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Our strategies to prevent TEVAR related complications

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Disclosure

Speaker name:

...Shinsuke Kotani.....

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)

- I do not have any potential conflict of interest



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background

- Thoracic endovascular aortic repair (TEVAR) has been established as promising less invasive therapeutic options.
- However, despite continuous advances and device improvements, important complications unique to the procedure still remain .



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TEVAR-related complications

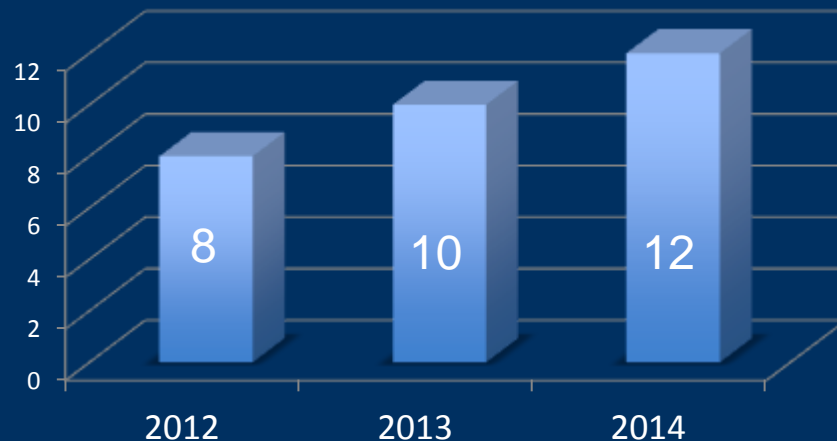
- Stroke
- Spinal cord ischemia (SCI)
- Retrograde type A dissection(RTAD)
- Rupture of iliac access vessel



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2012-2014 (30cases)

Cases

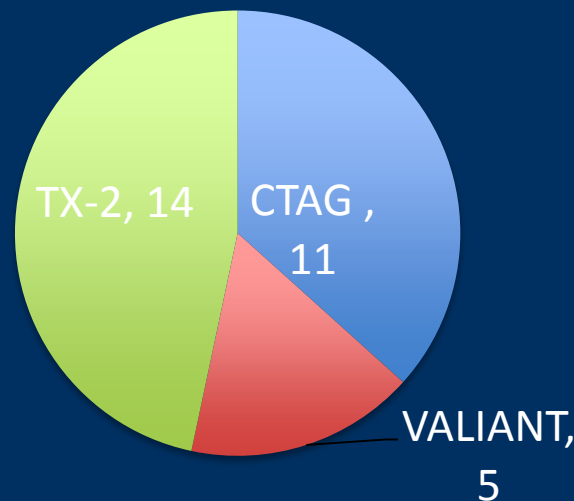


Mean Age, y 74.3
 Male , n(%) 22(73)

Indication, n
 aneurysm 22
 Type B dissection 8
 Rupture 2

Landing zone, n
 Zone 0 1
 Zone 1 2
 Zone 2 6
 Zone 3 16
 Zone 4 5

Oversizing(%) 18.7





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Perioperative complication following TEVAR (2012-2014)

	Total(30)	VALIANT(5)	TX-2(14)	TAG /CTAG(11)
<u>death, n(%)</u>				
operative	0(0)	0(0)	0(0)	0(0)
in hospital	2(6.7)	1(20)	1(7)	0(0)
<u>neurological event, n(%)</u>				
stroke	2(6.7)	1(20)	1(7)	0(0)
paraplegia/paraparesis	3(10)	2(40)	1(7)	0(0)
<u>perioperative events, n(%)</u>				
RTAD	2(6.7)	1(20)	1(7)	0(0)
conversion to open surgery	0(0)	0(0)	0(0)	0(0)
rupture of iliac access	3(10)	0(0)	1(7)	2(18)
<u>endoleak, n(%)</u>				
type 1	1(3.3)	1(20)	0(0)	0(0)
type 2	0(0)	0(0)	0(0)	0(0)

➔ Why VALIANT ?

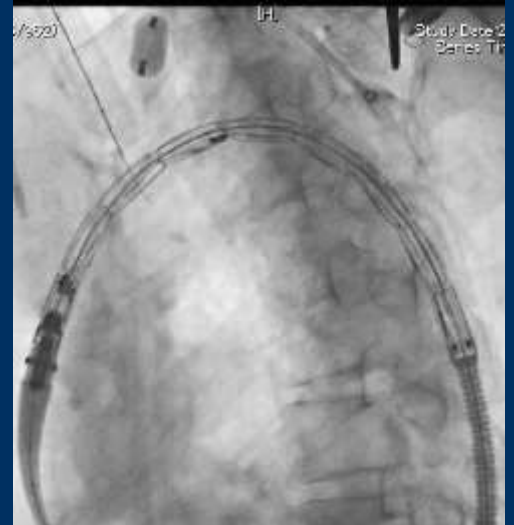


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To prevent stroke

atherothrombosis from thoracic aorta

- LSCA occlusion , LSCA revascularization
- Filter
- Clamping of branch vessel (if exposed)
- Compression of branch vessel(if not exposed)

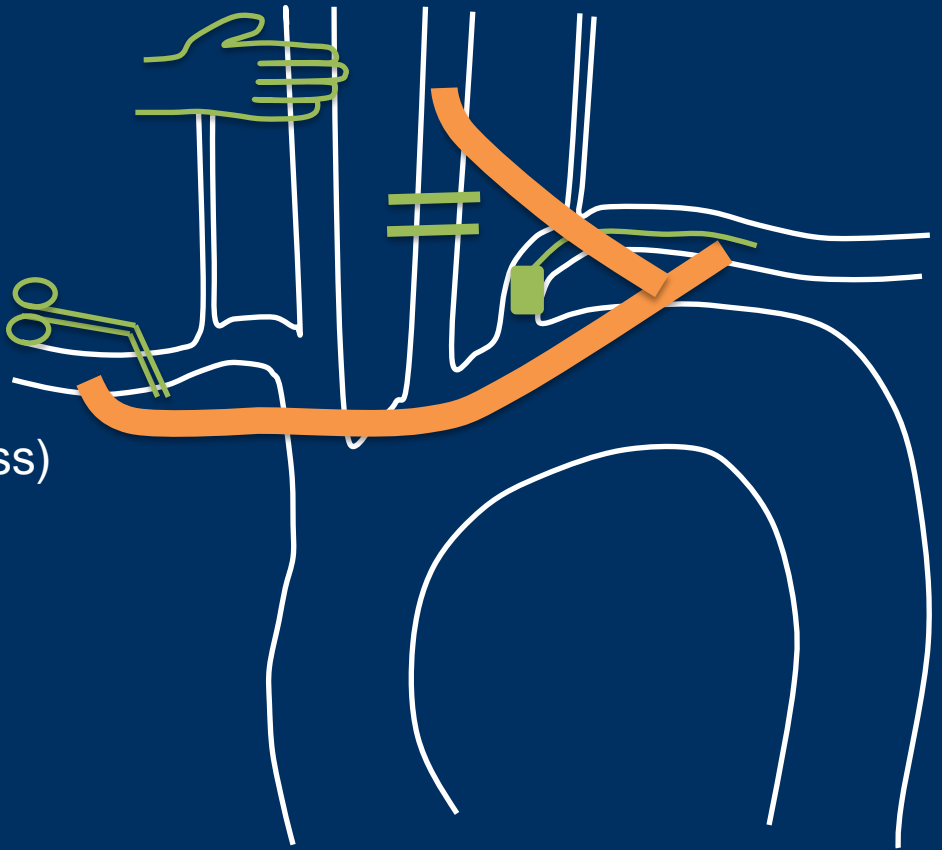




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Our strategies to prevent stroke

- Zone 3or4
no adjunctive measure
- Zone 2
1debranch (RSCA-LSCA bypass)
LSCA balloon occlusion
- Zone 1
2debranch (RSCA-LSCA-LCCA bypass)
- Zone 0
2debranch + BCA chimney



LSCA balloon occlusion
 LCCA (occluded)
 RSCA clamp
 RCCA compression



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In case of shaggy aorta

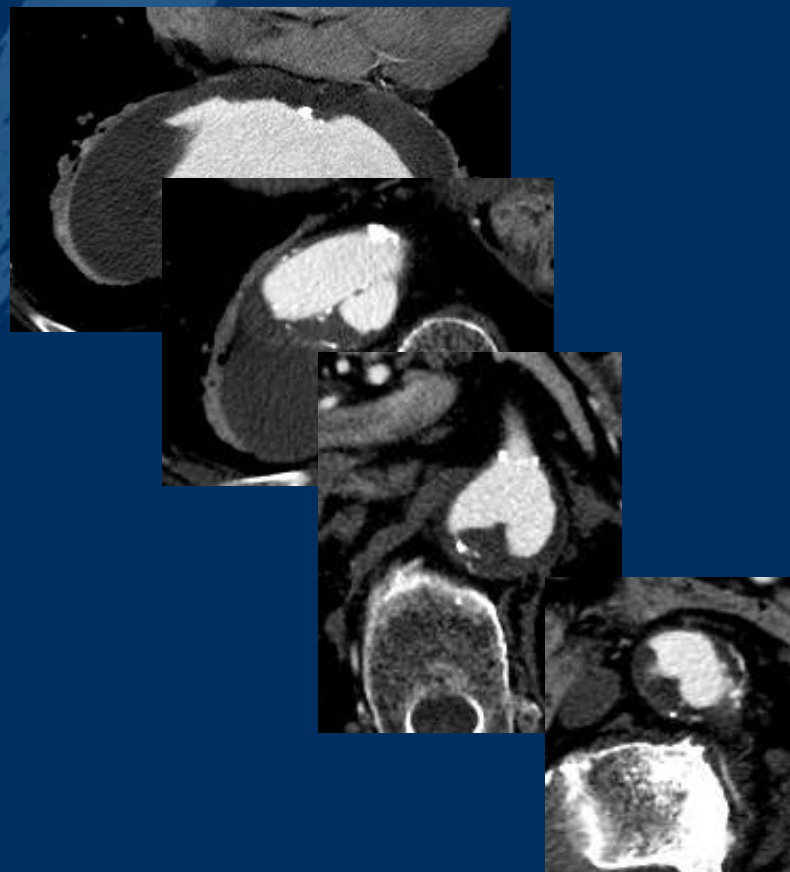


distal protection using retrograde filter via brachiocephalic artery



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In case of shaggy aorta



distal protection of SMA using Filtrap



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Risk factors to develop SCI and our management

- Length of aortic coverage
- Previous abdominal aortic repair
- Occluded internal iliac arteries
- Renal failure
- Shaggy aorta

unavoidable

- Coverage of LSCA →
- Hypotension →

Revascularization of LSCA
Hemodynamic management

High risk

TEVAR with CSF drainage



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Strategies to prevent RTAD

Retrograde Aortic Dissection After Thoracic Endovascular Aortic Repair

Ludovic Canaud, MD, PhD, Baris A. Ozdemir, BSc, MRCS, Benjamin O. Patterson, BSc, MRCS, Peter J. E. Holt, PhD, FRCS, Ian M. Loftus, MD, FRCS, and Matt M. Thompson, MD, FRCS

(Ann Surg 2014;260:389–395)

Conclusions: Although RTAD after TEVAR is an uncommon complication, it has a high mortality rate. RTAD is significantly more frequent in patients treated for acute and chronic type B dissection, and when the endograft is significantly oversized. The proximal endograft configuration was not associated with any difference in the incidence of RTAD.



no significant oversizing
especially in dissection cases



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Strategies to prevent RTAD

Rapid pacing to minimize the “windsock effect”

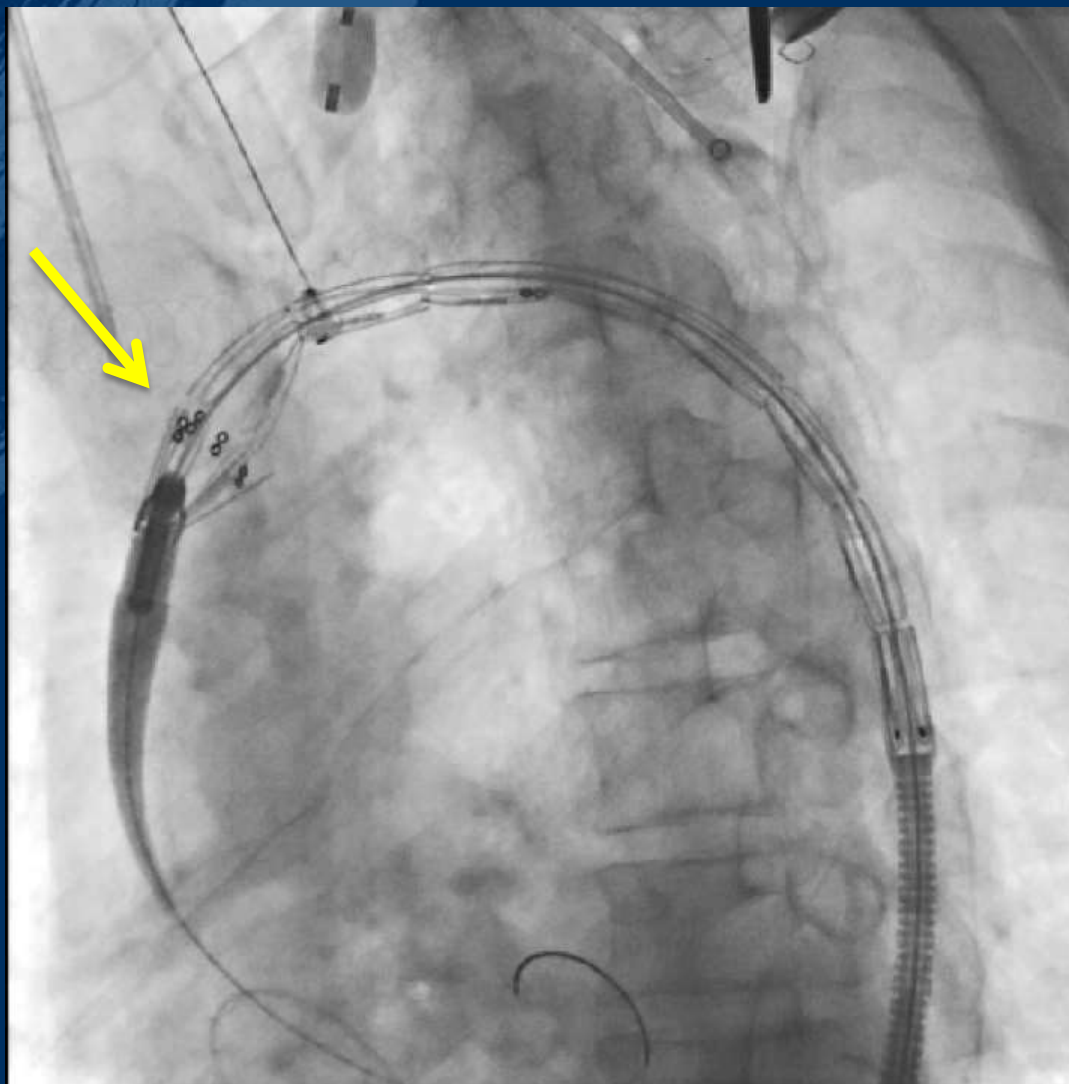


Rapid pacing may also decrease the damage of aortic wall during deployment and touch up.



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deployment under rapid pacing





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To prevent vessel access complications

- Use the low profile device



VALIANT

Or

CTAG via SENTRANT sheath



Iliac artery rupture due to 22F DrySeal sheath



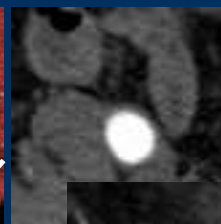
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VALIANT high accessibility

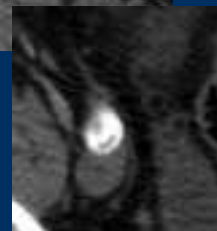
Y-graft(20*10mm)



Saccular aneurysm



11mm



4mm



7mm



8mm

Small and angulated access vessel



- VALIANT Captivia 34mm (24F)

no access complication



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2015-2017.2 (32cases)

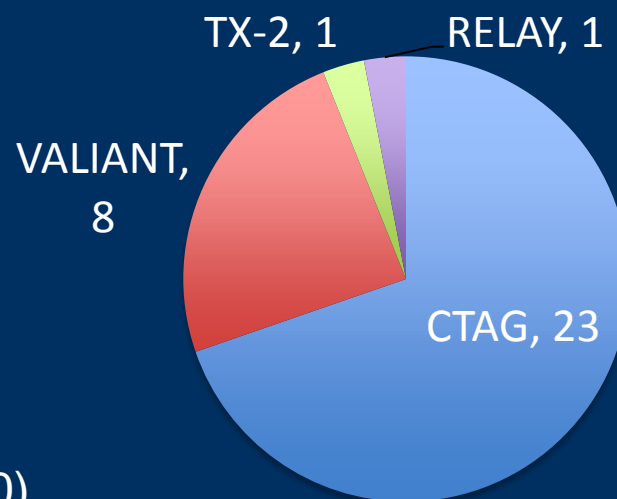
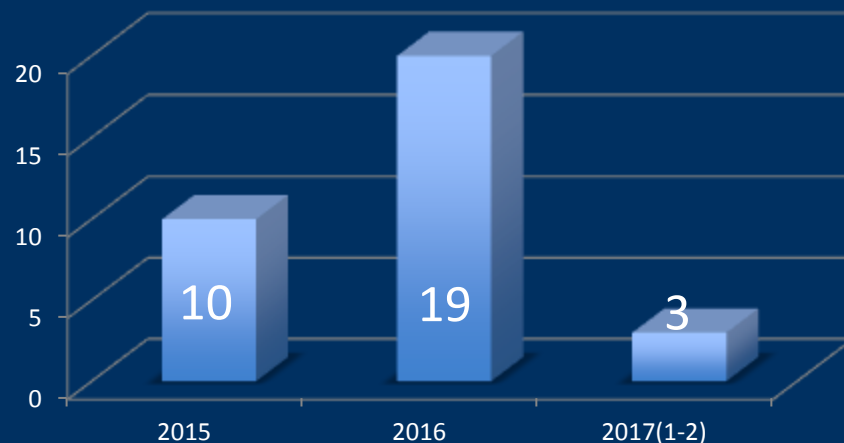
Mean age, y 73.0
male, n(%) 20(62.5)

Indication, n
aneurysm 22
Type B dissection 10
Rupture 2

Landing zone, n
Zone 0 2
Zone 1 4
Zone 2 9
Zone 3 14
Zone 4 3

Oversizing(%) 13.2
(dissection 9.1 aneurysm 15.0)

cases





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Perioperative outcome after TEVAR (2015-2017)

	Total(32)	VALIANT(8)	CTAG(22)	TX-2(1)
<u>death, n(%)</u>				
operative	0(0)	0(0)	0(0)	0(0)
in hospital	1(3.1)	0(0)	1(4.5)	0(0)
<u>neurological event, n(%)</u>				
stroke	1(3.1)	1(12)	0(0)	0(0)
paraplegia/paraparesis	1(3.1)	0(0)	1(4.5)	0(0)
<u>perioperative events, n(%)</u>				
RTAD	0(0)	0(0)	0(0)	0(0)
conversion to open surgery	0(0)	0(0)	0(0)	0(0)
rupture of iliac access	3(9.4)	0(0)	3(13)	0(0)
<u>endoleak, n(%)</u>				
type 1	0(0)	0(0)	0(0)	0(0)
type 2	1(3.1)	0(0)	1(4.5)	0(0)



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Conclusion

- Our strategies to reduce TEVAR related complications may play a beneficial role.
- access complication still remains challenging in small iliac artery.
- VALIANT is safe and effective option to avoid rupture of iliac access vessel.



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Why not VALIANT ?



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