

Intraoperative rotational fluoroscopic tomography coupled with electromagnetic localization offers the sinus surgeon the advantages of real-time image guidance and reduced radiation dose to the patient compared with conventional CT scanning. The GE implementation of this methodology, "FluoroCAT" scanning, employs the GE OEC 9800 Plus mobile fluoroscope and the GE InstaTrak 3500 Plus image reconstruction and surgical guidance device. We obtained dosimetric information for FluoroCAT scans by measuring exposures in a standard CT head phantom. Also, using measurements of exposure rate as a function of displayed fluoro technique, we calculated entrance exposure rates (EER) from technique readings monitored during scans of patients undergoing sinus surgery and during scans of the head phantom. Using high-current pulsed fluoro (15 pps "Digital Cine," 66-70 kVp, 67-90 mA) for FluoroCAT scans of 21 second nominal duration and 190° nominal rotation, the dose at the center of the phantom was 4 mGy. The maximum dose in a "surface" hole of the phantom was 11 mGy. On the GE Lightspeed Plus, the CTDI(vol) for the scan protocol previously used for guiding this type of surgery is 85 mGy. In contrast with the relatively isotropic EER profile of the head phantom (5-6 R/minute for 15 pps Digital Cine), the EER to the head of each of three patients varied considerably with scan angle, from less than or equal to the phantom EER in the Lateral direction to 2.5 times the phantom EER in the A-P direction.