Post endovascular / surgical aortic repair structured reporting scheme (*work in progress*)

1. **Cardiovascular risk stratification**

**1.1 (y/n)**

1. Hypertension
2. Smoking
3. Familiar History
4. Diabetes mellitus
5. Hyperlipemia
6. Hyperomocisteinemia

**1.2 Aortic disease risk factors**

1. Previous aortic dissection/intramural hematoma/penetrating aortic ulcer
2. Male gender
3. Coronary artery disease
4. Peripheral artery disease
5. Stroke
6. Bicuspid aortic vavle
7. Aortic coarctation
8. Connective tissue disease (eg Marfan, Ehlers-Danlos, aneurysms osteoarthritis syndrome)
9. **Clinical Indication to the Exam:**
10. Symptomatic patients presenting with:

* Unexplained anemia after aortic repair
* Fever

1. Asymptomatic patients presenting with:

* Post aortic repair follow-up

1. **Previous diagnostic tests performed**

* None
* CTA: normal/ abnormal
* Echoradiography: normal/ abnormal
* MRA: normal/ abnormal
* PETCT: normal/ abnormal

1. **Scanning Protocol**

Patient preparation

1. Cardiac rhythm before the scan (if performed with ECG-gated technique) [sinus non-sinus rhythm; type of arrhythmia]
2. Heart rate before the scan

Non contrast scan

1. Type of scanner: single/dual source
2. Number of slices
3. ECG gating: none/ prospective/ retrospective
4. Tube voltage and Tube current
5. Pitch
6. Reconstruction algorithm: ∅ FBP ∅ Iterative reconstruction algorithm
7. CTDI
8. Dose Length product (DLP): mGy/cm

Pre-contrast unenhanced phase performed: (y/n)

1. ECG gating: none/ prospective/ retrospective
2. Tube voltage and Tube current
3. Pitch
4. Reconstruction algorithm: ∅ FBP ∅ Iterative reconstruction algorithm
5. CTDI
6. Dose Length product (DLP): mGy/cm

CTA parameter

1. Type of scanner: single/dual source
2. Number of slices
3. ECG gating: none/ prospective/ retrospective
4. Tube voltage and Tube current
5. Pitch
6. Reconstruction algorithm: ∅ FBP ∅ Iterative reconstruction algorithm
7. CTDI
8. Dose Length product (DLP): mGy/cm

Contrast agent parameters

1. Type of contrast agent (mgI/mL):
2. Volume of contrast agent
3. Rate of infusion for contrast agent
4. Use of saline solution (if yes add volume and rate)
5. **Results**

**5.1 Diagnostic image quality:**

1 = poor image quality (non-diagnostic)

2 = moderate image quality (diagnosis suspected but not established)

3 = good image quality (diagnosis could be established)

4 = excellent image quality (diagnosis could be established with high confidence)

**5.2 Post TEVAR:**

When evaluating post aortic repair patients it is important to interpret results in the context of the surgical/endovascular aortic repair procedure report.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Diameter** | **Stent** | **Integrity of struts** | **Stent migration** | **Aortic aneurysm sac comparison with previous examinations** | | | **Endoleak type** |
| **Reduction** | **Stable** | **enlargement** |
| **Aortic annulus** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |
| **Sinus of Valsalva** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |
| **Sinotubular junction** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |
| **Ascending aorta** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |
| **Aortic arch** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |
| **Descending** | mm | yes/no | yes/no | yes/no | yes/no | yes/no | yes/no | None / I / II / III / IV / V |

**5.3 Post surgery**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Diameter** | **Graft** | **Suture aneurysm** | **Aortic aneurysm sac** | | |
| **Reduction** | **Stable** | **enlargement** |
| **Aortic annulus** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Sinus of Valsalva** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Sinotubular junction** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Ascending aorta** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Aortic arch** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Descending** | mm | yes/no | yes/no | yes/no | yes/no | yes/no |

**5.4**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Side branches** | **Origin over stented** | **Side branch stented** | **Replaced/grafted** | **Bypassed** | **patent** |
| **Right coronary artery** | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Left coronary artery** | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Brachiocephalic trunk** | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Left common carotid artery** | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Left subclavian artery** | yes/no | yes/no | yes/no | yes/no | yes/no |
| **Left bronchial arteries** | yes/no | yes/no | yes/no | yes/no | yes/no |
|  |  |  |  |  |  |

* 1. **Complications:**

|  |  |
| --- | --- |
| 1. **Endoleak** | None / I / II / III / IV / V |
| 1. **Contrast leakage (active bleeding)** | y/n |
| 1. **Pericardial effusion** | y/n |
| 1. **Pleura effusion** | y/n |
| 1. **aorta dissection** | y/n |
| 1. **Infection** | y/n |
| 1. **Increasing amount of low-attenuated material on serial scans around the graft** | y/n |
| 1. **Perigraft fluid, hematoma, aneurysm, or gas collection** | y/n |
| 1. **Collection around the graft (i.e. abscesses)** | y/n |
| 1. **Graft dehiscence** | y/n |
| 1. **Pseudoaneurysm** | y/n |
| 1. **Hemopericardium** | y/n |

* 1. **Coronary arteries evaluation (if applicable):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coronary Anomaly** | RCA □ | LAD □ | benign □ | malign □ |

***If yes: specify type of anomaly***

* 1. **Coronary arteries evaluation (if applicable):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Coronary vessel** | **interpretable** | | **Stenosis1** | | | | **Stenosis location** |
| Left Main | yes □ | no □ | none □ | mild □ | signif □ | occl □ | Proximal/mid/distal |
| Left anterior descending artery | yes □ | no □ | none □ | mild □ | signif □ | occl. □ | Proximal/mid/distal |
| Left Circumflex | yes □ | no □ | none □ | mild □ | signif □ | occl □ | Proximal/mid/distal |
| Right coronary artery | yes □ | no □ | none □ | mild □ | signif □ | occl □ | Proximal/mid/distal |

1Mild is <50% stenosis, Significant is 50-99% stenosis

* 1. **Heart chambers (if applicable):**

|  |  |  |  |
| --- | --- | --- | --- |
| **RA** | **LA** | **RV** | **LV** |
| normal □ | normal □ | normal □ | normal □ |
| enlarged □ | enlarged □ | enlarged □ | enlarged □ |
| thrombus □ | thrombus □ | thrombus □ | thrombus □ |

* **ASD**
* **VSD**
  1. ** Myocardium:**

|  |  |  |
| --- | --- | --- |
| **contrast enhancement** | honogenous □ | inhomogenous □ |
| **scars** | present □ | not present □ |
| **calcifications** | present □ | not present □ |
| **Contractility (if applicable)** | normal □ | abnormal □  indicate segment: |
| **wall motion abnormal. (if applicable)** | present □ | not present □ |

* 1. **Pericardium:**

|  |  |  |  |
| --- | --- | --- | --- |
| thinn □ | thickened □ | calcified □ | effusion □ |

* 1. **Cardiac valves:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Aortic V** | normal □ | calcified □ | thickened □ | vegetations □ | bicuspid □ |
| **Mitral V** | normal □ | calcified □ | thickened □ | vegetations □ |  |
| **Pulm V** | normal □ | calcified □ | thickened □ | vegetations □ | bicuspid □ |
| **Tricusp V** | normal □ | calcified □ | thickened □ | vegetations □ |  |

* 1. **Extra-Cardiac findings:**

|  |  |
| --- | --- |
| **1.** | **Lungs and pleura:** |
| **2.** | **Venous anomalies (eg: PAPVR)** |
| **3.** | **Mediastinal adenopathies:** |
| **4.** | **Muscolo-skeletal system:** |

1. **Impressions:**

**7. Conclusions (with recommendations for further testing):**

**Recommended References:**

1 Erbel R, Aboyans V, Boileau C, et al. (2014) 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC). Eur Heart J, 35:2873-2926.

2 Hiratzka LF, Bakris GL, Beckman JA, et al. (2010) 2010 ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM guidelines for the diagnosis and management of patients with Thoracic Aortic Disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine. Circulation, 121:e266-369.