Adapting CBCT in private practice: A personal experience

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Consider the allegory of a pilot navigating a plane with no cockpit controls and poor visibility. It is too dark to see, and there are no reference points to help the pilot guide the plane. At this point, the sky is a 2-D world. This scenario is frightening to even the most skilled pilots navigating the unknown.

Implant dentistry offers similar challenges in navigating the implant properly into the receptor site so that it meets the surgical and prosthetic goals of the plan. In order to achieve proper implant placement, we need predictability.

As a trained prosthodontist, it has always been my goal to achieve a high degree of predictability. When evaluating implant receptor sites, I realised early on the need for top-down cognition during the treatment planning process.

In other words, the teeth are first visualised in their ideal prosthetic position and then the implants are planned in each potential receptor position and then the implants are visualised in their ideal prosthetic treatment planning process. For top-down cognition during the planning process, we need predictability.

It was still essential that the patient’s head was properly positioned in the machine. If the head is not positioned properly, erroneous information may be gleaned from the cross-sectional images.

Another potential source of error in a large imaging centre is whether the machines are periodically calibrated to insure consistent accuracy. Lastly, unless the doctor is present during the image acquisition (at the imaging centre), he or she is unable to ensure that pre-scan details are attended to (e.g. cotton rolls between the teeth or the proper seating of a radiopaque scanning appliance).

Another issue with 2-D radiographic modalities is that they have varying degrees of distortion. Once realised that there were these types of errors with 2-D imaging, I came to the understanding that S-LD imaging gave me the best chance of optimising control of implant placement, and avoiding vital adjacent anatomy.

Prior to the last decade, the only way to access this technology was by referring your patient to the hospital radiology department or imaging centre for a medical-grade CT. In that venue, we lacked control of some of the process, including proper head position, optimum slice thickness, resolution and higher radiation exposure which may have affected the diagnostic quality of the images. All of this changed with the advent of CBCT scanning devices that have made the S-D technology accessible to the dental profession in a cost-effective way.

My early attempt to interface with 3-D imaging technology was to send the patient to a separate location for a CBCT scan. This posed some logistical problems in terms of having the patient scheduled in a timely fashion, and was inconvenient, as this required going to an unfamiliar facility. Many patients will lose motivation when too many barriers are encountered, such as travelling to a distant centre for image acquisition.

Having CBCT technology in the office has provided me with the control that I desired and has made a dramatic change in our daily workflow, with instant access to the technology. I could practice without a CBCT device in my office today. Having CBCT in the office has allowed me to have a greater understanding and appreciation of the anatomy and related structures of each patient. This knowledge is then applied during the treatment planning process to determine which tissues are deficient and with careful attention to vital structures so that implants can be placed in the most optimal receptor sites.

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In order to overcome some of these issues, my next progression was to try a mobile imaging service. A specially equipped van fitted with a CBCT device will travel to your office or the patient’s home. Although this is more convenient for the patient, reliability of these services is sometimes questionable and can be questioned about calibration due to relatively imperfect road surfaces, which may cause the machine to bounce around in the van. In addition, there may be issues with transferring the data, depending on the software applications that are to be used.

All of the points in contention were resolved when I decided to purchase a CBCT device for my office. After investigating all of the machines, I decided on an i-CAT Classic (Imaging Sciences).

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Honestly, I do not know how I could practice without a CBCT device in my office today. Having CBCT in the office has provided me with the control that I desired and has made a dramatic change in our daily workflow, with instant access to the technology. I could practice without a CBCT device in my office today. Having CBCT in the office has allowed me to have a greater understanding and appreciation of the anatomy and related structures of each patient. This knowledge is then applied during the treatment planning process to determine which tissues are deficient and with careful attention to vital structures so that implants can be placed in the most optimal receptor sites.

Other advantages of CBCT imaging in the office that I have found highly rewarding are airway analysis for sleep apnoea patients; interpretation of hard-tissue pathology; identification of vital structures during oral surgery procedures; and identification of vital structures during oral surgery procedures.

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