Laser In Situ Fenestration is the best way to preserve LSA flow when its origin must be covered: Techniques, Limitations and Midterm Results

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In situ Laser Fenestration
Disclosures
Consultant: Lombard Medical, Medtronic Inc, Volcano, WL Gore
Speakers’ Bureau: Medtronic Inc.
Scientific Advisory Board: Medtronic Inc.

In situ Laser Fenestration
Other Ways

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<th>Surgical Debranching</th>
<th>Ex vivo Fenestration</th>
<th>Chimneys</th>
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<td>Too time consuming in emergent cases</td>
<td>Time consuming</td>
<td>Requires precise positioning</td>
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<tr>
<td>Add the open surgical risks</td>
<td>Requires precise positioning</td>
<td>Will compromise the seal zone and increase the risk of type I endoleak</td>
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<td>Higher combined stroke and mortality rates</td>
<td>Deployment less predictable</td>
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<td>More arch catheter manipulations</td>
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In situ Laser Fenestration
Technique

Endograft deployment with retrograde LSA Laser

Laser Orientation

Deployment view: 48° LAO

Barrel view: 37° RAO

May be facilitated by using preformed or steerable sheath
### In situ Laser Fenestration Technique

**Laser Activation**
- Guidewire into ascending aorta

**Predilation:**
- Over stiff 0.035 guidewire with 6x40 balloon

**Stenting of the fenestration**
- Retrograde angiogram with balloon expandable covered stent across the fenestration and proximal to the vertebral artery origin

**Completion aortogram**

### Initial Experience

**The arch anatomy dictates the feasibility**

- Type III arch
- Other criteria of the arch vessels

- Acute takeoff
- Offset takeoff
- Short innominate
- Low or aberrant Vertebral artery origin
- Involved by dissection
- SATs too large or dilated

22 patients with successful LSA fenestration during emergent TEVAR
- Operative mortality: 4.5% (1/22)
- No stroke
- Paraplegia: 4.5% (1/22)
- No major fenestration related complications
- No type I or III endoleak
- 100% patency of LSA stents
Mean Age of 62 yrs

From July 2009
N = 35 patients

All types of Thoracic aortic pathologies:
- Aortic Dissection, IMH, BTAI,
- Thoracic aneurysms or TAAA (including 7 ruptures)

In situ Laser Fenestration
Midterm Results

No Fenestration related Type III endoleaks
LSA fenestration related reintervention rate = 8.6%
1 early type Ic endoleak requiring coiling around LSA stent
2 late type Ic endoleaks: LSA distal restenting at 17 & 30 mo

Mean clinical follow up of 31 months (range 1–72 mo)

In situ laser fenestration can safely, easily, quickly and effectively revascularize arch branches during TEVAR

Imaging surveillance has documented the mid term durability of this innovative technique

THE BEST WAY OUT IS ALWAYS THROUGH.

Robert Frost
American poet (1874–1963)