



Comparing a Novel DSA Technique with Traditional DSA Methods

Cardiology Consultants, PA

- * Located in Spartanburg, SC
- * A group of 12 Cardiologists practicing at Spartanburg Regional Medical Center and the Cardiology Consultants private practice ASC.
- * The Cardiovascular group provides cardiovascular services that include PCI, CTO, EP, Structural Heart, CLTI procedures, chronic DVT.



Dr.; Brian Brown, Interventional Cardiologist
Cardiology Consultants, PA
Spartanburg, SC
Spartanburg Regional Medical Center
Spartanburg, SC



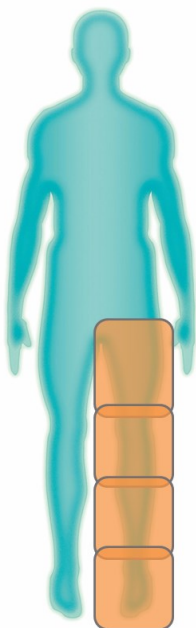
Substantial Dose and Contrast Savings can be achieved using a Novel DSA technique with Trinias

The Shimadzu Trinias interventional x-ray lab offers two methods of performing leg imaging to diagnose and treat peripheral artery disease:

- “Traditional” Selected Subtraction
- Score RSM

Score RSM is a unique feature offered by Shimadzu that uses a real-time smooth mask to create a subtracted image that is significantly less susceptible to patient motion.

Dr Brian Brown has compared both methods and the results show a substantial decrease in contrast media usage and in the radiation dose applied to the patient by using Score RSM.



In the traditional leg imaging method that has been used for many years, DSA subtraction is used to identify areas for treatment by making selective subtracted images at each level. (Diagram shown).

Using Score RSM Dr Brown simply moves the table, manually down the leg, imaging the entire leg as he moves. Patients frequently move as a result of the injection, but visibility to the vessels remains clear with Score RSM, overcoming the motion.

Traditional DSA imaging would require substantial adjustment to overcome the motion, requiring more time and potentially repetition of the imaging. Sometimes DSA images are unusable.

Dr Brown has documented the savings in contrast media and radiation dose utilizing RSM.



Growing the practice to address the underserved patient population

- 50 year old private Cardiovascular practice serving a population of about 300,000 people
- Practice decided to build an OBL/ASC to increase access to care and improve patient experience, decrease cost to patients.
- 13,500 sq feet building with an 4500 sq ft OBL/ASC cath lab.
- Physician group identified an unmet need with an underserved population for PAD treatment to increase access to care and salvage limbs, by limiting amputations.
- 1—Trinias F12 unity edition in the ASC
- 3—Trinias C12 unity systems in SRMC

Method and Results

Treatment of 14 patients for Peripheral artery disease using the Shimadzu Trinias C12 unity edition.

Procedures were performed using DSA and Score RSM on each patient over a six months period.

The patient population varied in size from a BMI of 21 to a BMI of 45.

Diseases treated were exclusively patients with calcified PAD with CLTI.

Comparison results:

- Radiation Dose Savings— **58.78%**
- Contrast Media Savings— **40.7%**



Conclusions

Clinical evidence shows significant contrast media savings and radiation dose savings are achievable with Score RSM.

In addition, procedure efficiency is improved without reregistration of images and retakes due to motion.

Further study could include larger patient population size, multiple centers and randomized trials.

	Traditional DSA	Score RSM
Advantages	Crisp Images	Motion tolerant
		Rotational and Pendulum image acquisition possible
		Timing of the bolus injection is not as critical
		Less retakes thereby reducing exposure totals
Disadvantages	Susceptible to motion	Not well known or understood by clinicians
	Multiple images required to achieve geometric awareness	

Dr Brown, “RSM improves my efficiency, lowers my procedure time and reduces the radiation dose to me and my patient”

Benefits to Score RSM Methodology

SCORE RSM is faster and simpler to use to perform leg procedures with a single sweep down the leg.

Motion is defeated with Score RSM, reducing the risk of retakes due to patient movement.

Dr Brown’s trial shows clear advantages to radiation dose savings of 58.78% and contrast media savings of 40.7%.

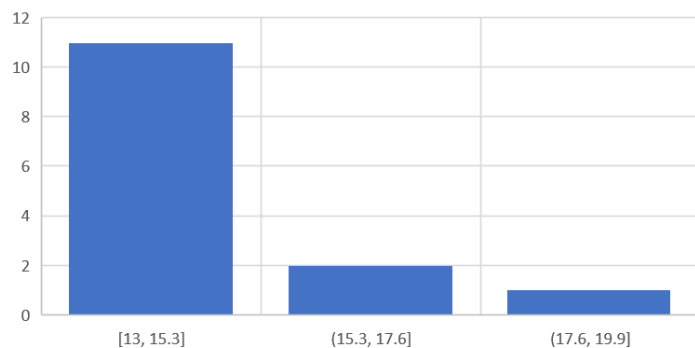
Unique forms of imaging can be created by introducing motion with DSA imaging using a rotational precession or a pendulum movement over the body.



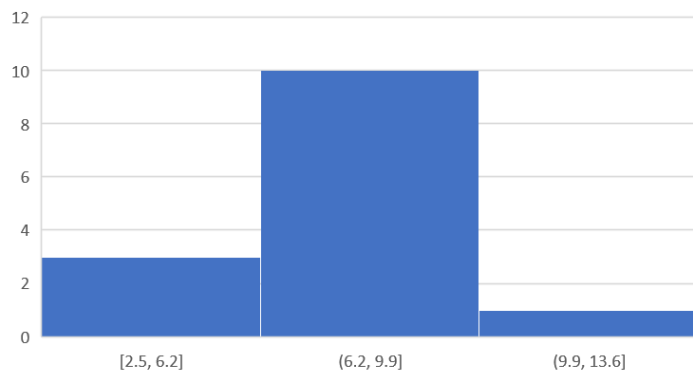
Appendix

	Dose Savings mGy	Contrast Savings ml
Pt 1	9.9	14
Pt 2	2.5	13
Pt 3	2.5	13
Pt 4	9.5	18
Pt 5	9.9	15
Pt 6	6.6	13
Pt 7	6.2	15
Pt 8	5.2	13
Pt 9	9.8	14
Pt 10	8.6	17
Pt 11	7.6	15
Pt 12	9.8	16
Pt 13	7.9	15
Pt 14	6.5	13
Total Savings	102.5	204
Avg Savings per patient	7.32 mGy	14.57 ml

Contrast Savings (ml) Histogram



Dose Savings (AK mGy) Histogram



	Dose Savings		Contrast Savings	
	Score RSM	Tradition- al DSA	Score RSM	Traditional DSA
	RSM AK mGy	DSM AK mGy	RSM Contrast mL	DSM Con- trast mL
Pt 1	10.7	20.6	10	24
Pt 2	7.1	9.6	10	23
Pt 3	12.9	15.4	10	23
Pt 4	11.1	20.6	10	28
Pt 5	10.6	20.5	10	25
Pt 6	9.8	16.4	10	23
Pt 7	10.9	17.1	10	25
Pt 8	10.2	15.4	10	23
Pt 9	11.3	21.1	10	24
Pt 10	12.7	21.3	10	27
Pt 11	10.7	18.3	10	25
Pt 12	10.4	20.2	10	26
Pt 13	9.6	17.5	10	25
Pt 14	8.2	14.7	10	23
Total	146.2	248.7	140	344
Mean	10.44	17.76	10.00	24.57
Median	10.65	17.9	10	24.5
Std Dev	1.47	3.20	0.00	1.55