**Presenter:** James B. Allison  

**Title of Abstract:** Dose Reduction Using Iterative Reconstruction and Split Bolus in CT Urography  

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**Modality:** CT  

**Organ System:** GU  

**Purpose:** Determine the average dose reductions in CT urograms performed using IR and split-bolus technique.  

**Methods Used:** Three groups of examinations for hematuria were evaluated retrospectively: 80 consecutive patients using three-phase protocol with filtered back-projection, 16 patients using a newly-implemented two-phase split-bolus protocol and FBP, and 52 using the two-phase protocol and IR. kVp, filters, and the anatomy imaged were held constant per protocols. Parameters were CTDIvol and DLP. One of the investigators evaluated an ROI in the left psoas on the enhanced phase to obtain the HU standard deviation to measure noise as a surrogate of image quality.  

**Results of Abstract:** Average total DLP reductions of 59.6% (p <.001) were achieved comparing the two-phase protocol with IR to the three-phase protocol with FBP. The precontrast average DLP reduction with IR was 44.1% (p<.001), with a 37.7% average reduction in CDTI (p<.001). Split-bolus technique on FBP studies led to a 27% average total DLP reduction (p=.001). The split bolus phase vs. nephrogram/urogram technique yielded a 70.3% DLP reduction with IR (p<.001) and 43.3% with FBP (p <.001). A total average DLP reduction of 44.7% was seen in split-bolus technique examinations comparing IR to FBP (p<.001).  

**Discussion:** While comparing individual examinations using CTDI and DLP is difficult, this analysis demonstrates significant dose reductions to the population of patients undergoing CT urography by implementing split-bolus technique and iterative reconstruction.  

**Scientific and/or Clinical Significance?** Split-bolus technique and IR independently produced significant decreases in the total radiation exposure delivered.  

**Relationship to existing work** Split-bolus CT urogram has been reported as clinically effective. Iterative reconstruction techniques allow one reduce noise when using lower radiation exposures.