DU surveillance: A safe alternative for CT-A or MRA after EVAR? after lower extremity stent grafts?

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No disclosures

DU vs CT-A post-EVAR?
250 EVARs
Group 1 (1998-2004): both CT & DU
Group 2 (2004-2008): only DU and no CT if initial postop CT normal
AAA sac diameter?
Endoleaks?
Charges?
(Beeman, Doctor, Dougherty, Calligaro. JVS 2009;50:1019-24)

DU vs CT-A post-EVAR?
250 EVARs: AAA Sac Diameter
DU and CT scans equivalent in determining AAA sac diameter post-EVAR
(p < 0.001)
(Beeman, Doctor, Dougherty, Calligaro. JVS 2009;50:1019-24)

DU vs CT-A post-EVAR?
250 EVARs: Endoleaks
CT-A missed Type II endoleaks more than DU
(Beeman, Doctor, Dougherty, Calligaro. JVS 2009;50:1019-24)

DU vs CT-A post-EVAR?
250 EVARs: Charges
In Group 1, if had eliminated CT scans and used DU alone:
would have reduced charges for EVAR surveillance by 29% ($534,356)
In Group 2, did eliminate CT scan surveillance:
cost savings of $1,595 per patient
(Beeman, Doctor, Dougherty, Calligaro. JVS 2009;50:1019-24)
DU vs CT-A post-EVAR?
250 EVARs
None of Group 2 patients had adverse event (rupture, graft migration, limb occlusion) as a result of having DU performed as sole follow-up modality

(Beeman, Doctor, Dougherty, Calligaro. JVS 2009;50:1019-24)

DU for EVAR limb stenosis?
• 248 EVAR adequate DU f/u of 496 limbs
• PSV > 300 cm/sec: 7/17 limbs occluded
• PSV < 300 cm/sec: 0/479 limbs occluded 
  (p < 0.001)

(Blom, Troutman, Dougherty, Calligaro. JVS 2012;55:1577)

DU for Type II endoleaks?
278 EVARs
• Velocities and location of T2ELs did not correlate with sac enlargement
• Only predictors for sac enlargement = multiple T2s, to-and-fro doppler flow

(Beeman, Dougherty, Calligaro. JVS 2010;52:1147-52)

Is DU necessary 1st three years post-EVAR?
410 EVARs
Intervention required for endoleak or limb stenosis during 3-yr follow-up:
2% (7/325) initial normal post-EVAR DU vs.
25% (21/85) initial abnormal post-EVAR DU 
  (p = 0.0001)

(Troutman, Chaudry, Dougherty, Calligaro. JVS 2014;60:558-62)

DU for Lower Extremity Stent Grafts
Occlusive disease
92 lower extremity stent grafts (most Viabahn)
Abnormal DU findings
PSV Vr > 3.0
focal PSVs > 300 cmsg/s
uniform PSVs < 50 cmsg/s throughout stent graft

(Troutman, Dougherty, Calligaro. JVS 2014;60:1580-84)

DU for Lower Extremity Stent Grafts
Occlusive disease
75% (15/20) with abnormal DU findings prophylactic intervention (8) occluded without intervention (7) vs.
3% (2/72) with normal DU findings 
  occluded without intervention 
  (p = 0.0001)

(Troutman, Dougherty, Calligaro. JVS 2014;60:1580-84)
### Summary

**EVAR surveillance**
- DU = CT-A for endoleak, sac enlargement, limb stenosis but DU much cheaper, less radiation
- DU predict enlarging AAA sac due to Type II endoleaks \( \Rightarrow > 1 \) leak, to-and-fro doppler flow
- DU dx failing EVAR limb: PSV > 300 cms/sec, PSV ratio > 3.5

**Lower Extremity Stent Graft surveillance**
- DU dx failing LE stent graft: PSV > 300 cms/sec, PSV ratio > 3.0

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**REFERENCES**


