Single Innominate Chimney grafts:  
*When is it a good choice*  
*and when is it not.*

**Disclosure**

Medtronic

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**Debranching TEVAR**

- **Zone I coverage**
  - Carotid – Carotid, Carotid – LSA bypass
  - Zone I – 39%

- **Zone II coverage**
  - Carotid – LSA bypass
  - Zone II – 35%

- **Zone 0 coverage**
  - Carotid – Carotid, Carotid – LSA bypass + Innominate chimney
  - Zone 0 – 26%

**March 2012 – October 2015**

- **25 cases:** 16 males, 9 females
- **Average age:** 71 years old (54 – 84)
- **Average TAA diameter:** 79 mm (53 – 112)
Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

Surgical technique
Single stage

C-C bypass: Retropharyngeal space
Distal LCCA to LSA bypass

Thoracic stent graft – from groin
Chimney stent graft – from R axillary a.

Deployment: 2 teams
Deploy thoracic stent graft first
Chimney device, 0.5 - 1 cm beyond the fabric

Devices

Innominate stent graft:
Iliac limb (Endurant)
10% oversize
Length: 93 mm (124 mm or x 2)

Aortic stent graft:
20-30% oversize

Patient: 62 yo male
CAD, CKD, Stroke, HTN
78 mm Arch Aneurysm – 64 mm AAA

6.4 cm AAA
11/18/2015

2

71 yo male
Symptomatic 90 mm Aneurysm (TAAA)

Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

Chimney SMA & Celiac a.

2

Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

3

70 yo male
Ruptured 95 mm Aneurysm

Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

3

Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

4

75 yo male, septic knee (salmonella)

Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

3 year PO

72 mm
from 96 mm
RESULTS

100% Technical success
Exclude aneurysm/leakage from circulation
Total in-hospital mortality – 24% (6/25)

Elective group (n = 17)
In-hospital mortality 11% (2/17)
MI, VAP

Emergency group (n = 8)
In-hospital mortality 50% (4/8)

Complications
VAP, MOF 3
MI 1
3 Proximal Endoleak (1 Ruptured)
Neck hematoma 2
Hoarseness of voice 1

No stroke, No paraplegia

25 cases: 17 elective arch aneurysms
8 Emergency cases:
6 ruptured arch aneurysms
2 Infected arch aneurysm

All 25 cases: 9 females (36%)
Ruptured cases: 3/6 females (50%)
Carotid – Carotid & Carotid – LSA bypass
TEVAR + Innominate chimney

2.5 months postop
Too short sealing zone

Need long sealing zone (≥ 30 mm long)

Gutter leak
Thoracic stent graft 15% oversize
Need more oversize, may be 30% !!!

What should be the upper limit neck diameter?

The largest thoracic device
46 mm

Neck Diameter Oversize
42 9.50%
41 12%
40 15%
39 18%
38 21%
37 24%
36 28%
35 31%
34 35%

CONCLUSIONS

Chimney innominate artery + TEVAR is a GOOD option for zone 0 landing. (Not perfect)

Need long sealing zone (≥ 30 mm)
Need more oversize Thoracic stent graft (>30%)

Proximal neck should be < 36 mm (or <38 mm)

Other alternatives: Open surgery, branched-device, Aorto-carotid
Thank you