I. STUDY OBJECTIVE

Compare the radiation exposure to the surgical team during supine and prone positions with common C-arm configurations.

II. METHODS

Benchtop experiment conducted using Siemens C-arm, an anthropomorphic model, and a 180cc ionization chamber.
Directly measured radiation scatter (mR/min) at eye and gonad level using low and high dose settings for a surgical team comprised of an anesthesiologist, radiation technologist, scrub nurse, and urologist. C-arm position included AP, 15 deg oblique, AP with torso in 15-degree decubitus, lateral with torso in 15 degree decubitus. Dose reduction interventions included C-arm OVER the patient, or surgical team opposite to image intensifier.
Surgeons receive the highest radiation exposure during PCNL.

Lateral C-arm orientation represented the greatest exposure with an average dose increase by 6.49 to 21.13 times compared to oblique and AP configuration, respectively.

Dose Reduction Strategies:
- Positioning the team opposite to the image intensifier reduced exposure by 3.1 to 3.6 times.
- Rotating C-arm over the table, compared to under the table during lateral orientation, reduced exposure by 1.5 times.

This study highlights the ability for a surgical team to drastically alter radiation exposure by considering position as part of the contributing factors.