Update On Laser Fenestrated Endografts For Aortic Emergencies: Technical Tips And You're Invited!

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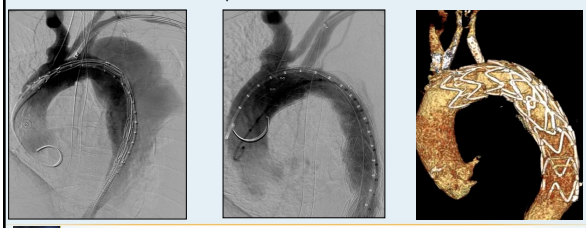
Disclosures

Consultant: Endospan, Getinge, Medtronic Inc, Penumbra, Terumo Aortic, Philips, WL Gore
Speakers' Bureau: Medtronic Inc., Penumbra, Terumo Aortic, WL Gore
Advisory Board: Endoron, Endospan, Medtronic Inc., Philips

Emergent In Situ Laser Fenestration

Zone 2 TEVAR with In Situ Laser Fenestration of the LSA
Ruptured chronic TBAD



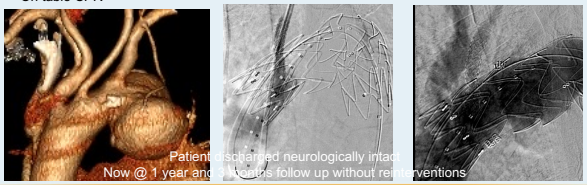
Emergent In Situ Laser Fenestration

Case Study: Ruptured Arch Aneurysm

78 year old male patient
Ruptured 8cm arch aneurysm
Hypotensive, to hybrid room
On table CPR

After Zone 1 TEVAR percutaneous retrograde laser fenestration of the LCA

Completion arch study with patent LCA fenestration and no endoleaks

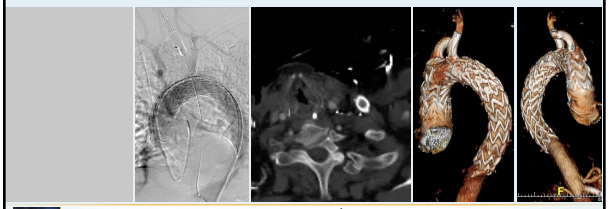


Emergent In Situ Laser Fenestration: Acute TAAD

Bilateral Carotid to Subclavian Artery Transpositions
Zone 0 TEVAR with Innominate & LSA Fenestrations

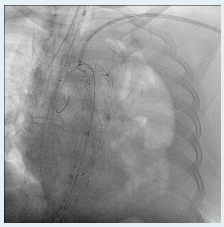
Completion Arch Study

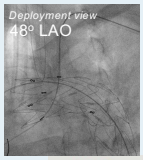
Postoperative CTA @ 1 month

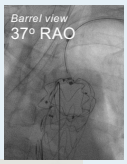


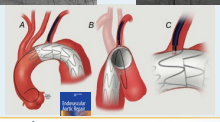
In Situ Laser Fenestration: Technical Tips

Laser Orientation



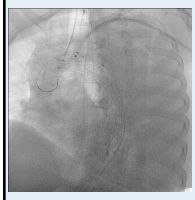






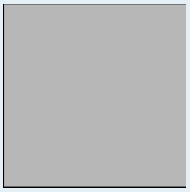
In Situ Laser Fenestration: Technical Tips

Laser Activation with 2.3 fiber at default setting



Predilation with 6x40 noncompliant balloon

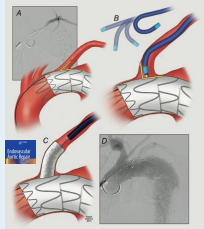
Stenting of the fenestration with balloon expandable covered stent



In Situ Laser Fenestration: Technical Tips

LCA fenestration after LSA to LCA transposition

May be facilitated by using steerable sheath to modify the acute take off angle

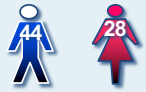


Arch In Situ Laser Fenestration:

EVMS experience: Study population

July 2009 – May 2019

N = 72 patients



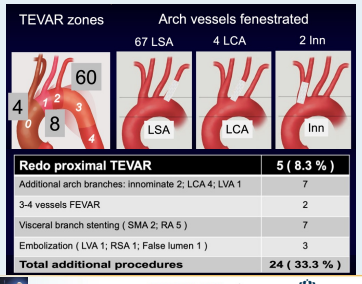
Mean Age of 63.7 years

Emergent / Urgent Procedure in 91.7 % (66 / 72)

Thoracic aortic pathologies:

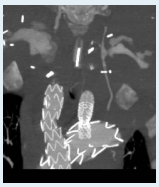
Acute TBAD or IMH:	36	50%
Chronic Dissection:	20	27.8%
Aneurysms: DTA or TAAA :	13	18.1%
PAU:	2	
BTAI:	1	
Aortic ruptures	19	26.4%

EVMS experience: Procedural Data



Redo proximal TEVAR	5 (8.3 %)
Additional arch branches: innominate 2; LCA 4; LVA 1	7
3-4 vessels FEVAR	2
Visceral branch stenting (SMA 2; RA 5)	7
Embolization (LVA 1; RSA 1; False lumen 1)	3
Total additional procedures	**24 (33.3 %)**

Zone 0 TEVAR with innominate chimney and LCA to LSA transposition and LSA in situ laser fenestration



EVMS experience: Early Outcomes

Operative Mortality = 6.9% (5/72)

3 rupture
2 acute TBAD
cause: heart 2; resp 1; stroke 2

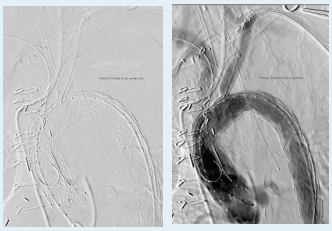
Neurologic Complications:

Stroke : 2 (2.8%)

SCI : permanent paraplegia: 3 (4.2%)
temporary paraparesis 2 (2.8 %)

Mean Length of Stay = 10.2 days

Zone 0 TEVAR with innominate chimney and LCA to LSA transposition and LSA in situ laser fenestration

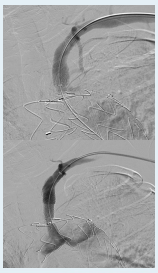


EVMS experience: Late Outcomes

Mean clinical follow up of 3.6 years (range 0–13 years)

No type III endoleak
No stent occlusion
3 stent stenosis: 1 symptomatic treated with PTA

Fenestration related reintervention rate: 5.5 % (4/72)
1 early type Ic endoleak requiring coiling
2 late type Ic endoleaks: LSA restenting @ 17 & 30 mo
1 PTA for stenosis @ 4 yrs



EVMS experience: Late Outcomes

A single-center retrospective review of 33 consecutive patients who underwent zone 2 TEVAR with LSA revascularization by RISLF done ≥10 years ago (2009-2013)

Median Clinical Follow Up	7.4 (range 0-12.6) years
Median Imaging Follow Up	7.3 (range 0-12.5) years

Late Postoperative Outcomes of Zone 2 TEVAR with LSA Revascularization by Retrograde In Situ Laser Fenestration (n=29)	
All Cause Mortality	8 (27.6%)
Aorta Related Mortality	1 (3.4%)
Fenestration Related Mortality	0 (0%)
Type Ic Endoleak	2 (6.9%)
Type IIIc Endoleak	0 (0%)
LSA Stent Patency	28 (96.6%)

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Summary

In Situ Laser Fenestration during emergent / urgent TEVAR is a simple, quick, versatile and efficient technique to revascularize arch branches

ISLF can be performed safely for all urgent thoracic aortic pathologies with low stroke rates and high technical success

ISLF of arch branches is a durable technique with very high stent patency rate and very low fenestration related endoleaks and reinterventions

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