Endovascular Thermal Septotomy Of The Dissection Flap With An Electrocautery Activated Guidewire To Treat Chronic TBADs:

When And How Does It Work: Complications And When It Should Be Avoided: Technical Tips And How To Avoid Pitfalls

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Transcatheter Electrosurgical Septotomy

A Disruptive Technique

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Disclosures

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  - Consulting
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  - Planning & proctoring
- Some devices presented here are investigational and have not been approved by the FDA
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    UT Health & Memorial Hermann Texas Medical Center , Houston, TX, USA

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False lumen management

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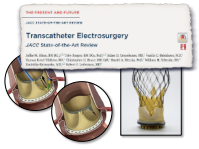
Transcatheter electrosurgery

2015

- Structural heart disease: **BASILICA** and **LAMPOON** techniques

(Khan et al. JACC 2018)



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Transcatheter electrosurgery

2015

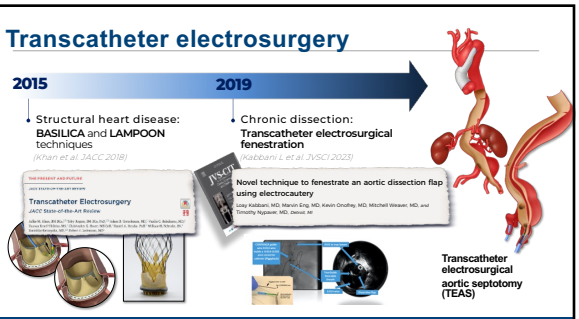
- Structural heart disease: **BASILICA** and **LAMPOON** techniques

(Khan et al. JACC 2018)

2019

- Chronic dissection: **Transcatheter electrosurgical fenestration**

(Kabbani L. et al. JVSCI 2023)



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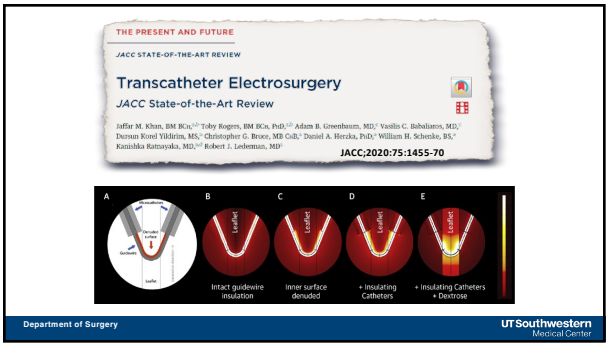
THE PRESENT AND FUTURE
JACC STATE-OF-THE-ART REVIEW
Transcatheter Electrosurgery
JACC State-of-the-Art Review
JACC:2020:75:1455-70
A
B
C
D
E
Leaflet
Intact guidewire insulation
Inner surface denuded
+ Insulating Catheters
+ Insulating Catheters + Dextrose
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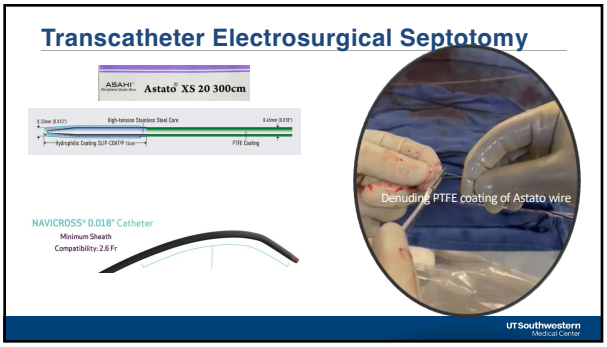
Transcatheter Electrosurgical Septotomy
Astato XS 20 300cm
NAVICROSS 0.018" Catheter
Minimum Sheath Compatibility: 2.6 Fr
Denuding PTFE coating of Astato wire
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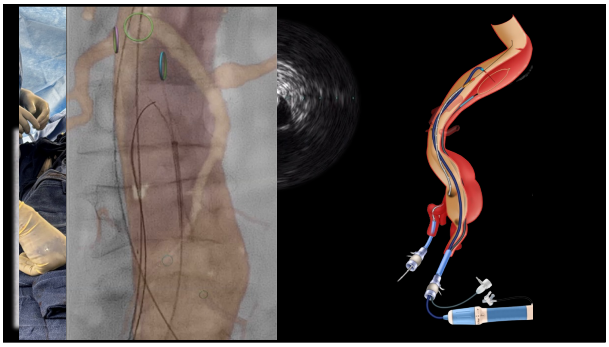


Transcatheter Electrosurgical Aortic Septotomy
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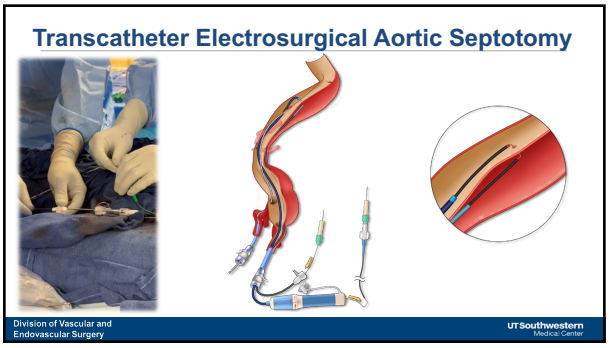
Transcatheter Electrosurgical Aortic Septotomy
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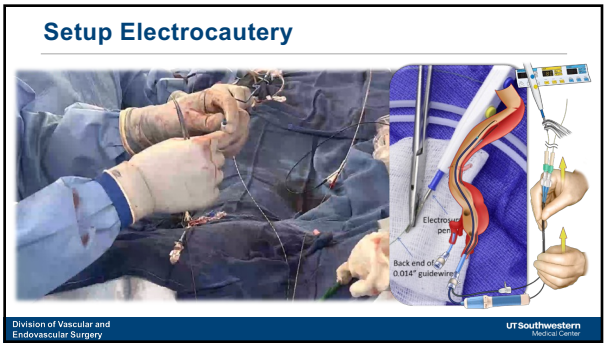
Setup Electrocautery
Back end of 0.014" guidewire
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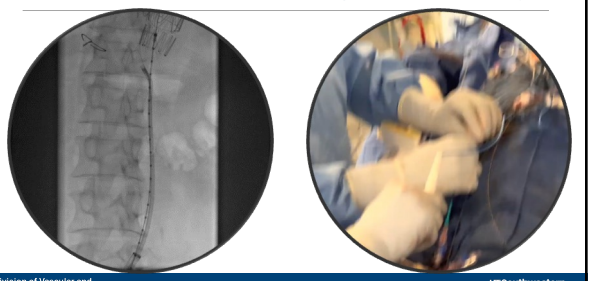
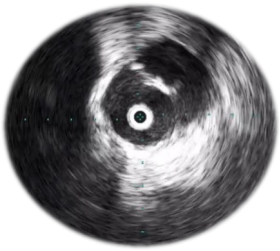
Transcatheter Electrosurgical Septotomy

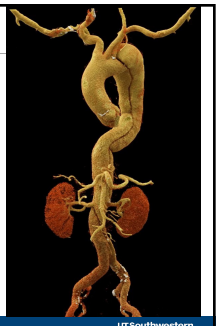


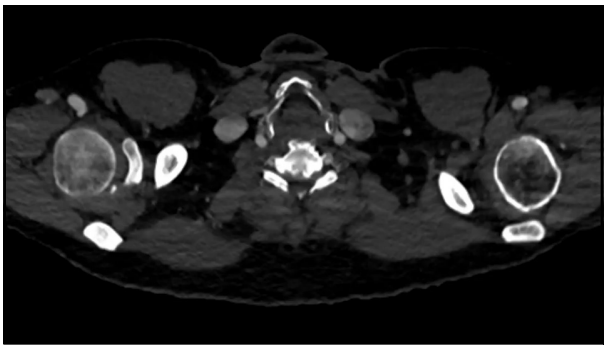
Post-Septotomy IVUS

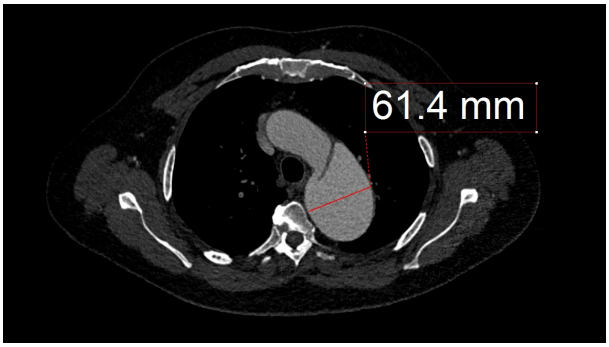


Case report

- 70yo male presented with a thoracic aortic aneurysm
- First noted in 2012, managed conservatively
- March 2024, CTA revealed an increase in aneurysm sac to 61 mm and Type B dissection







Treatment Plan

- TEVAR using Thoracic Branch Endoprosthesis (TBE)
- Transcatheter Electrosurgical Aortic Septotomy

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3-months later

- Presented to OSH with syncope, chest, and abdominal pain radiating to the back
- The patient was intubated and transferred to our institution

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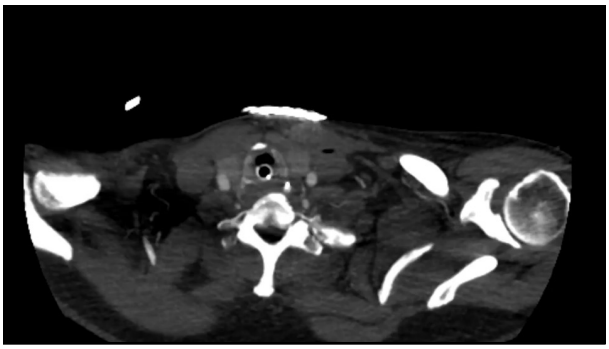

Plan

- Urgent endovascular thoracic aneurysm repair with TBE & left subclavian stenting
- Transcatheter Electrosurgical Aortic Septotomy

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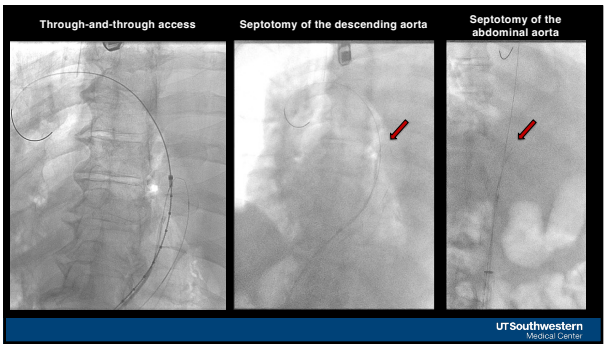

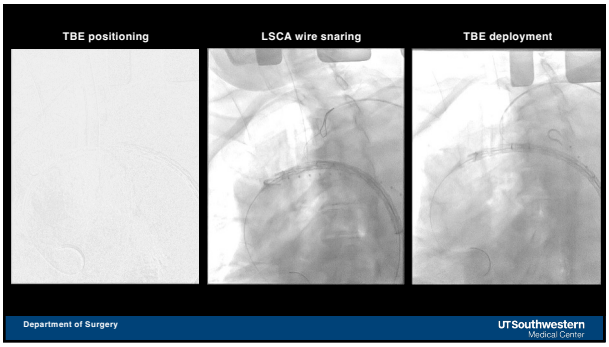

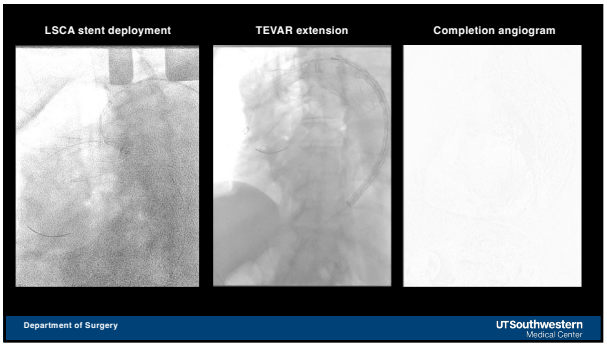

Hospital course

- Left hemothorax evacuation on POD 3
- Chest tubes removed on POD 5
- Discharged home on POD 8

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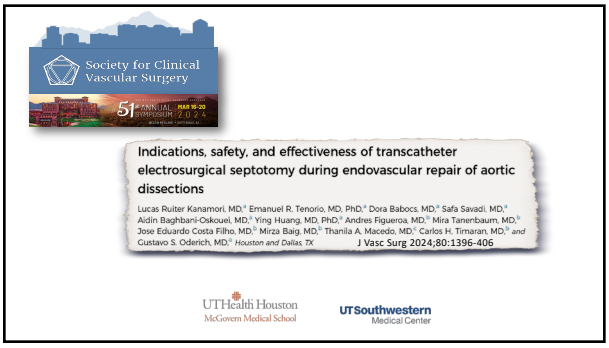

2-Center Experience

	n = 36	Percent or IQR
Acute complicated dissection	3	8
Chronic post-dissection aneurysm	32	89
Aortic arch (Zone 0-3)	7	19
Thoracic aorta (Zone 4-5)	7	19
Thoracoabdominal aorta (Zone 4-9)	19	53
Infrarenal aorta and iliacs (Zone 9-11)	3	8
Maximum aortic diameter (mm)	60	52 - 70
Prior aortic repair	27	75
Prior open surgical repair	23	64
Prior endovascular aortic repair	15	42
Symptomatic/ ruptured aneurysm	10	28
Family History of aortic disease	3	8

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Extent of repair and procedural data

	n = 36	Percent or Mean
Arch branch stent graft	7	19
TEVAR (±Petticoat)	8	22
TAAA FB-EVAR	18	50
EVAR	3	8
Procedural data	11	31
Total operating time (min, mean ± SD)		335 ± 22
Total endovascular time (min, mean ± SD)		248 ± 162
Total fluoroscopy time (min, mean ± SD)		102 ± 67
Total contrast volume (ml, mean ± SD)		177 ± 56
Total Cumulative Air Kerma (Gy, mean ± SD)	36	2.0 ± 1.5

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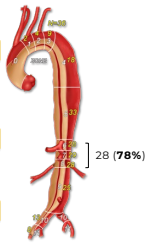
TEAS indication, extent and technical success

	n = 36	%
Indications		
True lumen compression (≤ 16mm)	28	78
Target artery from different lumen	19	53
Proximal or distal landing zone optimization	12	33
Organ or limb malperfusion	4	11
Technical success		
All patients (n = 36)	33	92
Chronic dissections (n = 33)	32	97
Acute dissections (n = 3)	1	33
Reasons for technical failure		
Dislodgement of dissection lamella, 2 (acute dissection)		
Inadvertent SMA dissection, 1 (chronic dissection)		
No arterial disruption or rupture		



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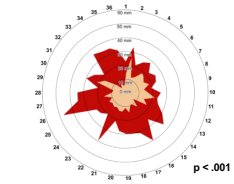
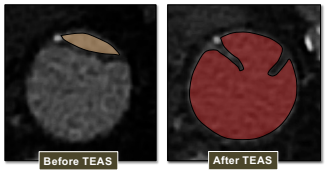
Aortic working lumen diameter



	Mean ± SD (mm)
Before TEAS	13.2 ± 4.8
After TEAS	28.4 ± 6.8



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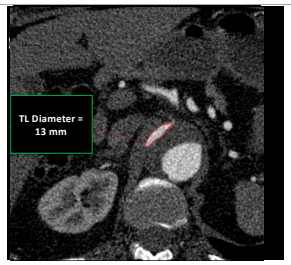
When to avoid TES?



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POP Blue Toe Syndrome

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Always look

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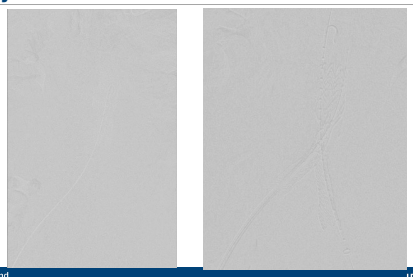
Always look



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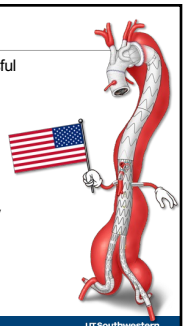
Conclusion

- TEAS can be performed safely and achieve a successful distal seal with false lumen exclusion in patients with **chronic** dissections
- TEAS facilitates endovascular repair, particularly in narrow true lumen and when target vessels arise from false lumen
- Full fluoroscopic visualization is needed to avoid injury
- Mural thrombus or thick septum should be avoided
- Longer follow up is needed to assess durability and frequency of endoleaks after FBEVAR for PD-TAAAs



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