Every patient is different

The value of cone beam 3-D imaging

Our patients come to us for a variety of different needs, and as practising clinicians, it is our obligation to properly diagnose and recommend an appropriate plan of treatment. Until recently, 2-D periapical or panoramic imaging modalities were utilised to diagnose periapical pathology, tooth decay, periodontal disease and root morphology for endodontic treatment, restorative dentistry, and assessment of potential implant receptor sites. These concepts were accepted and widely taught by radiology departments in dental schools worldwide as conventional diagnostic dentistry.

However, with the advent of CT, and now CBCT, it has become increasingly evident that 2-D imaging modalities may not provide the most accurate assessment of the region of interest. As an example, on a panoramic image of the mandibular symphysis, we may be able to determine the height of available bone, but we cannot ascertain the width, contour or quality of the bone for the potential placement of dental implants. The course of the mandibular canal is essential to avoid damage resulting in irreversible paraesthesia. In the posterior mandible, there is often a clearly defined lingual concavity that if not visualised could lead to potential complications.

A few more considerations to think about: How important is it to know the actual width from the lateral to the medial wall of the sinus to determine the volume needed to fill the sinus to create the foundation for implant placement? Intraosseous vessels often reside within the lateral walls of the maxillary sinus and these cannot be determined with 2-D imaging modalities. It is important that they be visualised when contemplating a sinus augmentation procedure. Can the contour of the floor of the sinus be properly appraised when evaluating the posterior maxilla for a transcresatal approach with simultaneous implant placement? What about the presence of septa in the maxillary sinus? Septa are often problematic when they hinder the proposed treatment. Their presence and location cannot be determined from any 2-D radiography and may play a significant role in the long-term success of treatment.

Readers of past issues of our cone beam international magazine of cone beam dentistry have been exposed to a variety of clinical examples of how 3-D imaging modalities have been utilised in daily practice. However, there is one aspect of CBCT that may represent the most important reason that clinicians need to move from 2-D to the world of 3-D imaging: the ability to visualise anatomy in 3-D provides clinicians with an unprecedented appreciation that each patient is different. Each patient’s anatomy is revealed to be individual and separate from another person’s mandible or maxilla, each tooth, each alveolus, each inferior alveolar nerve or maxillary sinus. That individuality is so very important for clinicians to understand prior to commencing treatment and should serve as ample justification to enhance our diagnostic acumen to improve clinical outcomes and reduce complications for our many patients.

Please enjoy our latest issue, with our compliments. It is our mission to continue to present valuable content regarding this wonderful imaging modality and ancillary procedures that benefit from 3-D imaging technology. If you pick up one pearl from the articles enclosed, spread the word, tell your friends and share with your colleagues. Thank you!

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