

AbstractID: 4530 Title: Toshiba's 256 Slice CT: Development, Design, and Clinical Applications

As CT has evolved from axial to helical to multislice helical, the advanced applications have been focused on volumetric imaging. Improvements in coverage and temporal resolution have opened the doors to challenging imaging tasks such as coronary angiography. However, even with today's most advanced systems, there is still a several second time difference between the imaging of the superior and inferior portions of the heart. During this time period, small differences in heart rate and contrast medium can lead to discontinuities within the volume data as seen in some MPR images. Such artifacts can lead to inaccessibility or, worse, misdiagnosis.

Toshiba has developed its 256 slice system to cover over 12 cm of anatomy in a single rotation with 0.5 mm slices to allow the complete coverage of the heart at a single, instantaneous time point. Such a system will enable seamless coverage free from banding artifacts and discontinuities. Furthermore, wide volume coverage will allow dynamic evaluation of the flow of contrast material and perfusion over an entire organ rather than in just 3-4 cm, opening the doors to new clinical applications.

No new system is without technological challenges. The wide coverage of the 256 slice system requires a cone angle that is four times larger than a 64 slice system and advancements in cone beam reconstruction have been necessary to meet this need.

This lecture will detail the design of Toshiba's 256 slice system and provide an overview of the system's image quality, dosimetry, and clinical applications. It will show early clinical examples of the advantages of whole organ coverage. It will explore some of the technological challenges inherent in such a system and the solutions to these challenges.

Educational Objectives

1. Understand the development and design of Toshiba's 256 slice system.
2. Understand the clinical utility of seamless, wide volume coverage
3. Understand the technical challenges of the 256
4. Understand the system's image quality