Can duplex ultrasound (DU) evaluate unsuspected axillary & subclavian stenosis before axillo-femoral bypass?

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Routine imaging of axillary, subclavian, and innominate arteries before axillo-femoral bypasses not advocated –
• Rarity of stenosis of inflow arteries
• Widespread belief that R inflow stenosis < L so use R Axillary A.
• Measure BP in arms

Axillofemoral bypasses
• In these patients with extensive atherosclerosis, inflow disease can cause axillo-femoral graft failure
• Don’t we routinely get inflow imaging (aortoiliac) before leg bypass?
• Shouldn’t we routinely get inflow imaging (ax-subclavian) before axfem bypass?

Arteriography of Axillary Arteries
• Montefiore Medical Center:
  Prospectively determined incidence of unsuspected inflow stenosis with arteriography and BP measurements
  • 40 patients for axillofemoral bypass

Arteriography of Axillary Arteries
Results – 40 patients
25% (10) pts - inflow stenosis
(8 unilateral, 2 bilateral)
• L = 7 (5 subclavian, 2 axillary)
• R = 5 (3 subclavian, 1 axill, 1 innom)
20% (8/40) patients
stenotic inflow ipsilateral to ischemic leg
Arteriography of Axillary Arteries

Results – 12 stenotic inflow arteries
Upper extremity BP measurements:
Suggested inflow stenosis – 3 cases
Normal BP – 9 cases

Equal BP measurements in UE’s do not ensure adequate inflow for Axillo-femoral graft

DU for Axfem Bypass

Pennsylvania Hospital

• Routine DU evaluation of inflow Axfem arteries for 25 years

• Non-invasive

• Avoids contrast

• Highly accurate

DU for Axfem Bypass

Patients and Methods

“Abnormal” DU findings c/w > 50% stenosis

Focal PSV > 250 cm/s
Adjacent PSV ratio (Vr) > 2.0

If any question, get Agm or CT-A

DU for Axfem Bypass

Pennsylvania Hospital – 139 AxFem Bypasses

• 79 ax-uni-femoral (on side of LE disease):
  46 R axfem
  33 L axfem

• 60 ax-bi-femoral:
  45 R ax-bi-fem (13 - L inflow stenosis)
  15 L ax-bi-fem (15 - R inflow stenosis)

So 20% patients had inflow stenosis

CONCLUSION

Inflow Imaging before Axfem Bypass

• BP measurements not accurate

• If you routinely use R side as inflow, 20-25% have inflow stenosis

• If have not done DU, get Agm of aortic arch vessels at time of outflow Agm

• DU of axillary, subclavian, & innominate arteries should be done routinely before Axillo-femoral bypass