

FALSE LUMEN PROCEDURES ON CHRONIC TYPE III B AORTIC DISSECTION

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Disclosure

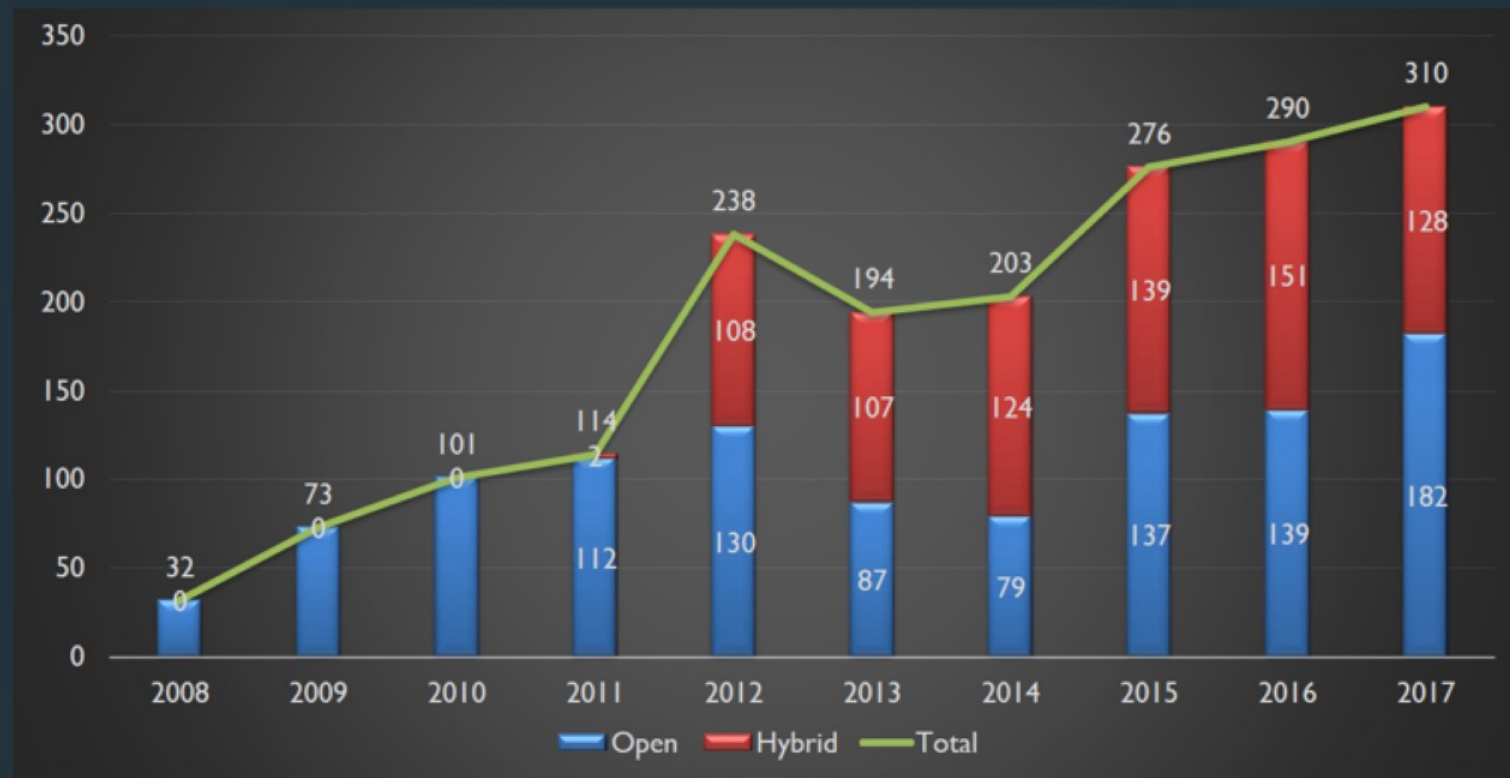
Speaker name: Suk-Won Song

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I have the following potential conflicts of interest to report:

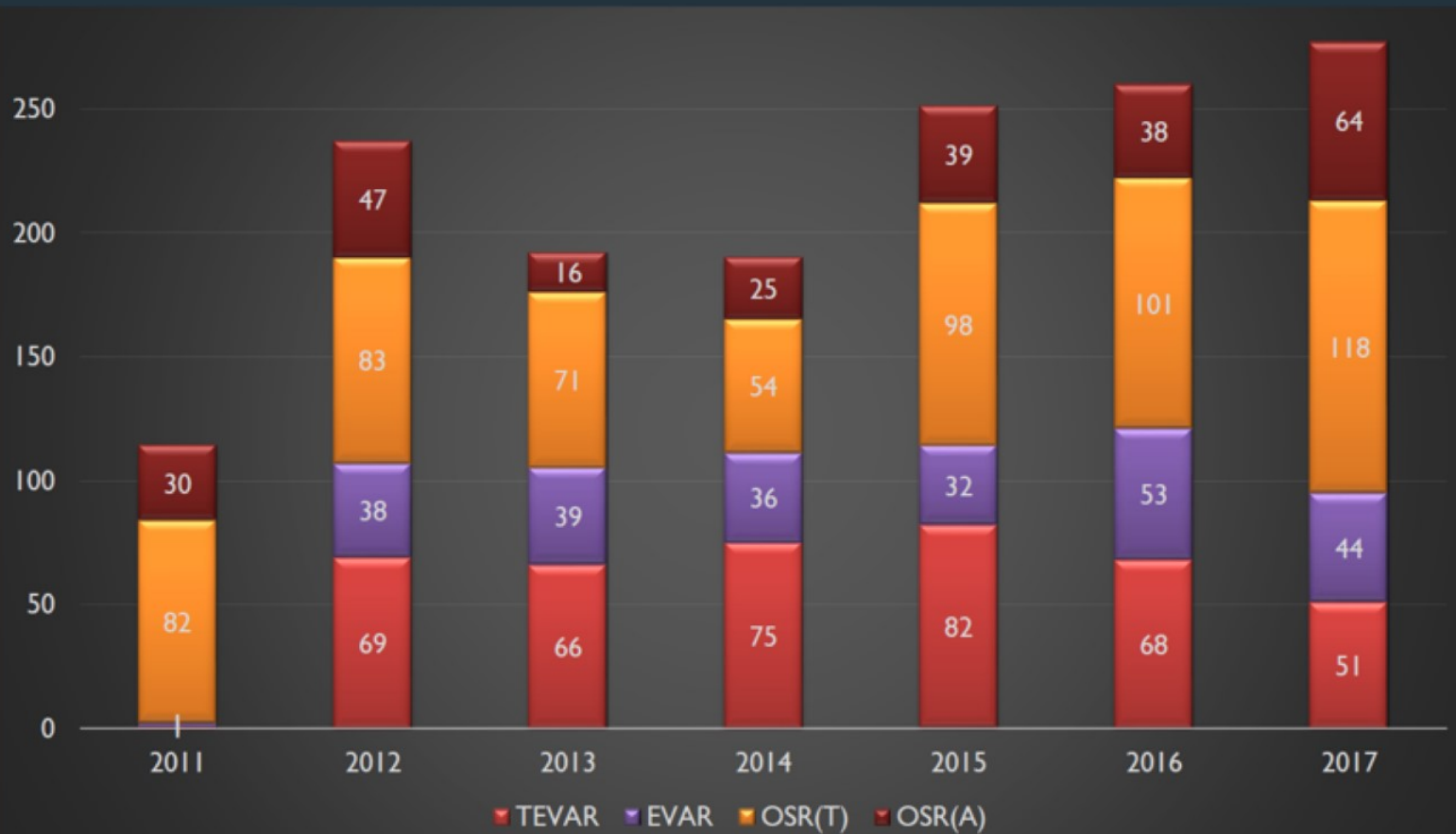
- ☐ Consulting
 - ☐ Employment in industry
 - ☐ Stockholder of a healthcare company
 - ☐ Owner of a healthcare company
 - ☐ Other(s)
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- ☒ I do not have any potential conflict of interest

Gangnam Severe Aortic Surgery

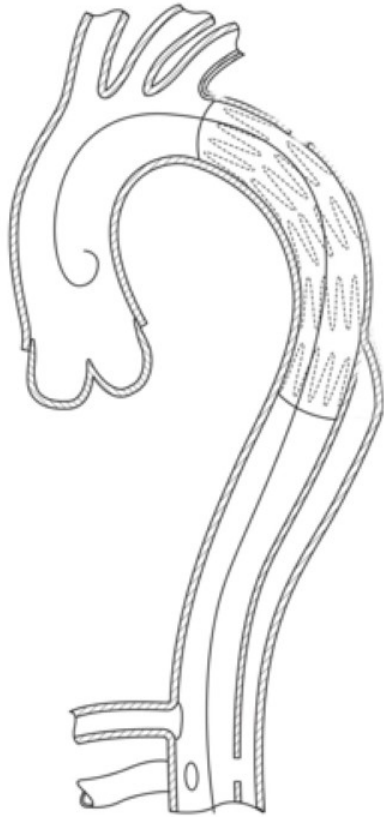
OSR vs Hybrid



Gangnam Severance Aorta Surgery

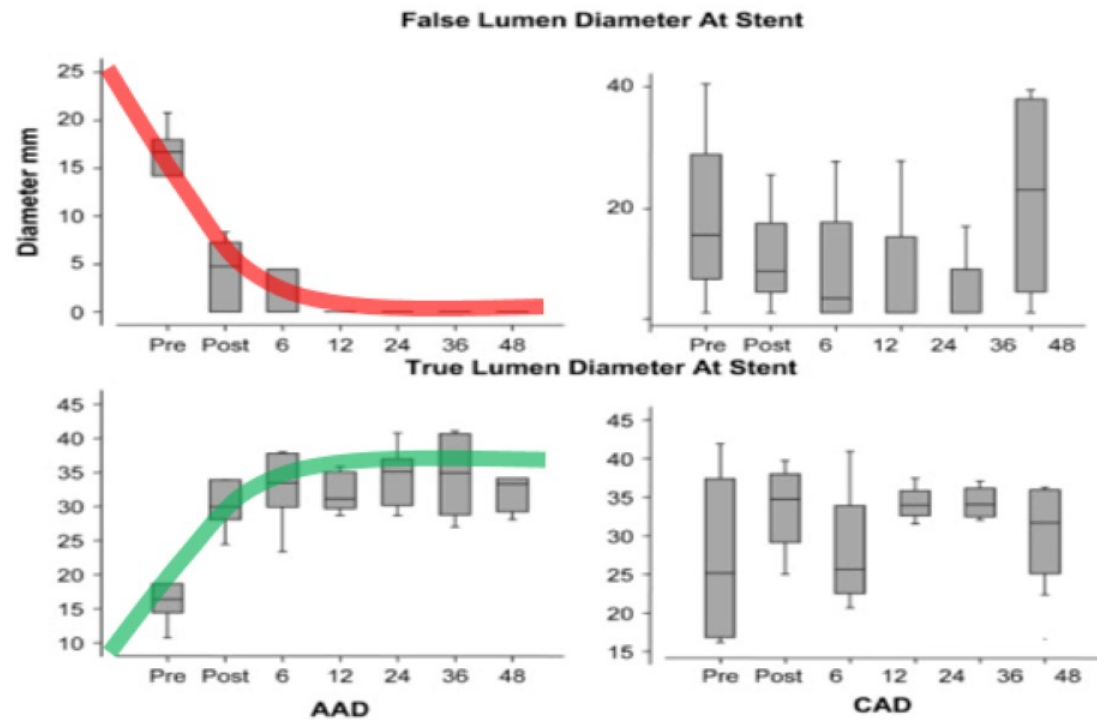
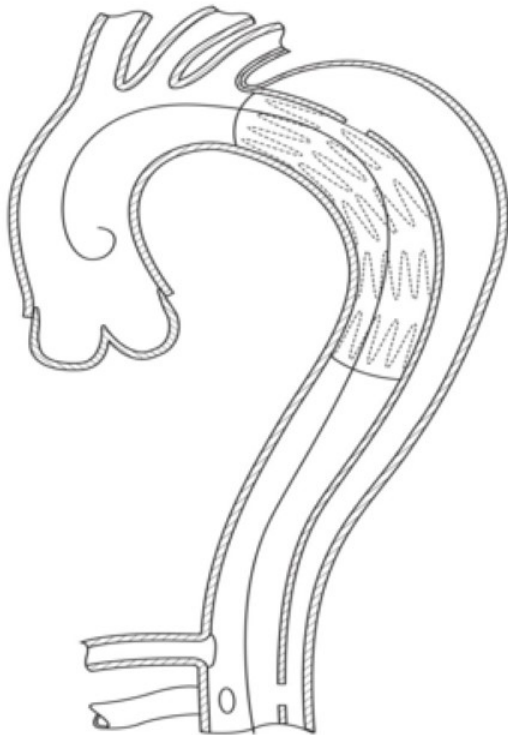


True lumen stent graft

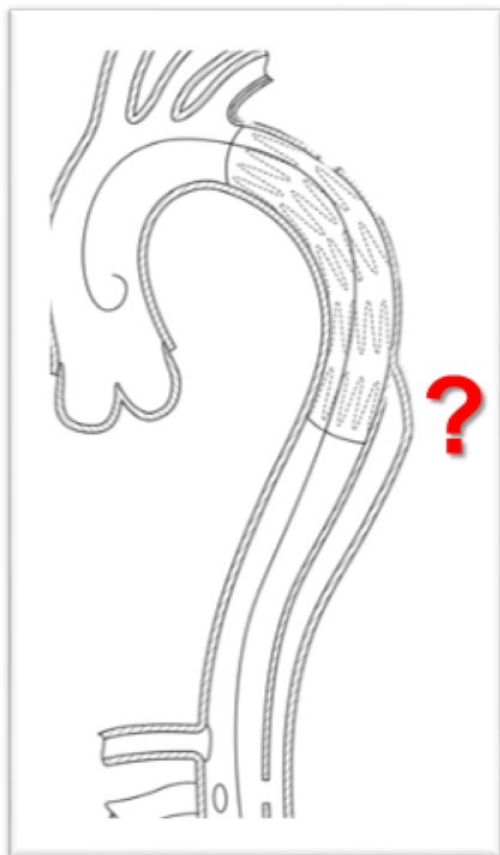


- Occlusion - primary entry tear
- Expand - True lumen
- Thrombosis - False lumen
- Promote Aortic remodeling
- Secure flow to arterial system

Aortic Remodeling



Successful TEVAR



- Occlusion - primary entry tear
- Expand - True lumen
- Thrombosis - False lumen

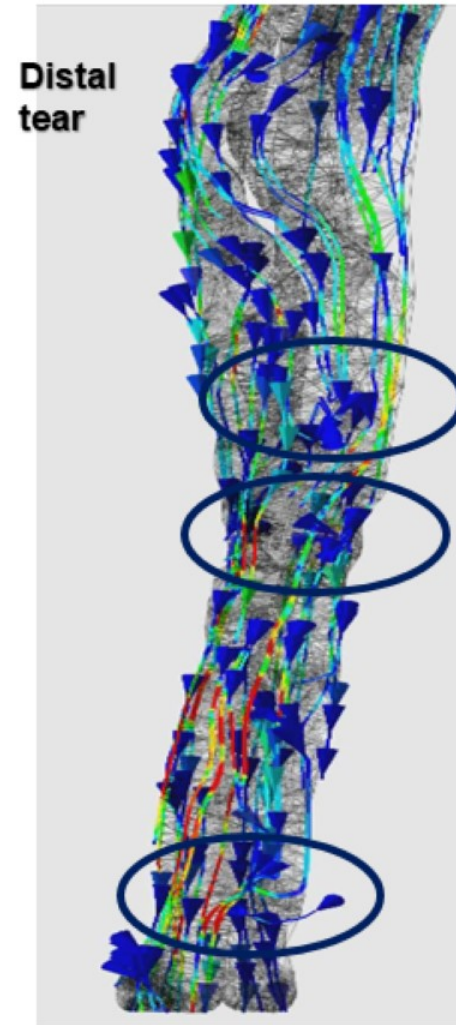
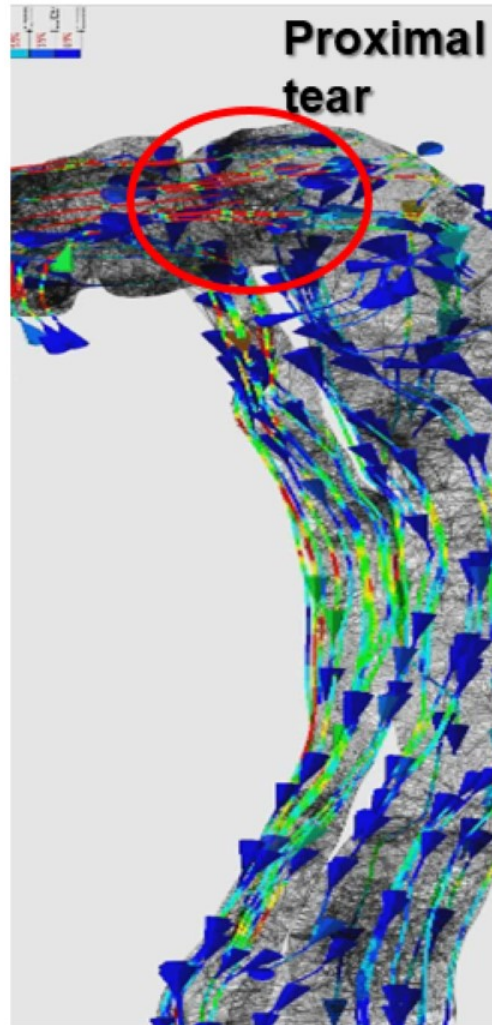


- Thoracic FL ?
- Abdomen FL ?

CFD Simulation

Assumption

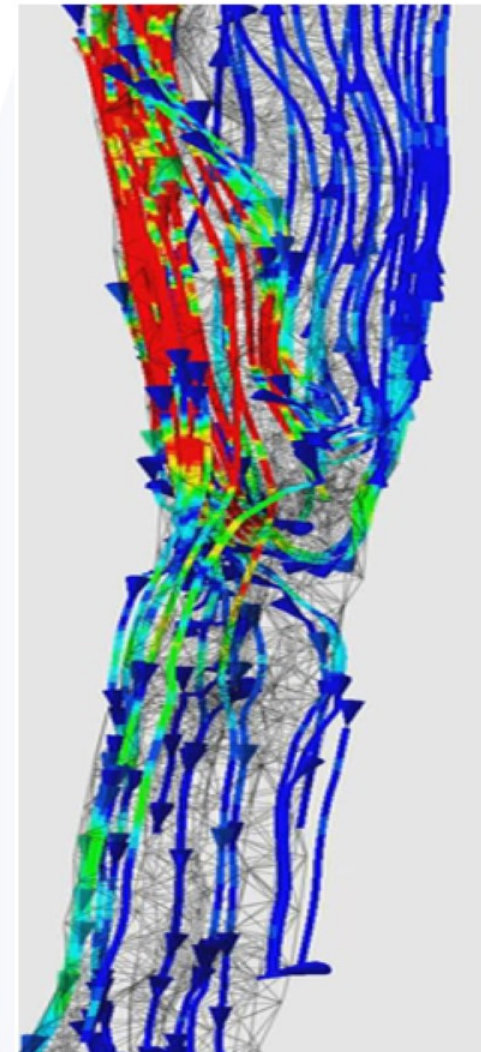
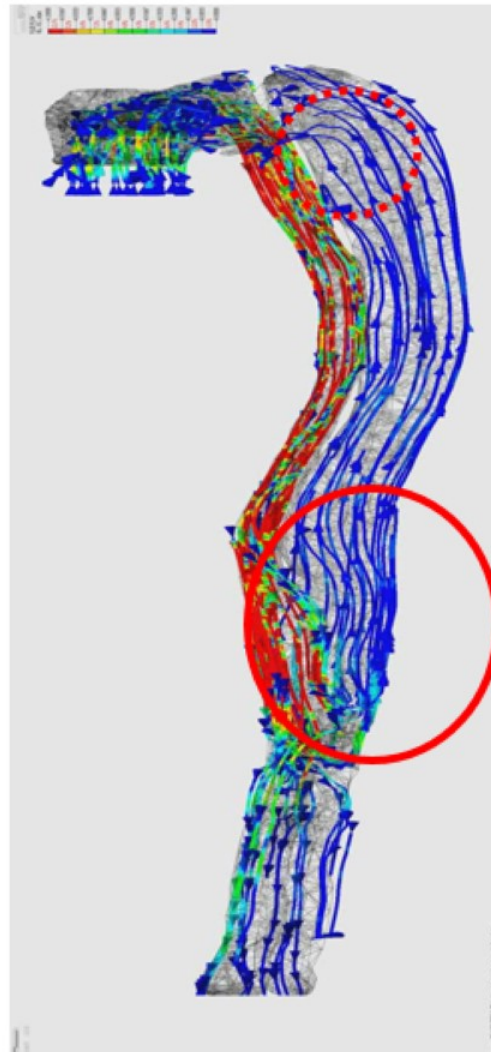
- *Non-Newtonian fluid*
- *Pulsatile flow*
- *Rigid aortic wall*
- *No intima mobility*
- *No aortic branch*



After proximal tear coverage

Assumption

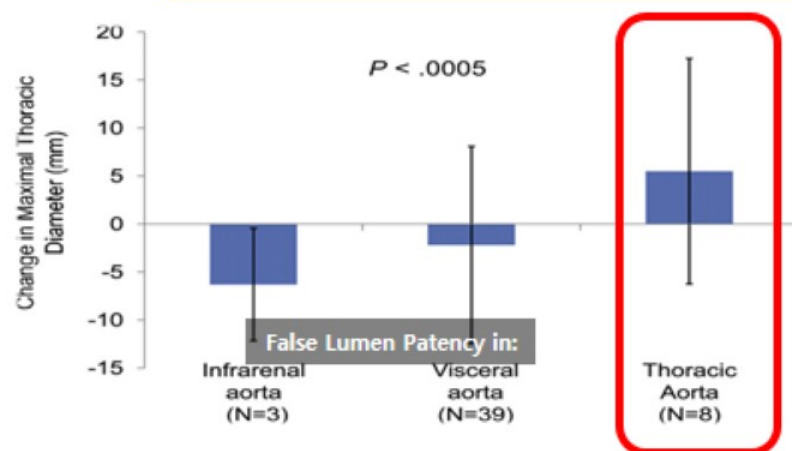
- Non-Newtonian fluid
- Pulsatile flow
- Rigid aortic wall
- No intima mobility
- No aortic branch



TEVAR in chronic type B

Efficacy of thoracic endovascular stent repair for chronic type B aortic dissection with aneurysmal degeneration

Salvatore T. Scali, MD,^a Robert J. Feezor, MD,^a Catherine K. Chang, MD,^a David H. Stone, MD,^c Philip J. Hess, MD,^b Tomas D. Martin, MD,^b Thomas S. Huber, MD, PhD,^a and Adam W. Beck, MD,^a Gainesville, Fla; and Lebanon, NH





- * 2004 - 2011
- * N = 80, 60 y
- * 26 months FU
- * TEVAR for Type B and residual AD
- * LSA-coverage 75%, 24% debranching
- * Median 16 (1 - 74) months.
- * 35% FL-expansion during FU

Scali et al. 2013; J Vasc Surg. 58:10-7

Acquired cardiovascular disease

Prognostic factors for aorta remodeling after thoracic endovascular aortic repair of complicated chronic DeBakey IIIb aneurysms

Read at the 94th Annual Meeting of The American Association for Thoracic Surgery, Toronto, Ontario, Canada, April 26–30, 2014.

Suk-Won Song, MD, PhD^a, Tae Hoon Kim, MD^a, Sun-Hee Lim, RN^a, Kwang-Hun Lee, MD, PhD^b,  ,
Kyung-Jong Yoo, MD, PhD^c, Bum-Koo Cho, MD, PhD^d

Complete thrombosis 13/20 (65%)

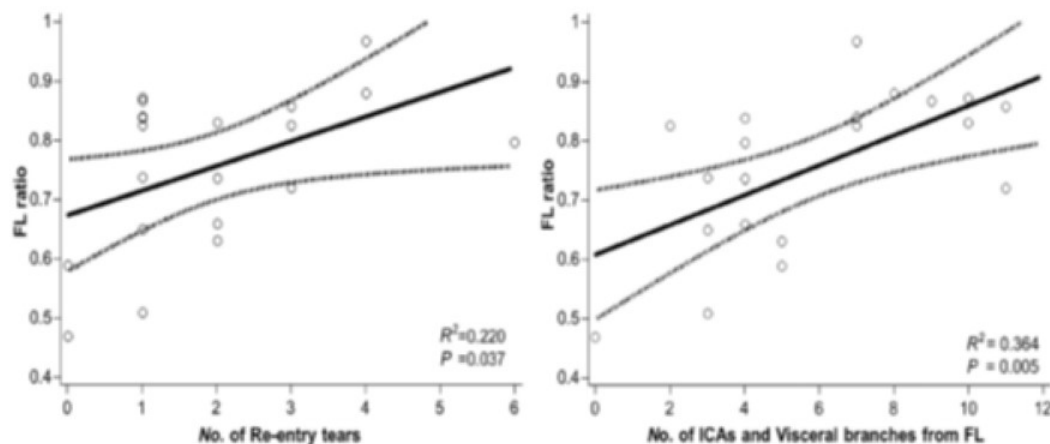
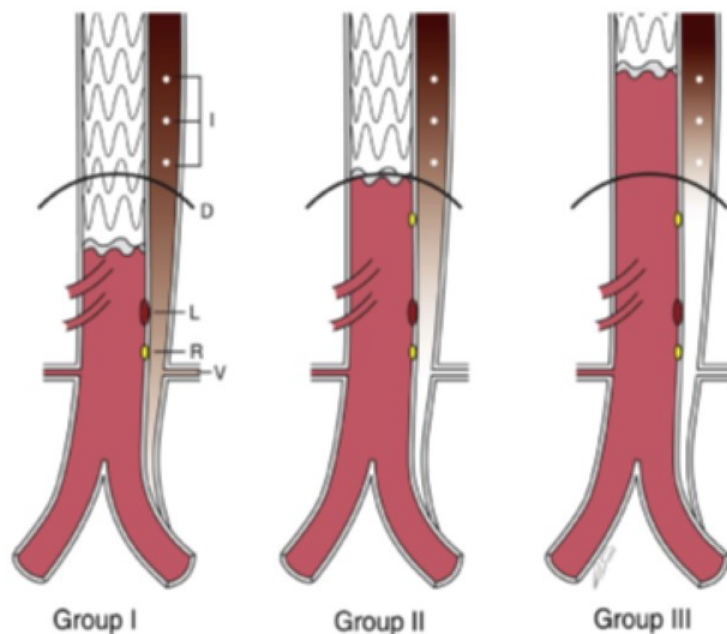
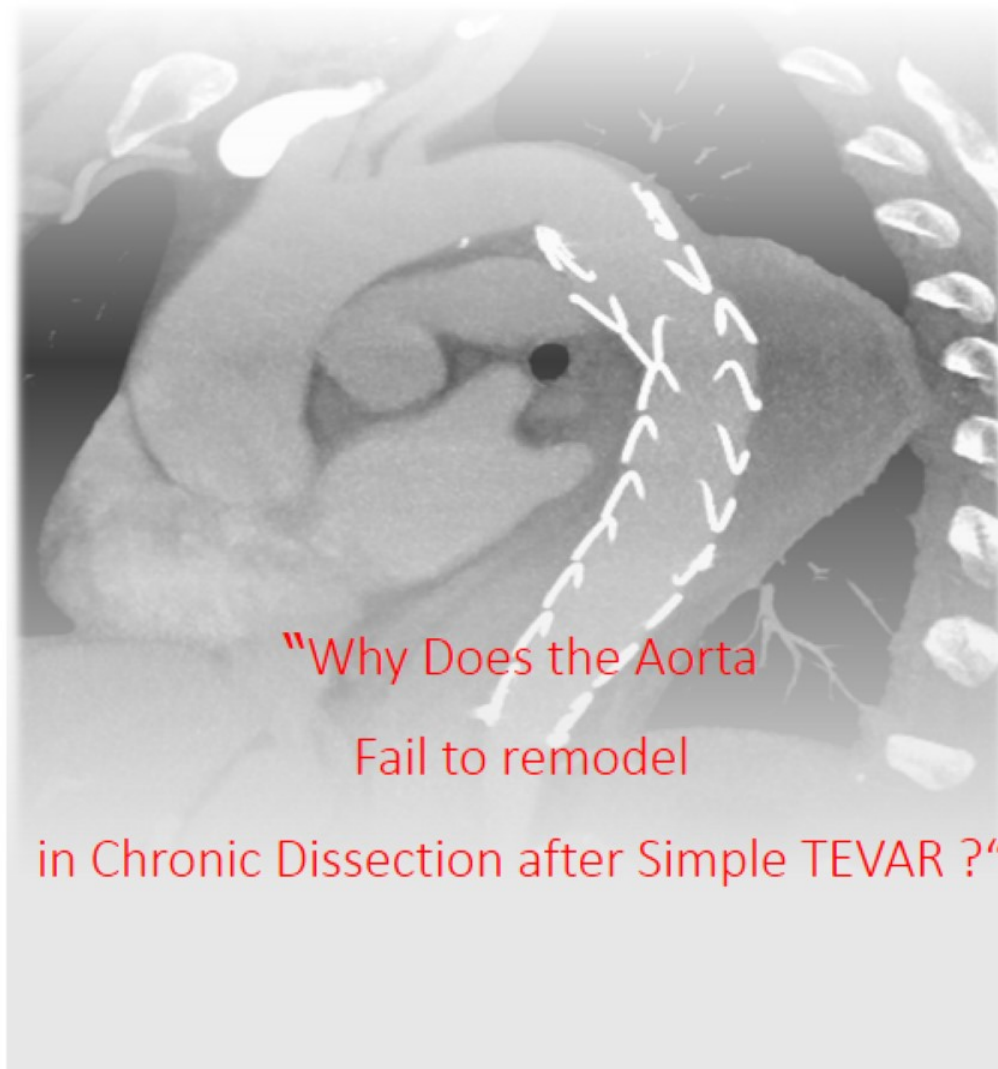
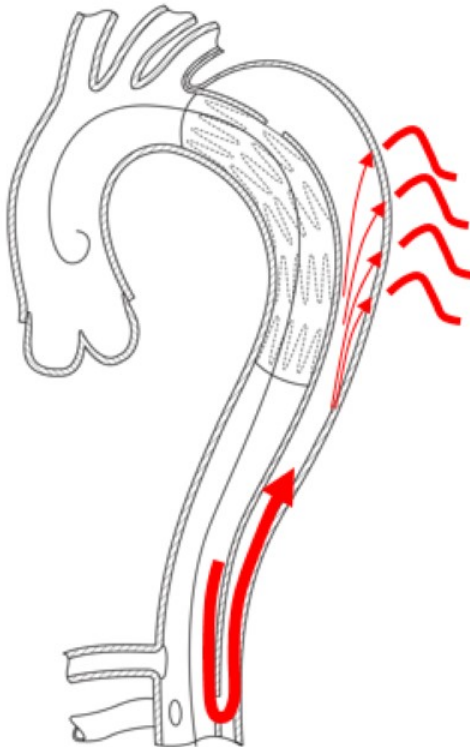


FIGURE 2. Results of univariate linear regression analysis showing prognostic factors significantly related to a decreased false lumen (FL) ratio. ICA, Intercostal artery.



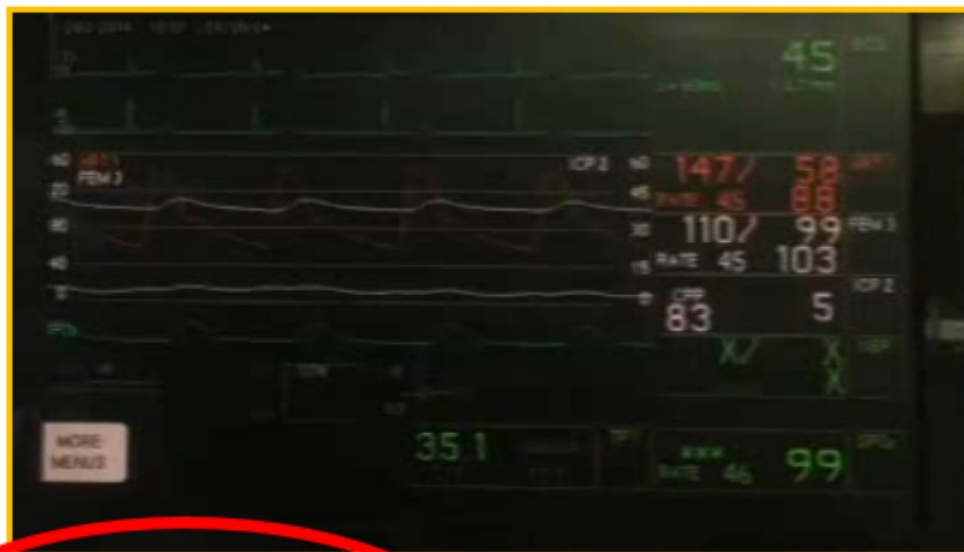


Mode of Failure



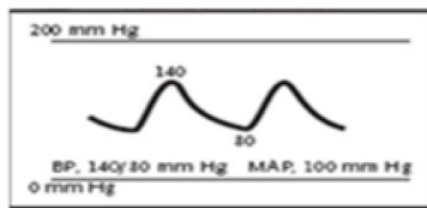
- Perfusion and pressure unchanged in FL
- Presence of Intercostals originating from FL
- FL back flow to Intercostals

Q) Which one is the typical flow pattern in the false lumen after the entry tear sealing off by the aortic stent-graft?

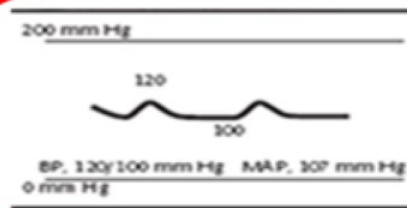


N Engl J Med 2007; 357:349-59

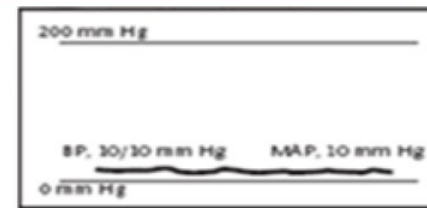
1)



2)



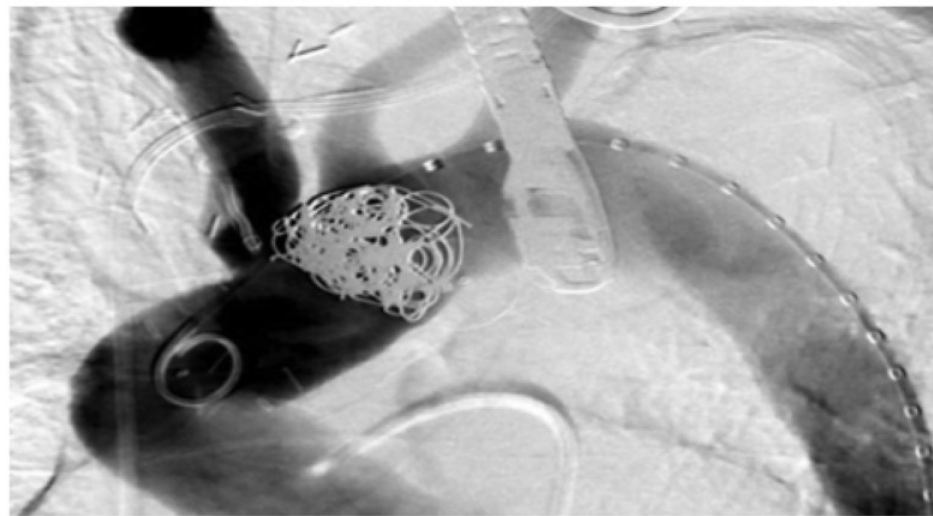
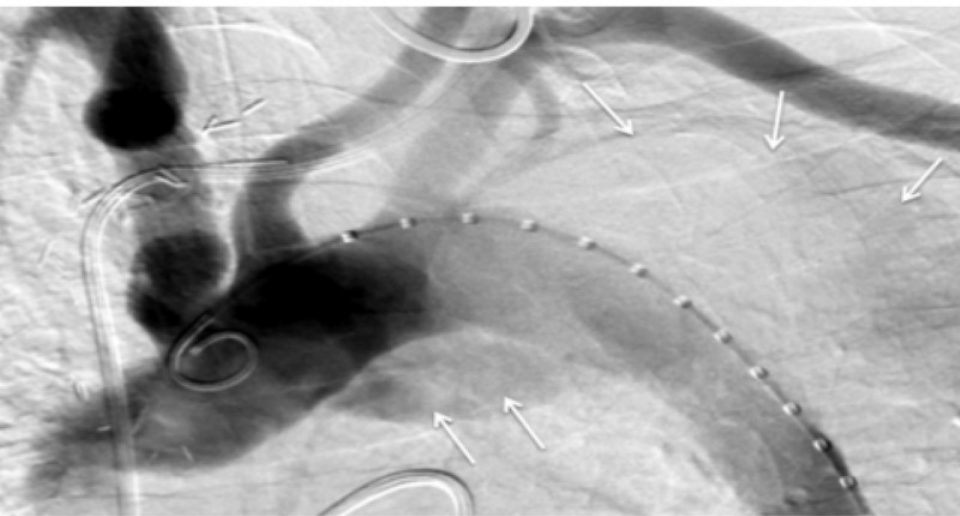
3)



True lumen stent graft
MAY NOT a perfect procedure

FL thrombosis may not be achieved by TEVAR
Adjunctive technique is needed !

False lumen procedure



False lumen procedure

◆ TECHN

Dista

Tilo

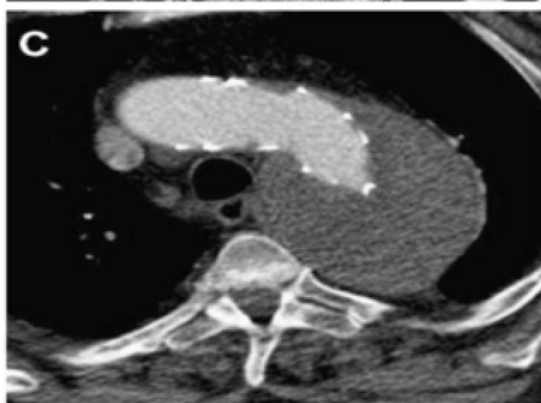
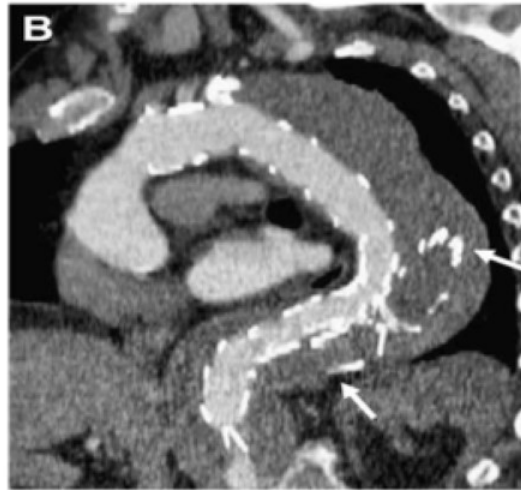
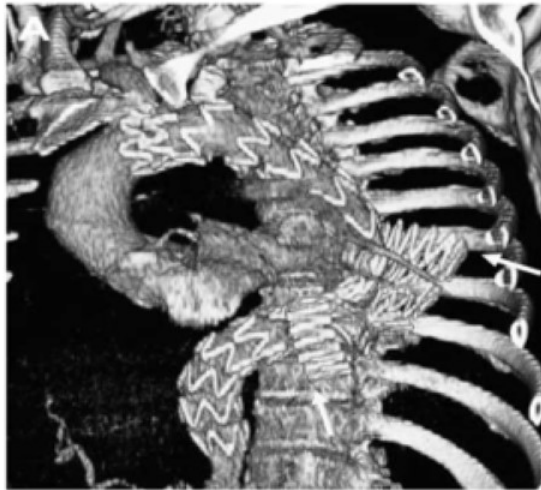
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Original article

Effects of False Lumen Procedures on Aorta Remodeling of Chronic DeBakey IIIb Aneurysm

Presented at the Poster Session of the Fifty-second Annual Meeting of The Society of Thoracic Surgeons, Phoenix, AZ, Jan 23–27, 2016.

Tae-Hoon Kim, MD^a, Suk-Won Song, MD, PhD^a, Kwang-Hun Lee, MD, PhD^b, Min-Young Baek, RN^a, Kyung-Jong Yoo, MD, PhD^c

Complete thrombosis 20/25 (80%)

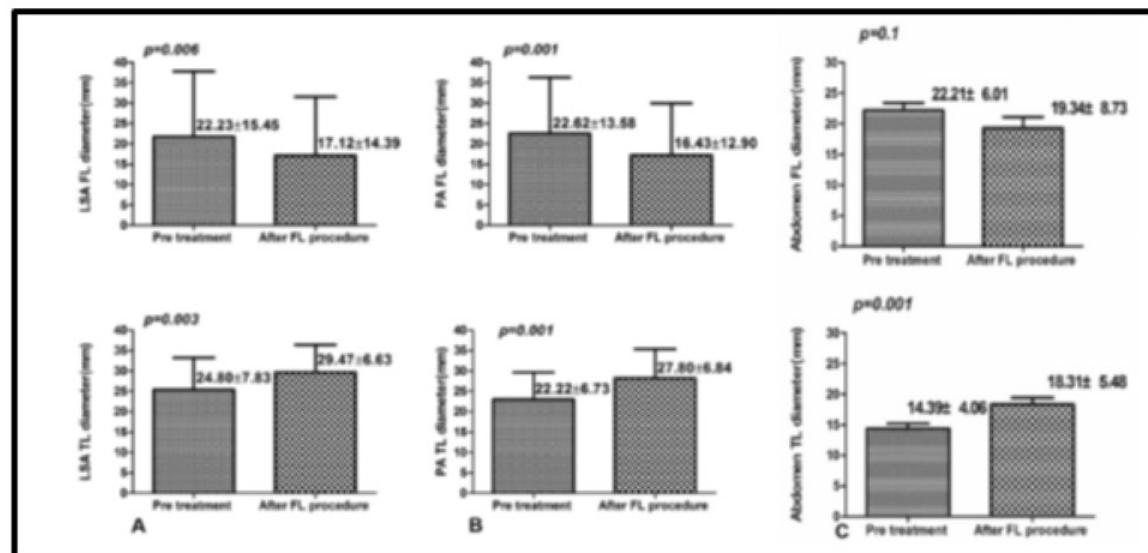


Table 2. Clinical Outcomes and Complications

Operative Results	Patients (n = 25)
30-day mortality	0 (0)
Hospital stay, days	7.5 ± 6.0
ICU stay, hours	27.0 ± 37.8
Complications	
Spinal cord ischemia	0 (0)
CSF complication	1 (4)
Access site complication	0 (0)
Ischemic stroke	1 (4)
Cerebral hemorrhage	0 (0)
Pulmonary	0 (0)
Cardiac	0 (0)
Renal	0 (0)
Gastrointestinal	0 (0)
Endoleak	0 (0)
Complete thrombosis	20 (80)
Reintervention	0 (0)

Previous our studies #3
JVS, 2018

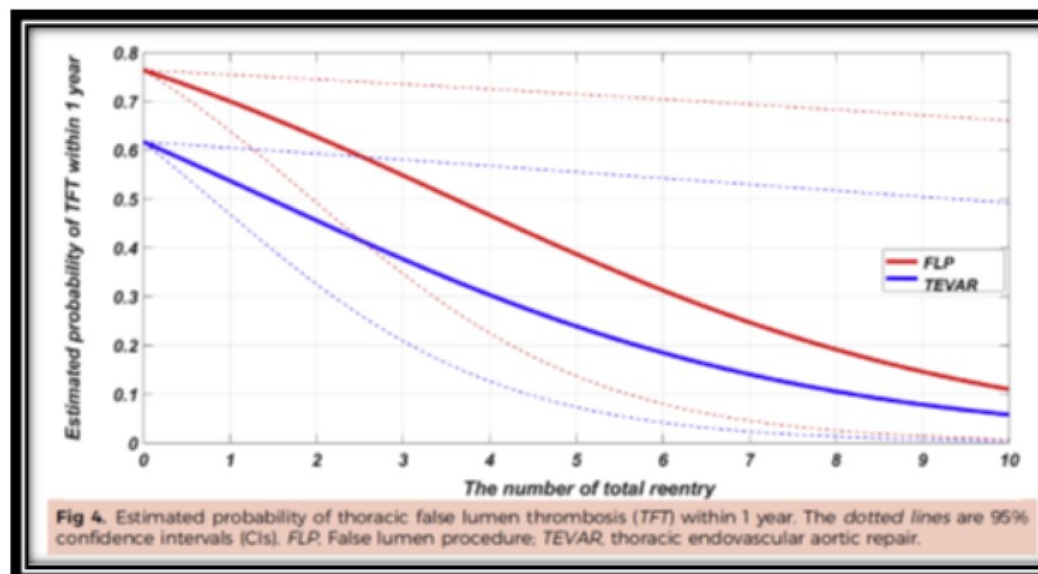
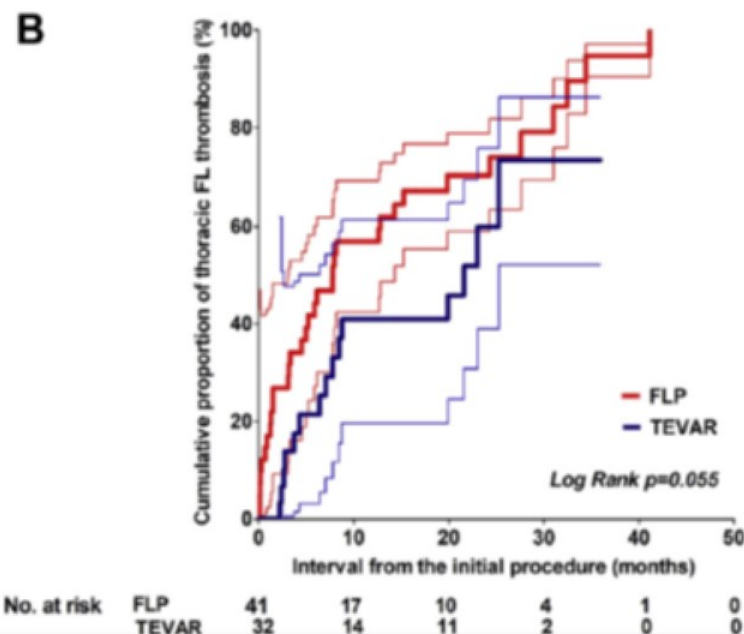
The effect of false lumen procedures during thoracic endovascular aortic repair in patients with chronic DeBakey type IIIB dissections

Tae-Hoon Kim, MD,^a Suk-Won Song, MD, PhD,^a Kwang-Hun Lee, MD, PhD,^b Min-Young Baek, RN,^a Kyung-Jong Yoo, MD, PhD,^c and Bum-Koo Cho, MD, PhD,^d Seoul, Republic of Korea

Complete thrombosis

TEVAR + FLP 41 - 83%

TEVAR only 32 - 56%



“Stentless TEVAR”



Vascular
plug

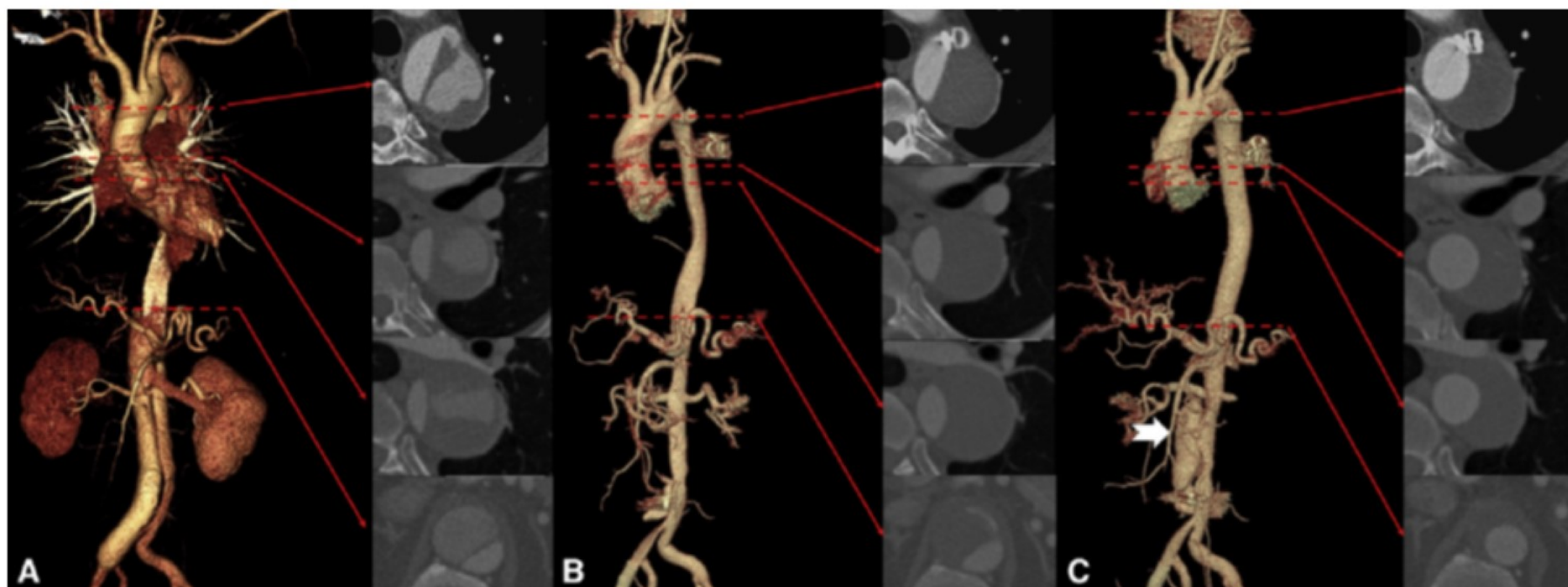
Coil

CASE REPORT

Previous our studies #4
JTCVS, 2018

Stentless thoracic endovascular aortic repair of a chronic DeBakey IIIb aneurysm

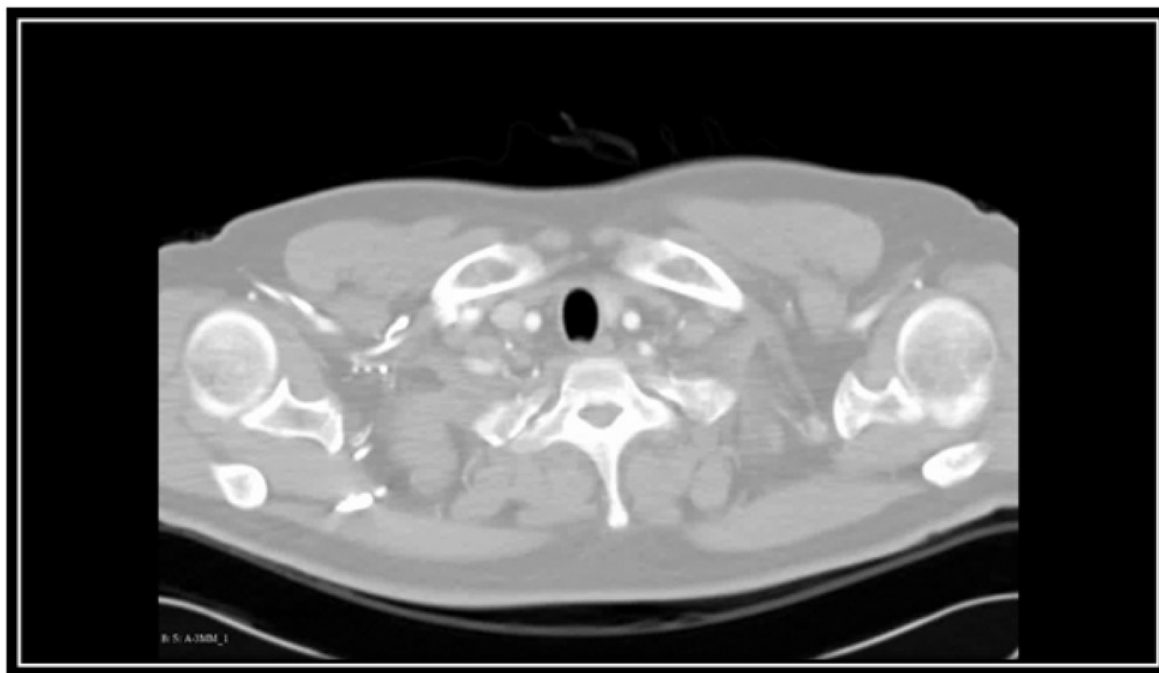
Ahmed Sameh Eleshra, MD,^{a,b} Woon Heo, MD,^a Kwang-Hun Lee, MD, PhD,^c and Suk-Won Song, MD, PhD^a, Seoul, Republic of Korea, and Mansoura, Egypt



Case

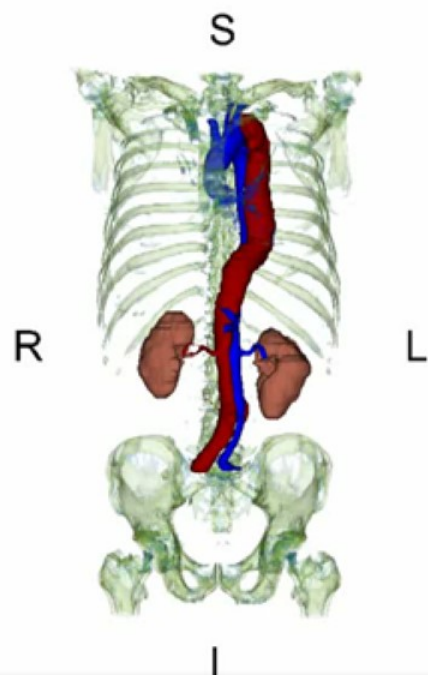
- **44 year-old male**
- **HTN with medication**
- **Chronic DeBakey IIIb (CDIIIb)**
- **Aneurysmal change progression**

Image study



- **Maximal diameter 62mm**
- **FL of DTA 35 to 42mm**
- **Abdominal FL dilation**
- **Celiac/Rt. renal from FL**

Image study



TL : Blue
FL : Red

3D FL endoscopic simulation



1. Cephalocaudal view
2. Enter through FL
3. Intima tear at T4 level
4. ICA from FL
5. Intima tear at Celiac level
6. Rt. Renal a. from FL
7. Lumbar a. from FL

Plan

■ Target

1. The proximal DTA intima tear
2. ICA
3. The celiac axis re-entry tear
4. The right renal artery re-entry tear
5. intimal tear at aortic bifurcation

False lumen procedure



1. AVP insertion

- FL angiography
- AVP insertion via tear
- Post angiography

False lumen procedure



2. Coil insertion

- FL angiography
- Coil insertion for preventing from ICA back flow

False lumen procedure



3. Celiac stent grafting

- Guide wire into celiac a.
- Dye was splitted into FL and TL-celiac
- Viabahn stent grafting

False lumen procedure



4. Rt. Renal stent grafting

- Guide wire into RRA
- Dye was splitted into FL and renal
- Viabahn stent grafting

False lumen procedure

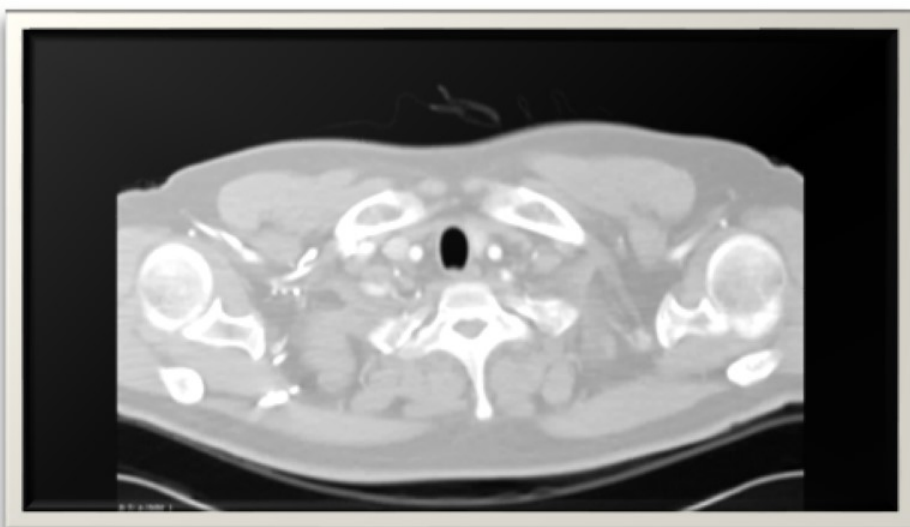


5. Coil and AVP insertion

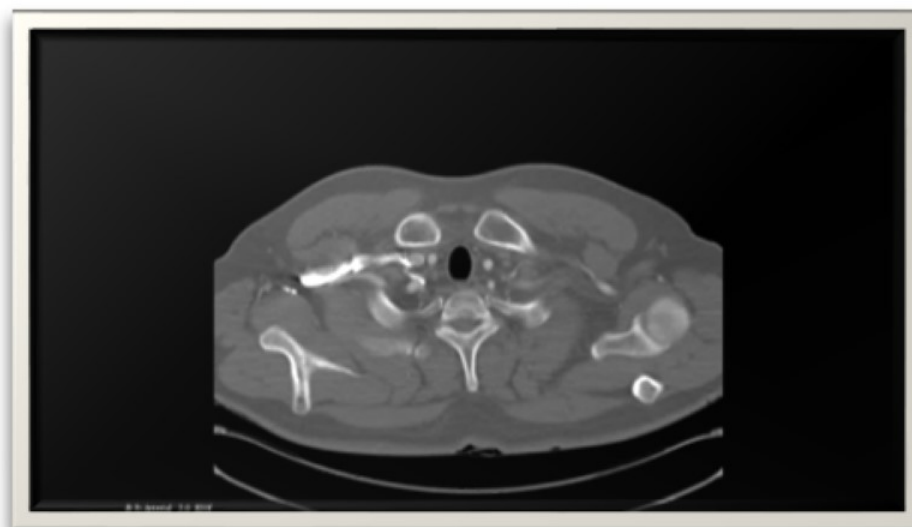
- FL angiography
- Coil insertion
- AVP insertion

Follow up imaging

Pre-procedure



Post-procedure



**Preop
CT**

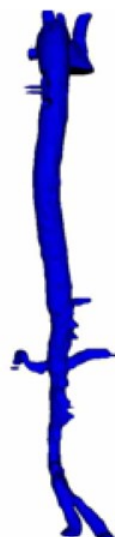
TL



FL



Last CT



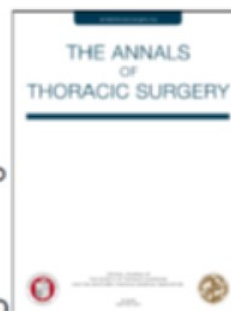
FL



Accepted Manuscript

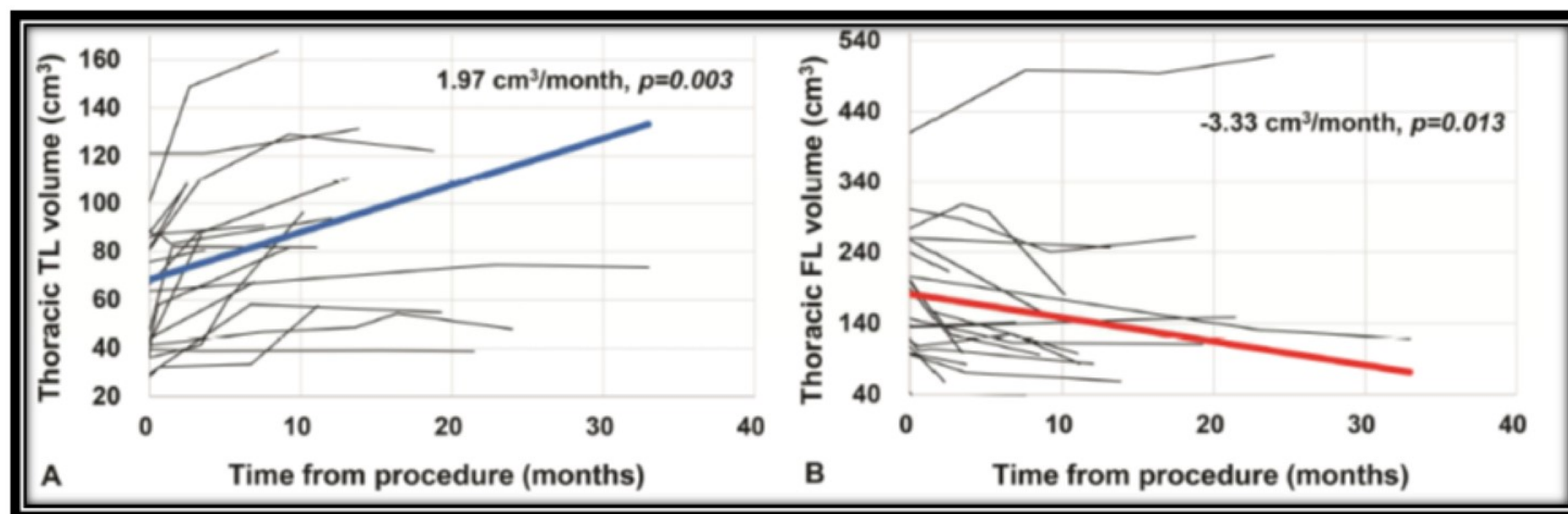
Outcomes of Stentless-Thoracic Endovascular Aortic Repair for Chronic DeBakey IIIb Aneurysms

Tae-Hoon Kim, MD, Suk-Won Song, MD, PhD, Kwang-Hun Lee, MD, PhD, Woon Heo, MD, Min-Young Baek, RN, Kyung-Jong Yoo, MD, PhD, Bum-Koo Cho, MD, PhD



Previous our studies #5
ATS, 2018

N = 19



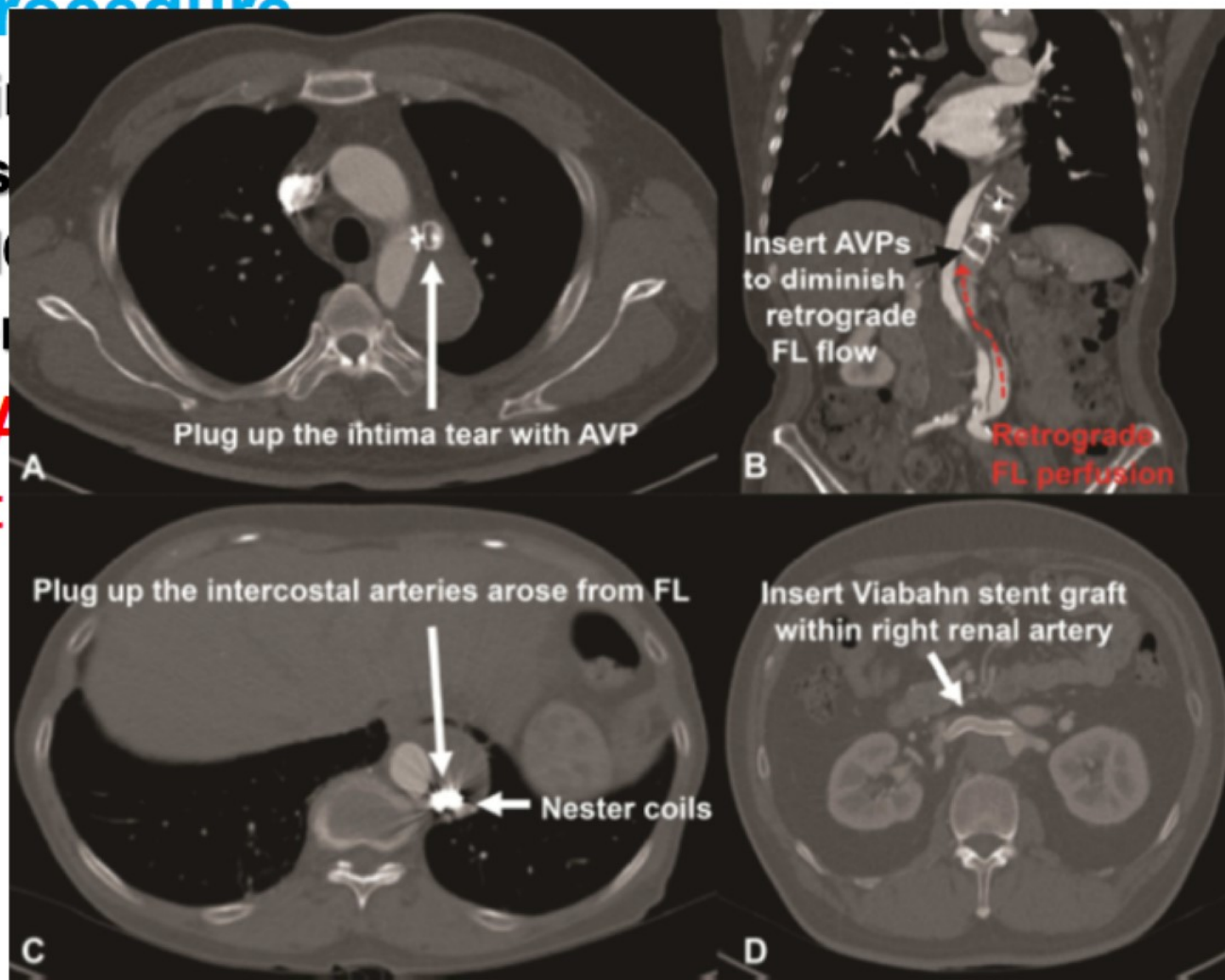
Adjunctive techniques for FL thrombosis

False lumen Procedure

- A. Plug up the i
- B. Inserting vas
- C. Plug up the l
- D. Inserting ste

Stentless-TEVA

- FLPs without



The fate of the abdominal aorta after endovascular treatment in chronic Debakey IIIb aneurysm



Tae-Hoon Kim, MD,^a Suk-Won Song, MD, PhD,^a Kwang-Hun Lee, MD, PhD,^b Min-Young Baek, RN,^a
Kyung-Jong Yoo, MD, PhD,^c and Hye Sun Lee, PhD^d

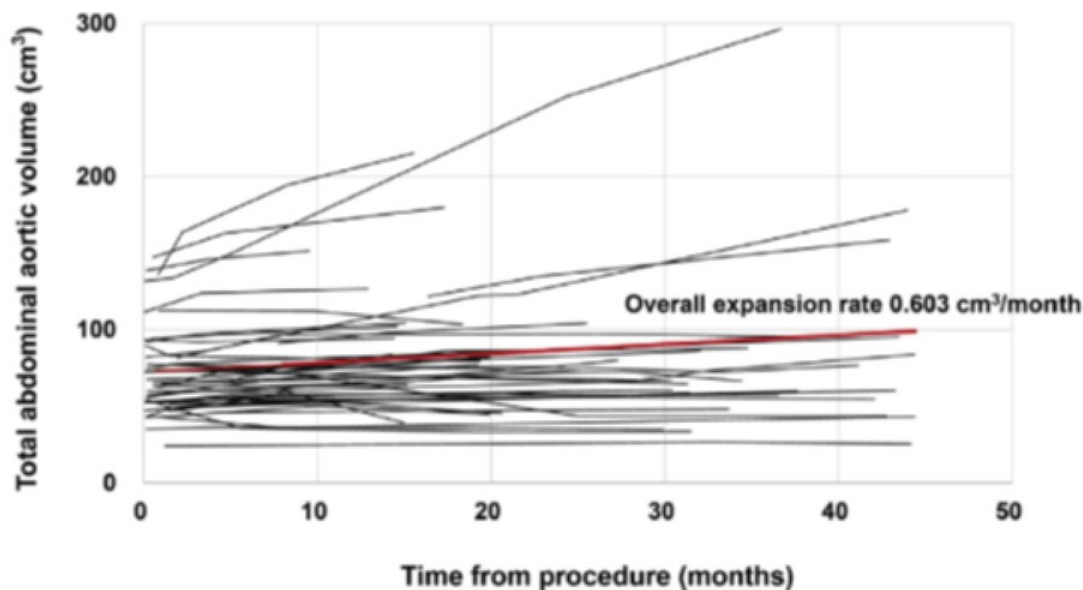


FIGURE 6. Spaghetti plot showing changes of total abdominal aortic volume over time in individual patients (n = 46). Red line indicates overall expansion rate of total abdominal aortic volume calculated on univariable linear mixed model.

Acute type B aortic dissection

Malperfusion / rupture

Emergent TEVAR

(Stent, stentless, fenestration)

Uncomplicated
BMT

CT at HOD #5~7

In Gangnam Severance hospital,

Urgent TEVAR
(Stent, stentless, fenestration)

Uncomplicated
BMT

CT at 2~3 months

If, "High risk" feature

Elective TEVAR
(in subacute phase)

Uncomplicated
BMT

“High risk” feature

Total aortic diameter $\geq 40\text{mm}$ ¹

False lumen diameter $\geq 20\text{mm}$ ¹

Large intimal tear $\geq 10\text{mm}$ ²

Partial thrombosis ³

No. of vessel originating from the false lumen ⁴

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1. Samuel I. Schwartz et al. J Vasc Surg 2017
2. Evangelista et al. Circulation 2012
3. Tsai et al. N Engl J Med 2007
4. Kamman et al. J Vasc Surg 2017

Summary

- The number of aortic intervention cases are going to be increased
- The technique of aortic intervention continues to evolve
- For the **total** and **perfect** aortic intervention - We should focused on the many details (New device and procedure)

Severance

With the Love of God, Free Humankind from Disease and Suffering

