FURTHER EXPERIENCE WITH LONGER FOLLOW-UP ON ARCH CHIMNEY: WHEN DO THEY WORK AND PITFALLS TO AVOID SO THEY DO NOT FAIL

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Disclosure
Speaker name: NICOLA MANGIALARDI
I have the following potential conflicts of interest to report:
- Consulting GORE, CORDIS, TRIVASCULAR
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)
I do not have any potential conflict of interest

DO THEY WORK?

Born as a rescue
..unintended coverage of aortic arch branch

OUR EXPERIENCE
1. 06/2002 overstenting of the LCCA
2. 12/2002 overstenting of the IA

OVERTSENTING INNOMINATE ARTERY

DEATH AT 12 YRS

DO THEY WORK?

Chimney Technique for Aortic Arch Pathologies: An 11-Year Single-Center Experience
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- TECHNICAL SUCCESS 36/36 100%
- MORTALITY 3 8.3%
- PROCEDURE REL COMPLICATIONS 4 11.1%
  - MINOR STROKE (2 RUPT-1 ELECT) 3
  - PARAPARESIS 1
  - EARLY TYPE I EL 0

J Endovasc Ther. 2014;21:312-322
DO THEY WORK?

364 ARCH CHIMNEY
MORTALITY 4%
EARLY TYPE I EL 11%
(15 OBSERVED: 7 SELF SEALED – 17 TREATED: 14 EV+ 3 CONVERSION)
PROCEDURE REL COMPLICATIONS 8%
CH-G PATENCY (17 MTHS) 97-99%
LATE TYPE I EL (>30 DAYS) 4%

“TECHNICAL RULES”
• GRAFT CHOICE (MAIN/PARALLEL)
• VESS TAKE-OFF \rightarrow CHIMNEY/PERISCOPE/SANDWICH
• AVOID GUTTERS
  – OVERSIZING
  – CHIMNEY LENGTH OVERLAPPING
• CHIMNEY PATENCY
  – CONFORME/REINFORCE
• SAFE LANDING ZONE (ANGLES/AORTIC WALL)
• FOLLOW UP

MAIN GRAFT CHOICE
THOR/ S-G radial force

PARALLEL GRAFT CHOICE
flexibility $\approx$ radial force

SURGICAL DEBRANCHING 18 50%
– RCCA-LCCA-LSA 6
– RCCA-LCCA 2
– LCCA-LSA 10

LENIGHT/DIAMETER & MATERIAL FATIGUE
DO NOT ESITATE TO REINFORCE THE PARALLEL GRAFT!!

DO NOT ESITATE TO REINFORCE THE PARALLEL GRAFT!!

CHIMNEY ORIENTATION

VESSELS TAKE-OFF

REDUCE INTERACTION IN THE ASCENDING

CHIMNEY GRAFT

(OUR EXPERIENCE)

– VIABAHN 28 (15 REINF)
– GORE LEG 3 (1 REINF)
– ADVANTA 3 (REINF)
– WALLSTENT 2
– BIOTRONIK 2
– PROTEGE’ 4
– VISI-PRO 1

GUTTERS

LATE TYPE I EL

“GUTTERS”

minor
major

Aortic graft

Oversizing options

1. 20%
2. 30%
3. 30% for 2 vessels
   40% for 3 vessels
4. $0.72 \sqrt{a^2 + b^2}$
Aortic graft
Oversizing options

\[ 4.072 \sqrt{a^2 + b^2} \] (Lachat)

Oversizing 25-35%
for double chimney
Lower for larger diameter

OSIRIX EVALUATION

GUTTERS AREA

Oversizing & OSIRIX

GUTTERS
CHIMNEY OVERLAPPING → HOW LONG?

- Longer chimney → reduce EL (gutters)

- Bad landing zone → curvature/graft LZ

RETROGRADE TYPE A
Day 4 sudden death

FOLLOW-UP

- TYPE I EL
- CHIMNEY GRAFT COMPLICATION
FOLLOW-UP

**TYPE I ENDOLEAK 6 (18.2%)**
MEAN F-UP 39.6 MTHS (MIN 1-144)

- Ia 5
  - Sac enlargement 2 (IA 6 mths - LSA 10 mths)
    (2 embolization + 1 ascending replacement)
  - w/out sac enlargement 3 (LCCA)(IA)(LCCA+LSA)
    (91 yrs / lung K → death / COPD & tracheostomy)

- Ib 1 (47 mths)
  (distal extension)

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**FOLLOW-UP**

**CHIMNEY GRAFT COMPLIC. 4 (12.1%)**
MEAN F-UP 39.6 MTHS (MIN 1-144)

- LSA ASYMPT OCCL 1 (11 MTHS)
- LCCA ASYMPT OCCL 1 (22 MTHS)
  (TREATED → BYPASS)
- STENT FRACTURE (ASYMPT) 1 (2 MTHS)
- VIABAHN STENOSIS 1 (24 MTHS)

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**VIABAHN STENOSIS**
CHIMNEYS

- OFF THE SHELF
- FEASIBLE
- SAFE
- DURABLE
CHIMNEY ROLE
✓ RESCUE
✓ EMERGENCY
✓ HIGH RISK PATIENTS
✓ CUSTOM SG LIMITATION