



IVUS Assisted PTA For Left Innominate Vein Compression Syndrome

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History

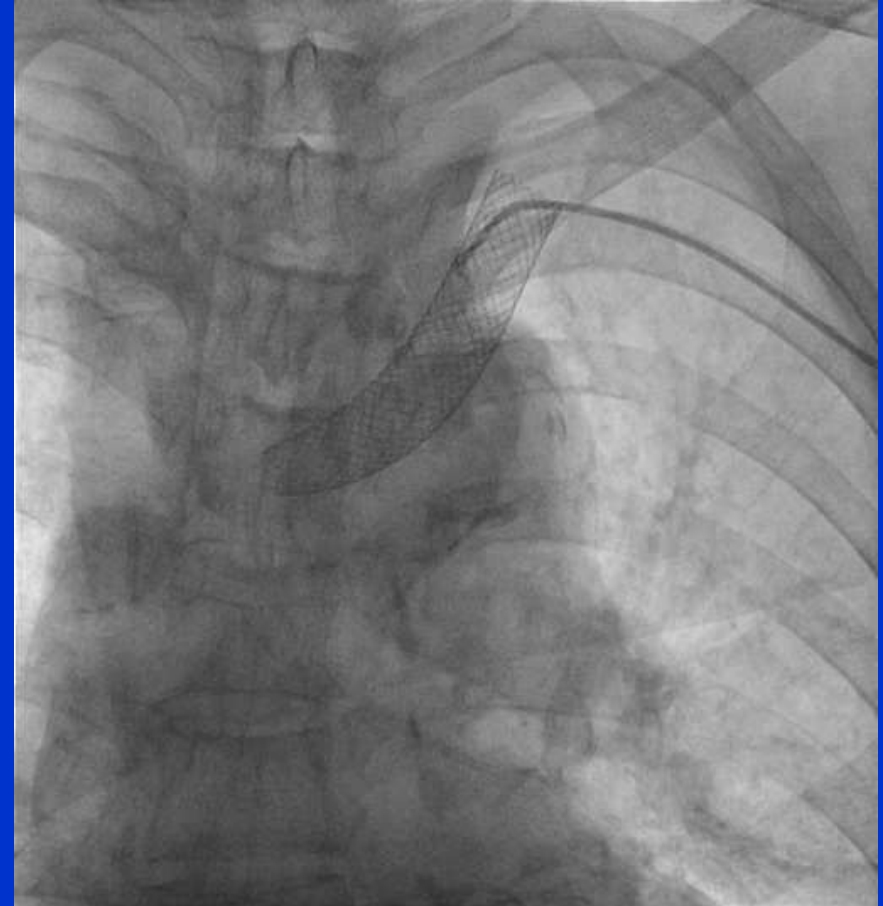
- 74 y/o woman
- Uremia under hemodialysis tiw
- Left brachio-basilic AV bypass s/p PTA for **8 times** for repeated left innominate vein stenosis between 2012-2014
- 2014-6 PTA with stenting of left innominate vein (Wall stent)
- 2014-9 Elevated venous pressure and left arm swelling



2014-9 PTA

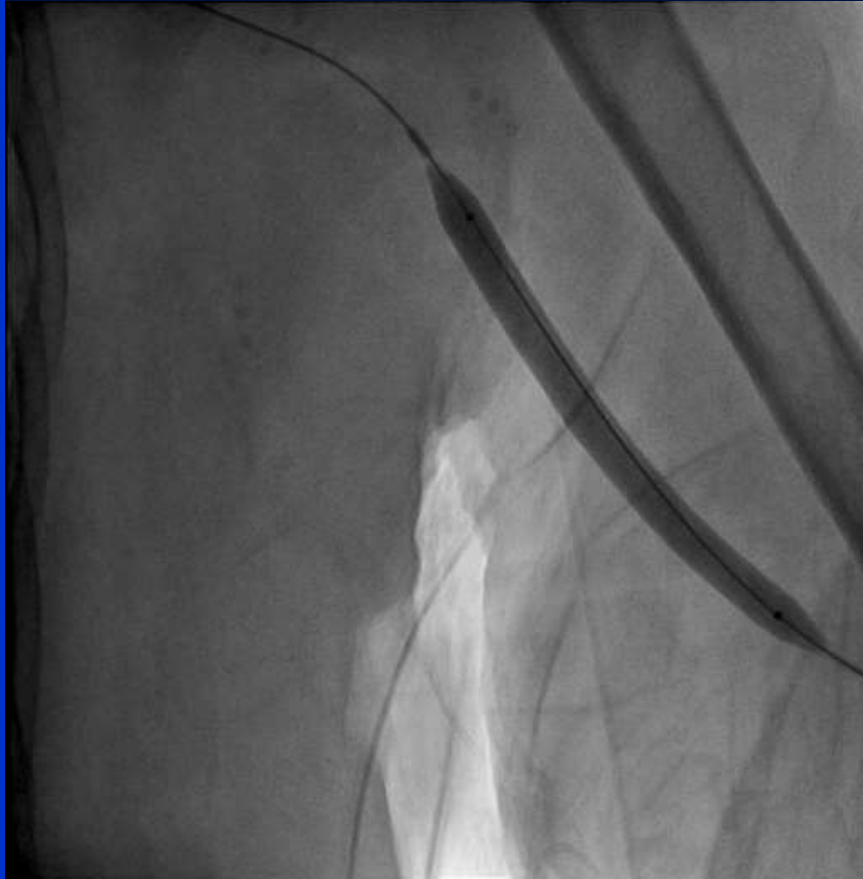


6Fr sheath, left brachio-basilic AV bypass graft



Migration of Wall stent (14.0/90 mm)

Pressure gradient across left innominate vein: 60 mmHg



7.0/80 mm Conquest 12 atm 14.0/40 mm Conquest 8 atm



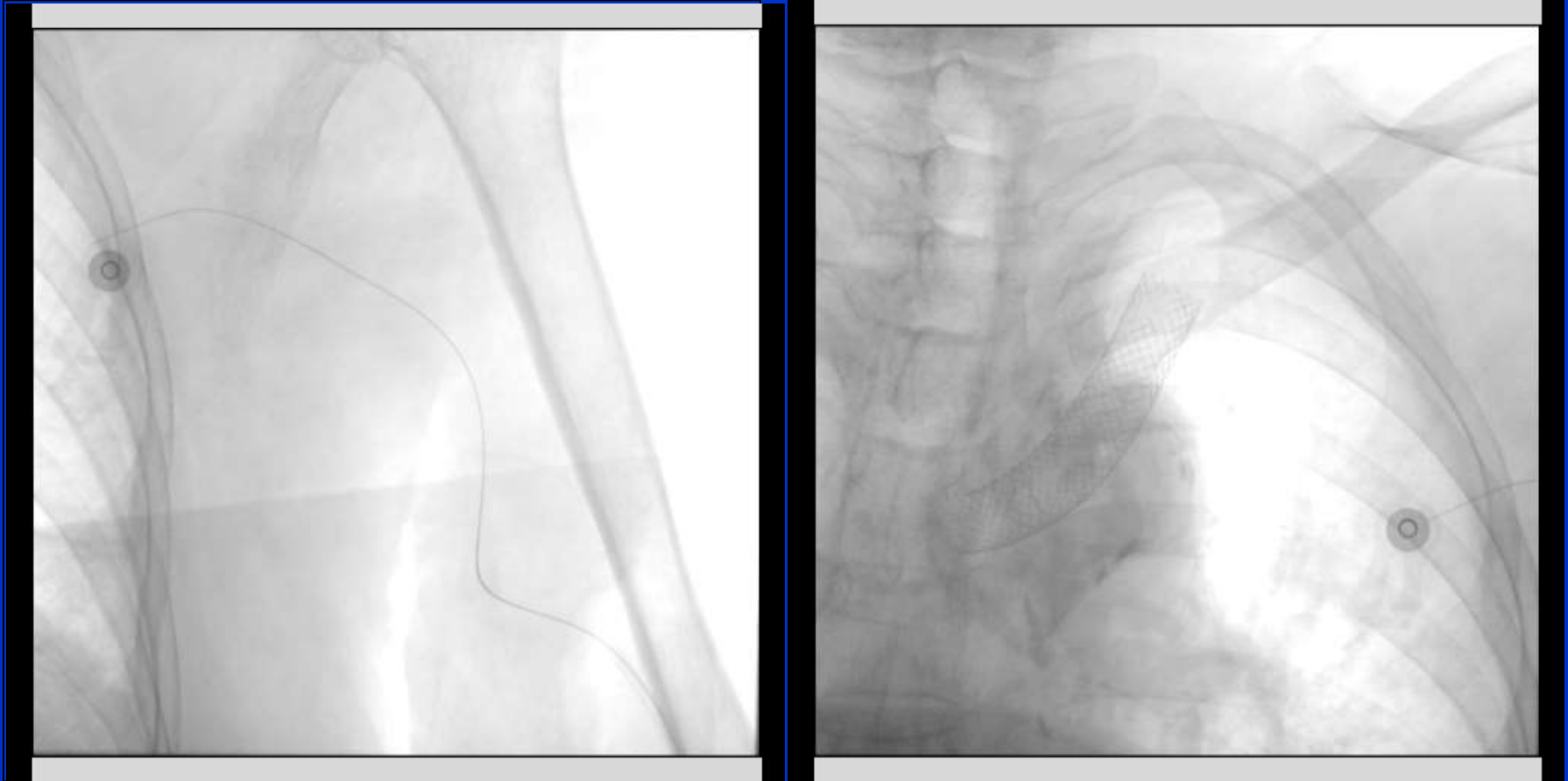
Sheath pressure decreased from 105/62 mmHg to 72/35 mmHg after PTA

2 months later...left arm swelling with collaterals again





2014-11 PTA



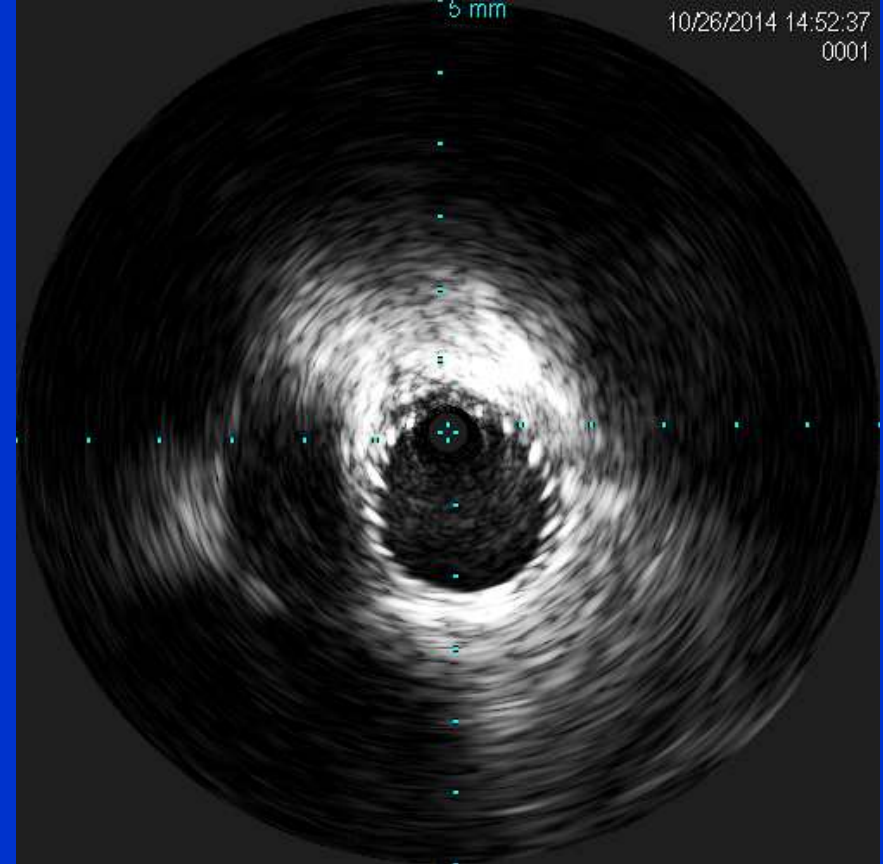
6Fr sheath, left brachio-basilic AV bypass graft

CMUH

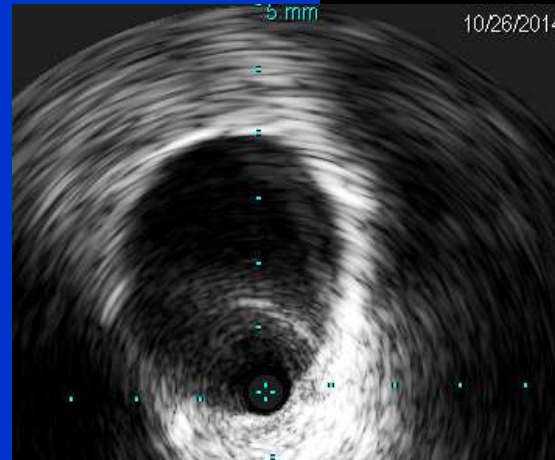
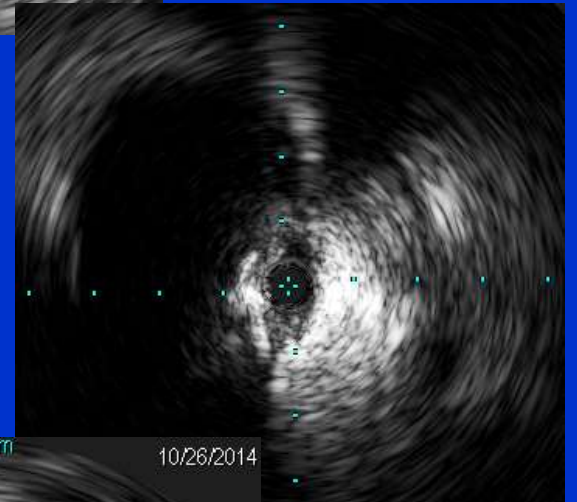
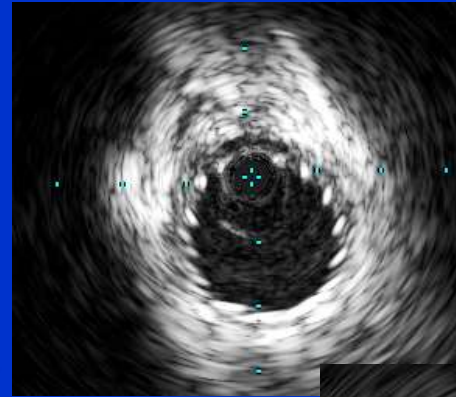
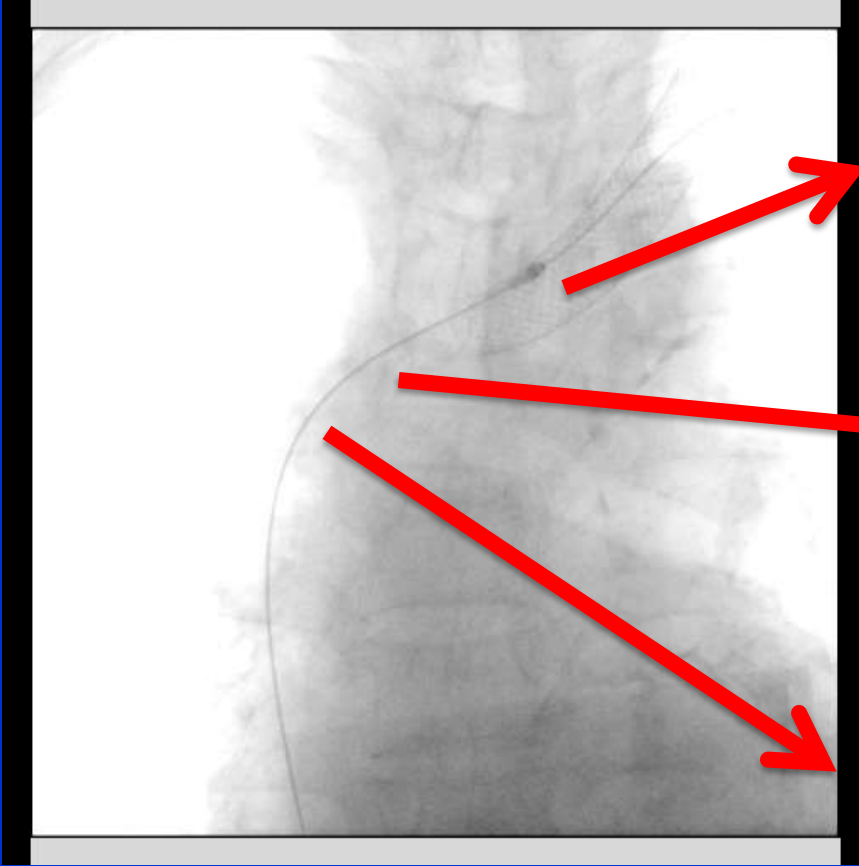




Migration of Wall stent, restenosis of left innominate vein



RCFV: 12Fr sheath; Volcano IVUS





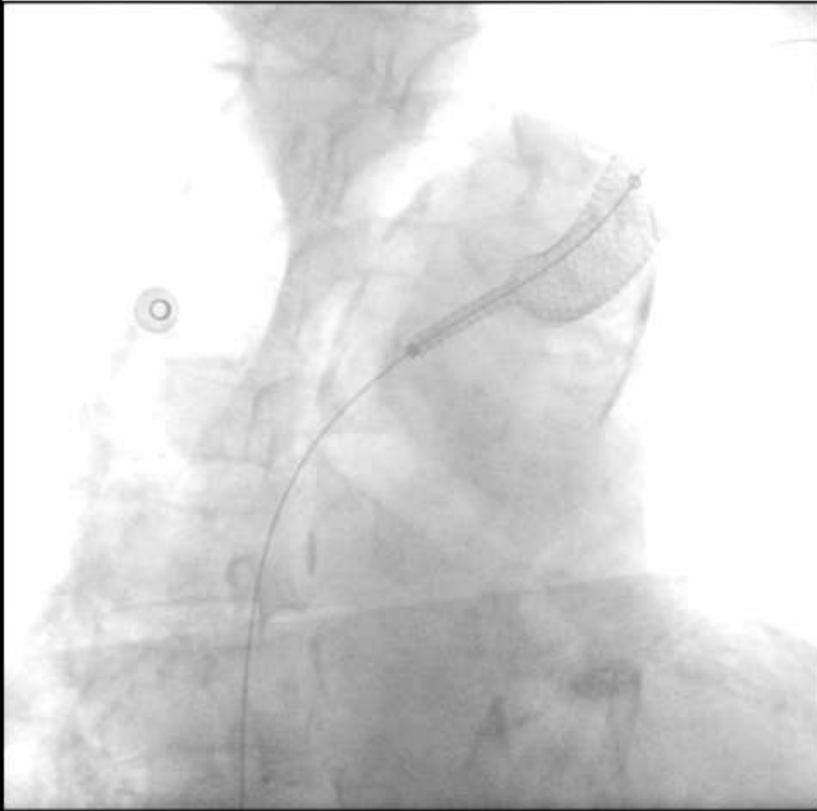
**Externalization of .035" Roadrunner wire by Snare
14.0/40 mm Conquest balloon at 8 atm**

CMUH





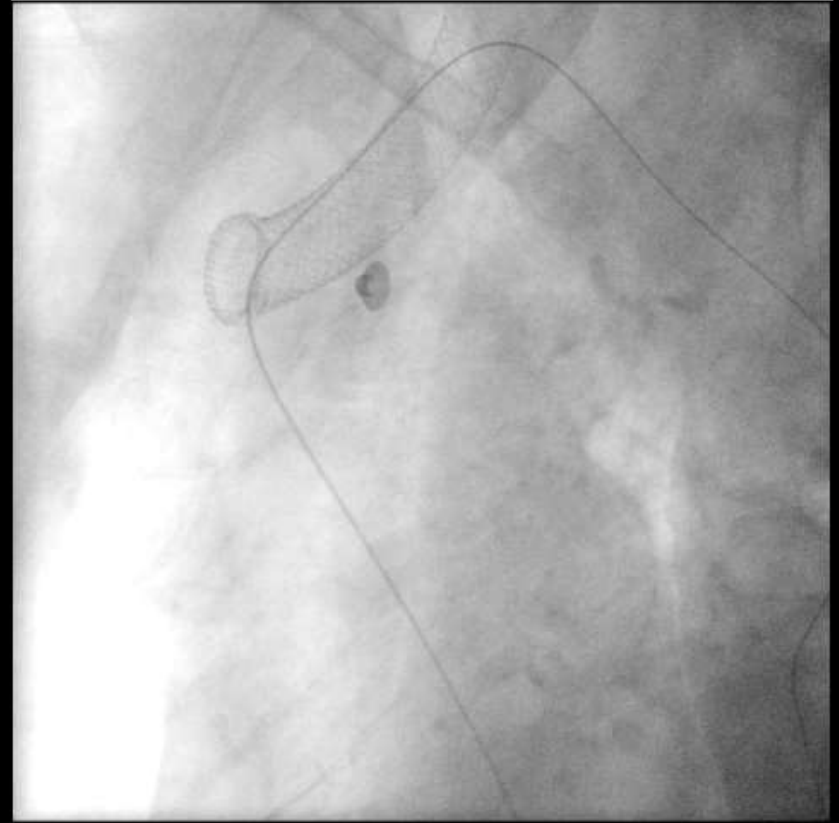
13.0/50 mm Viabahn graft stent



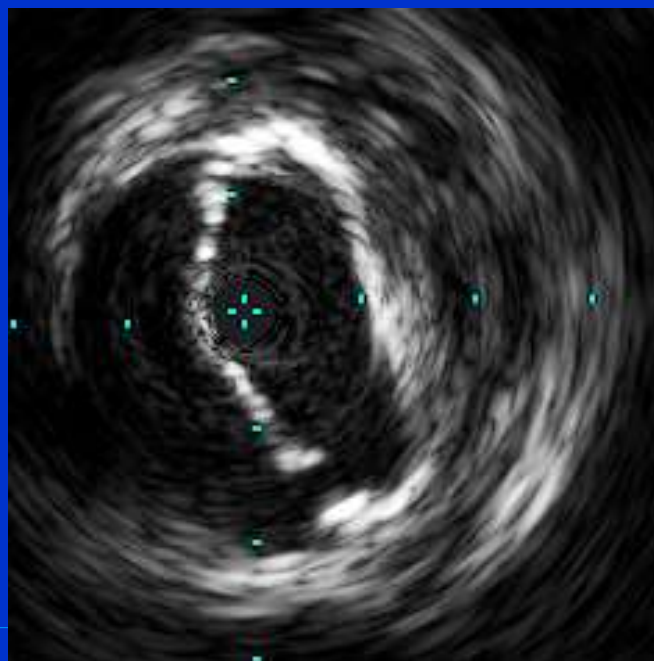
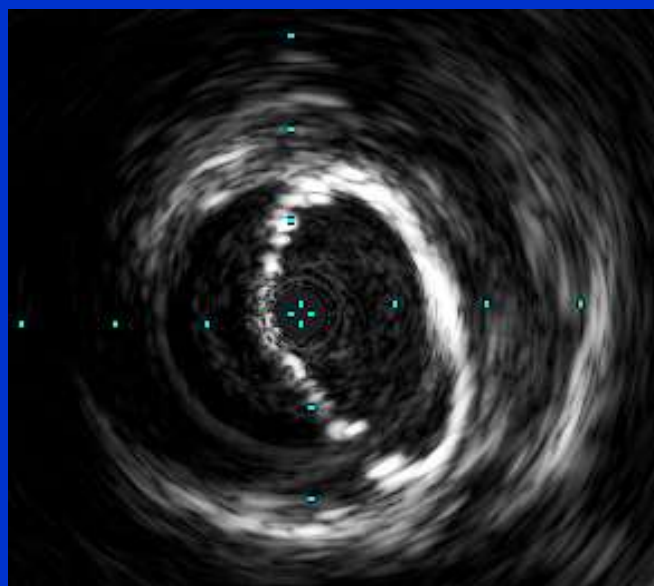
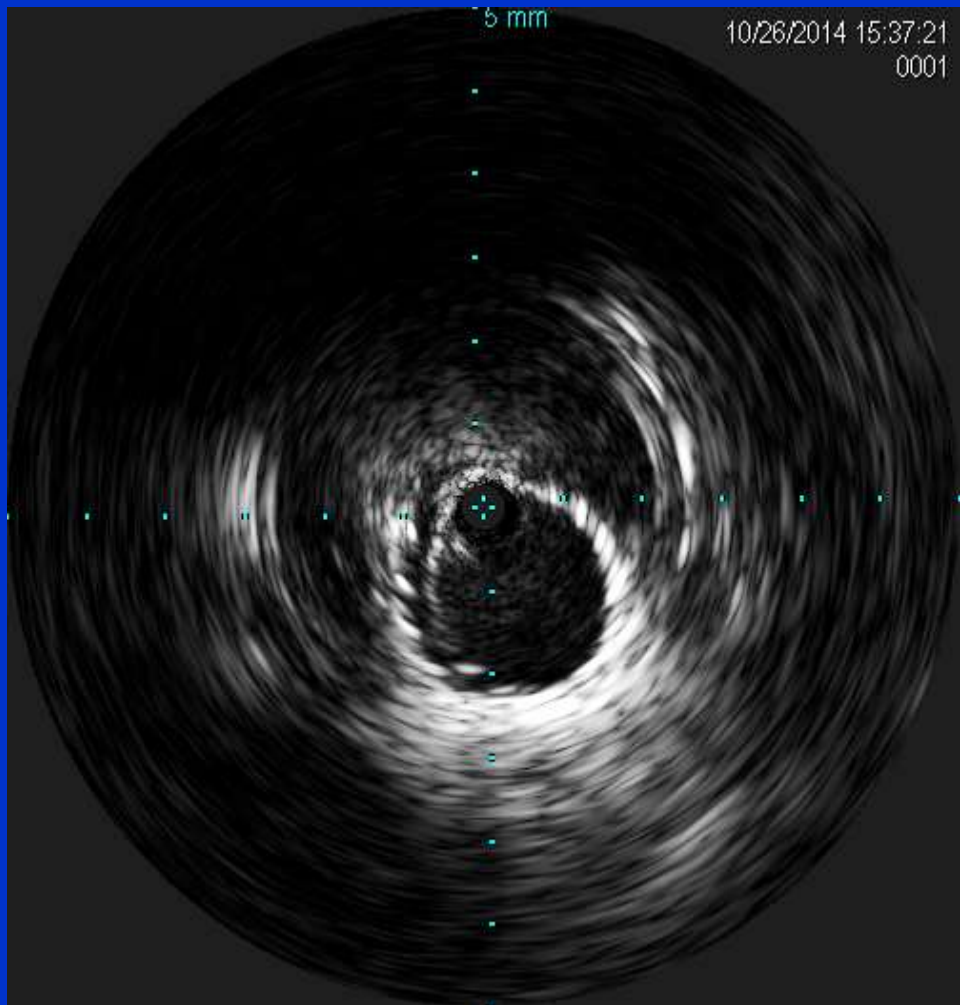
13.0/50 mm Viabahn



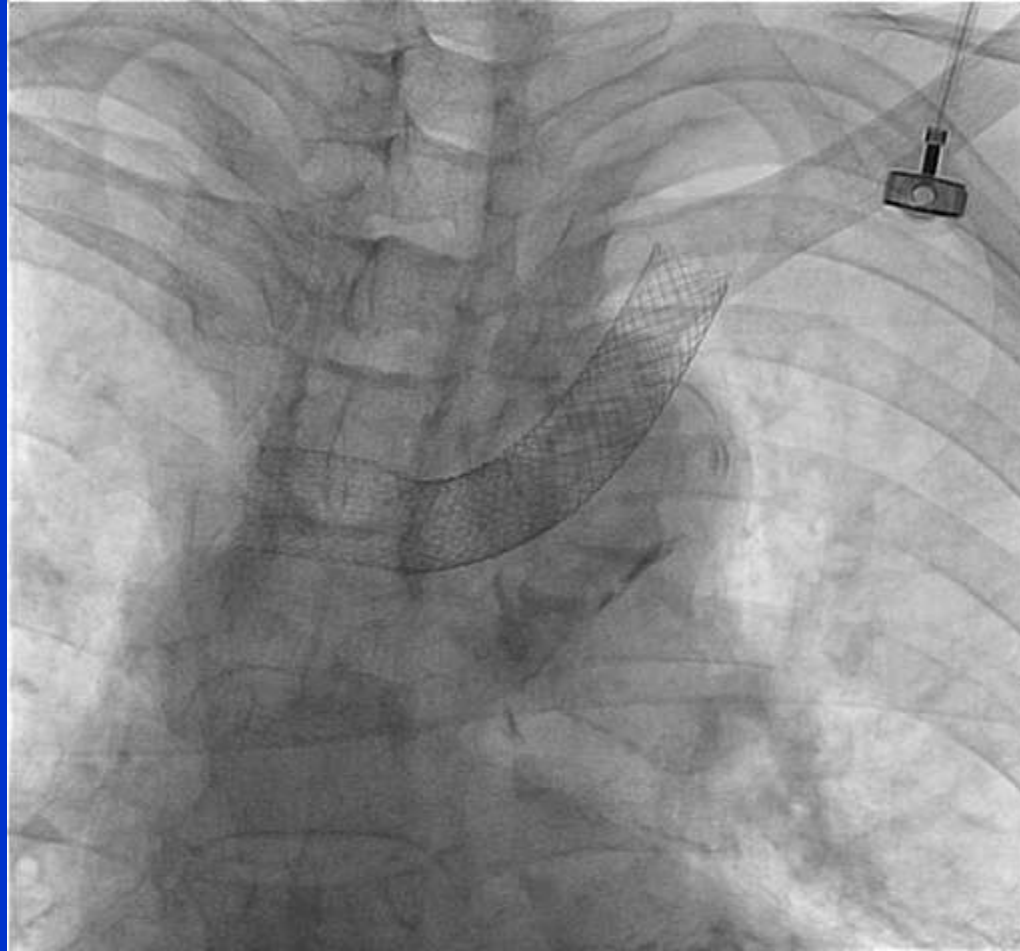
14.0/40 mm Conquest 8 atm



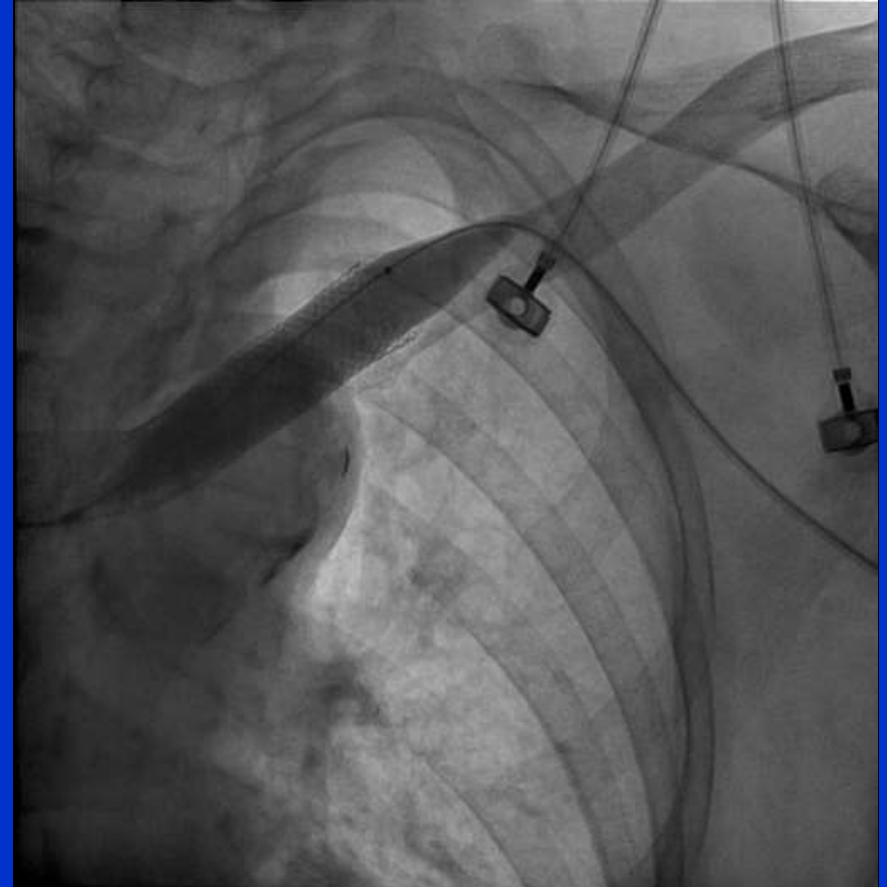
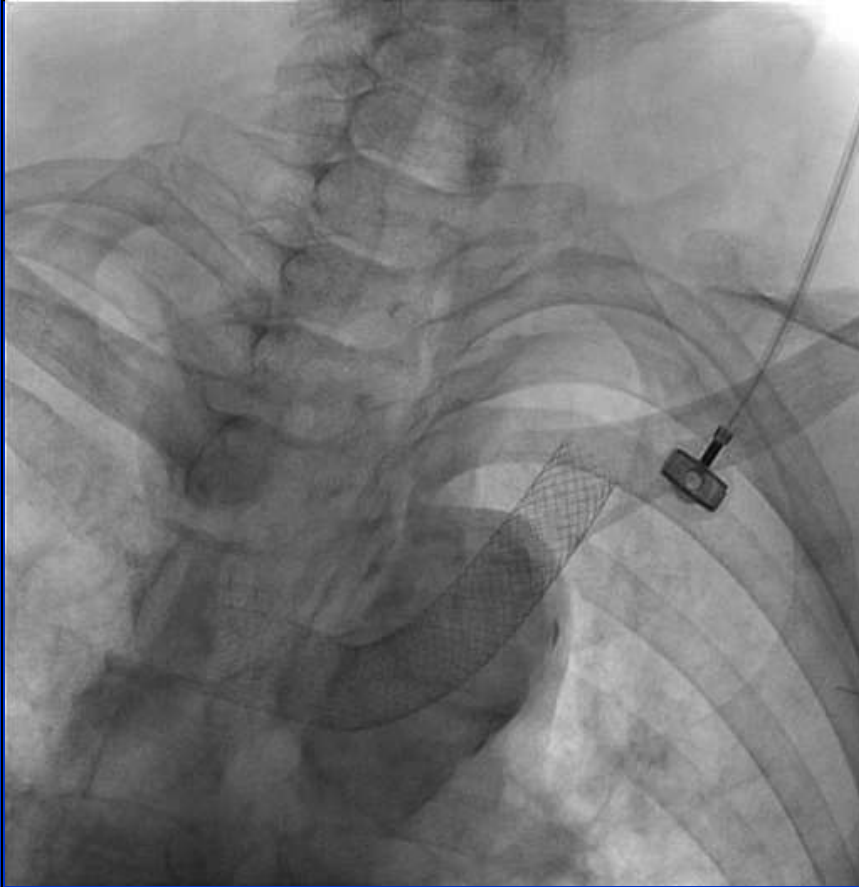
**No pressure gradient across left innominate vein
Viabahn graft stent**



2014-12 F/U Angiography (1 mo)

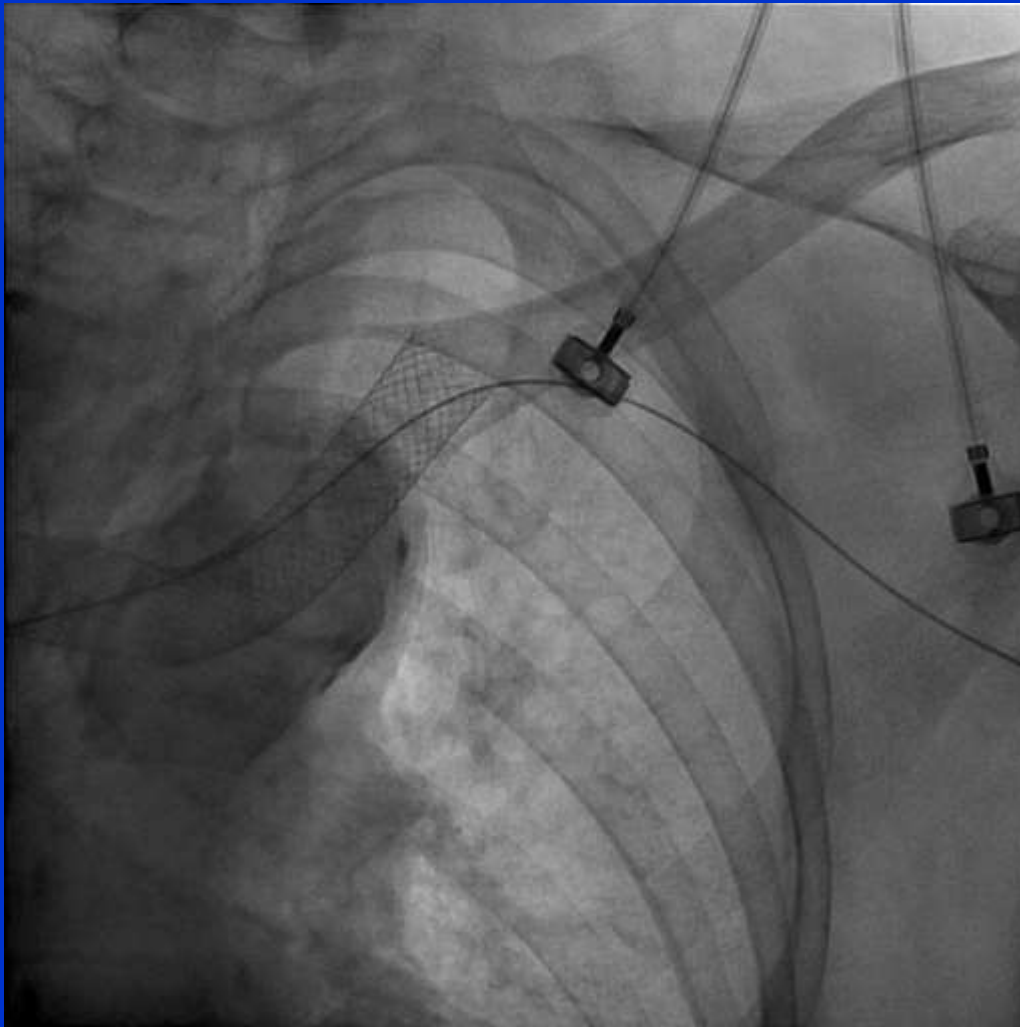


2015-3 F/U Angiography (4 mo)



Edge restenosis of Wall stent
14.0/40 mm Conquest balloon at 8 atm MUH

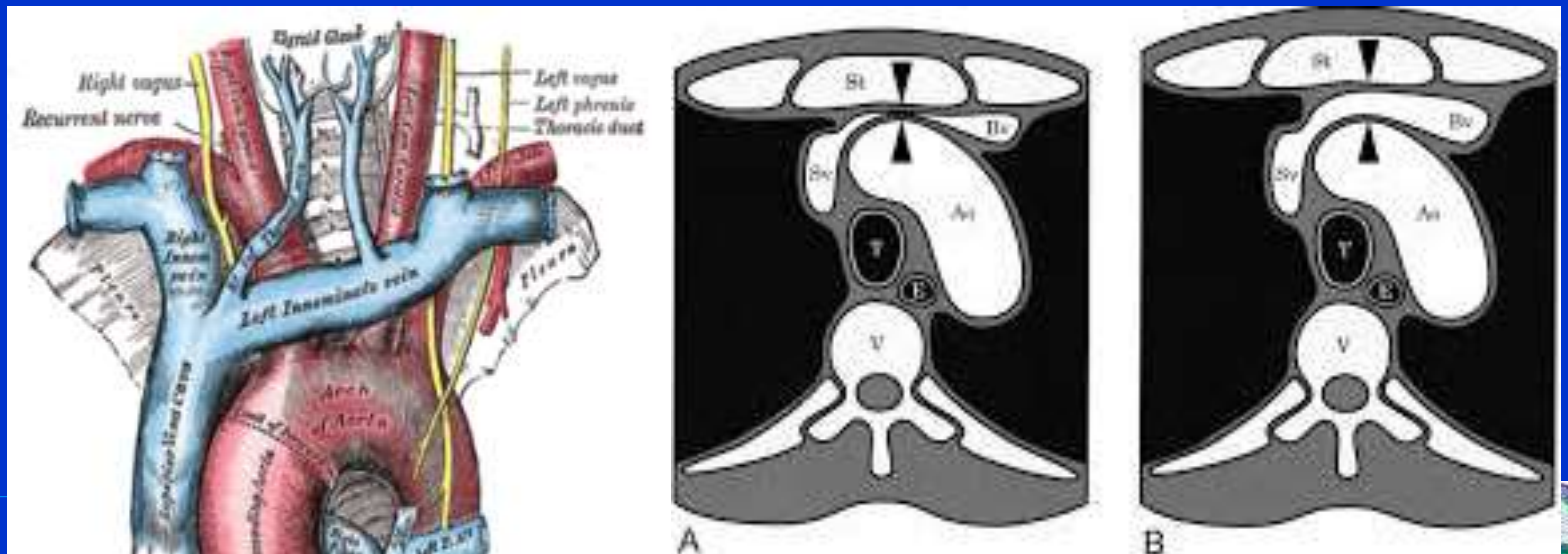




Sheath pressure decreased from 34/19 mmHg to 19/8 mmHg after PTA

Discussion

- Left innominate vein stenosis
 - Intrinsic stenosis: Hx of central catheter/pacemaker
 - External compression
- Wurtz et al., Innominate vein compression syndrome. BJS. 1989



Discussion

- For innominate vein compression, PTA alone is not enough
- PTA with stenting
 - Balloon expandable stent
 - Nitinol stent
 - Wall stent
 - Viabahn graft stent



Long-term Results of Stent-graft Placement to Treat Central Venous Stenosis and Occlusion in Hemodialysis Patients with Arteriovenous Fistulas

Robert G. Jones, Radiology Department, Queen Elizabeth Hospital Birmingham, University Hospital Birmingham NHS Trust, Edgbaston, Birmingham B15 2TH, United Kingdom

Journal of Vascular and Interventional Radiology
Volume 22, Issue 9, Pages 1240–1245, September 2011



Stent Grafts for Central Vein Stenosis

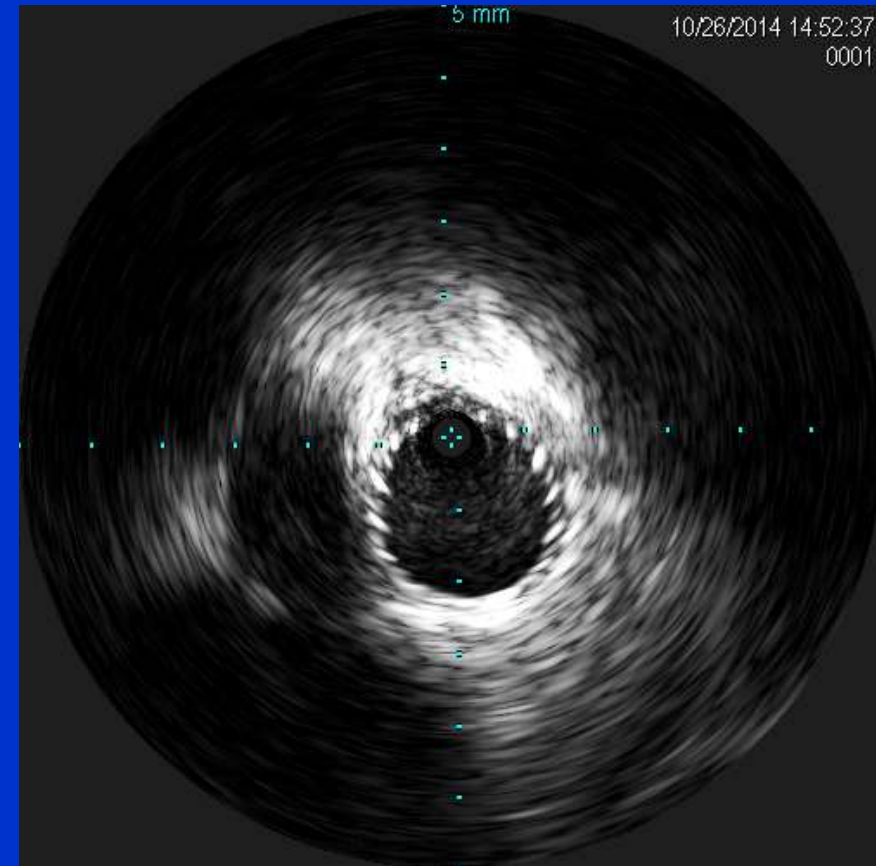
- 42 Viabahn stents in 30 patients
- Mean f/u 705 days
- Primary patency rates were **81%, 67%, and 45% at 6, 12, and 24 months**, respectively. Primary assisted patency rates were **100%, 80%, and 75% at 6, 12, and 24 months**, respectively.

Our Experience for Left Innominate Vein Stenting (China Medical University Hospital, 2012-2015)

- M:F 0:6
- All presented with left arm swelling with left arm AVF/AVG with refractory repeated PTA
- All 13x50 mm Viabahn graft stent, self paid (83000 NTD, 2594 USD, 2939429 KRW)
- One Volcano IVUS performed
- Two Chest CT performed
- Procedure success: 100%
- **No any restenosis/occlusion till now**

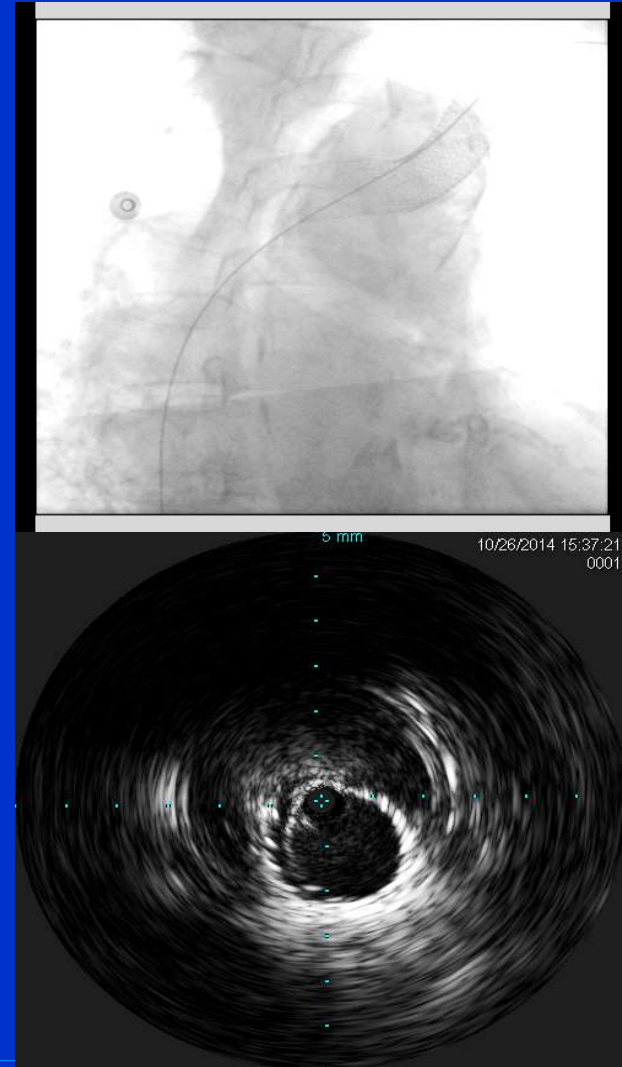
IVUS (Volcano) in Innominate Vein Compression Syndrome

- Evaluate stent size
- Accurate stent position
- Compression severity
- Expensive (43000 NTD, 1313 USD, 1522837 KRW)



IVUS (Volcano) in Innominate Vein Compression Syndrome

- IVUS can identify stent compression, when angiography is not so accurate
- However, clinical result will be good if angiography showed no residual stenosis without pressure gradient found



Conclusion

- For refractory repeated restenosis of central vein lesion, external compression should be highly suspected and CT scan can be considered
- IVUS can provide more information about innominate vein anatomy and facilitate PTA
- PTA with Viabahn graft stent for left innominate vein compression syndrome might be a cure for this disease. Large scale study is needed.



Thanks for your attention

