AbstractID: 1082 Title: Evaluation of the Image Quality Delivered by the Wedge Reconstruction Method for Large-Coverage Helical Cone Beam CT

One of the main advantages of cone beam computed tomography (CBCT) scanners is their ability to cover a large volume in a short period of time. Increasing the number of detector rows with small pixel height forces the use of cone beam (CB) reconstruction algorithms in order to suppress artifacts originating from the cone angle of the rays. CBCT helical data are reconstructed today mostly by approximate algorithms, e.g., Feldkamp-type 3D back-projection. Using techniques such as the spectral split, these algorithms can preserve the dose utility using all the redundant data, where as a way to handle redundant data within the framework of exact reconstruction methods is limited today for discrete pitch values. Motivated by the growing efforts to develop large-coverage CBCT, the goal of this work was to find for which helical acquisition geometries approximate algorithms provide a satisfying image quality. Volumetric clinical CT images produced from a 16-row scanner were forward projected to various geometries. The forward-projected data were reconstructed using the so-called approximate Wedge method. A satisfying image quality was found for helical pitch values, i.e., bed travel per one gantry rotation, up to 80 mm.