

DYNAMIC AORTIC IMAGING: GOLD STANDARD FOR EVALUATING ENDOLEAKS TECHNICAL REQUIREMENTS AND HOW TO MAKE IT HELP IN DIAGNOSIS AND TREATMENT

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CONFLICTS



- Siemens
 - Grants
 - Honoraria
 - Resources



- VITAA
 - Principle Investigator

THE IMAGING CONTINUITY

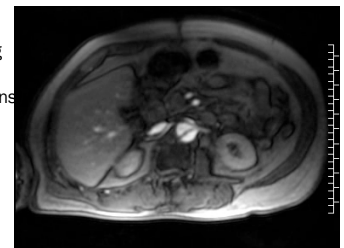


- Diagnostic Imaging CT or MRA C/A/P
3-5 mm slices
- Pre op Imaging CT or MRA C/A/P
1.5mm slices
- Intra op Imaging Fluoro, Fusion, CBCT
TEE, IVUS, PCT, PMRI
- Follow up Imaging CT or MRA Delayed imaging
USS, contrast agents
- Troubleshooting for reintervention Dynamic CT / MRA
- Anatomical Imaging
 - Disease detection and monitoring
 - Designed to specifically aid in therapy
 - Optimized to execute on the procedure
 - Monitor outcome of intervention
 - Specific to the complication
 - Cinematic Rendering

DYNAMIC CT FOR A DYNAMIC PROCESS



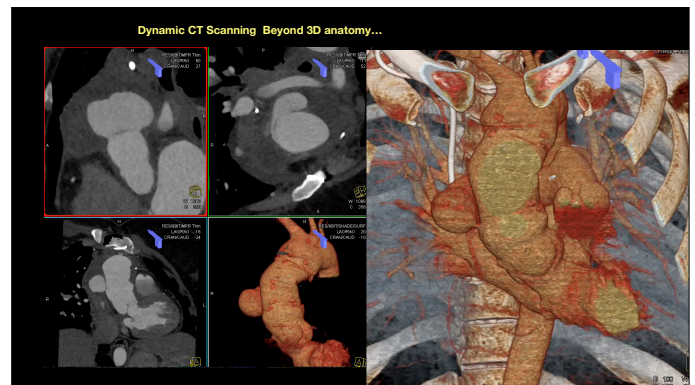
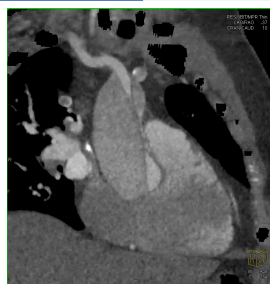
- No one would accept static imaging for heart valve disease, ASD, evaluation of ischemic disease
- Why would we accept static imaging for dissection/endo leak
- Whenever flow dynamic, flow patterns are part of the disease process.
- Limitation has been availability
 - MRA - additional expertise
 - CTA - more generally applicable

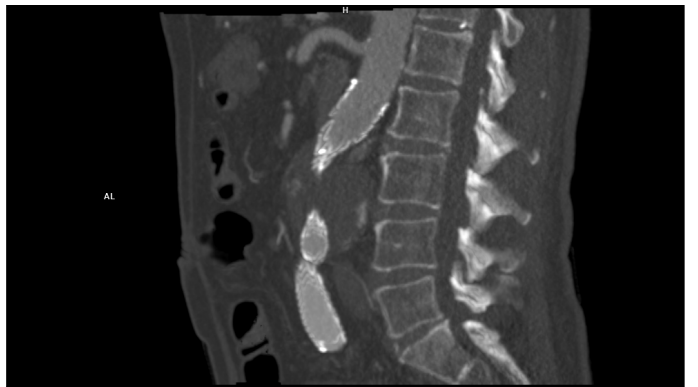
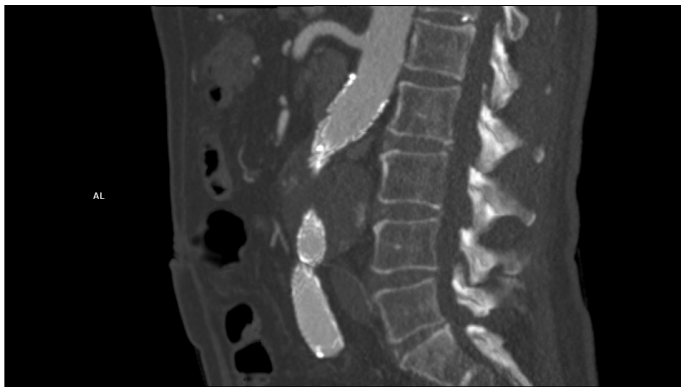
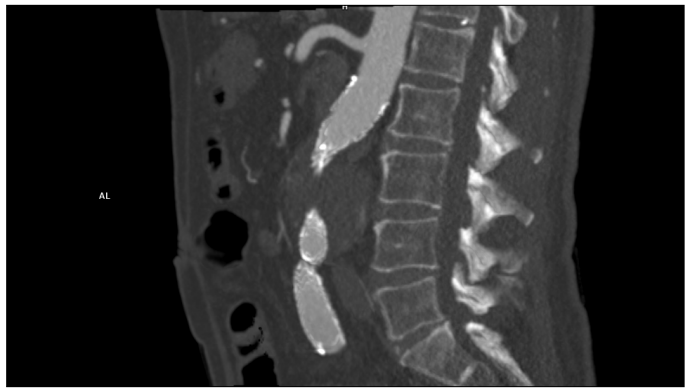
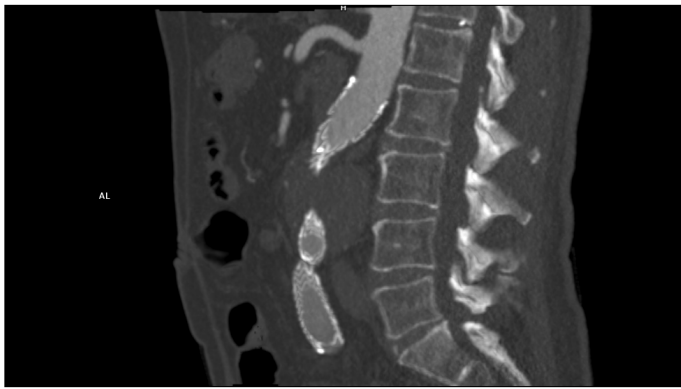
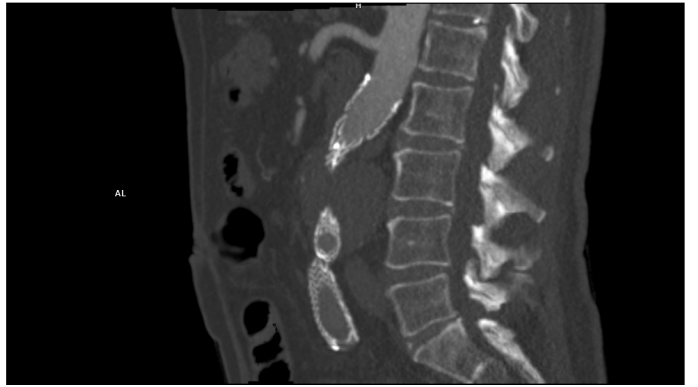


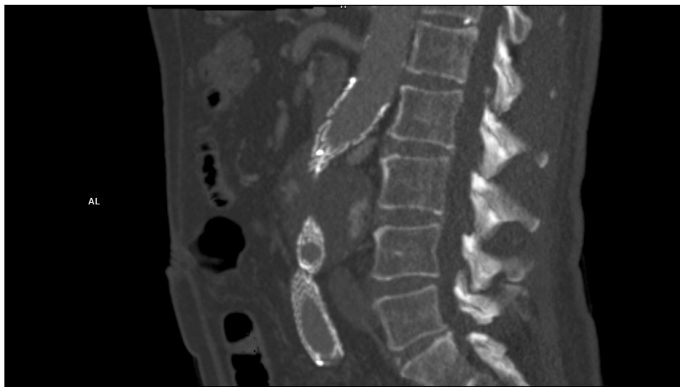
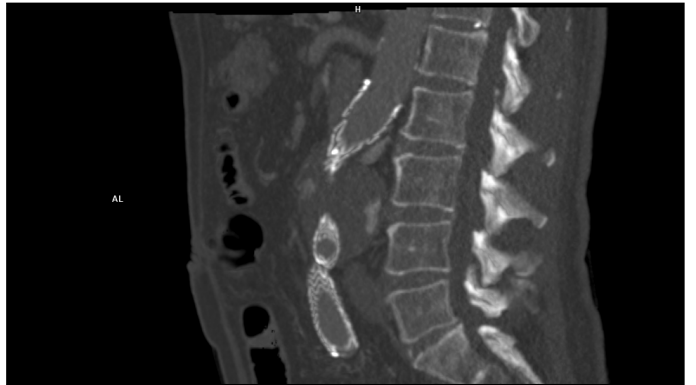
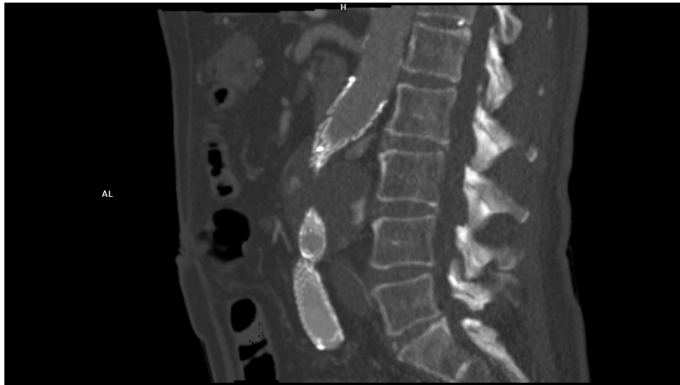
DEVELOPING THE CONCEPT.



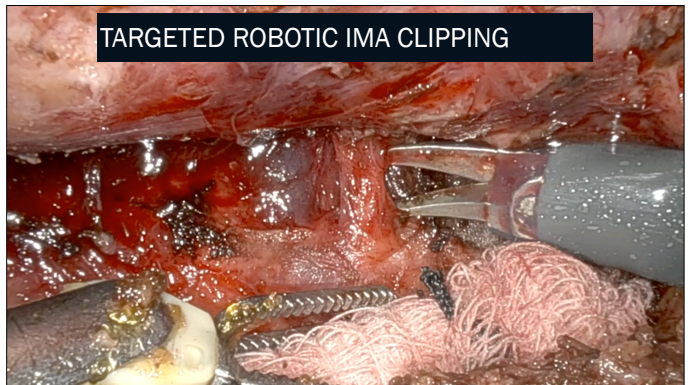
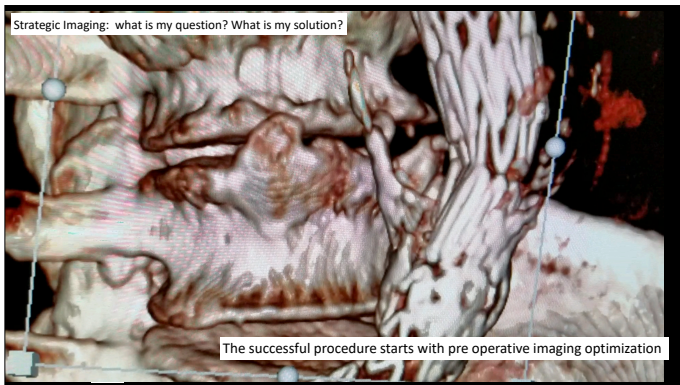
- One View is no View
- Static CV imaging is "ONE VIEW"
- Dynamic imaging for dynamic disease processes
- Heart valve evaluation — real time echo/MR
- Need to see flow and its dynamic interaction with disease or Branch vessels.







Triphasic vs Dynamic CTA		HOUSTON Methodist LEADING MEDICINE
	Triphasic CTA	Dynamic CTA
Scan number	3	12 (11-13)
kV	120 kV	80 kV
Field of view	Total abdomen	Endograft only
Contrast consumption	100 ml	75 ml



DISSECTIONS: THE MOST DYNAMIC DISEASE PROCESS

HOUSTON Methodist DEBAKEY HEART & VASCULAR CENTER

MRI

@LumsdenHMDHVC

CT

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FUSED CT AND MRA

HOUSTON Methodist DEBAKEY HEART & VASCULAR CENTER

Dual Energy CT high spatial resolution

↓ Fusion

Dynamic MRA Flow

Geometry and hemodynamics of lumen and false lumen

@LumsdenHMDHVC

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MRI: the optimal imaging for dissections.

HOUSTON Methodist DEBAKEY HEART & VASCULAR CENTER

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Dynamic obstruction in action.

Aortic Dissection Dynamic Obstruction

Image Guidance Techniques and Treatment Approach Optimization in the Management of Type-II Endoleak After Endovascular Aortic Aneurysm Repair

Journal of Endovascular Therapy, 2023; 26(10):1153-121. doi: 10.1177/15267662231207970. Epub 2022 Jun 23.

Dynamic, Time-Resolved CT Angiography After EVAR: A Quantitative Approach to Accurately Characterize Aortic Endoleak Type and Identify Inflow Vessels

Marion Becard^{1,2}, Norraj Chandraiah^{1,2}, Peter Leggett^{1,2}, Eric K. Peden¹, Christofa B. Savaris¹, Su Min Chang¹, Alan B. Lumsden¹

AFFILIATIONS is required
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DeBAKEY

Dynamic Imaging of Aortic Pathologies: Review of Clinical Applications and Imaging Protocols

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Abstract

The aortic dissection has been significant obstacle in dynamic imaging of the aorta. Today's dynamic imaging techniques are being applied to aortic dissection to enhance the accuracy of diagnosis and management. This review discusses the clinical applications and imaging protocols for dynamic imaging of aortic dissection. We discuss the challenges in dynamic imaging and describe the advantages of dynamic imaging in the management of aortic dissection. We have not been able to identify any other review of dynamic imaging of aortic dissection. This review provides a comprehensive overview of dynamic imaging techniques for aortic dissection and discusses the clinical applications and imaging protocols for dynamic imaging of aortic dissection. Clinical applications and protocol flow diagrams.

Keywords: Aortic dissection, dynamic imaging, CT angiography, MRI, endovascular repair, aortic aneurysm, aortic dissection, dynamic imaging, clinical applications, and protocol flow diagrams.

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Research Product

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- Very high tissue weakness
- High tissue weakness
- Low tissue weakness

VITAA's RAW™ (Regional Areas of Weakness) Mapping technology can analyze the deformation of the aorta wall using images captured throughout the cardiac cycle. Then, by incorporating critical simulation data on blood flow and location and size of clots (ILT or intraluminal thrombus) within the aneurysm, VITAA's algorithms compute and generate detailed strength and weakness maps of the abdominal aortic aneurysm.

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