TRA Medical Imaging
P.O. Box 1535, Tacoma, WA 98401 | MAIN (253) 761-4200 | TOLL FREE (866) 761-4200 | www.tranow.com

CTA Watchman / Pulmonary Vein

Reviewed By: Dan Verdini, MD, Rachael Edwards, MD
Last Reviewed: October 2020

Contact: (866) 761-4200, Option 1

In accordance with the ALARA principle, TRA policies and protocols promote the utilization of radiation dose reduction techniques for all CT examinations. For scanner/protocol combinations that allow for the use of automated exposure control and/or iterative reconstruction algorithms while maintaining diagnostic image quality, those techniques can be employed when appropriate. For examinations that require manual or fixed mA/kV settings as a result of individual patient or scanner/protocol specific factors, technologists are empowered and encouraged to adjust mA, kV or other scan parameters based on patient size (including such variables as height, weight, body mass index and/or lateral width) with the goals of reducing radiation dose and maintaining diagnostic image quality.

If any patient at a TRA outpatient facility requires CT re-imaging, obtain radiologist advice prior to proceeding with the exam.

The following document is an updated CT protocol for all of the sites at which TRA is responsible for the administration, quality, and interpretation of CT examinations.

Include for ALL exams

- **Scout**: Send all scouts for all cases
- **Reformats**: Made from *thinnest* **source** acquisition
  - Scroll Display
    - Axial recons - Cranial to caudal
    - Coronal recons - Anterior to posterior
    - Sagittal recons - Right to left
  - Chest reformats should be in separate series from Abdomen/Pelvis reformats, where applicable
- **mAs**
  - Prefer: Quality reference mAs for specific exam, scanner and patient size
  - Auto mAs, as necessary

TRA Medical Imaging
P.O. Box 1535, Tacoma, WA 98401 | MAIN (253) 761-4200 | TOLL FREE (866) 761-4200 | www.tranow.com

CTA Watchman / Pulm Vein

Indication: Watchman: Pre-procedural device placement, 45 day or 1 year follow-up post placement
Pulm Vein: Atrial fibrillation, pulmonic vein stenosis, pre-procedural (PVI) planning

***NOTES*:**
- **Tera Recon:** All recons go to Tera Recon or Via
- **NO** pre-procedure medications are required for this exam

Patient Position: Supine, feet down with arms above head

Scan Range (CC z-axis):
- Arterial phase: carina to bottom of heart
- Delayed phase: upper ½ of heart to include left atrial appendage

IV Contrast Dose, Flush, Rate, and Delay:
- Dose: (modify volume if using something other than Isovue 370)
  - < 200 lbs 80 mL Isovue 370
  - >200 lbs 100 mL Isovue 370
- Flush: 50 mL saline
- Rate: 4 mL/sec

Acquisitions: Two (arterial and delay)
- Scan direction: Caudocranial
- Breathing: End inspiration
- kV: Care kV (Siemens) or BMI table (GE)
- Acquisition helical thickness (slice) 0.6-0.75 mm

- **Arterial phase**
  EKG gated dose modulated (helical) retrospective
  - Coverage: carina to bottom of heart
  - Trigger bolus off thoracic aorta, threshold 100 HU
  - EKG Gating:
    - Siemens: dmRetro 200-400 window
    - GE: dmRetro 15-45% window
- **Delay**
  EKG gated dose modulated retrospective
  - Coverage: Upper ½ of arterial field of view
  - Delay: Either 60sec delay after start of contrast injection, or 20 sec after end of arterial acquisition
  - EKG Gating:
    - Siemens: dmRetro 200-400 window
    - GE: dmRetro 15-45% window

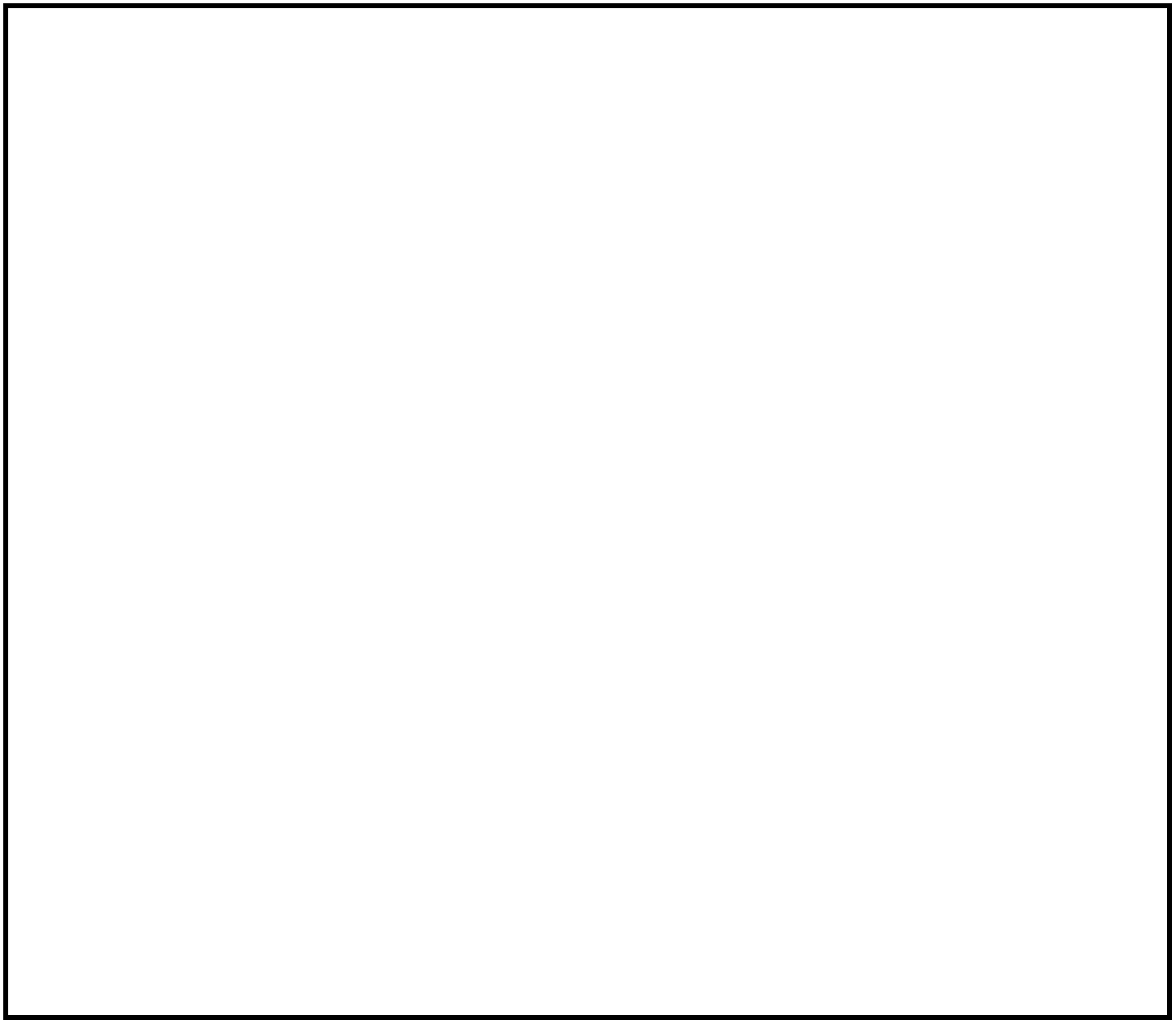
P.O. Box 1535, Tacoma, WA 98401 | MAIN (253) 761-4200 | TOLL FREE (866) 761-4200 | www.tranow.com

Series + Reformats:

- **Arterial (soft tissue or vascular kernel)**
  - Thin Axial, heart FOV: Siemens: best systolic, 0.6mm (thinnest possible)
    GE: 30%, 0.625mm (thinnest possible)
  - Multiphase, heart FOV: Siemens - 200-400ms in increments of 40ms for Siemens,
    GE - 15 - 45% in increments of 5%)
  - Sag, heart FOV: Siemens: 1 x 1mm
    GE: 1.25 x 1.25mm
  - Cor, heart FOV: Siemens: 1 x 1mm
    GE: 1.25 x 1.25mm
  - Full Chest, Full FOV, Axial, 2 x 2mm
  - Full Chest, Full FOV, Sag 2 x 2mm
  - Full chest, Full FOV, Cor 2 x 2mm
  - Full Chest, Full FOV, Axial MIP 10 x 2mm

- **Delay (soft tissue or vascular kernel)**
  - Thin Axial, heart FOV: Siemens: best systolic, 0.6 x 0.6mm
    GE: 30%, 0.625mm
  - Sag, heart FOV: Siemens: 1 x 1mm
    GE: 1.25 x 1.25mm
  - Cor, heart FOV: Siemens: 1 x 1mm
    GE: 1.25 x 1.25mm

P.O. Box 1535, Tacoma, WA 98401 | MAIN (253) 761-4200 | TOLL FREE (866) 761-4200 | www.tranow.com



General Comments

NOTE:
Use of IV contrast is preferred for most indications *aside from*: pulmonary nodule follow-up, HRCT, lung cancer screening, and in patients with a contraindication to iodinated contrast (see below).

Contrast *Relative* Contraindications

- **Severe contrast allergy**: anaphylaxis, laryngospasm, severe bronchospasm
  - If there is history of severe contrast allergy to IV contrast, avoid administration of oral contrast
- **Acute kidney injury (AKI)**: Creatinine increase of greater than 30% over baseline
  - Reference hospital protocol (creatinine cut-off may vary)
- **Chronic kidney disease (CKD)** ***stage 4 or 5*** (eGFR < 30 mL/min per 1.73 m^2) **NOT** on dialysis
  - Reference hospital protocol

Contrast Allergy Protocol

- Per hospital protocol
- Discuss with radiologist as necessary

Hydration Protocol

- For eGFR **30-45 mL/min** per 1.73 m^2: Follow approved hydration protocol

IV Contrast (where indicated)

- Isovue 370 is the default intravenous contrast agent
  - See specific protocols for contrast volume and injection rate
- If Isovue 370 is unavailable:
  - Osmolality 350-370 (i.e., Omnipaque 250): Use same volume as Isovue 370
  - Osmolality 380-320 (i.e., Isovue 300, Visipaque): Use indicated volume **+ 25 mL** (*not to exceed 125 mL total contrast*)

Oral Contrast

- Dilutions to be performed per site/hospital policy (unless otherwise listed)
- Volumes to be given per site/hospital policy (unless otherwise listed)
- TRA-MINW document is available for reference if necessary (see website)

Brief Summary

- Chest only
  - ✓ Chest W, Chest WO
  - ✓ CTPE
  - ✓ HRCT
  - ✓ Low Dose Screening/Nodule
    - None

- Pelvis only
  - ✓ Pelvis W, Pelvis WO
    - Water, full instructions as indicated

- Routine, excluding chest only and pelvis only
  - ✓ Abd W, Abd WO
  - ✓ Abd/Pel W, Abd/Pel WO
  - ✓ Chest/Abd W, Chest/Abd WO

- ✓ Chest/Abd/Pel W, Chest/Abd/Pel WO
- ✓ Neck/Chest/Abd/Pel W, Neck/Chest Abd Pel WO
- ✓ CTPE + Abd/Pel W
    - TRA-MINW offices: Dilute Isovue-370
    - Hospital sites:
        - ED: Water, if possible
        - Inpatient: prefer Dilute Isovue 370
            - Gastrografin OK if Isovue unavailable
            - Avoid Barium (Readi-Cat)
        - FHS/MHS Outpatient: Gastrografin and/or Barium (Readi-Cat)

- Multiphase abdomen/pelvis
    - ✓ Liver, pancreas
        - Water, full instructions as indicated
    - ✓ Renal, adrenal
        - None

- CTA abdomen/pelvis
    - ✓ Mesenteric ischemia, acute GI bleed, endograft
        - Water, full instructions as indicated

- Enterography
    - Breeza, full instructions as indicated

- Esophogram
    - Dilute Isovue 370, full instructions as indicated

- Cystogram, Urogram
    - None

- Venogram
    - Water, full instructions as indicated