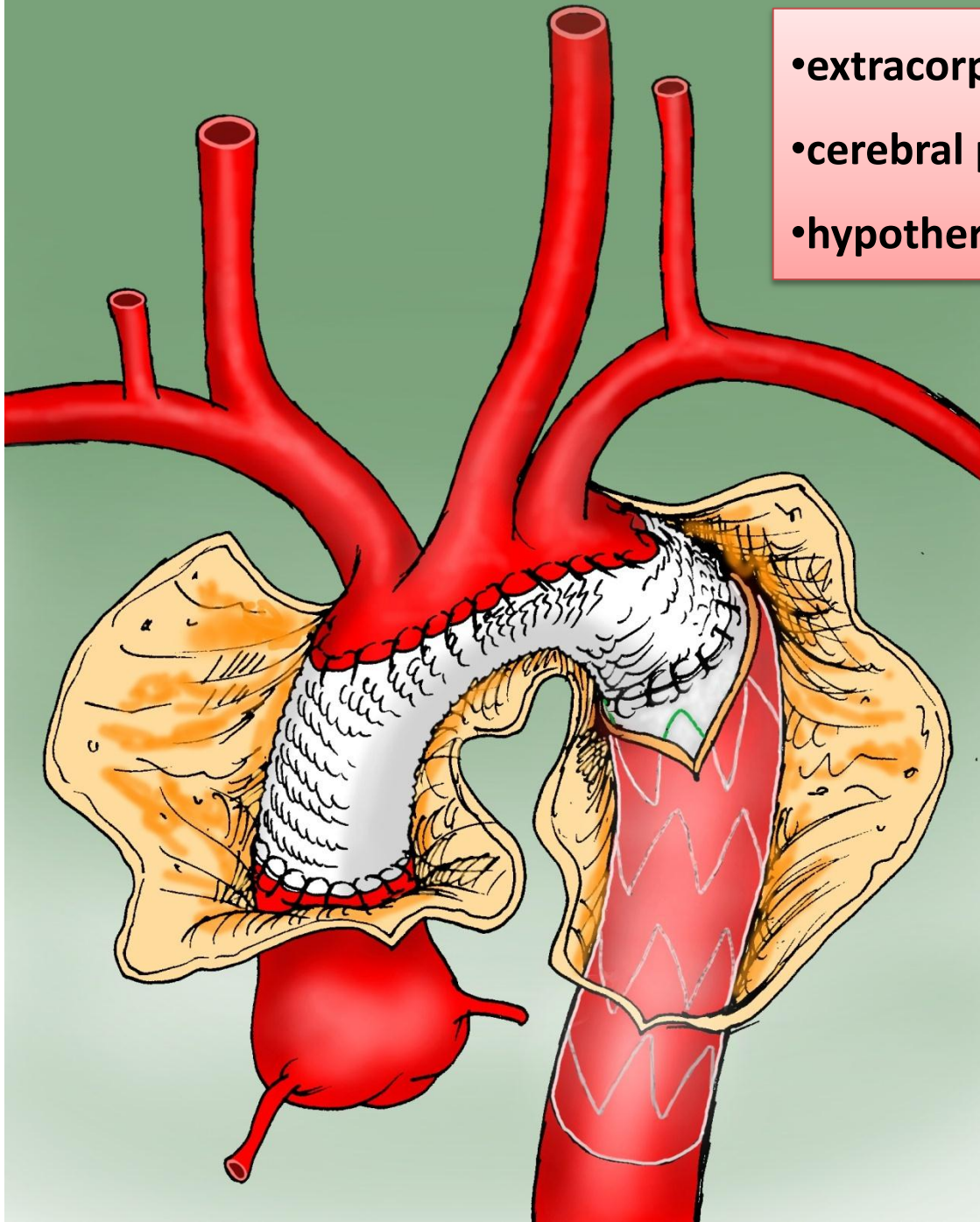


Debranching for type B dissection and aneurysms: initial experience and lessons

Cochennec F, Allaire E, Majewski M, Becquemin JP

*Henri Mondor Hospital
University Paris XII , Creteil France*

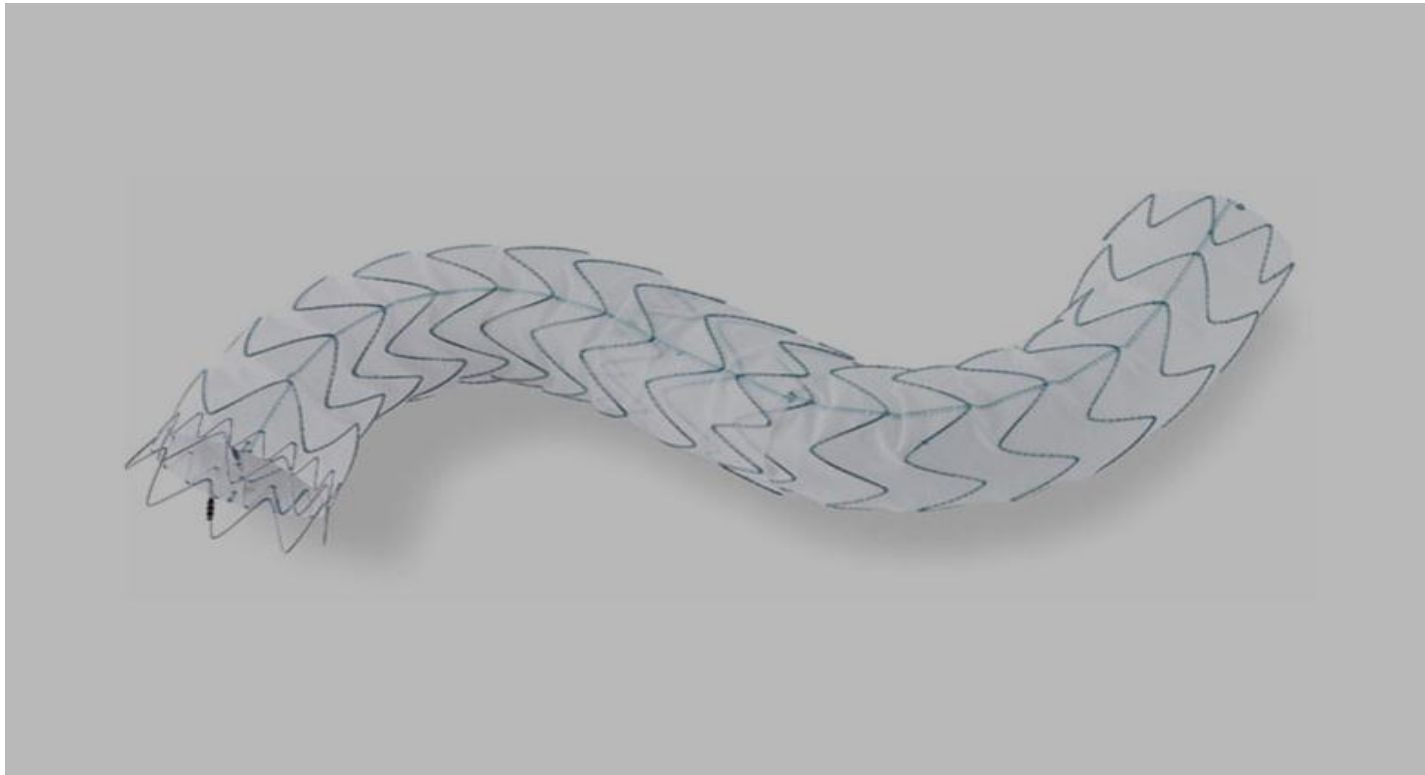


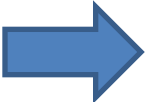
- extracorporeal circulation
- cerebral perfusion
- hypothermic circulatory arrest

Open repair : literature review

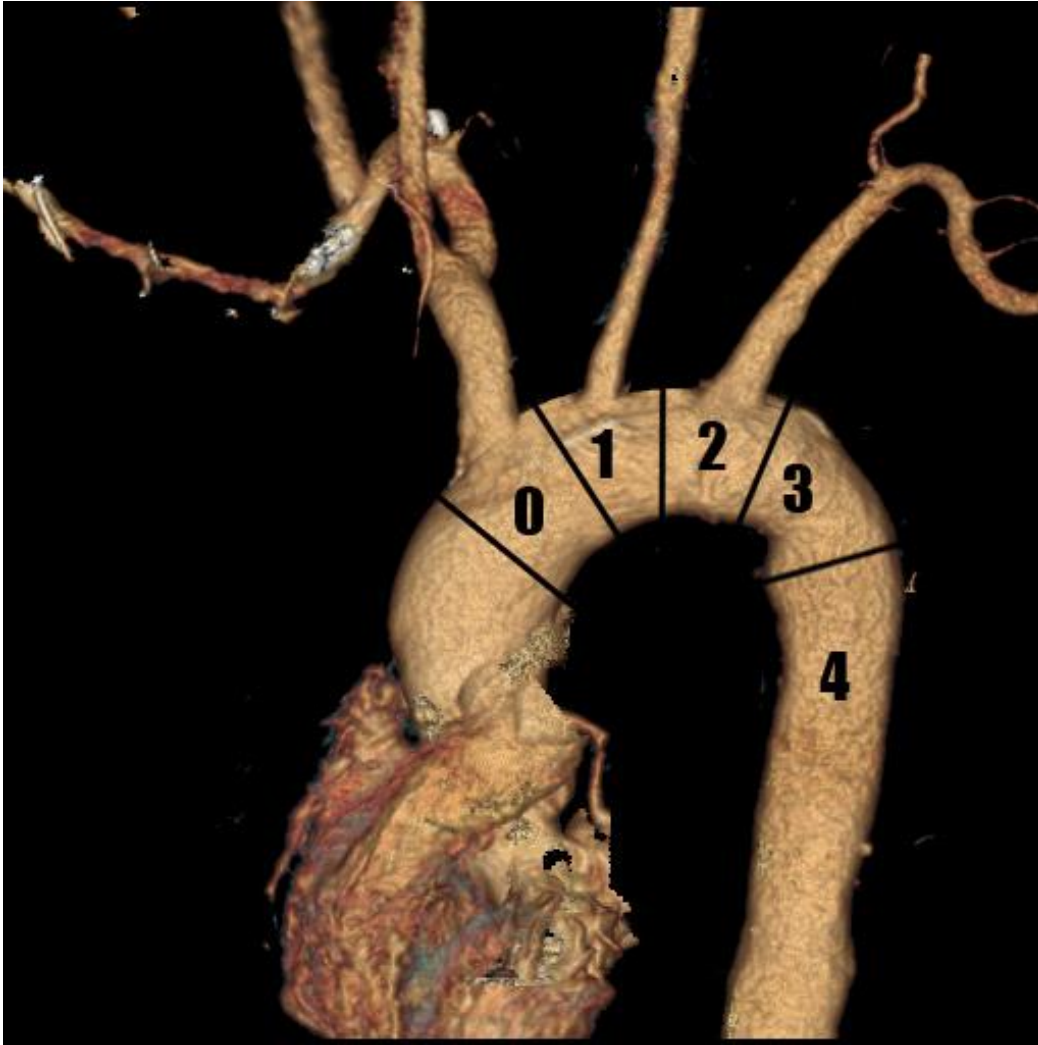
Author	Numbers of patients	Death		Stroke		Late survival
		Nb	(%)	Nb	(%)	(%)
Okita, 1999 ²	246	61	25.6 %	27.6		
Jacobs, 2001 ³	50	6	12 %			
Kikuchi, 2002 ⁴	60	2				
Matsuda 2002 ⁵	101					
Nakai, 2002 ⁶						52 %
						29 %
				8.9	14.4	88.7 %
			21 %	6.02	14	
		7	6.6 %	7.9	6.6	
U	103	21	21 %	19.6	19	83 %
						67 %
Shimazaki, 2004 ¹¹	39	3	7.5 %	2.9	7.5	
Strauch, 2004 ¹²	150	2.	14 %	30	20	
Total	1083	173	16 %	123	11 %	

Death : 7 to 25 %
Stroke : 4 to 20 %



- 
- Hybrid arch repair: Debranching+Stent graft
 - Chimney technique
 - Branched/fenestrated grafts
 - In situ fenestrations

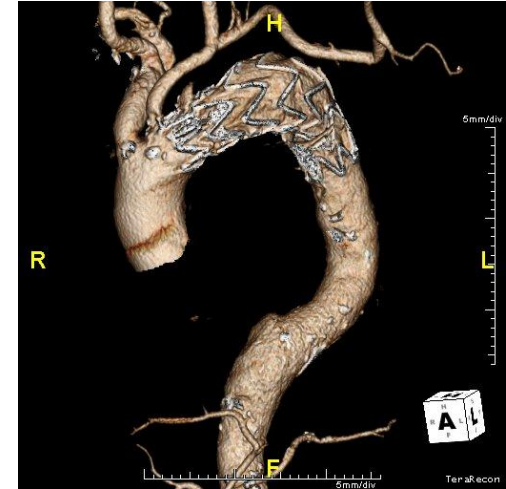
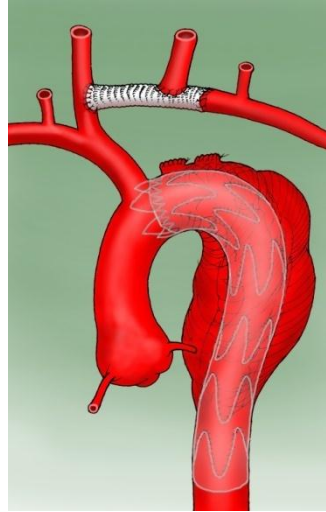
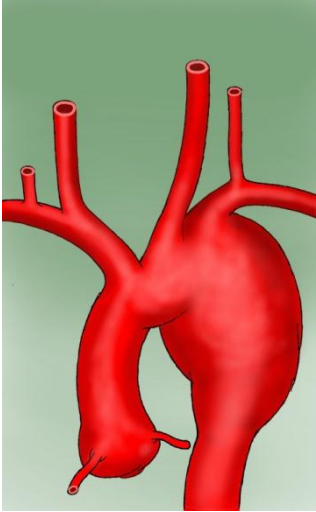
Hybrid repair



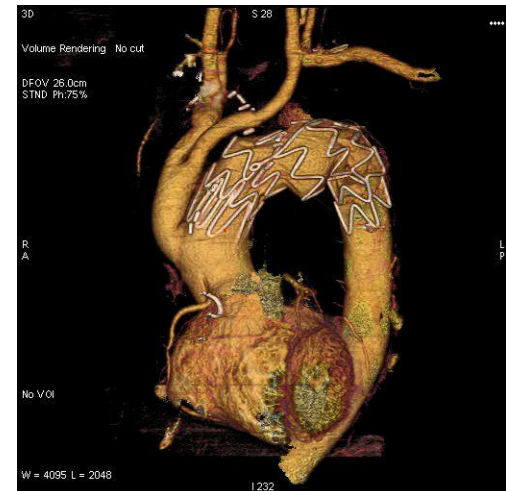
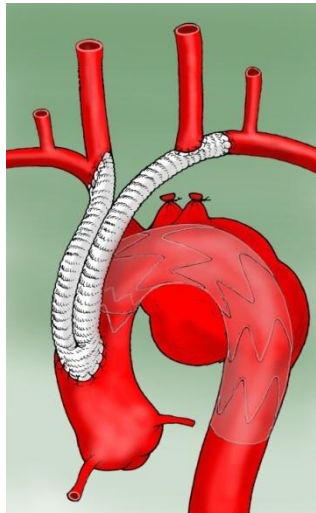
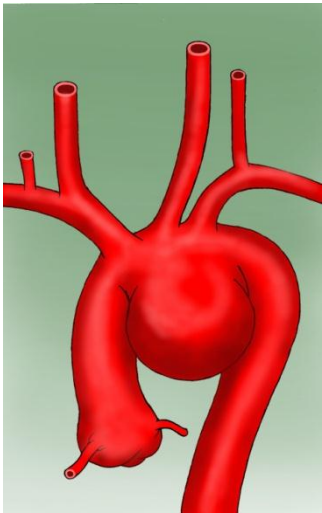
Ishimaru classification



Zone 1



Zone 0



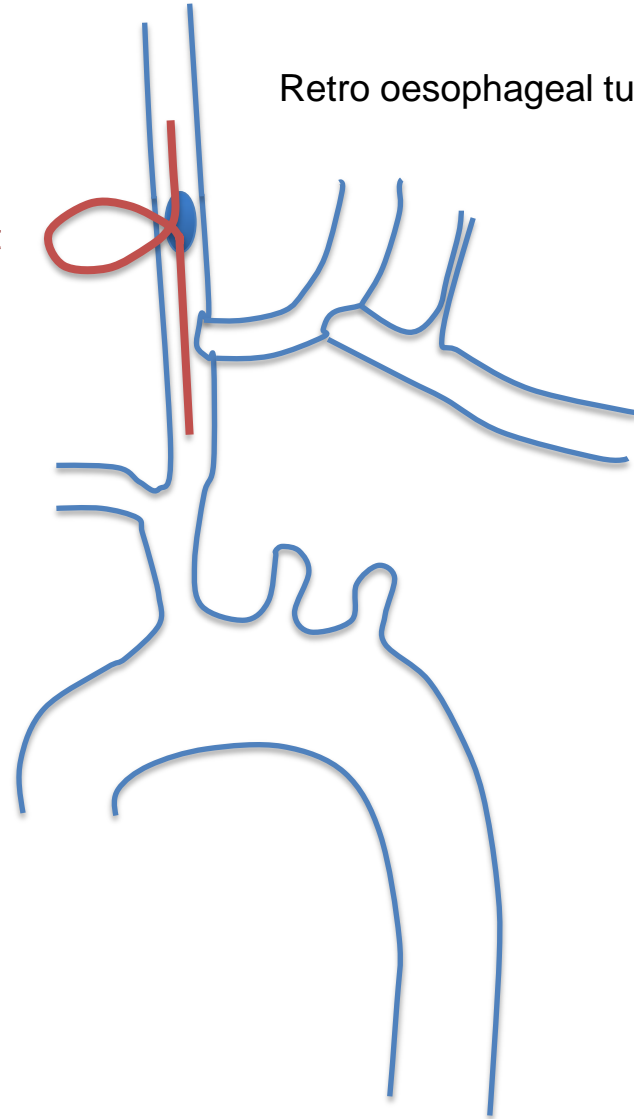
Left CCA to right CCA transposition
+
Left SCA to left CCA transposition



No prosthetic graft

Carotid shunt

Retro oesophageal tunnel



Preop

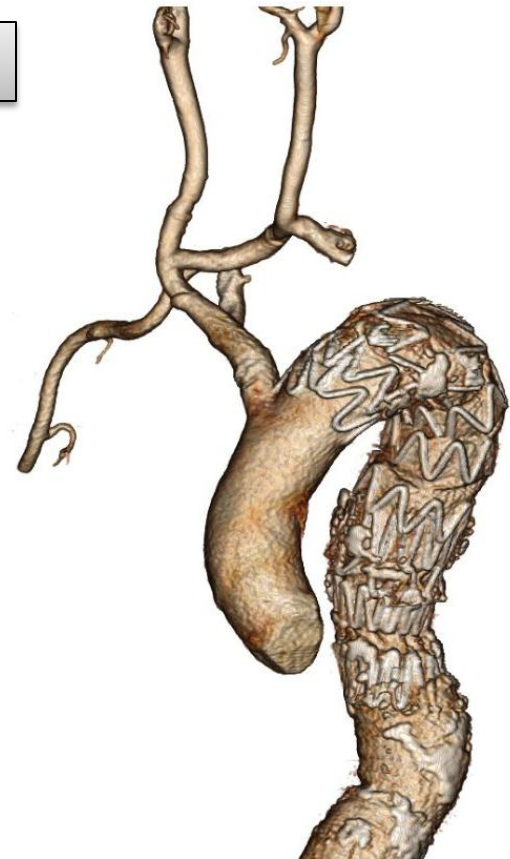
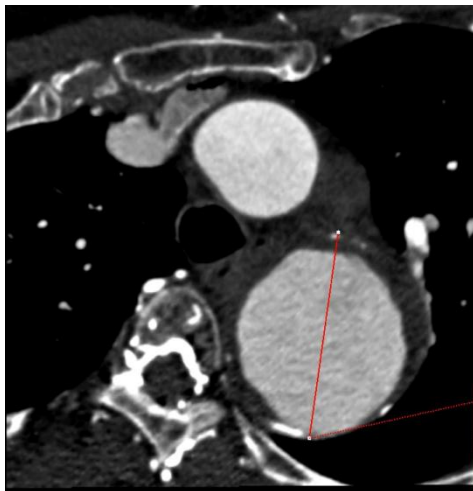


Postop

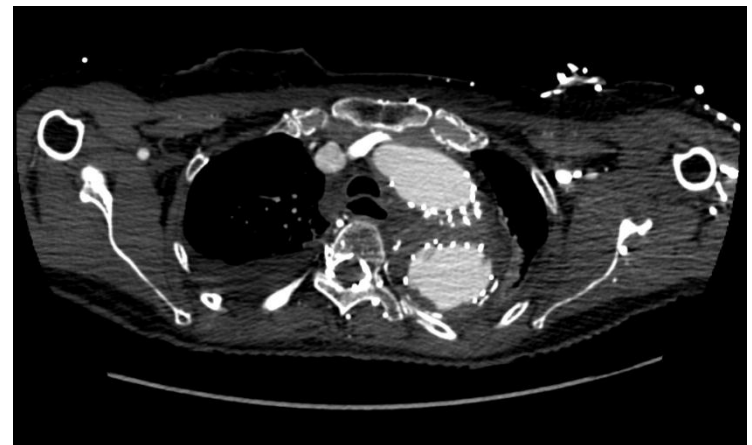




Preop



Postop



Literature review of ZONE 0 and 1 Debranching

G.A. Antoniou , EJVES 2010, N=195

Author/year	Technical success	Perioperative mortality	Perioperative morbidity ^a	Stroke rate	Spinal cord ischaemia
Weigang et al. (2009) ²⁵	26/26 (100%)	4/26 (15%)	5/26 (19%)	1/26 (4%)	0/26 (0%)

Mortality : 9%

Stroke : 7 %

Endoleak : 9%

Schumacher et al. (2006) ¹⁷	21/25 (84%)	5/25 (20%)	6/25 (24%)	1/25 (4%)	0/25 (0%)
Kieffer et al. (2006) ³¹	11/16 (69%)	4/16 (25%)	1/16 (6%)	4/16 (25%)	0/16 (0%)
Carrel et al. (2005) ³²	5/6 (83%)	0/6 (0%)	0/6 (0%)	0/6 (0%)	0/6 (0%)
(2004) ³³					
Total	167/195 (86%)	18/195 (9%)	27/195 (14%)	14/195 (7%)	1/195 (0.5%)

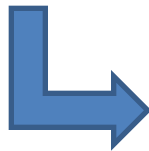
hybrid repair : unsolved problems

- Navigation in the arch
- Debranching



Strokes

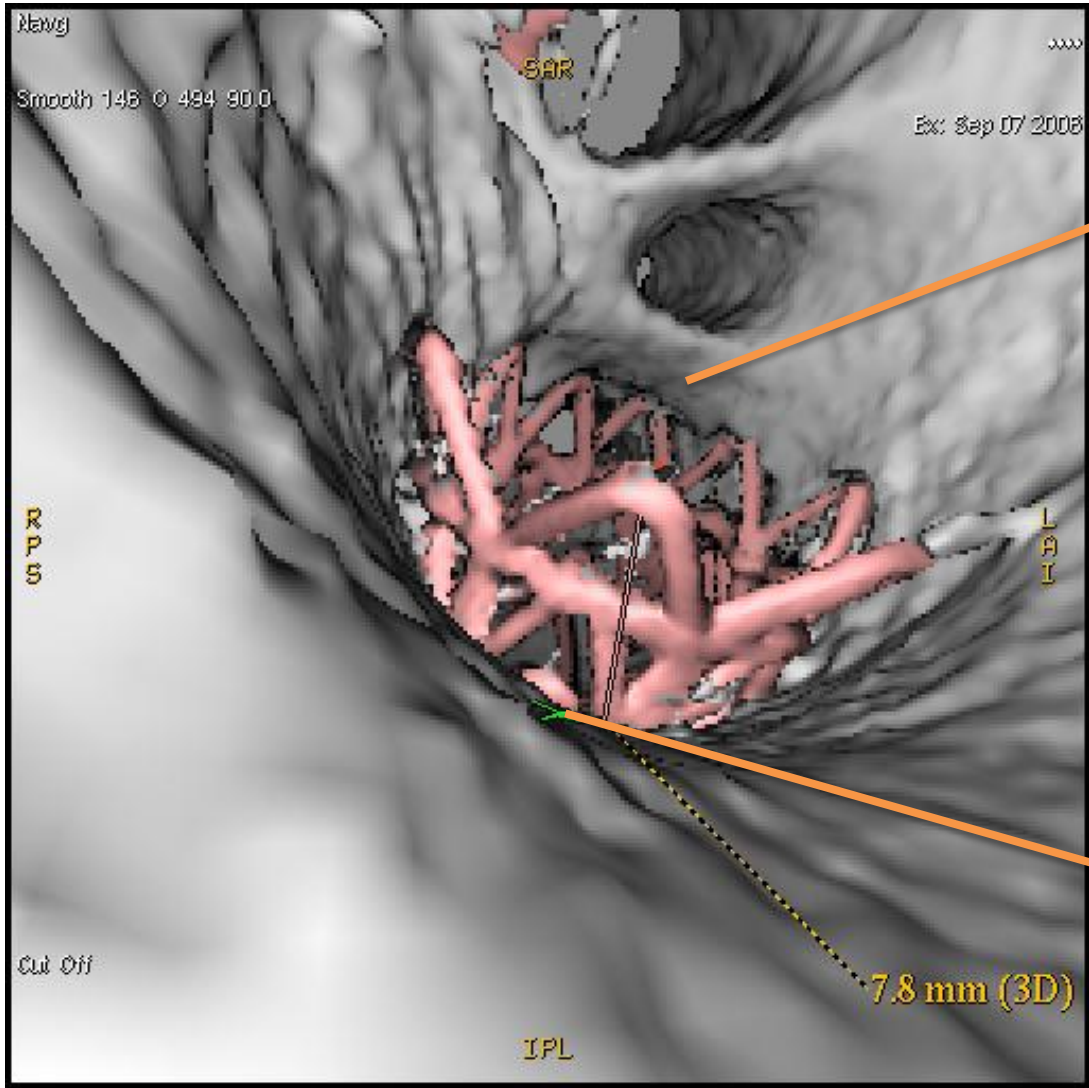
- Lack of apposition of current stent-grafts



Endoleak

Retrograde dissection

Lack of apposition



Excessive strain

➡ Risk of perforation

➡ Risk of retrograde dissection

➡ Type I Endoleak

What about debranching for type B dissections involving the aortic arch???

Total vs hemi-aortic arch transposition for hybrid aortic arch repair

Drosos Kotelis, MD,^a Philipp Geisbüsch, MD,^a Nicolas Attigah, MD,^a Ulf Hinz, MSc,^b
Alexander Hyhlik-Dürr, MD,^a and Dittmar Böckler, MD, PhD,^a Heidelberg, Germany

Supplemental Table I. Indications for HAAR comparing landing zone 0 and 1

Ref	Aneurysm		Dissection		PAU-IMH		Other		Total		Mean follow-up (months)
	Zone 0	Zone 1	Zone 0	Zone 1	Zone 0	Zone 1	Zone 0	Zone 1	Zone 0	Zone 1	
5	8	11	0	7	2	5	0	2	10	25	33.2
6	3	8	6	9	0	0	0	0	3	8	14
7	NR	NR	NR	NR	NR	NR	NR	NR	7	2	14
8	15	0	6	0	5	0	0	0	6	0	9
9	0	19	0	5	0	0	0	0	4	11	26.2
10	5	8	0	0	0	0	0	0	14	12	28
11	NR	NR	NR	NR	NR	NR	NR	NR	15	0	18
12	4	0	1	0	1	0	0	0	15	0	16
13	NR	NR	NR	NR	NR	NR	NR	NR	8	5	16
14	NR	NR	NR	NR	NR	NR	NR	NR	5	1	8-18
15	9	5	6	5	0	0	0	0			
16	15	0	0	0	0	0	0	0			
17	NR	NR	NR	NR	NR	NR	NR	NR			
18	NR	NR	NR	NR	NR	NR	NR	NR			

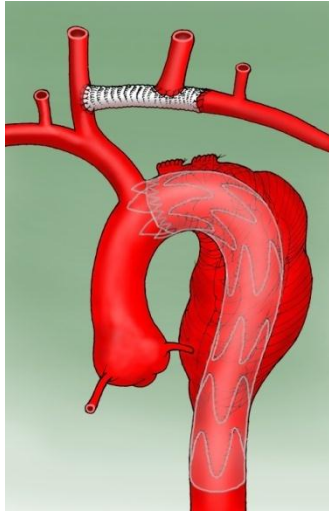
Dissections: 17%

HAAR, Hybrid aortic arch repair; NR, not reported; PAU-IMH, penetrating aortic ulcer-intramural hematoma; Ref, reference.

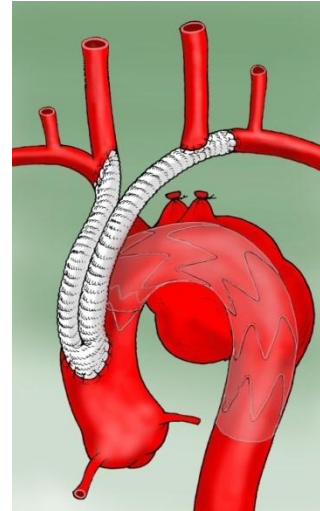
Hybrid repair for type B dissections Henri Mondor experience

2004-2011: 17 hybrid repairs for type B dissections involving the arch

N=10



N=7

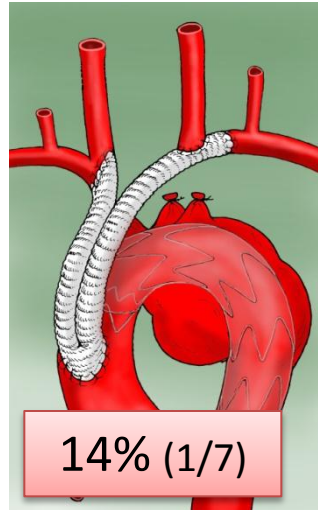
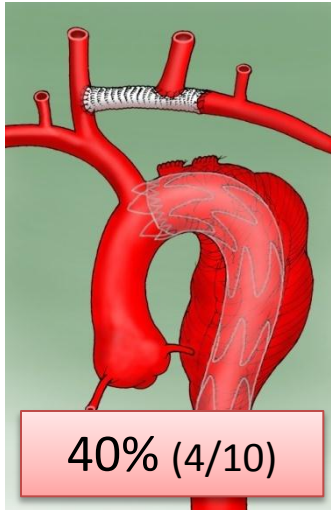


5: Acute (3 impending ruptures, 2 malperfusion syndroms)

12: Chronic aneurysmal degeneration

Hybrid repair for type B dissections Henri Mondor experience

Overall 30 day mortality: 29% (5/17)



Acute

60% (3/5)

Chronic

17% (2/12)

Retrograde dissections: 23% (4/17)

Hybrid repair for type B dissections Henri Mondor experience

Mid-term Results:

Median follow-up: 13 months (range: 3-69 months)

No rupture, No aortic related death

No graft occlusion

No Type I endoleak

Two type III endoleaks:

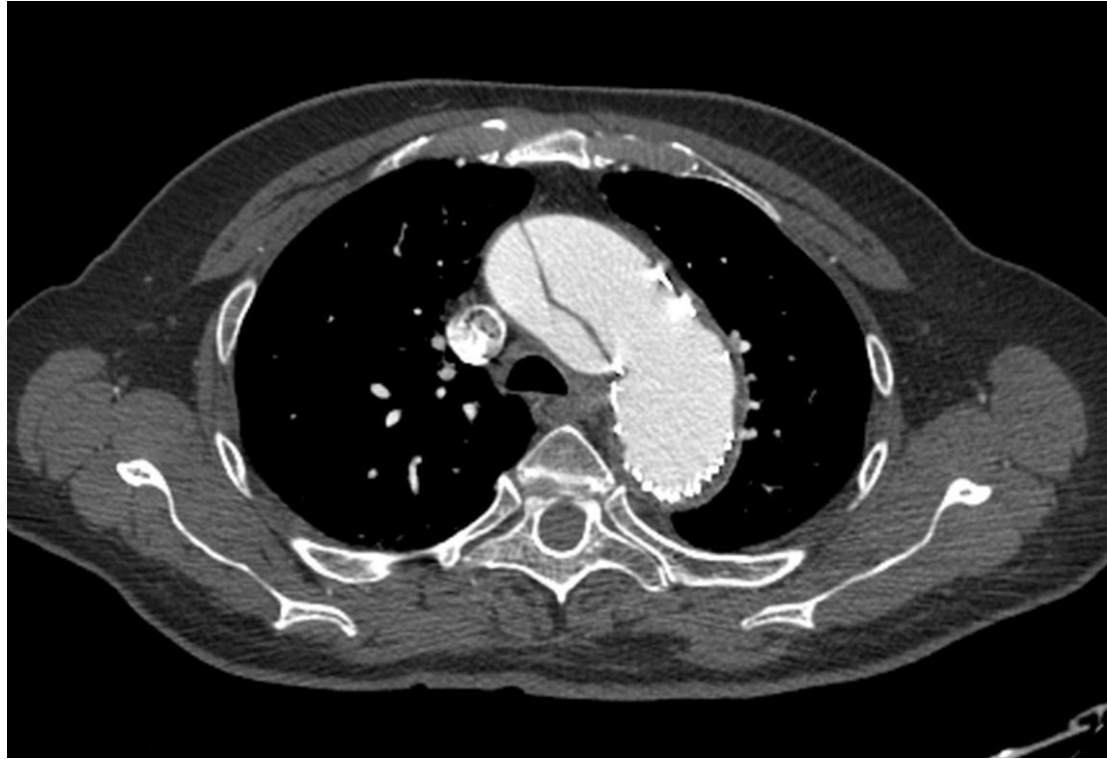
Additional graft component

Two type II endoleaks:

Managed conservatively

Two persistent perfusion of the distal false lumen

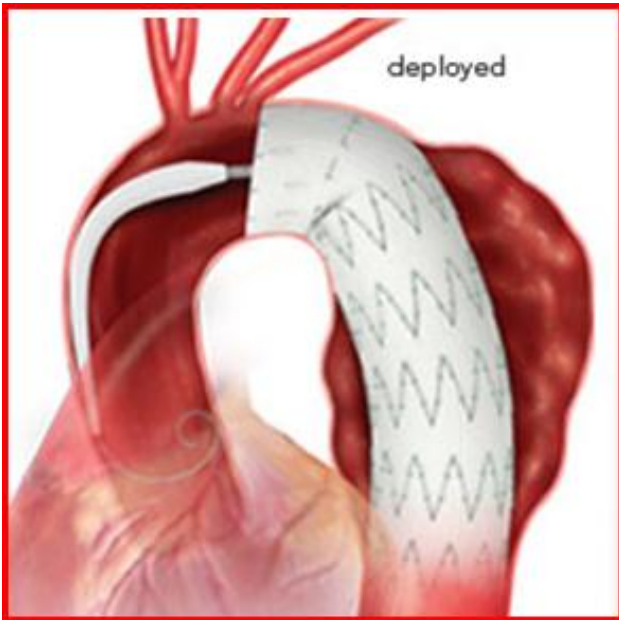
Managed conservatively



How to improve the results?

- Pacing
- Avoid proximal bare spring stent grafts
- New generation devices

Eggebrecht H *Circulation* 2009



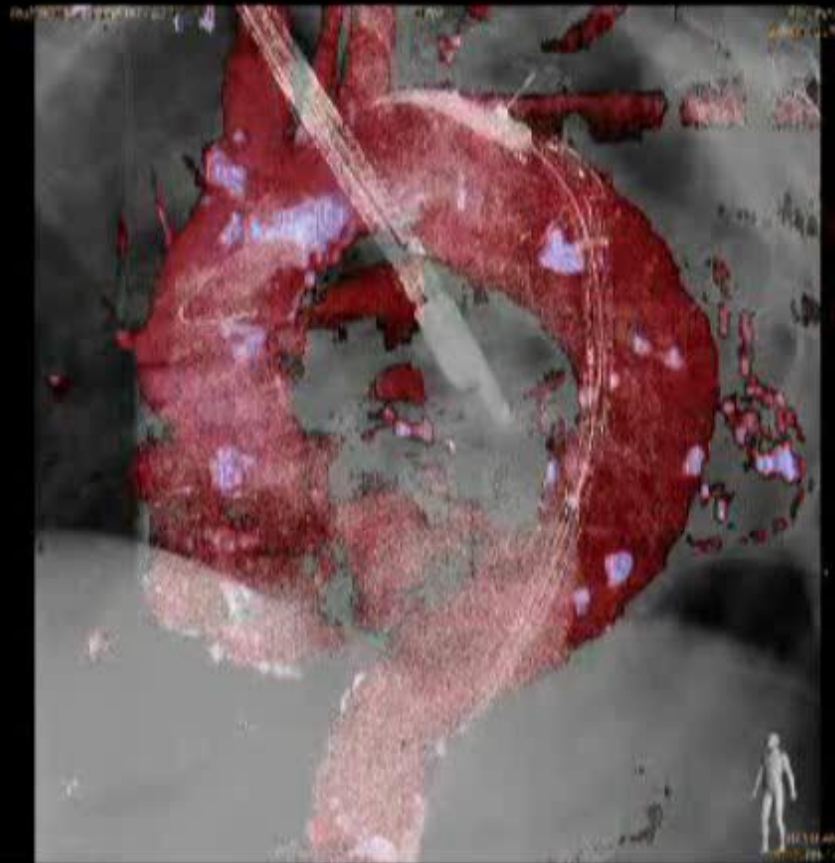
Zenith TX2 Pro-Form



Bolton Relay

- Patient selection +++

Fusion of images



Chimney Technique

3 urgent cases:

- 1 aorto-oesophageal fistulae
- 1 septic aneurysm of the arch
- 1 contained ruptured TAA

Covered stent in the IA + cervical debranching

3 died

2 type I endoleak



Conclusions

Hybrid repair is an interesting alternative to open repair for aortic arch lesions

But: it remains an invasive procedure

Type B dissections may represent a less favourable patient cohort

Branched/fenestrated graft may play a growing role in the near future