JACC
Journal *of the* American College *of* Cardiology

TCT-403: Reduction of Occupational Exposure to Scatter Radiation during Endovascular Interventions: A Prospective, Placebo Controlled Trial Comparing the Effectiveness of a Disposable Radiation-Absorbing Drape

J.Am.Coll.Cardiol. 2010;56;B93
doi:10.1016/j.jacc.2010.08.472

Joel E. Schneider, Ravish Sachar, William W. Orrison, Phillip W. Patton
WakeMed, Raleigh, NC, University of Nevada School of Medicine, Las Vegas, NV, University of Nevada Las Vegas, Las Vegas, NV

Purpose: To evaluate the effectiveness of a radiation-absorbing shield in reducing the occupational exposure to interventionalists during endovascular procedures.
Materials and Methods: A total of 56 patients undergoing endovascular procedures (renal and peripheral) were evaluated in a blinded, placebo-controlled prospective trial using a sterile, disposable surgical drape containing a lead-free x-ray attenuation material (RadPad) or a similar drape lacking the attenuation material. Radiation exposure measurements were obtained at the hand and body of the interventionalists to compare the effectiveness of the drape in reducing exposure.
Results: The peripheral drapes containing the x-ray attenuation material resulted in a reduction of 82.8% to the hands and 88.0% to the body compared to placebo drapes during peripheral procedures. The renal drapes reduced exposure to the hands 70.9% and body 63.4% compared to the placebo drapes. Fluoroscopy times were similar between the groups.

Summary of Radiation Exposure

	FT(min)	H(mR)	H(mR/min)	B(mR)	B(mR/min)
Renal Placebo	9.67	23.59	2.44	15.58	1.61
Renal Protective Drape	9.01	6.37	0.71	5.29	0.59
Peripheral Placebo	11.45	27.93	2.44	17.12	1.50
Peripheral Protective Drape	10.98	4.60	0.42	2.01	0.18
Renal Drape % reduction			70.9%		63.4%
Peripheral Drape % reduction			82.8%		88.0%
FT-Fluoroscopy Time, H-Hand, B-Body					

Conclusion: The use of a disposable radiation-absorbing surgical drape can significantly reduce occupational exposure to the interventionalist as compared to a placebo drape without the attenuation material. This additional protection allows physicians and medical personnel to achieve the universally desired goal of as low as reasonably achievable (ALARA) radiation exposure. The interventionalist exposed to scatter radiation, over a life-time career, could find significant health benefits by using a radiation protective drape during endovascular procedures.