

AbstractID: 8113 Title: Comparison of radiation doses for optimal and dose modulation techniques in abdominal CT examinations

**Purpose:** To compare reduction in radiation dose using dose modulation techniques and optimal exposure parameters and its impact on image quality for biphasic abdominal CT examination performed using multidetector CT scanner. **Method and Materials:** A prospective study of 426 patients undergoing biphasic contrast-enhanced abdominal examination involving arterial and venous regions were performed using optimal and dose modulation techniques in a six-section multidetector CT scanner. For the optimal setting, images were acquired using constant tube potential (arterial phase with 90 kV and venous phase with 120 kV) and varying tube current-time product according to patient's body weight. Using angular dose modulation (D-DOM) and z-axis dose modulation (Z-DOM) techniques, images were acquired with constant tube potential similar to optimal settings. The effective doses were calculated using the DLP values. The signal to noise ratio (SNR) was also studied from the image obtained at the region of the liver. In a blinded review, one radiologist rated the CT scans for overall image quality. Radiation dose and image noise for optimal and dose modulation techniques with similar settings used for patients were also studied using an acrylic body phantom. **Results:** The effective dose using optimal, D-DOM and Z-DOM techniques were 11.3 mSv, 9.5 mSv and 8.2 mSv respectively for patient's of body weight 40 to 60 Kgs. The mean SNR value for arterial phase and (venous phase) was 7.7 (6.2), 8.3 (6.5) and 8.5 (7.9) for optimal, D-DOM and Z-DOM respectively for patient's of body weight 40 to 60 Kgs **Conclusion:** This study indicates the potential of significant dose reduction in abdominal CT. Use of dose modulation techniques resulted in a dose reduction of 16 - 28% with acceptable diagnostic quality in comparison to the optimal settings.