

CBCT Specific Guidelines for South African Practice as Indicated by Current Literature:

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Maxillo-facial and Oral surgery:

Trauma:

1. Facial trauma for the confirmation or exclusion of fractures suspected from the history, clinical examination or associated injury.¹
2. Suspected root fracture of a tooth where:
 - No fracture is visible on conventional radiographs.
 - Where a fracture is visible in the middle 3rd of the root on conventional radiographs.²

**CBCT not applicable where fractures are visible in the coronal or apical 3rd of the root as the treatment may be instituted without further diagnostic aids.²

Pathology:

1. Diagnosis and surgical planning of the management of benign cysts and tumors of bone.^{3,4}
2. Diagnosis and surgical planning of the management of malignant conditions involving bone where no soft tissue imaging is needed.³
3. For the evaluation and surgical management of inflammatory conditions of bone, as well as follow up for these conditions.³
4. For the exclusion of sinus pathology in the presence of facial or oro-facial pain.³
5. Where the presence of oro-antral fistulas are suspected.³
6. CBCT imaging is superior to MCT in the evaluation of foreign metallic objects, retained broken dental needles in the craniofacial region.³

**CBCT not applicable where imaging of soft tissue is needed, here MCT or MRI is a better option, or where imaging needs to include the brain, neck and chest to exclude lymphatic and distant metastasis.⁵

Temporo-mandibular Joint (TMJ):

1. CBCT is indicated where osseous deformation or pathology is suspected.^{6,7}
2. CBCT is a superior imaging to panoramic radiographs and conventional tomograms for the evaluation of patients presenting with internal derangements. It further provides opportunity for the evaluation of sinus and dental pathology that could indirectly impact on bruxism and TMJ function, taking the radiation exposure and cost of a panoramic radiograph, TMJ tomograms, a full mouth series and sinus views into considerations a single large field of view CBCT that gives information related to all these structures are an overall safer procedure with less radiation and most probably lower cost to the patient.⁶
3. CBCT is indicated in fractures involving the TMJ, remodeling, osteoarthritis, inflammatory arthritis, developmental and acquired structural deformities and tumors of the TMJ.⁶

Impacted teeth:

1. Where a close relationship of the third mandibular molar is indicated with conventional 2D imaging.^{4,8}
2. Localization and treatment planning for impacted canines, mesiodens and other impacted teeth.⁸⁻¹⁰
3. Impacted teeth in a close relationship to any other vital anatomical structure or in an unusual position for an impacted tooth.⁴

**CBCT is not advocated for routine evaluation of impacted teeth and should follow 2D conventional radiographs if indicated.

Craniofacial surgery:

1. Congenital craniofacial and cleft patient where 3D imaging is needed for treatment planning purposes.^{4,5,11}
2. Acquired craniofacial deformities for the diagnosis, treatment planning, fabrication and design of prosthesis, 3D models, surgical guides, implant guides and implant planning.

** In cases where soft tissue information is desired the performance of a MCT is advised as this will result in a single radiation exposure providing all the needed information.

Orthognathic evaluation and planning:

1. The radiation dose and cost should be weighed for specific CBCT units and conventional 2D imaging for the use in routine orthognathic cases where panoramic radiographs, lateral cephalograms and a full mouth series are needed, especially where other indications for CBCT exists.¹¹
2. CBCT is advised in the literature for use in facial asymmetries, occlusal cants and transverse discrepancies.¹¹

Implant surgery:

1. CBCT is not advised for the general evaluation of the implant placement; peri-apical radiography and panoramic radiography are more suitable.¹²
2. CBCT is the cross sectional image modality of choice for the evaluation of implant placement and a cross sectional image is advised for the placement of implants.¹²
3. CBCT is advised for the evaluation of patients where the need for augmentation procedures is indicated.¹²⁻¹⁴
4. CBCT is advised in areas where implant placement is planned in areas where augmentation or reconstruction procedures have been performed.¹²⁻¹⁴
5. CBCT is not advised for the post-operative evaluation and review of asymptomatic implants.¹²
6. CBCT is indicated where operative complications have occurred erg. Implant mobility or altered sensation.¹²⁻¹⁴
7. CBCT is indicated where implant retrieval is planned.¹²
8. Where implant guides are to be fabricated for the placement of implants.¹⁴

Orthodontics:

1. For the evaluation and treatment planning for impacted and supernumerary teeth.^{11,15}
2. For the evaluation of obstructive sleep apnea.^{11,15}
3. For the evaluation of temporary anchorage devices.^{11,15}
4. For the evaluation of the orthognathic surgery patient.^{11,15}
5. For the planning of orthodontic treatment in the cleft lip and palate patient.^{11,15}
6. For the evaluation and treatment planning in patients where tooth movement and ultimate position may be influenced by limitations by the alveolar anatomy.¹¹

Endodontics:

1. CBCT is indicated in dental trauma for initial diagnosis as well as follow up.^{16,17}
2. For the diagnosis and evaluation as well as follow up after treatment of suspected peri-apical periodontitis.^{16,18,19}
3. In the evaluation and treatment planning for teeth planned for surgical management of peri-apical periodontitis (apicectomies).¹⁶⁻¹⁸
4. Evaluation and follow up of root resorption.¹⁶⁻¹⁸
5. Where supplementary canals are suspected in teeth that is being treated endodontically.^{16,18}
6. In the root canal treatment planning of teeth with a large degree of curvatures or where anatomical or morphological anomalies are present.¹⁶⁻¹⁸
7. Assessment of complications of endodontic therapy.^{17,18}

Periodontics:

1. Evaluation of buccal, lingual and furcation periodontal defects.¹⁹
2. Possible replacement for re-entry evaluation of regenerative therapy outcomes.¹⁹

References

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