CARDIAC IMAGING IN PRIVATE PRACTICE : LESSONS LEARNED

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NWR NorthwestRadiology TRUSTED IMAGING SINCE 1967 50 Years

M3-CCA08 N227B 29 NOV 2022 0930 - 1030

RSNA 2022

OVERVIEW: LESSONS LEARNED

- Protocols and Value Added
- Turf
- Mentorship

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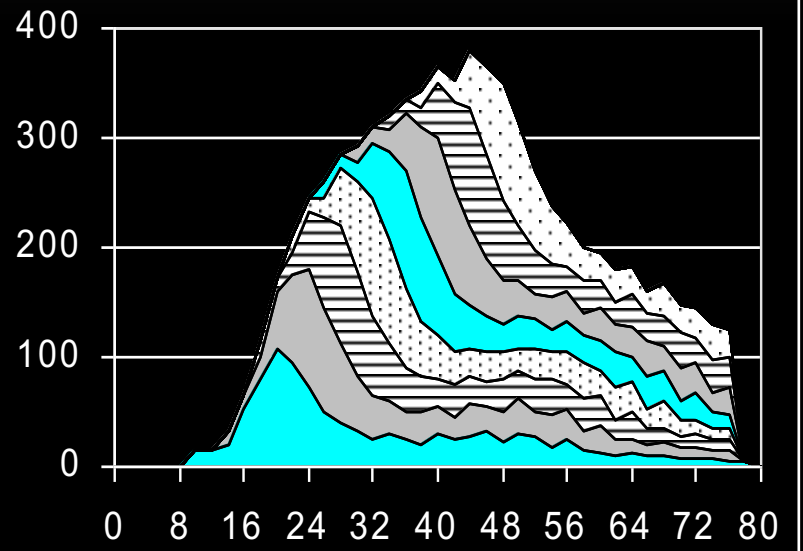
CARDIOVASCULAR PROTOCOL DEVELOPMENT

- Improve consistency of output across patient spectrum
- Complex exams become less operator dependent
- Vendor protocols and support are limited
- Opportunity to improve patient care

CT: Rules of Early Contrast Medium Dynamics:



- Arterial Enhancement is Proportional to Iodine Flow Rate (Flux)
- Arterial enhancement increases over time as a cumulative effect
- Arterial enhancement is highly variable between individuals
  - Inverse to cardiac output and BW / BSA
  - “patient factor”

Fleischmann D. Eur Radiol 2002;12:S11-S16

Fleischmann, et al. Radiol Clin N Am 54 (2016) 1–12

TIPS FOR BUILDING CT INJECTION/SCAN PROTOCOLS

- Scan times dependent on scanner, scan mode chosen
- Use weight-based CM dosing
- Utilize low kVp imaging and iterative reconstruction techniques
- It takes ~ 6 sec for image reconstruction, table movement, and breath hold instructions
  - I also add 2 sec "fudge factor"

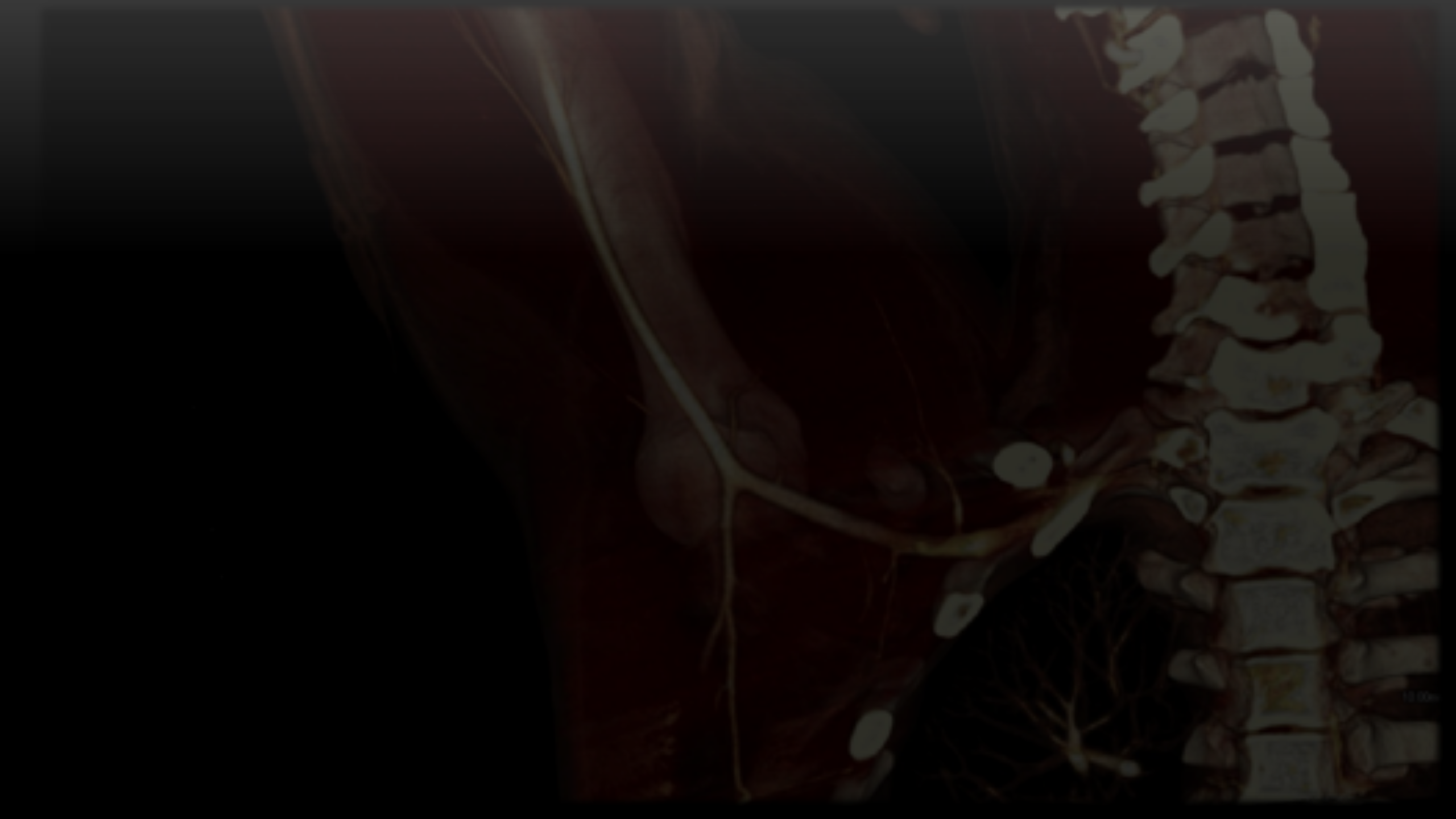
Injection Duration = scan time + 8 + "delay"

Fleischmann D. Eur Radiol 2002;12:S11-S16

Fleischmann, et al. Radiol Clin N Am 54 (2016) 1–12

CARDIAC MR PROTOCOLS: TIPS

- Make protocol as brief as possible
  - 45 min. or less
- Assign protocols as early as possible (EMR integration)
- Coordinate w/ nursing for stress CMR, etc.
- Protocol w/ EP, device reps, and short stay for device patients
  - > 300 per year

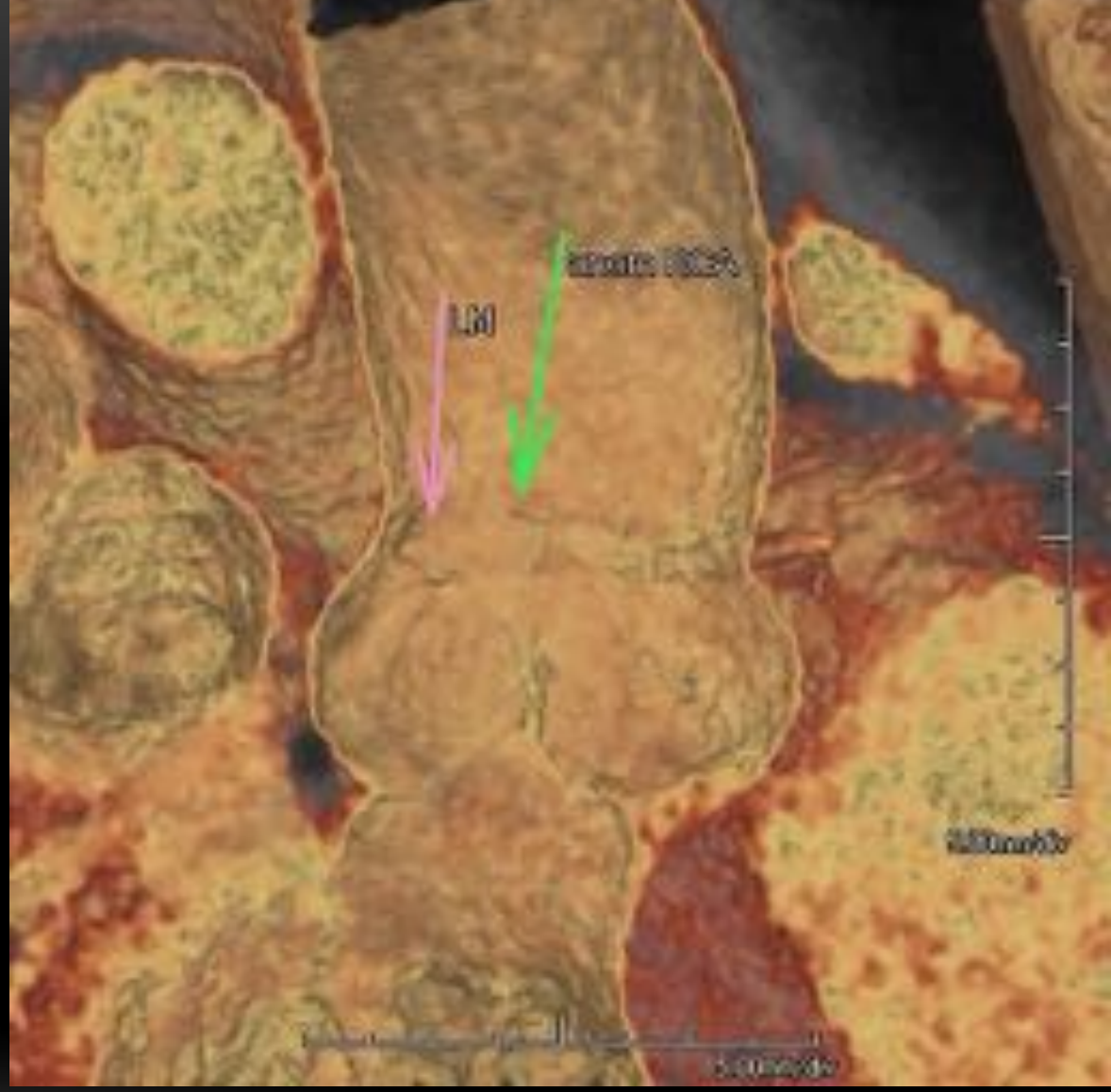


VALUE ADDED: 3D RENDERING SERVICES

- Integral to referring services' understanding of complex anatomy
- Wide spectrum of use: from LRD to CMR to TAVR
- 3D Printing
- Who provides? Who pays?

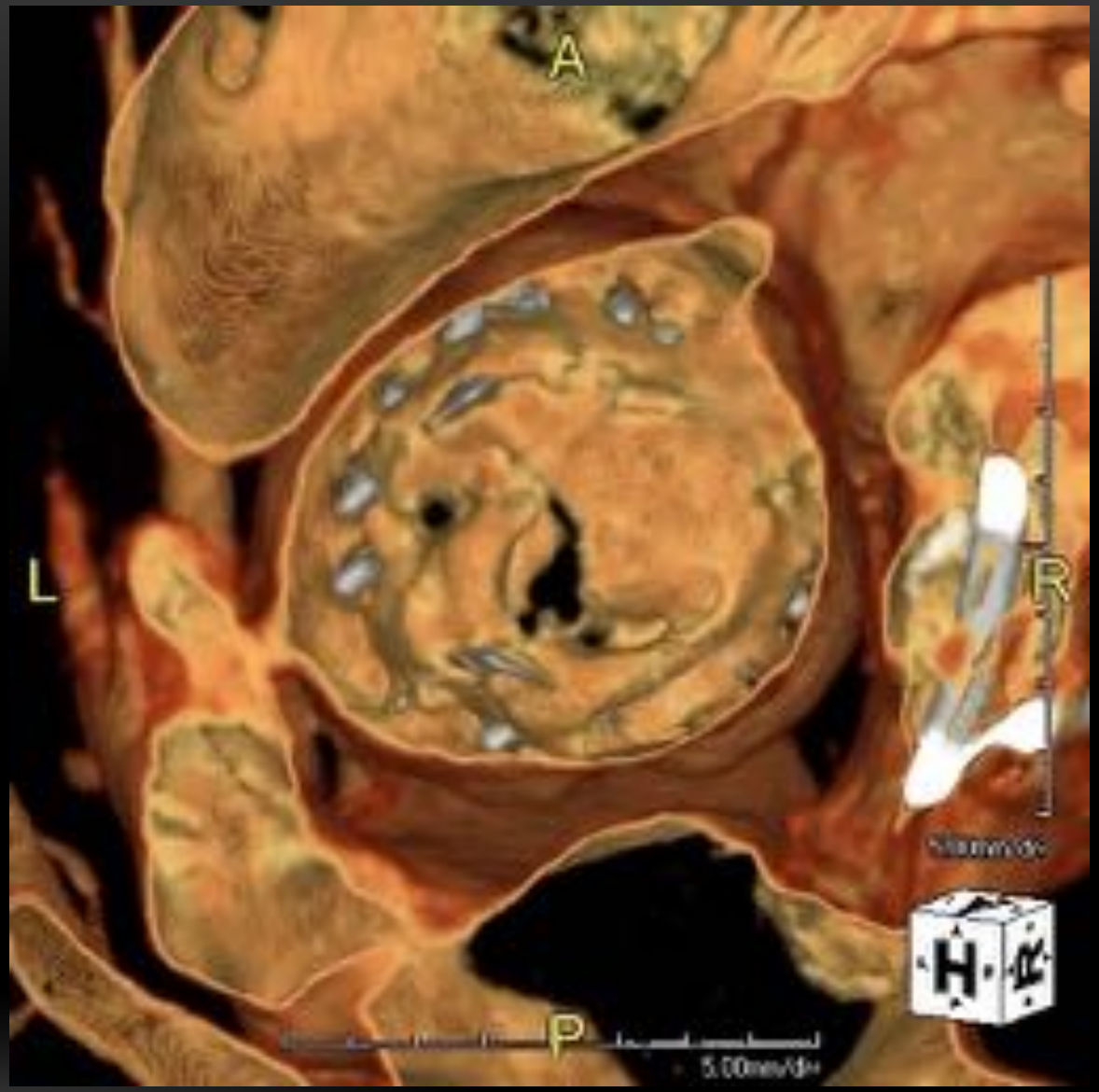
3D RENDERING SERVICES

- Integral to referring services' understanding of complex anatomy
- Demonstrates the value of CVI training



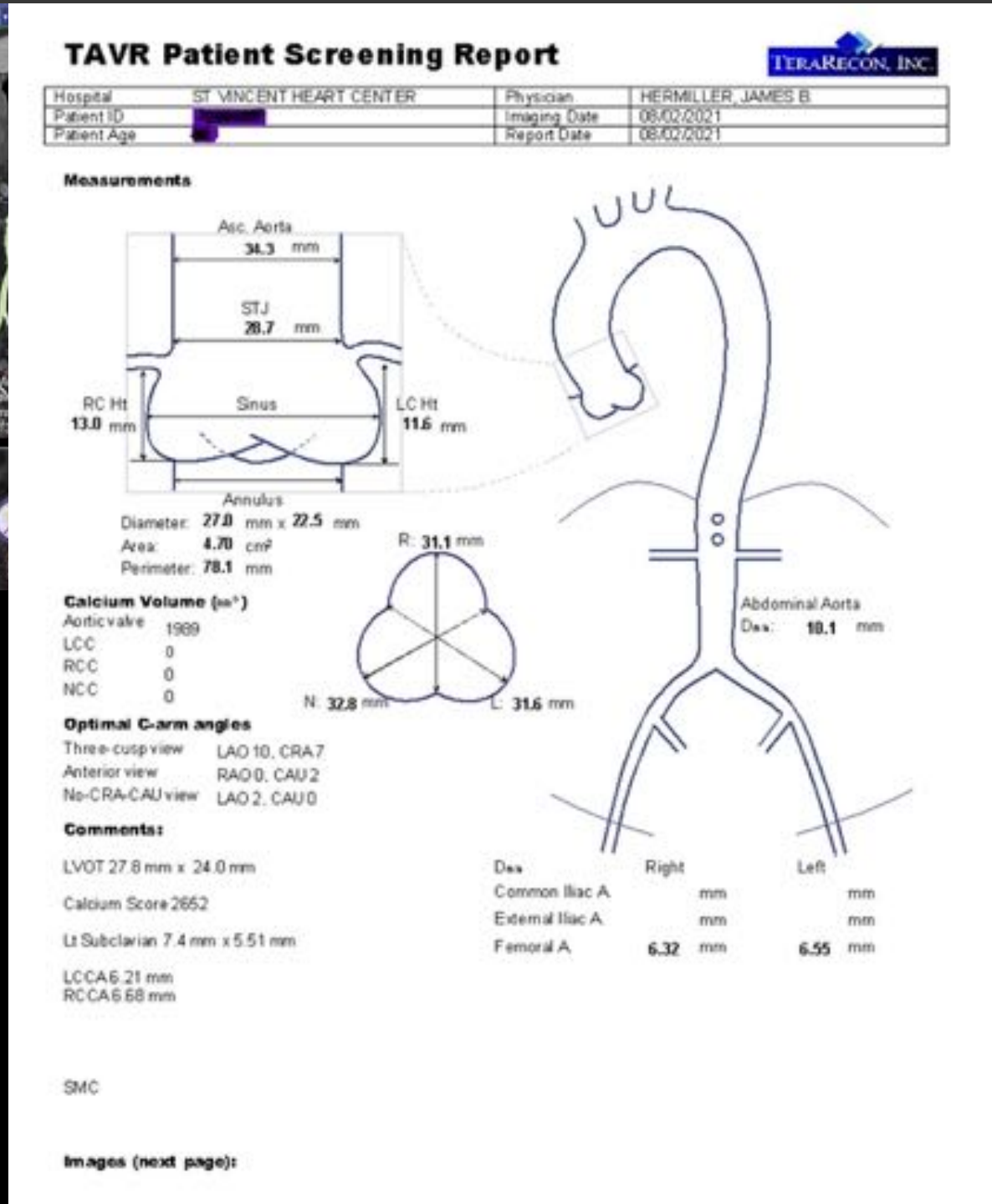
3D RENDERING SERVICES

HALT with RELM



3D LAB SETUP

- 3D rendering:
  - Thin Client, Zero footprint (cloud)
- Structural Heart:
  - Watchman, TMVR, TAVR
- CCTA, CMR, LA mapping, etc
- Recruited and trained in-house 3D lab (thanks Shannon!)
- Standardized workflow and reporting



TAVR Patient Screening Report

TeraRecon, Inc.

Hospital	ST VINCENT HEART CENTER	Physician	HERMILLER, JAMES B
Patient ID	[redacted]	Imaging Date	08/02/2021
Patient Age	[redacted]	Report Date	08/02/2021

Measurements

Asc. Aorta 34.3 mm
STJ 28.7 mm
RC Ht 13.0 mm
Sinus
LC Ht 11.6 mm
Annulus
Diameter: 27.0 mm x 22.5 mm
Area: 4.70 cm²
Perimeter: 78.1 mm

R: 31.1 mm
N: 32.8 mm
L: 31.6 mm

Calcium Volume (mm³)

Aortic valve	1989
LCC	0
RCC	0
NCC	0

Abdominal Aorta
Dxs: 18.1 mm

Optimal C-arm angles

Three-cusp view	LAO 10, CRA 7
Anterior view	RAO 0, CAU 2
No-CRA-CAU view	LAO 2, CAU 0

Comments:

LVOT 27.8 mm x 24.0 mm

Calcium Score 2652

Lt Subclavian 7.4 mm x 5.51 mm

LCCA 6.21 mm
RCCA 6.68 mm

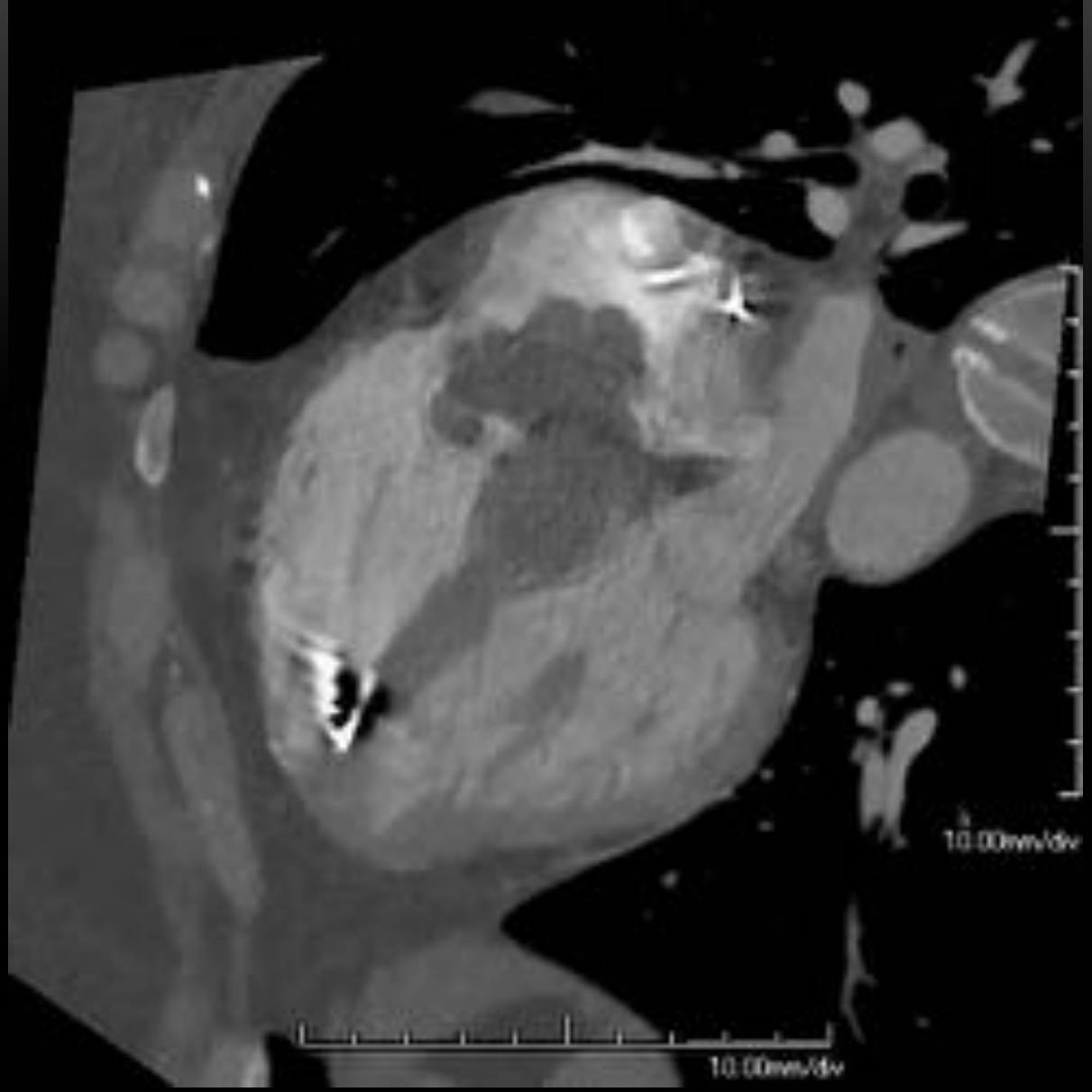
Dxs	Right		Left	
Common Iliac A.		mm		mm
External Iliac A.		mm		mm
Femoral A.	6.32	mm	6.55	mm

SMC

Images (next page):

VALUE ADDED SERVICES: 3D PRINTING

- Review with 3D solutions is often sufficient
- In certain instances, physical 3D models are extremely helpful (trouble-shooting, spatial relationships)
- Barriers to entry: training and resources
- Costs are decreasing but reimbursement still elusive



recurrent chondrosarcoma with septal and tricuspid annular involvement

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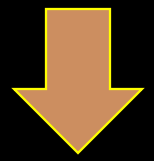
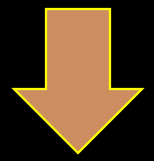
HISTORY: SILOS AND TURF BATTLES

- Departmental “Silo”: originally well-defined lines
  - Allowed involved physicians to fully master a particular area



- Advances in technology and high-end imaging, added specialty interest / training, and actual / potential reimbursement cuts



- External and internal pressures occur, Turf battles arise

Hopkins LM and Holmes DR. Cath Cardiol Interv 2007; 764-765

TURF ISSUES IN CARDIAC IMAGING

- Cardiologists now trained and interested in cardiac (and vascular) imaging
  - Existential threat to historical cardiology practice
- Hospital systems may employ cardiologists; may want to keep revenue
- Daytime hours vs. nights / weekends

NEGATIVE EFFECTS OF TURF BATTLES

- Duplication of (expensive) services within same institution
- Fragmentation of patient care
- Lack of overarching data management
- Diffusion of responsibility of patient care
- Lack of information sharing, problem solving, communication

Hopkins LM and Holmes DR. Cath Cardiol Interv 2007; 764-765

BENEFITS OF COLLABORATION

- Reorganize by disease specific lines, not specialties
- Multispecialty meetings: brings specialties together for case and best practice discussion
  - Reduce errors, improve outcomes, develop new procedures

CARDIAC IMAGING COLLABORATION: ASCENSION HEART CENTER OF INDIANA

- 3 cardiologist imagers – all completed 1 yr additional imaging fellowships
- 2 radiologist CVI/CTI – fellowship trained
- Readers physically located in same area (pre-pandemic)
- Division of labor across sites
- Close collaboration, 2nd opinions, conferences, case reviews, QA
- Mutual respect

COLLABORATIVE MEETINGS

- Structural Heart Valve Conference
- Heart Failure Conference
- Vascular Conference
- Pediatric Cardiovascular Conference
- CV Service Line QI committee

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For more information- attend:

Mentorship, Sponsorship and Coaching: Not Just for Early Career

S501 Monday 28 Nov 4:30-5:30 pm

CHALLENGES TO ALL EARLY CAREER RADIOLOGISTS

- Increasing coverage of multiple geographically separate sites
- Increasing exam volumes
- Performance benchmarks for promotion / partnership
- MOC
- Administrative responsibilities

Perry RE and Parikh JR. *Clinical Imaging* 64 (2020) 7–10

CHALLENGES SPECIFIC TO NON-ACADEMIC PRACTICE

- Practice Structure / Leadership
  - Unexpected contract changes / loss of partnership alliances
  - Group consolidations, M&A
  - Change from physician-led to corporate practice management
- Career Advancement / Balance
- Commoditization

Perry RE and Parikh JR. *Clinical Imaging* 64 (2020) 7–10

IMPACT OF COVID-19

- Abrupt operational changes:
  - physical distancing, remote work patterns, financial losses
- Potential delays in resident recruitment / training
- Research opportunities paused; institutional funding decreased
- Disproportionate impact: Women, underrepresented minorities

Perry RE and Parikh JR. *Clinical Imaging* 79 (2021) 48-51
Pandharipande RV, Mercaldo ND, Lietz AP, et al. J Am Coll Radiol, 16 (2019) 1091-1101

BENEFITS OF MENTORSHIP

- Foster strong relationships with patients, colleagues, techs, administration, referrers
- Create empowered workplace culture based on mutual trust & respect
- Robust network connections to allow junior rads to excel
- Example: Asking for 2nd opinions- shows value of mentors

R. Ackroyd, K.A. Adamson J R Coll Physicians Edinb, 45 (2015), pp. 143-147
Yablon CM, Kapustin AJ, et al. AJR Am J Roentgenol, 197 (2011), pp. W21-W22

BARRIERS TO MENTORSHIP

- TIME
- COMMUNICATION
- REWARD / RECOGNITION

Perry RE and Parikh JR. *Clinical Imaging* 64 (2020) 7–10
Straus SE, Johnson MO, et al. Acad Med, 88 (2013), pp. 82-89

METHODS TO IMPLEMENT MENTORSHIP IN PRIVATE PRACTICE

- Traditional (formal) process
  - May be difficult in busy private practice
- Informal approaches can be effective
  - Mentee chooses mentor
  - Peer-to-peer
  - Distance mentorships

Perry RE and Parikh JR. *Clinical Imaging* 64 (2020) 7–10
Straus SE, Johnson MO, et al. Acad Med, 88 (2013), pp. 82-89
Kashiwagi DT, Varkey P, Cook, DA. Academic Medicine88(7):1029-1037, July 2013.

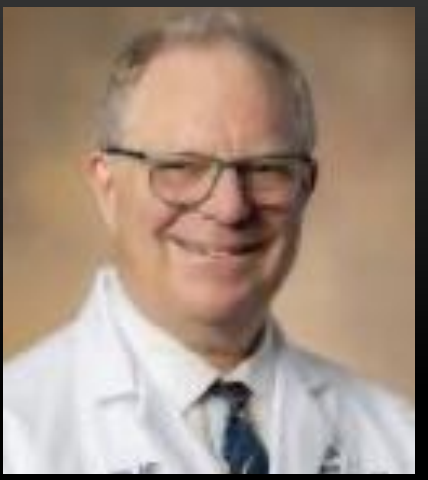
MENTORING - VALUE TO THE PRACTICE

- Improve radiologist retention, productivity
- Improved morale, satisfaction, and engagement
- Allow re-deployment of resources to quality metrics / practice growth rather than recruitment / re-training
- Improved practice flexibility (more attractive to recruits)

Perry RE and Parikh JR. *Clinical Imaging* 64 (2020) 7–10
Perry RE and Parikh JR. J Am Coll Radiol, 14 (2017), pp. 1341-1344

MY MENTORS

- Dominik Fleishmann, MD
- Geoff Rubin, MD
- Frandics Chan, MD PhD
- Susan J.F. Meyer, MD

Thank you!!!

CONCLUSIONS

- Despite challenges, cardiac imaging in private practice is rewarding
- Can leverage specialized training to educate your practice, improve patient care, deliver high quality service to referrers
- Collaboration in cardiac imaging is essential and in the best interest of patient care
- Mentorship is important for your practice and partners

VIRTUAL / IN-PERSON QUESTIONS?

THANKS FOR YOUR ATTENTION!!

Special thanks to Eric Williamson, MD

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