

MARY WASHINGTON HEALTHCARE IMAGING SERVICES

ENDOVASCULAR AORTOILIAC STENT GRAFT PROTOCOL

- I. **Primary Purpose of the Endovascular Aortoiliac Stent Graft Examination**
To evaluate endovascular aortic stent grafts for patency, stenosis, and the presence of possible perigraft leaks, increasing aneurysm size, and other complications.
- II. **Patient Preparation:** NPO 8 hours. Due to the fasting requirement, early morning appointments should be given when possible.
- III. **Equipment:** Performed with real-time scanner using a sector or curved linear transducer with frequencies ranging from 3.5 MHz to 5.0 MHz.
- IV. **Clinical indications:** At least one of the following should be listed as a clinical indicator for the exam: endograft/surgical aortic graft, atherosclerosis or aneurysm, abdominal or back pain, pulsatile abdominal mass, epigastric bruit.
Note: Use endovascular worksheet.
- V. **Image Optimization:** Optimize gray images using abdominal vascular or abdominal penetration preset, DGC controls, depth and transmit/focal zones, I-scan, AGC and harmonics to allow for vessel wall and plaque identification.
- VI. **Imaging Technique:** The endovascular aortic stent graft ultrasound exam consists of the following images:
 - Transverse grayscale, longitudinal grayscale, color Doppler and PSV of:
 1. Abdominal aorta above endograft with maximal diameter
 2. Proximal graft landing
 3. Stent graft with right and left limbs
 4. Aneurysm sac with maximal diameter
 5. Distal right and left graft landing
 6. Right and left common iliac arteries with maximal diameter

*Survey the entire graft in longitudinal and transverse planes evaluating the aneurysm sac, the superior and inferior attachment sites, the areas of the IMA and lumbar arteries and aortic side branches with color Doppler for possible endoleaks. Color Doppler imaging must be completed using the most sensitive settings to detect slow aneurysmal sac flows. All suspected leaks seen with color Doppler need to be confirmed with spectral Doppler.

Any complications following endograft placement (i.e. stenosis, occlusion, hematoma, twisting, kinking and deformity of graft as well as arteriovenous fistula, intimal flaps, dissection or pseudoaneurysm, at access sites) should be thoroughly evaluated.

All spectral Doppler images are taken with a Doppler angle of 60 degrees or less with the sample gate parallel to the vessel wall, NOT the flow jet.

After completing the exam, the technologist should scan the order for the exam into iSite and track the exam in the Syngo system.

Endovascular Aorto-iliac Stent Graft Duplex

Image Summary

<u>Image</u>	<u>Measurement</u>
1. Trans prox aorta above endograft grayscale	Maximal diameter
2. Trans prox graft landing color	
3. Trans maximal aneurysm sac grayscale	Maximal diameter
4. Trans aneurysm sac color	
5. Trans right and left limb of endograft color	
6. Trans right distal graft landing site color	
7. Trans left distal graft landing site color	
8. Long prox aorta grayscale	AP
9. Long prox aorta color/spectral Doppler	PSV
10. Long graft proximal landing site color	
11. Long graft proximal landing site color/spectral Doppler*	PSV
12. Long maximum aneurysm sac grayscale	AP
13. Long aneurysm sac color	
14. Long aneurysm sac color/spectral Doppler if flow is present*	
15. Long right limb of endograft color	
16. Long right limb of endograft color/spectral Doppler	PSV
17. Long right distal graft landing site color	
18. Long right distal graft landing site color/spectral Doppler*	PSV
19. Long right common iliac artery grayscale below graft	
20. Long right common iliac artery color/spectral Doppler below graft	PSV
21. Long left limb of endograft color	
22. Long left limb of endograft color/spectral Doppler	PSV
23. Long left distal graft landing site color	
24. Long left distal graft landing site color/spectral Doppler*	PSV
25. Long left common iliac artery grayscale below graft	
26. Long left common iliac artery color/spectral Doppler below graft	PSV

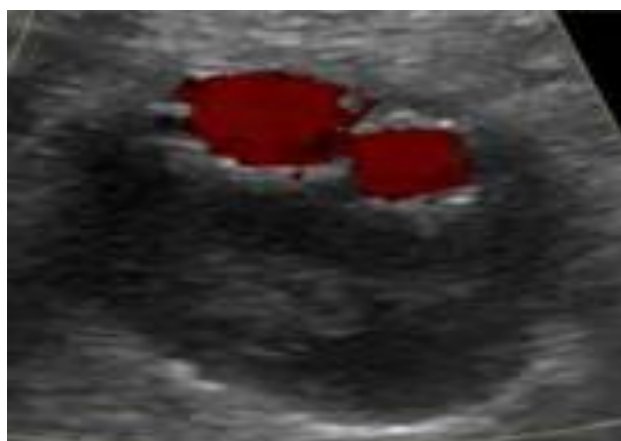
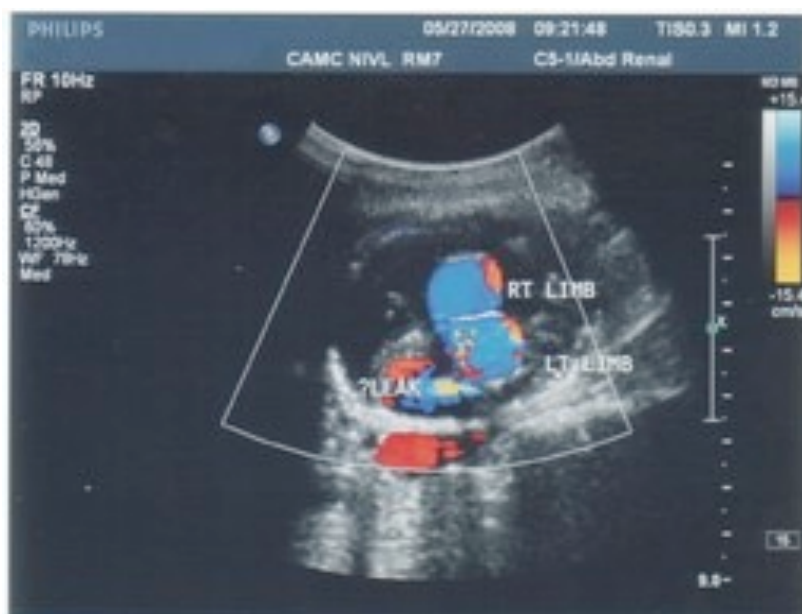
Note: Use the most sensitive color flow settings to detect slow aneurysmal sac flows.

*All suspected leaks seen with color Doppler need to be confirmed with spectral Doppler. Any complications following endograft placement (i.e. stenosis, occlusion, hematoma, migration, twisting, kinking and deformity of graft as well as arteriovenous fistula, intimal flaps, dissection or pseudoaneurysm, at access sites) should be thoroughly evaluated.

Reference:

1. *Doppler Waveform Assessment of Endoleak Following Endovascular Repair of Abdominal Aortic Aneurysm: Predictors of Endoleak Thrombosis*. Kathleen A. Carter, BSN, RN, RVT, et al. The Journal of Vascular Technology 24(2): 119-122, 2000.
2. *Update: Quantitative Duplex Ultrasound Assessment of Aortic Aneurysms After Endovascular Repair*. Bonnie L. Johnson, RDMS, RVT; et al. The Journal for Vascular Ultrasound 27(3):165–170, 2003
3. *Endovascular Aorto-iliac Stent Graft Evaluation*; SVU
4. *Color Duplex Ultrasound Protocol for Evaluation of Endovascular Stent Grafts for the Repair of Abdominal Aortic Aneurysm*. GE Medical Systems, US: Emerging Vascular Technologies, Program Supplement.

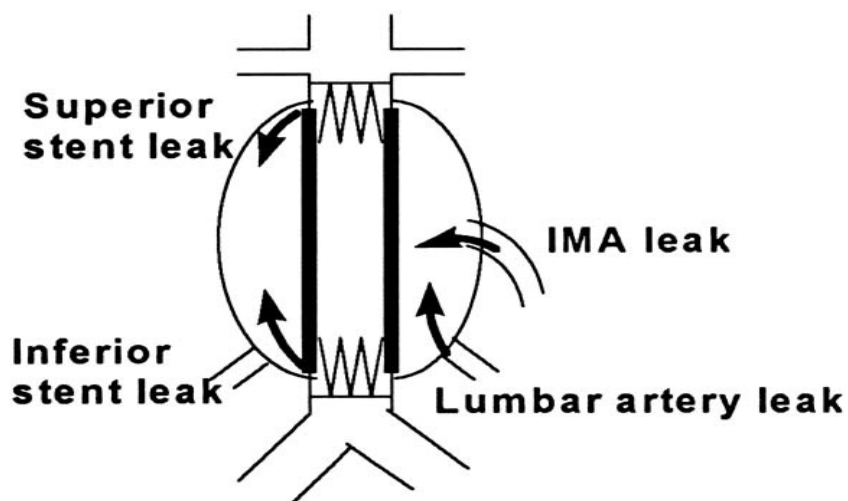
Endoleak



Patent right & left limbs of endograft without leak



Ellipse measurement of aneurysmal sac



[Rev3/13]