes by Mayo Clinic in Rochester, Minnesota since the late 1970s. It was quite a long time before it is used in our field in the late 1990s, a small start-up company based in Verona, Italy developed and patented a maxillofacial-specific CBCT machine named NewTom 9000. The machine was a hit in the early 2000s when it started to be marked in the USA. Soon, Japanese companies like J Morita and Hitachi were also developing their own small and large field of view (FOV) CBCT machines.

The initially produced CBCT machines in the early 2000s were using image intensifier detectors, which are bulky and heavy. Then, a postgraduate student with his supervisor from the University of Michigan considered using the TFT Panel which has many advantages against the use of an image intensifier as a detector in a CBCT machine. The machine was produced and marketed as the iCAT machine, and it was another hit in the USA and also worldwide.

Even though the CBCT machine was based on the principles of rotation in an older panoramic radiography machine, the earlier CBCT machines marketed are purely

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CBCT. This means it can only take CBCT images, and clinicians need another panoramic radiography machine for the other purpose. In 2007, Planmeca introduced a CBCT machine modified from the existing panoramic radiograph machine, which makes it even more compact and has a reduced footprint in a dental office. Then, more hybrid CBCT-Panoramic machines were built and marketed, apart from the original purely CBCT system.

Now, CBCT technology is constantly improving within its limitation to provide high-quality imaging at lower radiation doses.

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