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AAOMR Position Paper Recommending CBCT Imaging for Implant Planning Journal of Oral & Maxillofacial Research - 2012

Clinical Considerations in Selection Criteria for Dental Implantology:

Over the past decade, there has been a dramatic conceptual shift from a surgically driven to a prosthetically driven approach to dental-implant therapy. (5,14,17,26,27) It is no longer acceptable practice to place implants in alveolar bone without a previously developed plan for prosthetic restoration. **To optimize implant placement and to avoid surgical complications, the clinician must have full knowledge of oral-bone anatomy so that any osseous-topography, bone-volume excesses/deficiencies can be corrected before implant placement.** (28-31)

- Rotational panoramic radiography: **Because of its inherent limitations, panoramic radiography is considered unsuitable as a single imaging source for dental-implant site assessment.** (7,11-13,51,56-58)
- Cross-sectional imaging techniques: Cross-sectional imaging techniques produce in-focus, thin-section images... The main advantage of these images for implant dentistry is that they minimize or eliminate anatomic superimposition. Image sections perpendicular to the long axis of the region (object) of interest (e.g., the mandibular arch) are referred to as cross sectional trans-axial images. Cross-sectional images provide optimal accuracy for visualizing the bony architecture of the jaws.

Recommendation 4. "The radiographic examination of any potential implant site should include cross sectional imaging orthogonal to the site of interest."

Recommendation 5. "CBCT should be considered as the imaging modality of choice for preoperative cross sectional imaging of potential implant sites... The use of CBCT before bone grafting helps define both the donor and recipient sites, allows for improved planning for surgical procedures, and reduces patient morbidities. CBCT is best for the evaluation of volumetric and topographic changes of the restored residual alveolar ridge."

Recommendation 7. "CBCT imaging should be considered if bone reconstruction and augmentation procedures (e.g., ridge preservation or bone grafting) have been performed to treat bone volume deficiencies before implant placement."

Conclusions: "Initial imaging assessment is best achieved with panoramic radiography and may be supplemented with periapical radiography. **For the preoperative diagnostic phase, the AAOMR reaffirms that cross-sectional imaging be used for implant site assessment. Furthermore, the AAOMR recommends CBCT imaging as the current method of choice for cross-sectional imaging in that it provides the greatest diagnostic yield at an acceptable radiation dose risk.** The decision to perform a CBCT examination must be clinically justified and based on professional judgment (that is, the judgment of the clinician is that the use of CBCT will potentially provide information needed for prosthetic treatment planning, implant selection, and/or surgical placement). The CBCT imaging protocol should include the smallest FOV necessary and available and optimize exposure parameters. For periodic, postoperative implant monitoring, periapical and, in some cases, panoramic images provide adequate imaging."