Revolution™ Apex platform

Lead CT Now and Into the Future
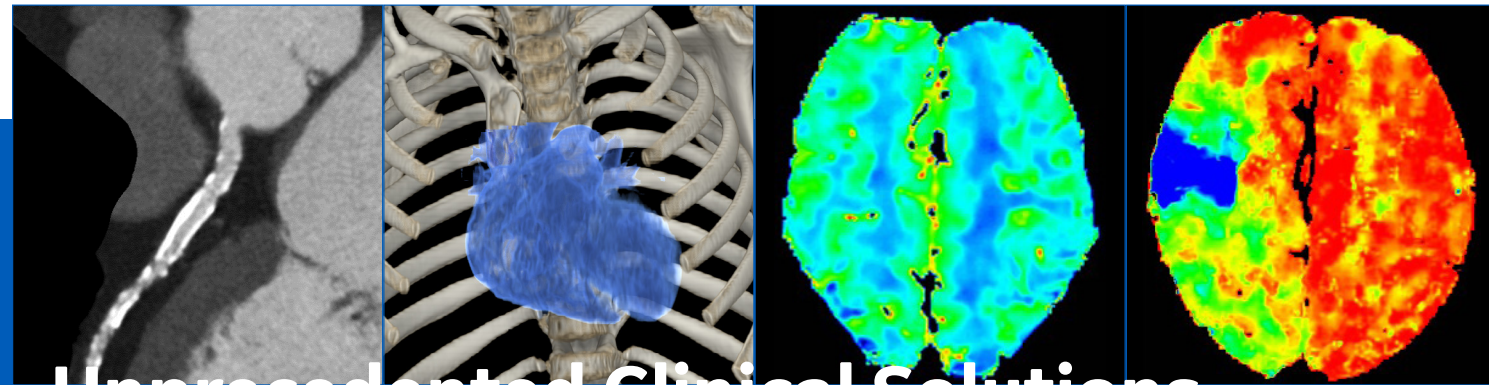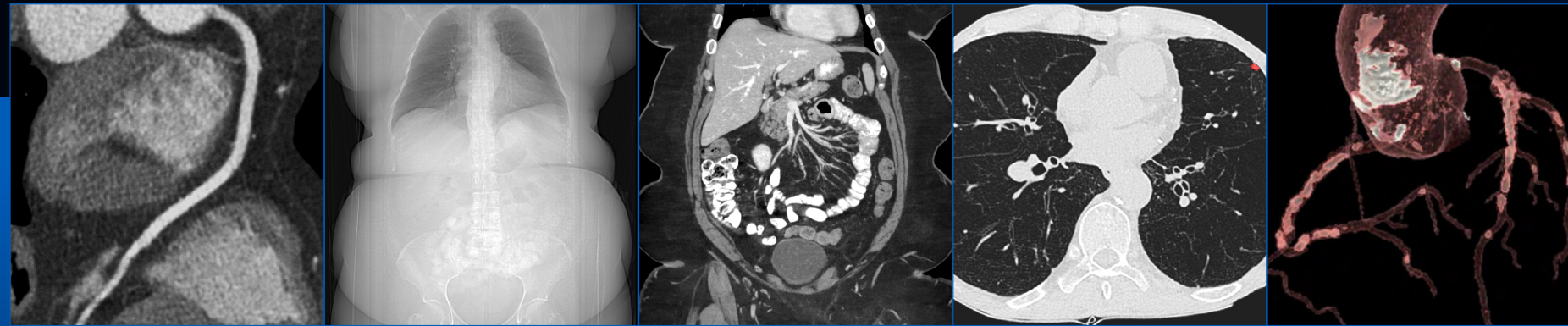
Unprecedented Clinical Solutions

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TOP **10** CASES: Only Apex platform can do.

1 1-beat cardiac. Simple for all at any heart rate, even in atrial fibrillation with low dose.

2 Uncompromised image quality, even for morbidly obese patients.

3 Spectral imaging with speed made routine, even with larger patients.

4 Ultra-low dose scanned in less than one second with full 50 cm FOV.

5 High-resolution imaging, even with heavily calcified coronary plaques and stents.

6 Pediatric imaging without sedation or table movement using the lowest possible dose.

7 Acute stroke rule-out in less than five minutes.

8 CT TAVI/TAVR planning in a single scan with a single injection and with low contrast volume.

9 Spectral bone marrow edema.

10 Ultrafast trauma exams with spectral imaging for all body types.

1

1-beat cardiac. Simple for all at any heart rate, even in atrial fibrillation with low dose.

A 16 cm detector means coverage is no issue for whole-heart acquisition, making 1-beat cardiac at any heart rate a reality. Tools like AutoGating, SmartPhase, Smart Arrhythmia Management and SnapShot Freeze 2 streamline and boost post processing for faster and more precise diagnosis.[1]
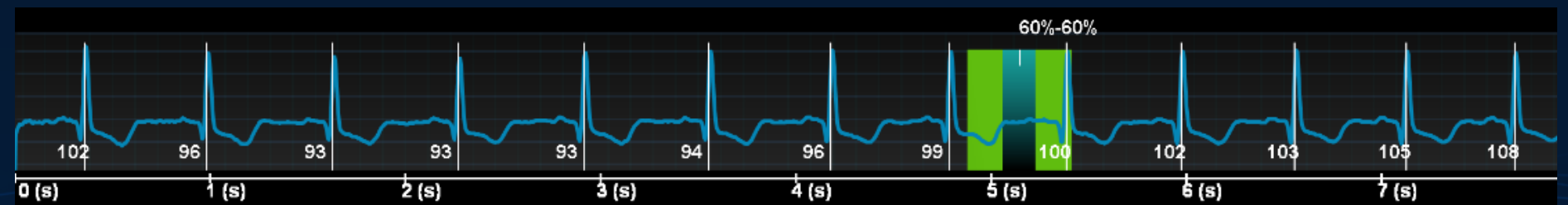
Scan type	Axial 1-beat Cardiac
Rotation time, s	0.28
Reconstruction	Deep Learning
Slice, mm	0.625
Kernel	Standard
BMI	31
BPM	101

HISTORY: Coronaries assessment
Free breathing

FINDINGS: Normal CCTA

Images courtesy of Centre Cardiologique du Nord – ST Denis – France

2 Uncompromised image quality, even for morbidly obese patients.

With Revolution Apex platform, every patient can have superior image quality—even the most challenging ones. Using the many capabilities of the system, including the Quantix™ Tube, 16 cm Z-Coverage Gemstone Clarity™ Detector and TrueFidelity™ Deep Learning Image Reconstruction, clinicals show uncompromised image quality, even for morbidly obese patients.[2]

Scan type	Helical
Rotation time, s	1.0
Reconstruction	DL
Slice, mm	0.625
kV	120
mA	550-700
Kernel	Standard
BMI	48

HISTORY: Carcinosarcoma & rectal cancer – post surgical changes

Bariatric Imaging for abdomen/pelvis BMI 48

Images courtesy of Froedtert & Medical College of Wisconsin – USA

TrueFidelity with gemstone spectral imaging 51 BMI

3

## Spectral imaging with speed made routine, even with larger patients.

The vision behind GSI Xtream has never wavered: a volume spectral imaging experience to help physicians diagnose disease with more confidence through a simplified workflow. Empowered by the Quantix Tube, GSI Xtream on Revolution Apex platform takes that idea to the next level to enable spectral imaging on more challenging patients without compromising on image quality and quantification accuracy. See the bigger picture with volume spectral CT.[3,4]

Scan type	Helical 80 mm
Slice, mm	0.625
Reconstruction	DL-H
kV	80/140 kVp switching
mA	515
Kernel	Standard
CTDIvol, mGy	55
BMI	51

HISTORY: Left thigh mixoid liposarcoma

2.5 mm, 70 keV
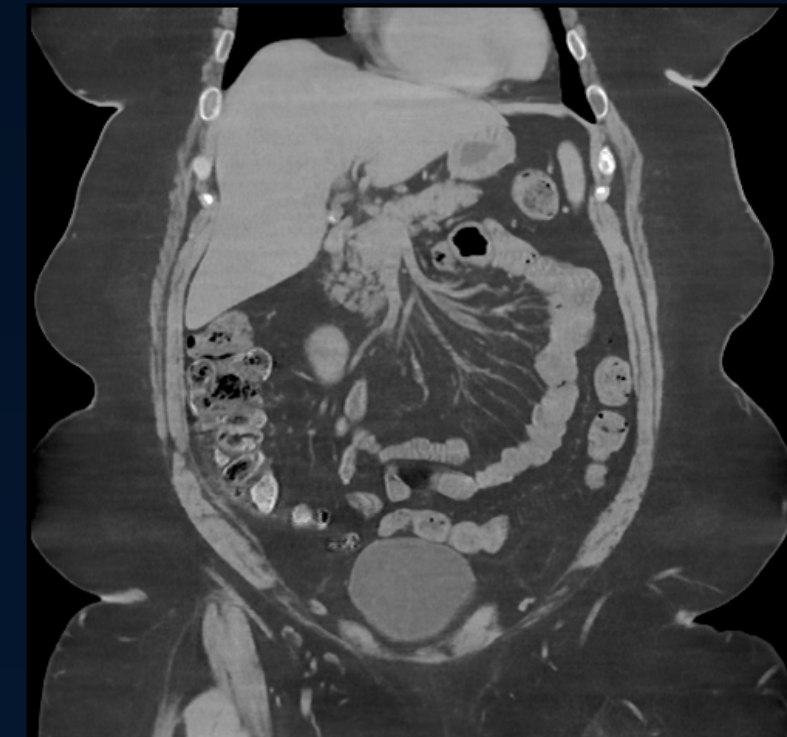
2.5 mm Water (Iodine)

2.5 mm, 40 keV

2.5 mm Iodine (Water)

Images courtesy of Froedtert & Medical College of Wisconsin – USA

4

Ultra-low dose scanned in less than one second with full 50 cm FOV.
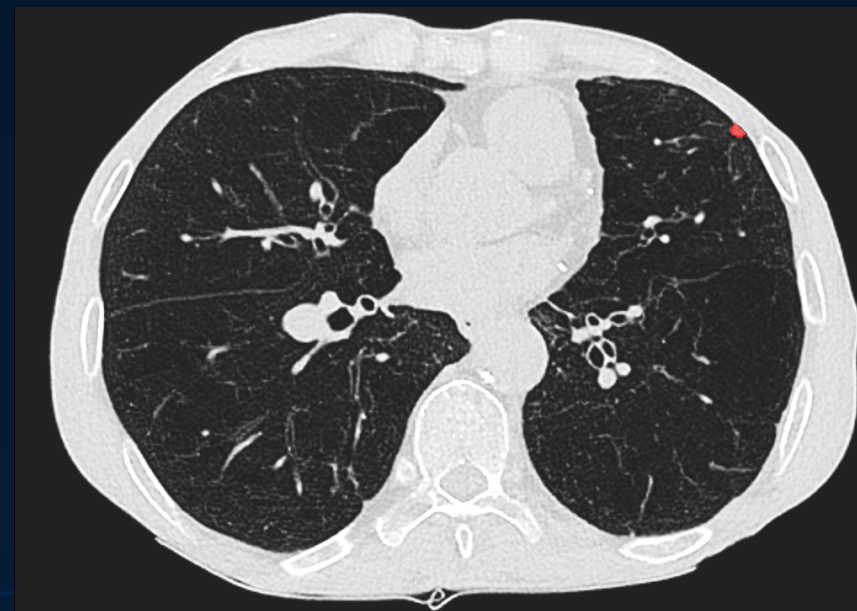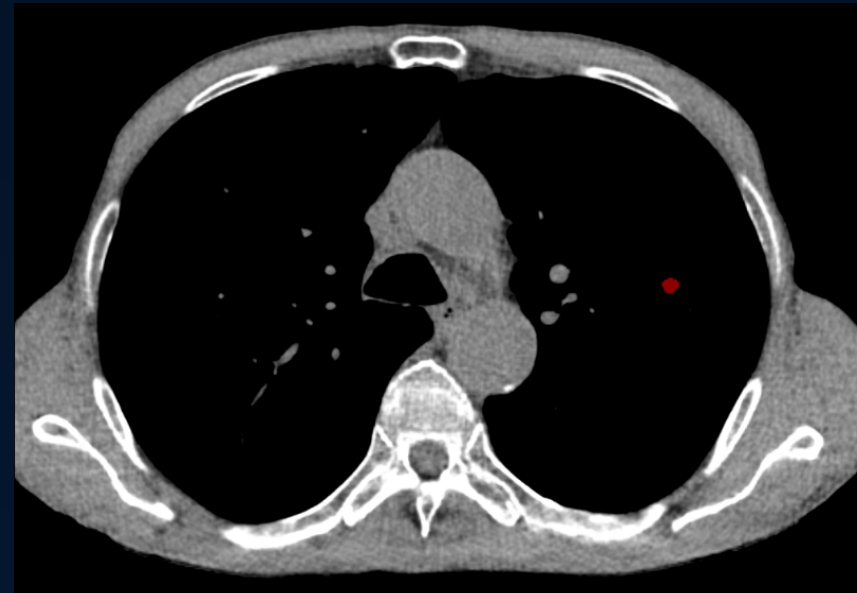
Using HyperDrive,* a 437 mm/s volumetric scan with 50 cm FOV, and as low as 70 kV, Revolution Apex platform can acquire sub-second chest exams with ultra-low dose. Rely on TrueFidelity images for every exam for the best image every time.[5,6,7]

Scan type	Helical 80 mm
Rotation time, s	0.28
Pitch	1.531
Reconstruction	DL-H
BMI	22
Slice, mm	0.625/1.25
Kernel	Standard
CTDI vol, mGy	0.18
DLP mGy-cm	8.4
mSv (*0.014)	0.11
kV	140
mA	10

HISTORY: Chest pain

FINDINGS: 2 nodules (7 mm) to follow-up

Diffuse emphysema

* HyperDrive is available on Revolution Apex Elite and Revolution Apex Plus

Ultra-low dose chest CT with HyperDrive: less than 1 sec scan time

Automated nodule detection

Images courtesy of Cin – Saint-Denis – France

5

High-resolution imaging, even with stents and heavily calcified coronary plaques.

With high-definition imaging, Revolution Apex platform has exceptional spatial resolution for better vessel visualization and reduced calcium blooming. This provides clear images to help the physician with tasks such as accurately quantifying stenosis in coronaries and other vascular structures, which could lead to increased speed and confidence in reporting.[1,8,9]
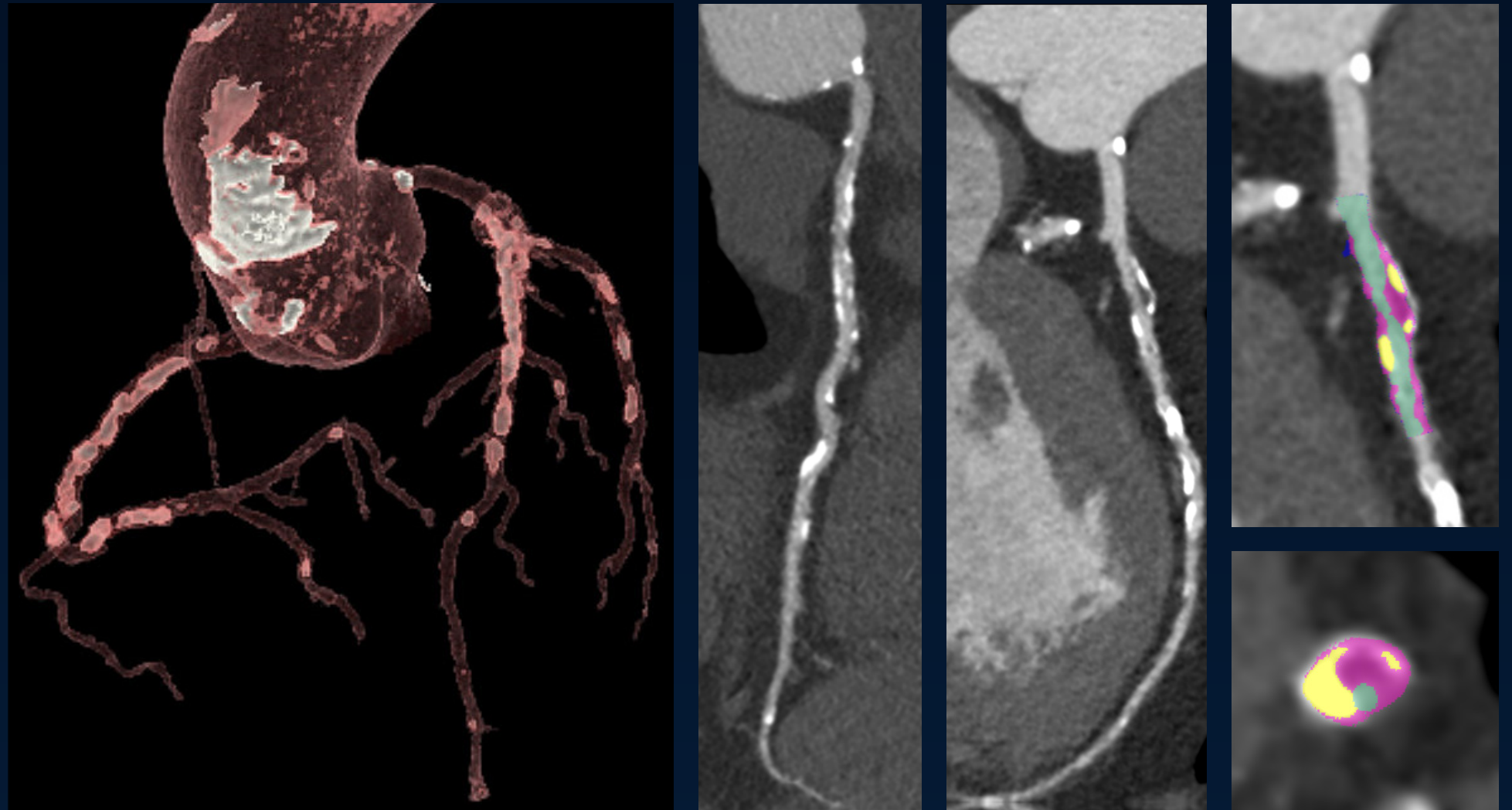
Scan type	Axial 1-beat Cardiac
Rotation time, s	0.23
Reconstruction	Deep Learning
Slice, mm	0.625
kV	70
mA	1300
Kernel	HD Standard
BMI	27
BPM	59
Effective dose, mSv	1.2

HISTORY: Arterial hypotension, hypercholesterolemia, smoking and alcohol history

FINDINGS: CA-score 2623, PDA, PLD, LCX with calcium plaque

Images courtesy of Universitair Ziekenhuis Brussel – Belgium

6

Pediatric imaging without sedation or table movement using the lowest possible dose.
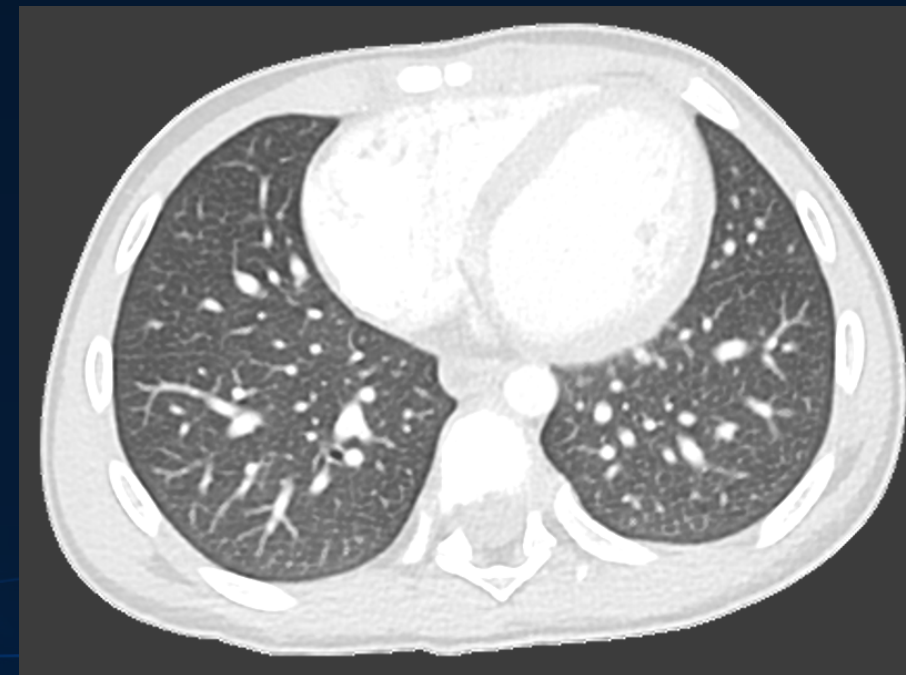
Revolution Apex platform using HyperDrive* can potentially reduce the need for sedation and therefore eliminate unnecessary repetition of scans in young children. TrueFidelity images and 70 kV scans allow you to minimize the radiation dose while improving image quality and diagnostic confidence.[10,11]
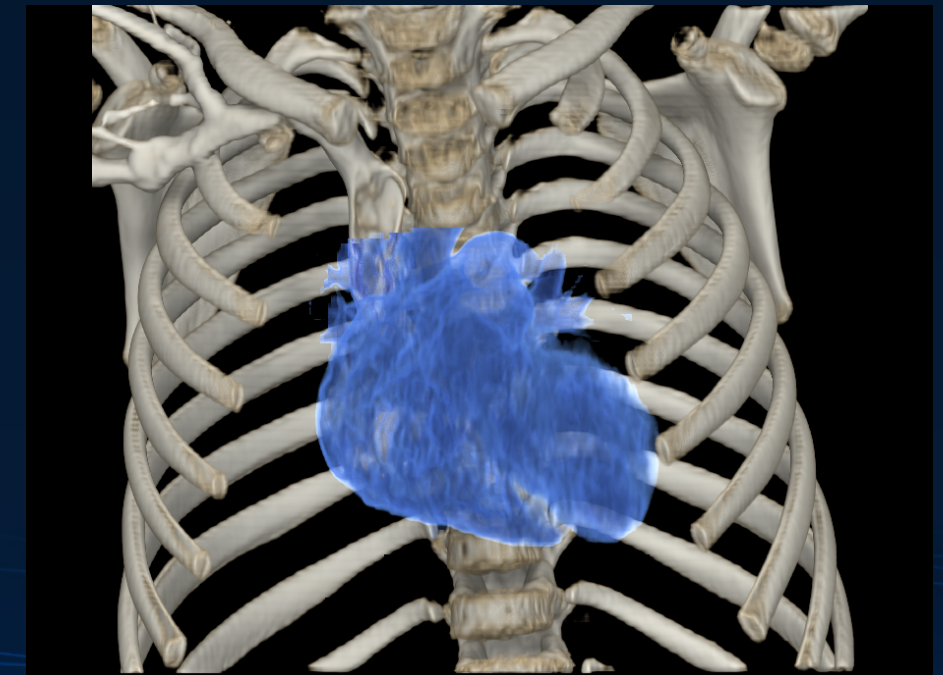
Rotation time, s	0.28
Slice, mm	1.25
Reconstruction	DL-H
Kernel	Standard
kV	100
mA	95
Noise index	12
CTDIvol, mGy	0.97
DLP, mGy-cm	15.52
Eff. dose mSv	0.28
k, *DLP	0.018

HISTORY: Congenital Anomaly

FINDINGS: Normal

* HyperDrive is available on Revolution Apex Elite and Revolution Apex Plus
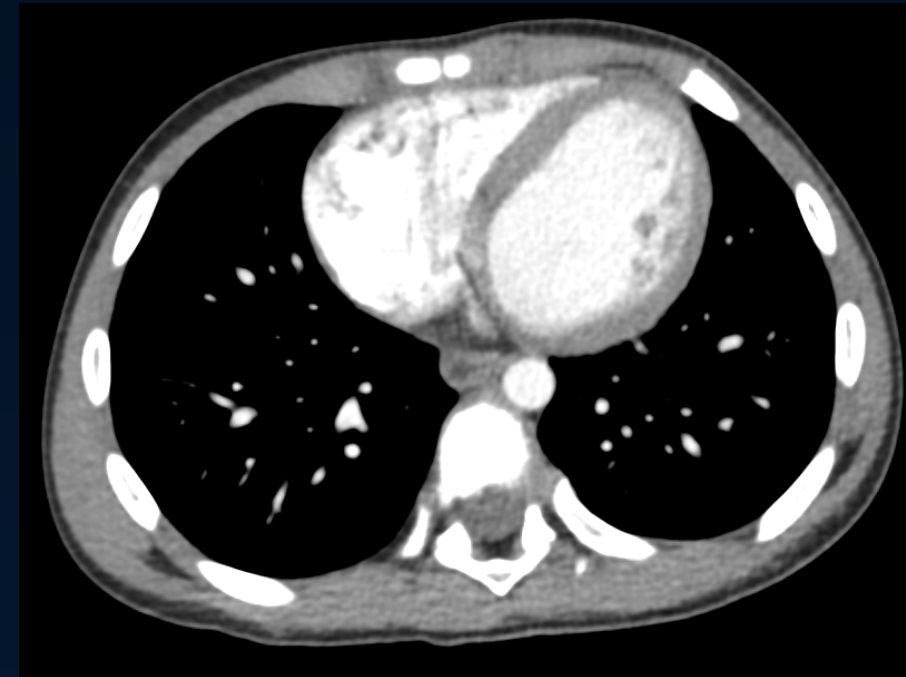
TrueFidelity 1.25 mm

TrueFidelity 1.25 mm

TrueFidelity Lung 1.25 mm

Volume Illumination

Images courtesy of University Hospital Robert Debre – Pr Alison Paris – France

7

Acute stroke rule-out in less than five minutes.

Time saved is brain tissue saved. Stroke-dedicated hardware, Smart Stroke software and post-processing solutions built into Revolution Apex platform can help physicians reduce "CT scan-to-report" time and "door-to-treatment" time. Save more of your stroke patients' brain tissue with our pioneering capabilities.[7,12]

1.Non-contrast:
Rule out hemorrhage
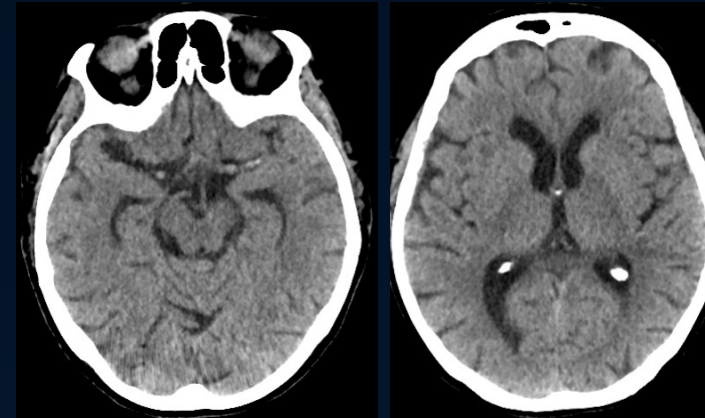
2.CTA:
Gated/ungated Heart-Aorta-Carotid arteries
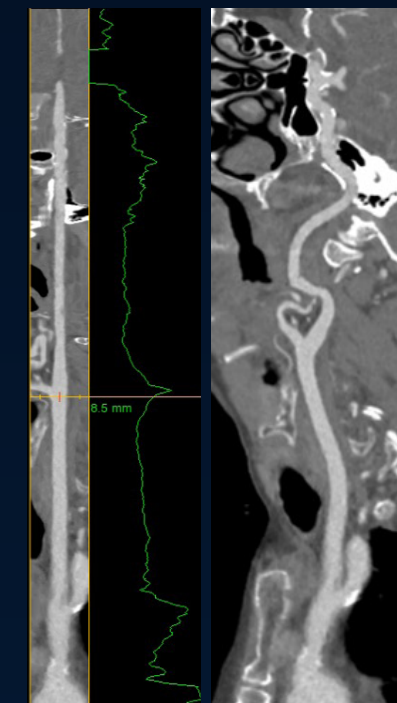
3.Gated Heart:
Gated left appendage venous phase

4. Brain perfusion:
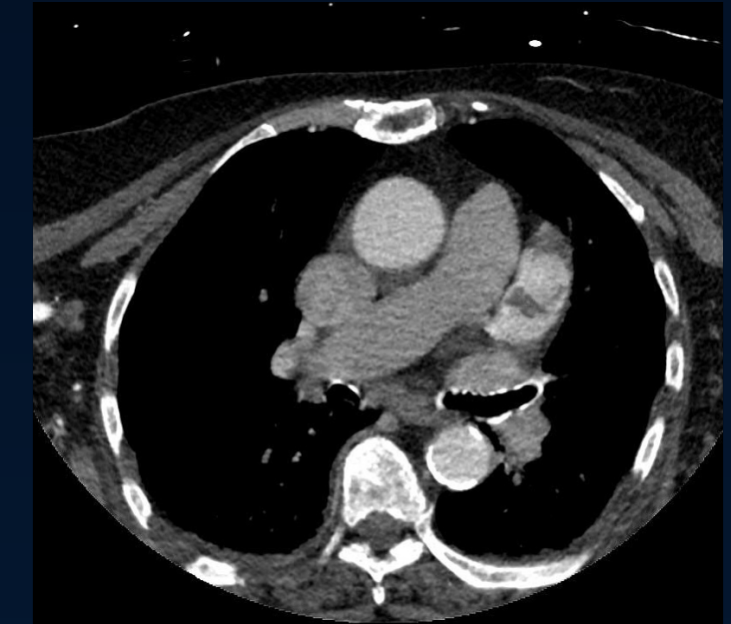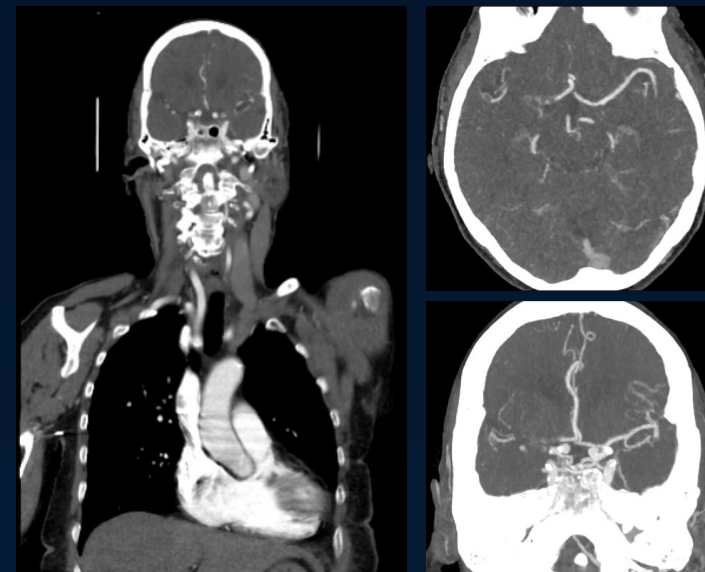Evaluate cerebral blood flow and tissue perfusion

Hyperdense media sign right side –
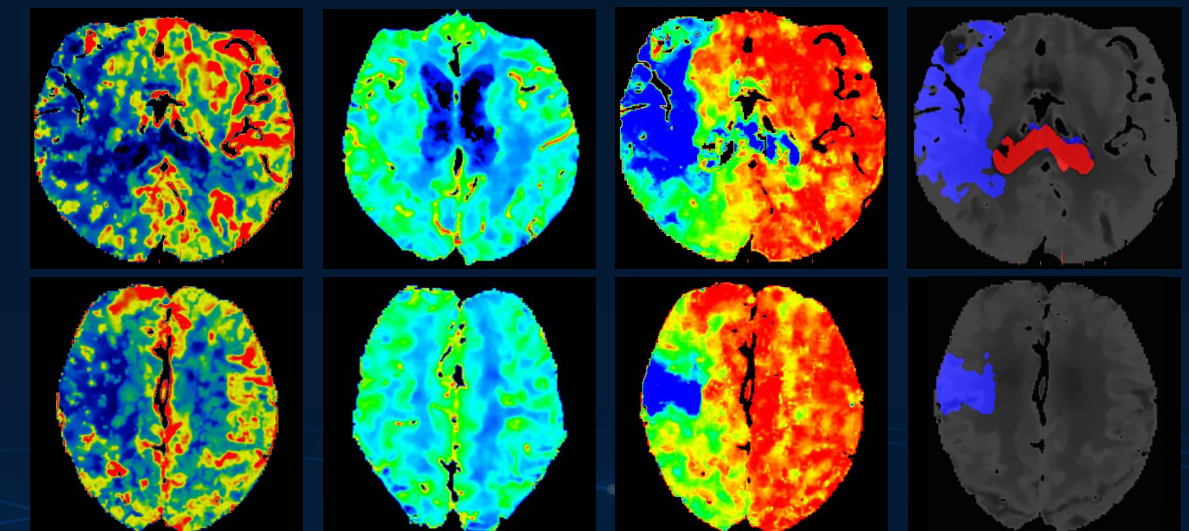no hypodense area in brain tissue detected

Gated/ungated CTA

Occlusion right
media artery

Gated late phase left appendage
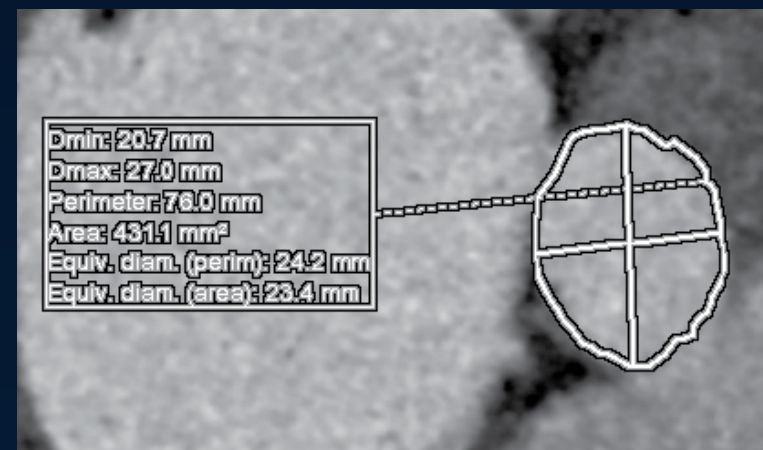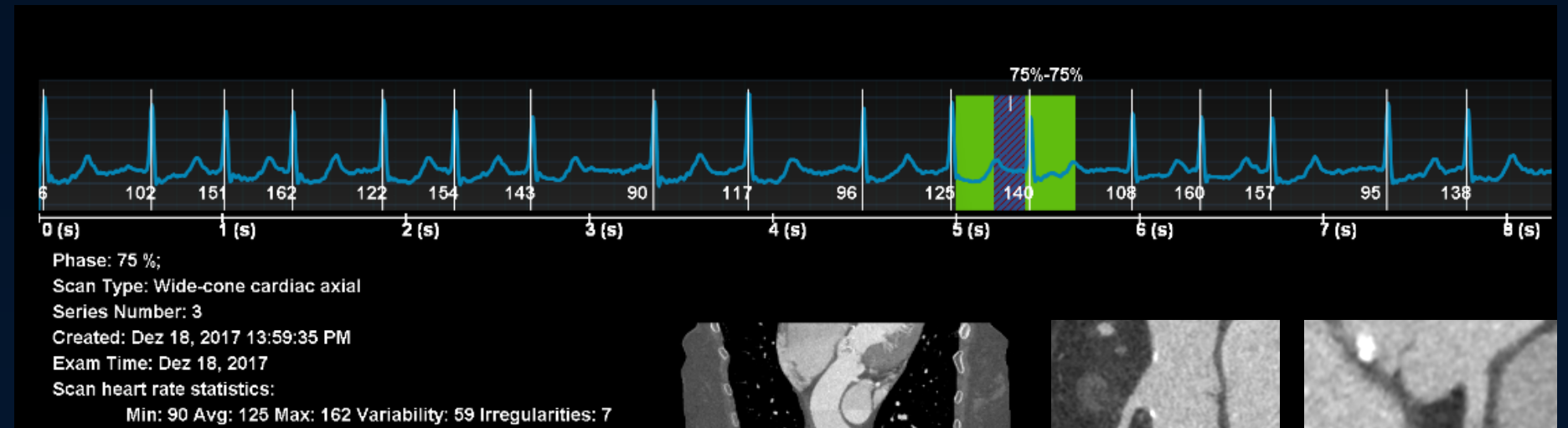
CBF   CBV   Tmax   Tissue classification

Images courtesy of University Hospital Jena – Prof. Dr. Teichgräber – Germany

8 CT TAVI/TAVR planning in a single scan with a single injection and with low contrast volume.

Versatile TAVR/TAVI protocols allow acquisition of the whole heart with gating, aorta, and femoral arteries with just a single injection of contrast media. Covering 700 mm of anatomy in less than 10 seconds, and paired with the reliable low kV scan, these protocols further optimize contrast by boosting visualization.[13,14,15]

Scan type	Mixed mode – Axial Gated/Helical single bolus
Rotation time, s	0.28
Gating	1 beat
Slice, mm	0.625
kV	100
mA	319
Kernel	Standard
ASiR-V %	60
CTDIvole, mGy	4.0 – 10.6 – 2.7
DLP mGy x cm	349
BMI	28
Contrast	80 cc/3.5
HR	90 – 162 bpm

SCAN PURPOSE: Preparation for TAVI replacement procedure

Whole heart cycle acquisition for coronary assessment

Beta blocker and nitro not used

Pre TAVI with variable HR 90-162 bpm – excellent image quality

Phase: 75 %;
Scan Type: Wide-cone cardiac axial
Series Number: 3
Created: Dez 18, 2017 13:59:35 PM
Exam Time: Dez 18, 2017
Scan heart rate statistics:
    Min: 90 Avg: 125 Max: 162 Variability: 59 Irregularities: 7

Dmin: 20.7 mm
Dmax: 27.0 mm
Perimeter: 78.0 mm
Area: 431.1 mm²
Equiv. diam. (perim): 24.2 mm
Equiv. diam. (area): 23.4 mm

Valve measurements with TAVI

Image courtesy of University Hospital Jena – Prof. Dr. Teichgräber – Germany

9

Spectral bone marrow edema.

GSI can also generate calcium-suppressed images to help evaluate bone marrow edema caused by bone fracture and bruises. This may benefit patients who have contraindications to MR imaging or for whom MR imaging is not available.[16]

Scan type	Helical 40 mm
Rotation time, s	1
Pitch	1
Slice, mm	1.2
Reconstruction	ASIR-V 70
kV	80/140 kVp switching
mA	~445
Kernel	Standard
CTDIvol, mGy	24

HISTORY: Obese patient, thoraco lombo sacrum exam

FINDINGS: Fracture L2, no visible fracture line

TrueFidelity with gemstone spectral imaging – bone marrow edema

Sagittal – Bone window

Sagittal – MD Water(HAP)

Images courtesy of Universitair Ziekenhuis Brussel – Belgium

10 Ultrafast trauma exams with spectral imaging for all body types.

Thanks to TrueFidelity's deep learning image reconstruction, Revolution Apex platform is able to use a wide helical coverage with HyperDrive[*] in order to scan a trauma patient without compromising image quality. Auto Prescription's automatic scan parameter selection creates the ability to scan with low kVp, even when the patient has their arms along the body, meaning there are no compromises needed on dose, speed, or imaging quality in this challneging examination.[5,6,7]

Scan type	Helical
Collimation	8 cm
Scan length	800 mm
Scan time, s	3
kV	100 (Auto Prescription)
Rot. time	0.5 sec
Pitch	1,531
DLP	1,099 mGy*cm
Eff. Dose	16.5 mSv
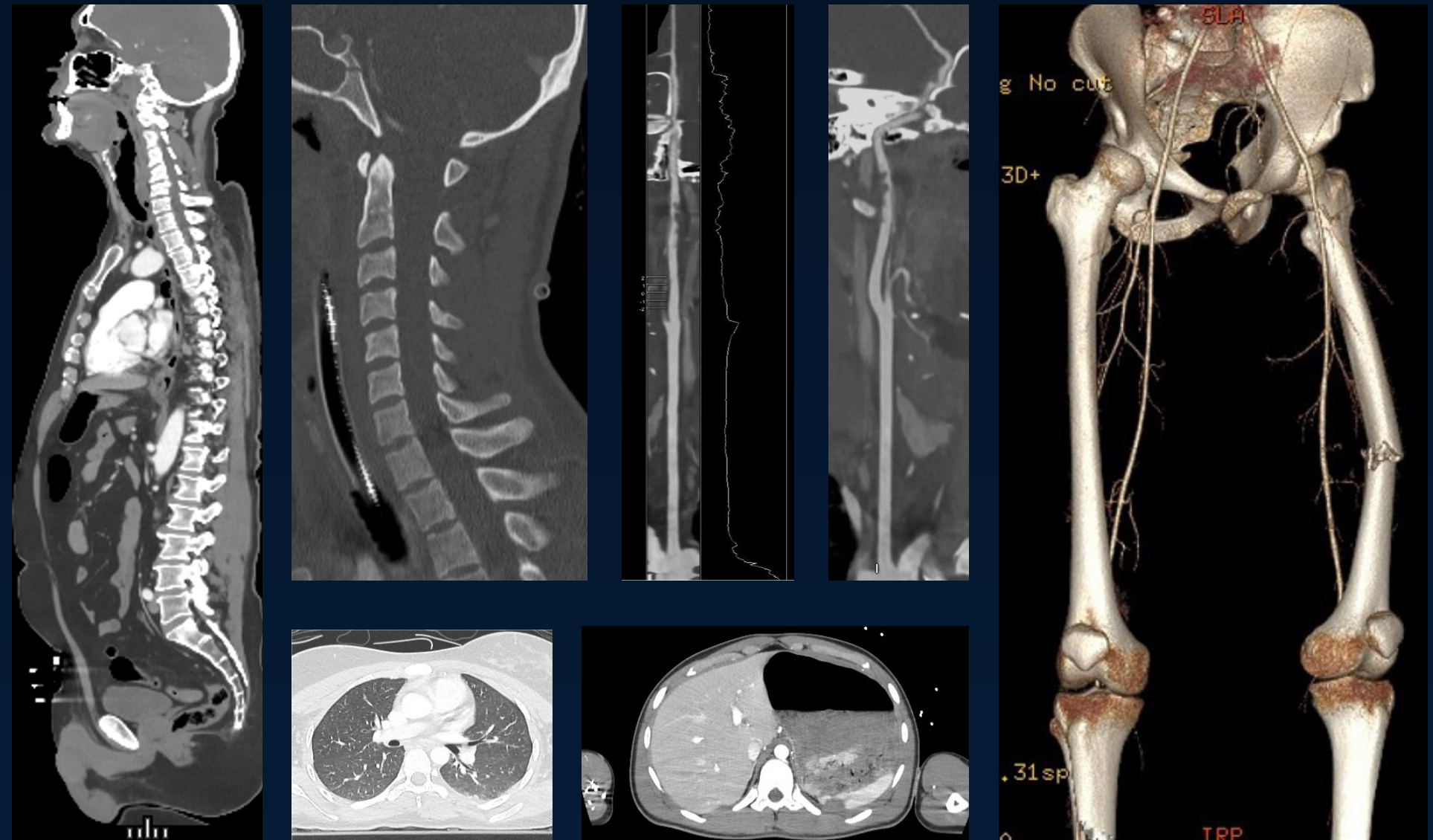
* HyperDrive is available on Revolution Apex Elite and Revolution Apex Plus

Ultrafast trauma exams for all body types

Images courtesy of Universitair Ziekenhuis Brussel – Belgium

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