Reduced Radiation Exposure in the Cardiac Catheterization Laboratory using Combination of both Horizontal and a Novel Vertical Radiation Shield

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Background

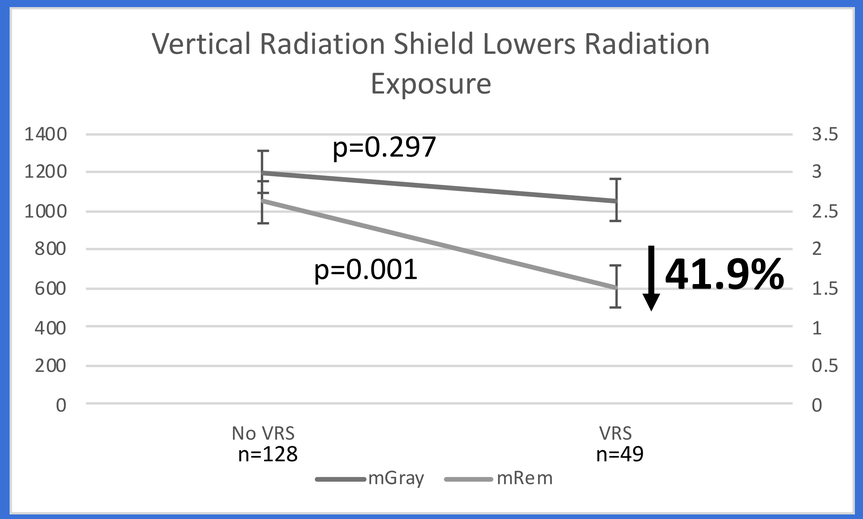
Radiation exposure in the cardiac catheterization laboratory (CCL) is a safety risk. We investigated a novel sterile Vertical Radiation Shield (VRS) on operator radiation exposure.

Methods

Prior to a coronary procedure, a dosimeter measured radiation exposure on a mannequin with human phantoms at various imaging angles, magnifications, and distances. The angle with the highest radiation, 8 magnification and placement of the mannequin at the access site was used to compare radiation exposure with both horizontal radiation absorbing pad (HRAP) (RadPad, Lenexa, KS) and/or VRS (Steradian, Radux Devices, MN), placed between the manniquin and the detector. After demonstrating benefit of VRS, four operator's radiation exposure was examined during coronary angiography with at least two HRAP with or without a VRS over 6 months.

Disclosures

Dr. Panetta co-owner LP Medical, LLC
Dr. Shah consultant for Radux Devices
Dr. Iqbal consultant for Radux Devices

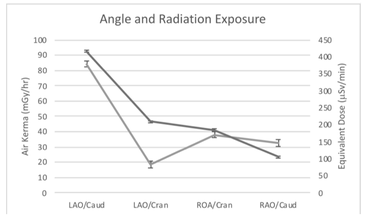


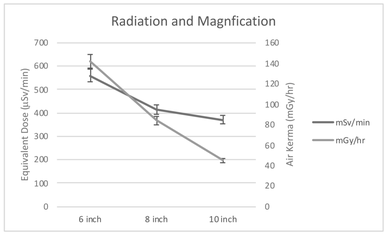
The difference remained after controlling for body mass index, magnification, percutaneous coronary intervention, large volume injections, and access site location ($F(1, 170) = 8.61$, $p < 0.001$, partial $\eta^2 = 0.05$).

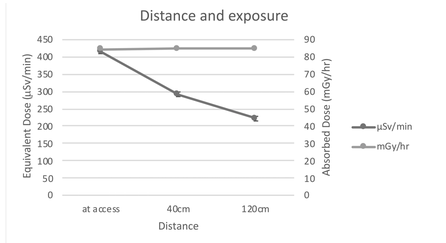
Summary

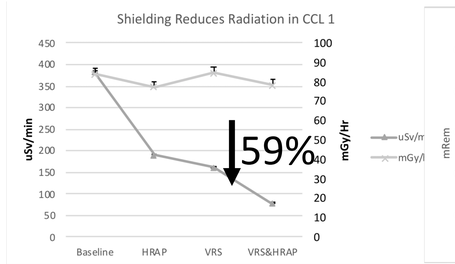
1. **Steradian Vertical Radiation Shield lowered radiation exposure by 41.9% to the operator**
2. **Angle: LAO/Caud has highest radiation exposure, other angle >50% lower**
3. **Distance:40 cm/16inchs can lower radiation by 30%**
4. **Magnification: 10" vs 8" lowered by over 40%**

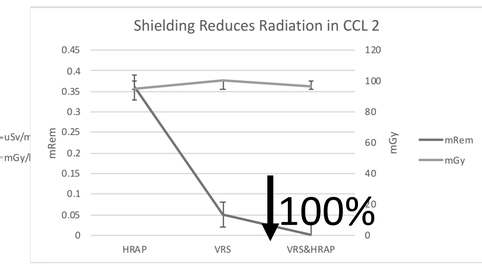
Figures











Limitations

Non randomized study
Single center