

CTA Liver Pre-SIRT

Updated 03/09/25

Reviewed 05/14/25

Indications - pre procedure planning for radioembolization of liver mass.

Use CT Angio Combo AP w/ + w/o Contrast charge. Do not use CT AP w/ + w/o Contrast charge.

GENERAL SCAN NOTES

Move the patient's arms over his/her head if possible. Remove any metal from the imaging field of view.

Topogram - lung bases through pubic symphysis (obtained during end inspiration).

Craniocaudal scan coverage - Lung bases through pubic symphysis on both phases (obtained during end inspiration).

Adjust FOV (field of view) on topogram to smallest without cropping anatomy.

IV Contrast:

Administer weight-based **Omnipaque-350 - 1 mL/kg** up to **150 mL** (100 mL minimum).

Inject at **4 mL/sec** followed by 40 mL saline flush, 20-gauge or larger in forearm or more proximal.

Bolus track off proximal abdominal aorta triggered at **100 HU**.

Oral Contrast: generally not given for this protocol.

For **GE scanners**, it is essential for the 1st recon thickness on the scanner to match the 1st recon thickness in this protocol book for the prescribed Noise Index to be valid. The 1st recon should generally be the thickest recon in the protocol.

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SIEMENS PARAMETERS & RECONS

For the Arterial phase:

| | Scan Mode | kV | mAs | Care Dose | Care kV & Lvl | Pitch | Acq | Coll | Rot Time | Scan Time |
|---------------|-----------|-----|-----|-----------|---------------|-------|-----|------|----------|-----------|
| Sensation 16 | spiral | 120 | 200 | on | NA | 0.80 | 16 | 0.75 | 0.5 | 26.0 |
| Go Up 32 | spiral | 130 | 92 | on | on 145 | 0.80 | 32 | 0.7 | 0.8 | 22.3 |
| Sensation 64 | spiral | 120 | 200 | on | NA | 1.20 | 64 | 0.6 | 0.5 | 5.4 |
| Definition 64 | spiral | 120 | 180 | on | off | 0.60 | 64 | 0.6 | 0.5 | 21.7 |
| Go Top 64 | spiral | 120 | 112 | on | on 145 | 0.80 | 64 | 0.6 | 0.5 | 8.1 |
| Drive 128 | spiral | 120 | 147 | on | on | 0.60 | 128 | 0.6 | 0.5 | 10.9 |
| Force 192 | spiral | 120 | 147 | on | on | 0.60 | 192 | 0.6 | 0.5 | 7.2 |

For the Venous (70 secs) phase:

| | Scan Mode | kV | mAs | Care Dose | Care kV & Lvl | Pitch | Acq | Coll | Rot Time | Scan Time |
|---------------|-----------|-----|-----|-----------|---------------|-------|-----|------|----------|-----------|
| Sensation 16 | spiral | 120 | 200 | on | NA | 0.80 | 16 | 1.5 | 0.5 | 13.0 |
| Go Up 32 | spiral | 130 | 92 | on | on 145 | 0.80 | 32 | 0.7 | 0.8 | 22.3 |
| Sensation 64 | spiral | 120 | 200 | on | NA | 1.20 | 24 | 1.2 | 0.5 | 7.2 |
| Definition 64 | spiral | 120 | 180 | on | on | 0.60 | 64 | 0.6 | 0.5 | 21.7 |
| Go Top 64 | spiral | 120 | 112 | on | on 145 | 0.80 | 64 | 0.6 | 0.5 | 8.1 |
| Drive 128 | spiral | 120 | 147 | on | on | 0.60 | 128 | 0.6 | 0.5 | 10.9 |
| Force 192 | spiral | 120 | 147 | on | on | 0.60 | 192 | 0.6 | 0.5 | 7.2 |

ARTERIAL PHASE

| Name of Series | Thick | Interval | Kernel | Window | IR Lvl | Recon Direction |
|--------------------|-------|----------|-------------|-------------|--------|-----------------|
| AX ARTERIAL | 1.0 | 1.0 | Br40 / B41f | mediastinum | 3 | head/feet |
| 3D VRT (& spin) | 0.75 | 0.5 | Bv36 / B31f | CT angio | | |

VENOUS PHASE (70 secs)

| | | | | | | |
|------------------------|-----|-----|-------------|-------------|---|------------|
| AX VENOUS | 3.0 | 3.0 | Br40 / B41f | mediastinum | 3 | head/feet |
| COR VENOUS | 3.0 | 3.0 | Br40 / B41f | mediastinum | 3 | front/back |
| SAG VENOUS | 3.0 | 3.0 | Br40 / B41f | mediastinum | 3 | left/right |
| AX VENOUS THINS | 1.0 | 1.0 | Br40 / B41f | mediastinum | 3 | head/feet |

Volume series on whole liver and on right lobe only.

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GE PARAMETERS & RECONS

For the **Arterial** phase:

| | Scan Type | SFOV | kV | mA Range | Noise Index | Smart mA | Slice Thick | Beam Coll | Pitch | Speed | Rot Time | Dose Red | ASIR | Scan Time |
|-------------|-----------|------------|-----|----------|-------------|----------|-------------|-----------|-------|-------|----------|----------|------|-----------|
| LS 16 | helical | large | 120 | 50-440 | 23.14 | on | 1.25 | 20 | 1.375 | 27.50 | 0.6 | NA | NA | 10.9 |
| Opt 540 | helical | large | 120 | 50-440 | 23.14 | on | 1.25 | 20 | 1.375 | 27.50 | 0.6 | NA | NA | 10.9 |
| LS VCT 64 | helical | large body | 120 | 50-650 | 23.14 | on | 1.25 | 40 | 1.375 | 55.00 | 0.5 | 50 | 50 | 4.5 |
| Disc VCT 64 | helical | large body | 120 | 50-650 | 23.14 | on | 1.25 | 40 | 1.375 | 55.00 | 0.5 | NA | NA | 4.5 |

For the **Venous (70 secs)** phase:

| | Scan Type | SFOV | kV | mA Range | Noise Index | Smart mA | Slice Thick | Beam Coll | Pitch | Speed | Rot Time | Dose Red | ASIR | Scan Time |
|-------------|-----------|----------|-----|----------|-------------|----------|-------------|-----------|-------|-------|----------|----------|------|-----------|
| LS 16 | helical | large | 120 | 50-440 | 16.36 | on | 2.5 | 20 | 1.375 | 27.50 | 0.6 | NA | NA | 10.9 |
| Opt 540 | helical | large | 120 | 50-440 | 16.36 | on | 2.5 | 20 | 1.375 | 27.50 | 0.6 | NA | NA | 10.9 |
| LS VCT 64 | helical | lrg body | 120 | 50-650 | 16.36 | on | 2.5 | 40 | 1.375 | 55.00 | 0.5 | 50 | 50 | 4.5 |
| Disc VCT 64 | helical | lrg body | 120 | 50-650 | 16.36 | on | 2.5 | 40 | 1.375 | 55.00 | 0.5 | NA | NA | 4.5 |

ARTERIAL PHASE

| Name of Series | Thickness | Interval | Recon Algorithm | Window Width/Level | Recon Direction |
|--------------------|-------------|-------------|-----------------|--------------------|------------------|
| AX ARTERIAL | 1.25 | 1.25 | std full | 400/40 | head/feet |
| 3D VRT (& spin) | 0.625 | 0.625 | std full | 400/40 | |

Must be first recon.

VENOUS PHASE (70 secs)

| | | | | | |
|------------------|------------|------------|-----------------|---------------|------------------|
| AX VENOUS | 2.5 | 2.5 | std full | 400/40 | head/feet |
| COR VENOUS | 2.5 | 2.5 | std full | 400/40 | front/back |
| SAG VENOUS | 2.5 | 2.5 | std full | 400/40 | left/right |
| AX VENOUS THINS | 1.25 | 1.25 | std full | 400/40 | head/feet |

Must be first recon.

Volume series on whole liver and on right lobe only.

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PHILIPS PARAMETERS & RECONS

For the Arterial and Venous (70 secs) phases:

| | Scan Mode | kV | Avg mAs | Dose Index | 3D Dose | Pitch | Detect | Colli | Rot Time | Scan Time |
|--------------|-----------|-----|---------|------------|---------|-------|--------|-------|----------|-----------|
| Incisive 128 | helical | 120 | 115 | 20 | on | 1.00 | 64 | 0.625 | 0.75 | 9.4 |

ARTERIAL PHASE

| | | | | | | |
|---------------|------|-----|---|-------------|---|-----------|
| AX ARTERIAL | 1.0 | 1.0 | B | mediastinum | 3 | head/feet |
| 3D VRT (spin) | 0.75 | 0.5 | B | | | |

VENOUS PHASE (70 secs)

| | | | | | | |
|-----------------|-----|-----|---|-------------|---|------------|
| AX VENOUS | 3.0 | 3.0 | B | mediastinum | 3 | head/feet |
| COR VENOUS | 3.0 | 3.0 | B | mediastinum | 3 | front/back |
| SAG VENOUS | 3.0 | 3.0 | B | mediastinum | 3 | left/right |
| AX VENOUS THINS | 1.0 | 1.0 | B | mediastinum | 3 | head/feet |

Volume series on whole liver and on right lobe only.