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Connecting The Vascular Community

## What Is Redo Fusion And How Does It Help After Failed Endovascular Complex Aortic Procedures

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## Disclosure

No, nothing to disclose

X Yes, please specify:

Company Name	Honoraria/Expenses	Consulting/Advisory Board	Funded Research	Royalties/Patent	Stock Options	Ownership/Equity Position	Employee	Other (please specify)
Terumo Aortic	X	X						
Medtronic	X	X						
Philips	X	X						

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## 2D-3D FUSION IMAGING

Registration

Pre-op CT Volume + Fluoro

Hertault, A. *Eur J Vasc Endovasc Surg* 2014;48(4): 382-390.  
Khalidi, A. *Eur J Vasc Endovasc Surg*. 2015;49(3): 255-261.

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## Aorta VR Discrepancy

Discrepancy

Stiff Guides Shaft insertion

Thorax CTA Arms Up

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## Endovascular Aortic Repair Reintervention

**EndoVascular Redo Aortic Surgery**

Wanken, Z. J., A systematic review and meta-analysis of long-term reintervention after endovascular abdominal aortic aneurysm repair. *J Vasc Surg*. 2020

Budtz-Lilly, & Resch, T. Endovascular redo aortic surgery. *J Cardiovasc Surg (Torino)* 2017

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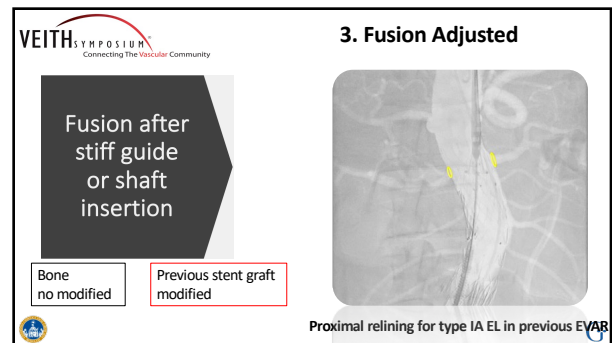
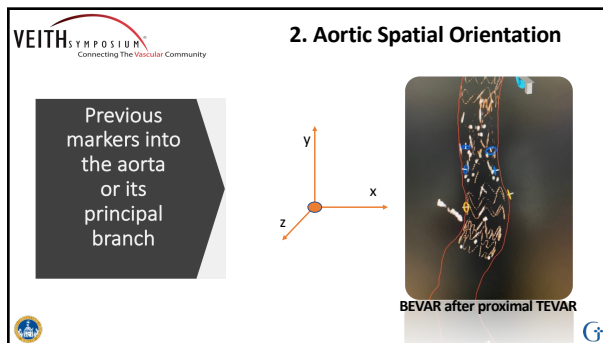
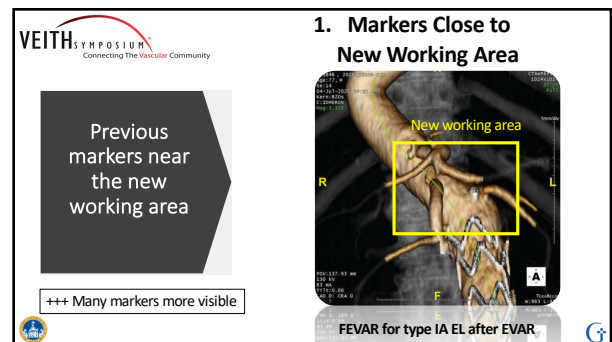
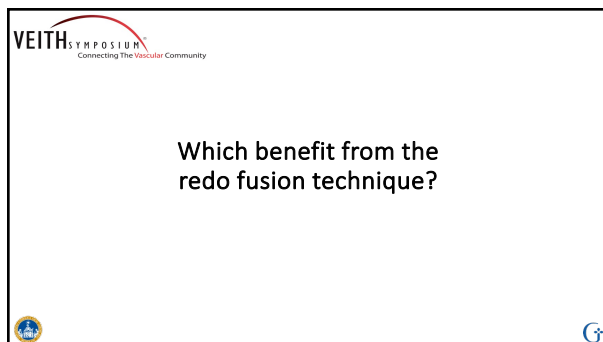
## EndoVascular Redo Aortic Surgery

- Stent graft landmarks
- Vascular Plug
- Coils
- Radiomarkers...etc.

EVAR

TEVAR

LSA Plug

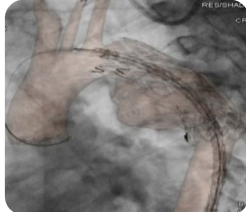


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### 4. Accuracy in tortuosity

More accurate in tortuous axis

Aortic Arch    Iliac Axis



Proximal relining for type IA EL in previous TEVAR

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### Preliminary study -28 patients

#### Accuracy

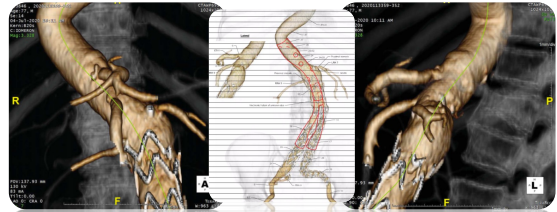
Distanza the marker # Heli Fusion a vaso target	L1 BONE	L2 REDO	p-value	IC
> 3cm	Distanza Media 5.286 mm	1.600 mm	0.0008	2.231-5.141
	SD 1.799	0.635		
	SEM 0.680	0.240		
	Numero pazienti 7	7		
≤ 3cm	Distanza Media 5.385 mm	1.215 mm	<0.0001	3.237-5
	SD 1.710	0.654		
	SEM 0.474	0.181		
	Numero pazienti 13	13		

Angolazione aortica in new writing 4mg	L1 BONE	L2 REDO	p-value	IC
< 45°	Distanza Media 4.400 mm	1.400 mm	0.0100	1.190-4.810
	SD 1.342	0.418		
	SEM 0.600	0.187		
	Numero pazienti 5	5		
≥ 45°	Distanza Media 5.800 mm	1.333 mm	<0.0001	3.705-5.229
	SD 1.568	0.733		
	SEM 0.405	0.189		
	Numero pazienti 15	15		

F. Minelli, ..., G. Tinelli Diagnostic 2023

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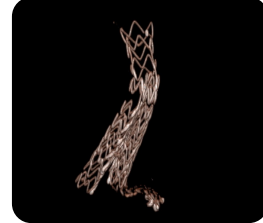
### Case #1 – FEVAR for IA EL



FEVAR 4 FEN

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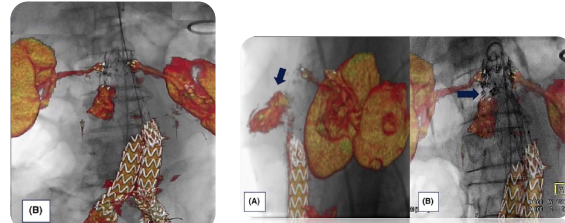
### Case #1 – FEVAR for IA EL



Previous EVAR Stent Graft    Target Vessels in Redo Fusion

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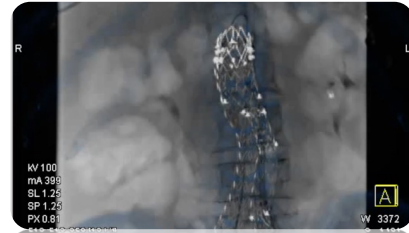
### Case #2 – Heli-FX on Redo Fusion



Tinelli G et AL. (2019). Endoanchors under 3D image fusion for a type IA endoleak after EVAR. Clin Case Rep, 7(12), 529-532.

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### Case #2 – Heli-FX on Redo Fusion



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### Case #3 – Z1 TEVAR



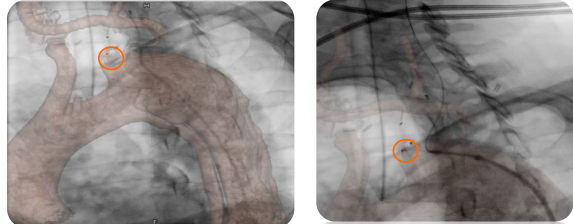
Subclavian Plug – Redo fusion

Plug in LSA VR

Target vessels in Fusion

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### Case #4 – LVA Embolization



Redo fusion on Vascular plug in LSA

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### Case #5 – Z0 TEVAR– for LCCA

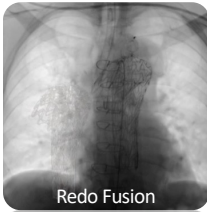


Aortic Valve Redo Fusion

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### Take Home Message

- Opportunity from previous EV treatment
- Redo Fusion is an adjunctive tool:
  - ✓ improve the volume alignment in the fusion technique
  - ✓ Less fine tuning for fusion discrepancy
  - ✓ Accurate 3D aortic orientation



Redo Fusion

