Arch hybrid procedures: are they effective and durable?

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DISCLOSURES

- Medtronic: Consultancy, Speakers fees, travel and conference fees
- Orzone: Institutional level capital funding and training fees
- Bolton Medical: Consultancy, speakers fees, travel and conference fees
- Gore: Travel and conference fees

TAAs involving the arch

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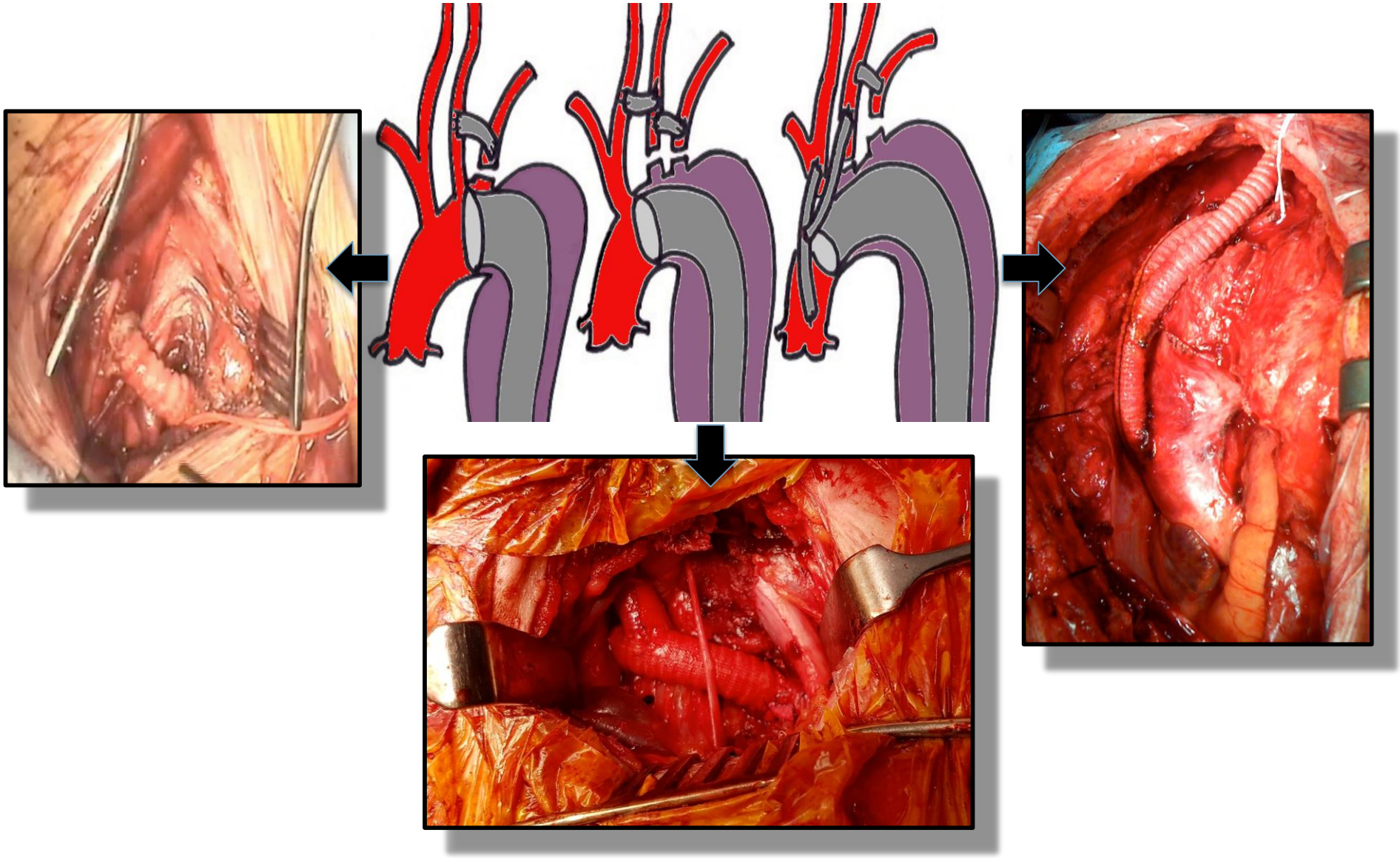
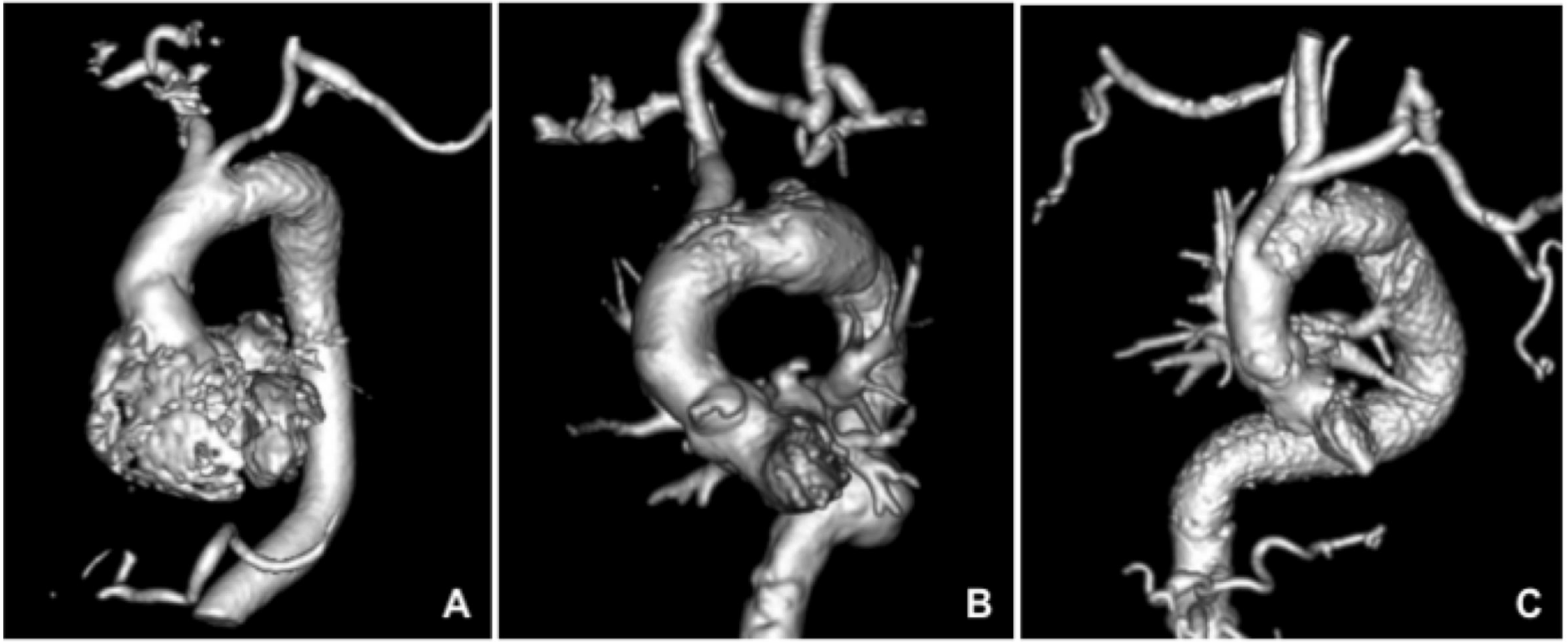
ARCH HYBRID SURGERY

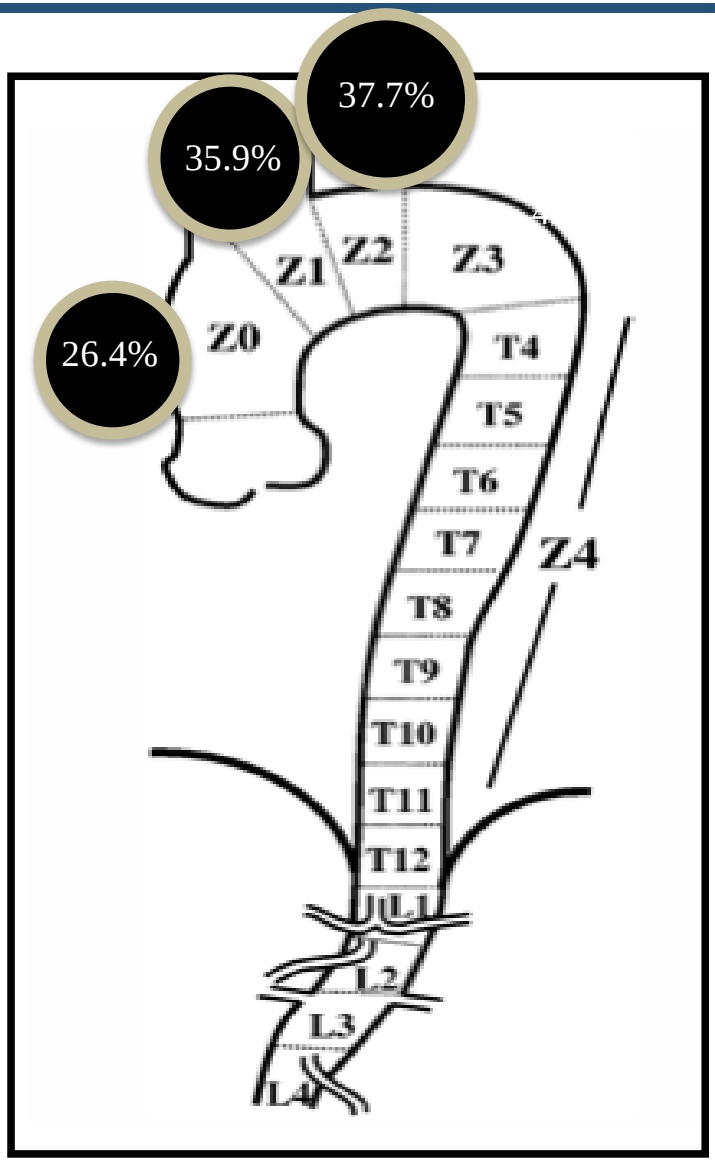


ARCH HYBRID PROCEDURES



IMPERIAL EXPERIENCE

Variable (N=55)		
	Median age	67 (38-88)
	Male sex	36 (65.5%)
ASA Grade	1	0
	2	7 (12.8%)
	3	35 (63.6%)
	4	13 (23.6%)
	Renal impairment (eGFR <60ml/min/1.73m^2)	14 (25.5%)
	Previous aortic repair/surgery	18 (32.7%)
	Connective tissue disorder	3 (5.5%)
	Emergency (<24hrs from presentation)	7 (12.7%)
	Symptomatic	28 (51.0%)
Aortic Pathology	Aortic aneurysm	40 (72.7%)
	Acute Type B dissection	10 (18.2%)
	Acute Type A dissection	1 (1.8%)
	Other	4 (7.3%)
	Mean number stents	2.5 (1-9)
	Spinal drain	40 (72.7%)
Ishimaru landing zone (N=53)	0	14 (26.4%)
	1	19 (35.9%%)
	2	20 (37.7%)

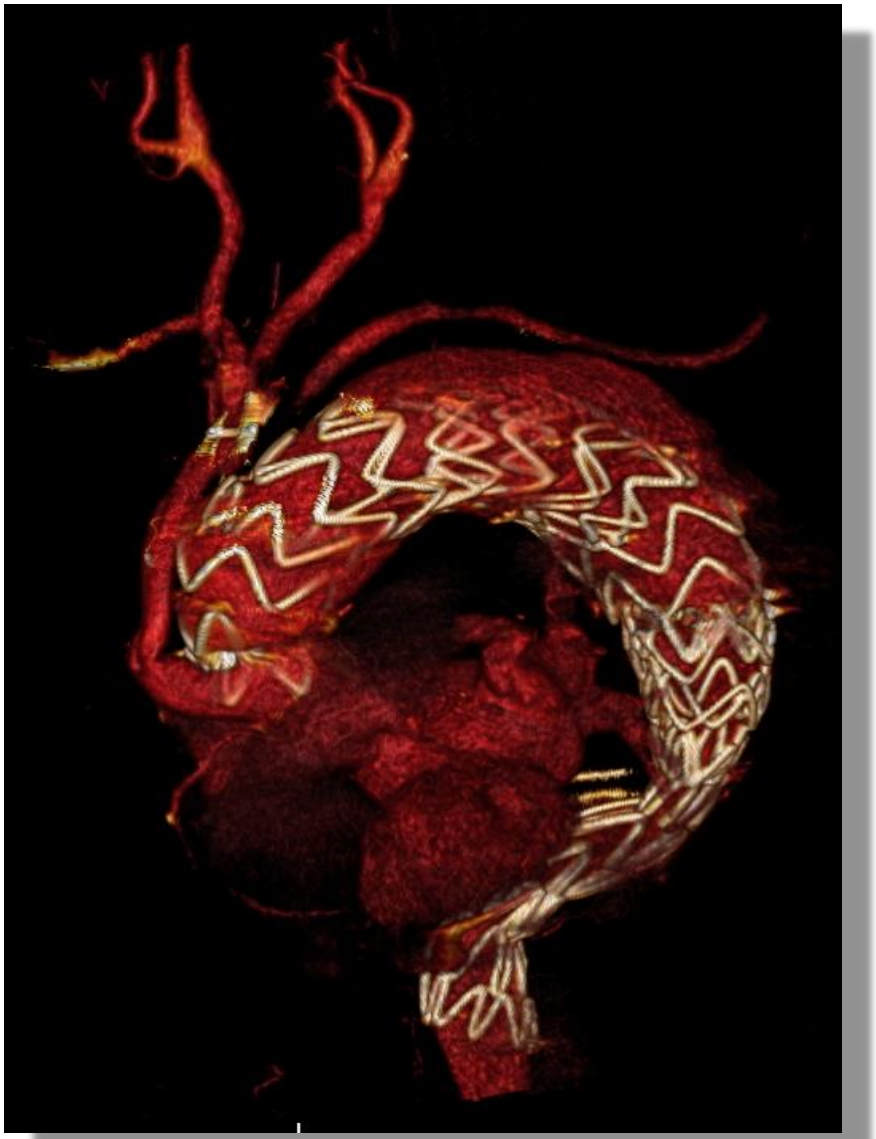


IMPERIAL EXPERIENCE: PROCEDURAL

- 32/55 (58.2%) performed as single stage procedures
- 2.52 (1-9) aortic stents/patient
- 40/55 (72.7%) spinal drain

- Primary technical success, was achieved in 52/55 (94.5%) of cases
  - Aneurysm rupture between stages
  - Stent graft deployment failure (access)
  - Type 1a

IMPERIAL EXPERIENCE: RESULTS

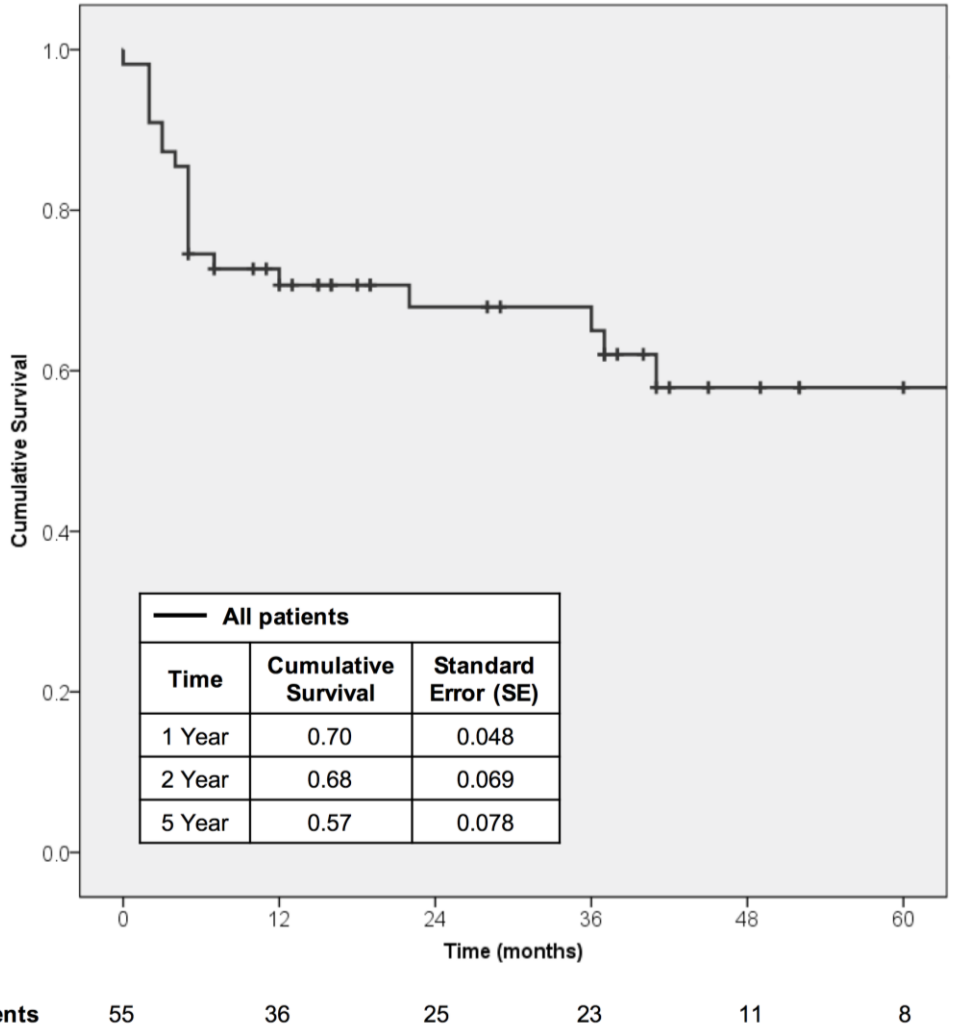


- Mortality (30D) 3.6% (2/55).
  - Elective 2.1% (1/48)
  - Emergency 14.3% (1/7)
- In Hospital Mortality 9.1% (5/55)
- 8 complications related to extra-anatomical bypass grafts
- 4 Further interventions

IMPERIAL EXPERIENCE: RESULTS

- Stroke rate
  - 6/48 elective/urgent
  - 2/7 emergency
- Early endoleak rate
  - 1a – treated with chimney and extension
  - 1b – treated with extension
  - Two type 2, planned subclavian occlusion
  - Two type 2, under surveillance

FIVE YEAR SURVIVAL



All patients

Time	Cumulative Survival	Standard Error (SE)
1 Year	0.70	0.048
2 Year	0.68	0.069
5 Year	0.57	0.078

Overall mean follow-up

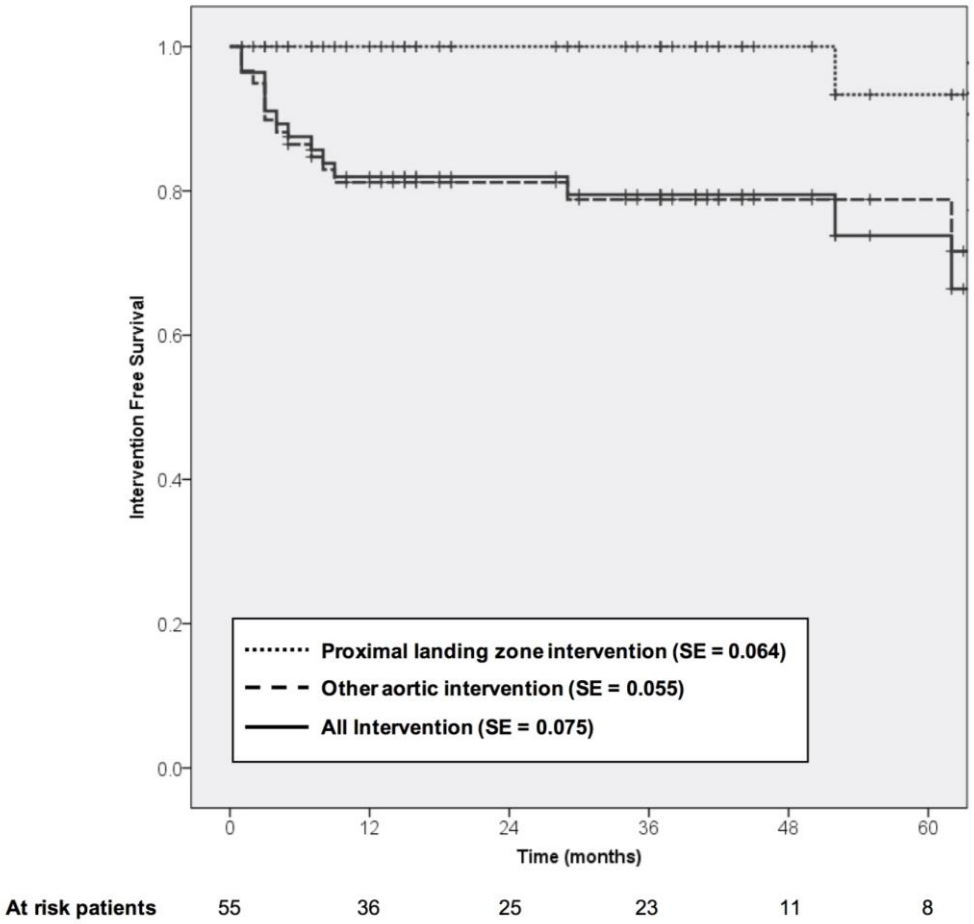
- 74.6 months (95% CI 57.5-91.7).

Cumulative survival

- 70% at 1 year
- 68% at 2 years
- 57% at 3 years.

FIVE YEAR SURVIVAL

Cumulative re-intervention free survival comparing proximal landing zone vs. other re-intervention vs. all aortic re-intervention



Bypass patency rate of 98.7% (78/79).

Long term reintervention

2 type 1a endoleaks

6 type 1b endoleaks

6 type 2 endoleaks

2 type 3 endoleaks

SCALLOPED TECHNOLOGY

Endovascular treatment of thoracic aortic aneurysms with a short proximal landing zone using scalloped endografts

Ali Alsafi, MBBS, BSc (Hons),[a] Colin D. Bicknell, MD, FRCS,[b,c] Nung Rudarakanchana, PhD, MRCS,[b,c] Elika Kashef, FRCR, MRCS,[a] Richard G. Gibbs, MD, FRCS,[b,c] Nicholas J. Cheshire, MD, FRCS,[b,c] Michael P. Jenkins, BSc, MS, FRCS, FRCS (Gen Surg), FEBVS,[b,c] and Mohamad Hamady, FRCR, EBIR,[a,b,c]
London, United Kingdom

ENDOVASCULAR APPROACHES

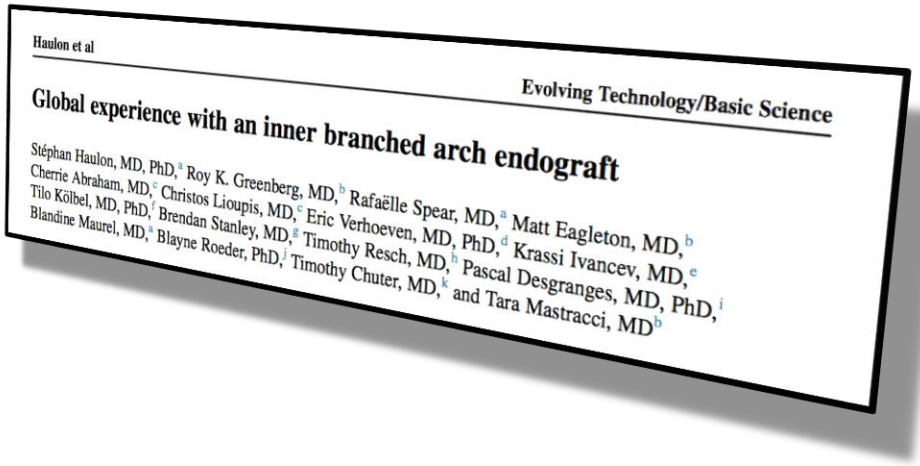
- Bolton double arch branch experience
  - Growing
  - Technical success
  - One type A dissection and one CVA
  - No re-intervention in the short term

- Other devices on the markets all with short term follow up

ENDOVASCULAR APPROACHES

COOK inner branched device
(38 patients)

- Early mortality and neurologic events 17.9% after learning curve


Haulon et al

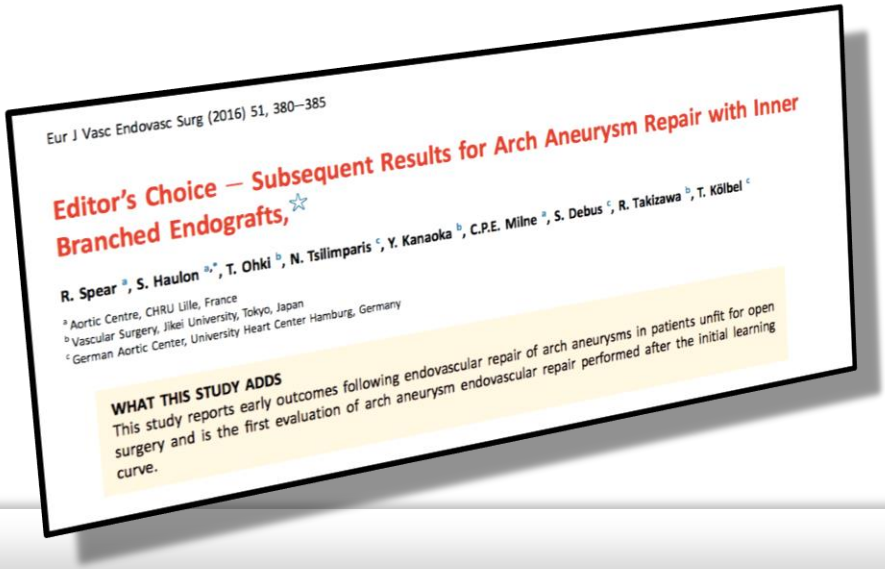
Evolving Technology/Basic Science

Global experience with an inner branched arch endograft

Stéphan Haulon, MD, PhD,[a] Roy K. Greenberg, MD,[b] Rafaëlle Spear, MD,[a] Matt Eagleton, MD,[b] Cherrie Abraham, MD,[c] Christos Lioupis, MD,[c] Eric Verhoeven, MD, PhD,[d] Krassi Ivancev, MD,[e] Tilo Kölbel, MD, PhD,[f] Brendan Stanley, MD,[g] Timothy Resch, MD,[h] Pascal Desgranges, MD, PhD,[i] Blandine Maurel, MD,[a] Blayne Roeder, PhD,[j] Timothy Chuter, MD,[k] and Tara Mastracci, MD[b]

12 month follow up for 33 survivors

- Further 12.1% mortality, 1 stroke
- Endoleaks in 9.1%, only one type 1
- 1 branch obstruction, 1 open conversion


Eur J Vasc Endovasc Surg (2016) 51, 380–385

Editor's Choice — Subsequent Results for Arch Aneurysm Repair with Inner Branched Endografts,☆

R. Spear [a], S. Haulon [a,*], T. Ohki [b], N. Tsilimparis [c], Y. Kanaoka [b], C.P.E. Milne [a], S. Debus [c], R. Takizawa [b], T. Kölbel [c]

[a] Aortic Centre, CHRU Lille, France
[b] Vascular Surgery, Jikei University, Tokyo, Japan
[c] German Aortic Center, University Heart Center Hamburg, Germany

WHAT THIS STUDY ADDS

This study reports early outcomes following endovascular repair of arch aneurysms in patients unfit for open surgery and is the first evaluation of arch aneurysm endovascular repair performed after the initial learning curve.

Subsequent series

- No death at 30 days
- Major stroke 7.4%, minor 3.7%
- Early intervention 14.8%

- One death and two re-interventions over a year

CONCLUSIONS

The hybrid technique has been criticized for disappointing results in the short term

- Acceptable mortality and morbidity in the short term in elective patients
- Long term re-intervention rate excellent

A totally endovascular approach is promising

- Short term follow up – acceptable complication rate and re-intervention rate
- Stroke for total arch replacements remains an issue

These data are a benchmark for totally endovascular repair to improve on

- In the short term we need to understand the results in those less anatomically suitable for arch branch devices and with disease in arch
- In the long term we need to understand the results over extended follow up