



# Lesion modification with Jetstream is better

Su Hong Kim MD PhD

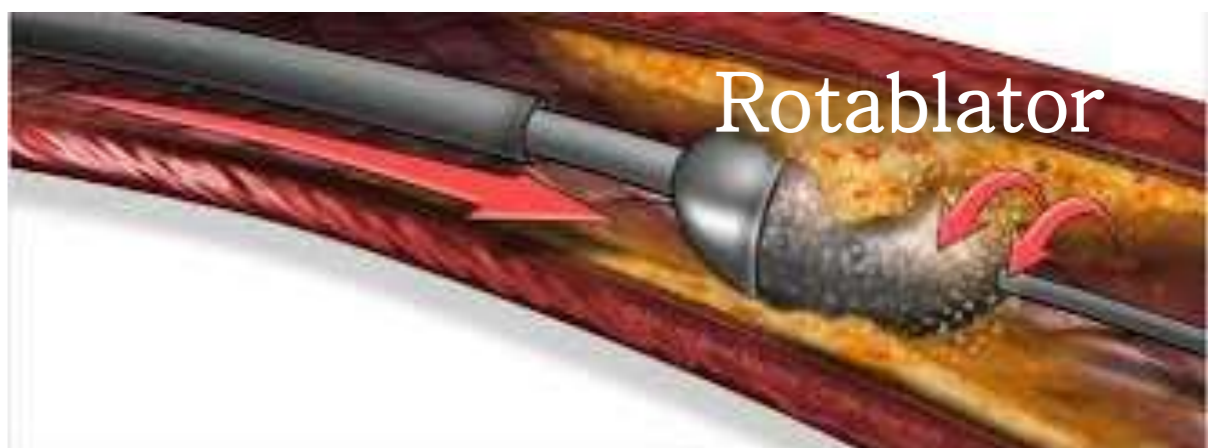
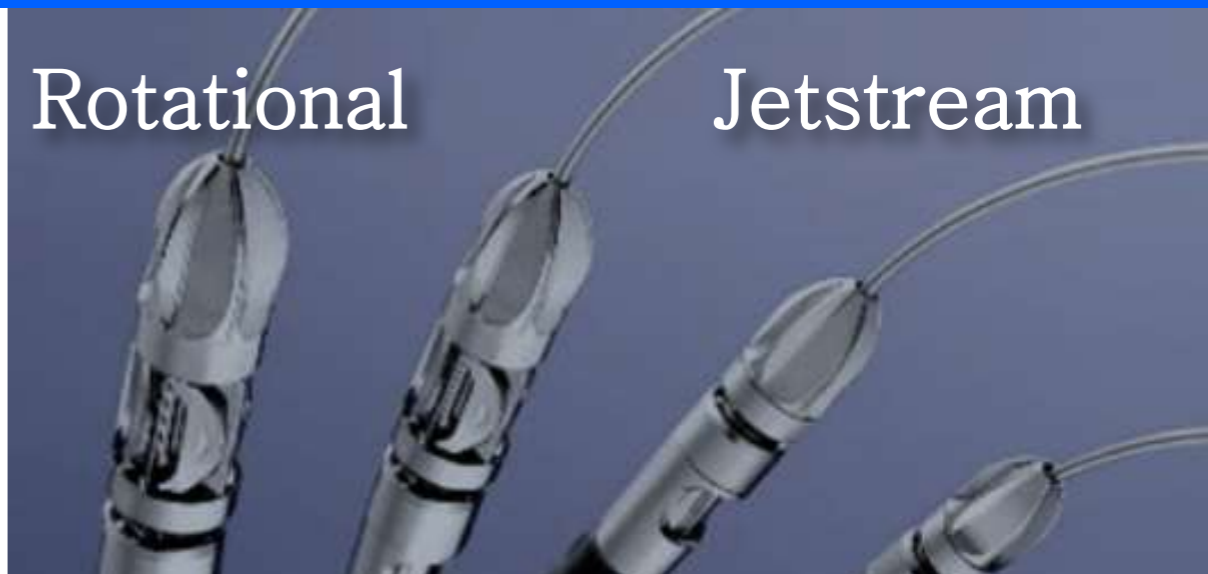
Busan Veterans Hospital

Busan, Korea (South)

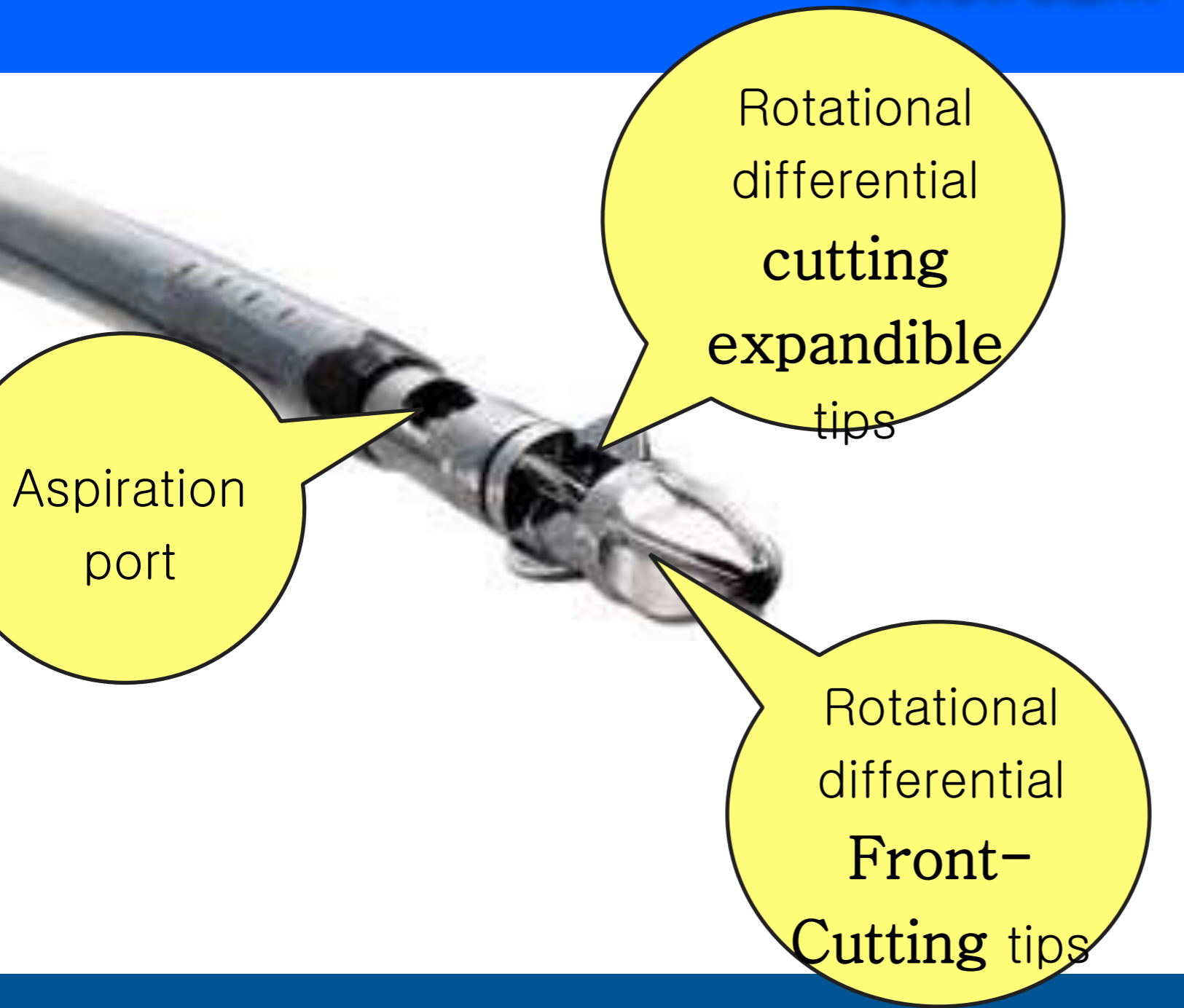
# Atherectomy in treating Complex Lesions

- 1) Increase change of procedural success
- 2) Reduce Flow Limiting Dissections
- 3) Reduce Bail-out Stenting
- 4) Allow Optimal Stent Expansion
- 5) Improve Effectiveness of anti-proliferative drugs

# Atherectomy Devices



# Jetstream



- Rotational cutter with aspiration capacity (thrombus, fibrotic, fatty, restenotic or calcified tissue)
- Thrombectomy devices

# Catheter type of Jetstream



**2.1/3.0 mm**

Blades Down	<b>3.0 mm</b>
-------------	---------------

Blades Up	<b>4.0 mm</b>
-----------	---------------



**2.4/3.4 mm**

Blades Down	<b>3.5 mm</b>
-------------	---------------

Blades Up	<b>4.5 mm</b>
-----------	---------------



**1.85 mm**

Blades Down	<b>2.75 mm</b>
-------------	----------------



**1.6 mm**

Blades Down	<b>2.5 mm</b>
-------------	---------------

# WHY? JETSTREAM?

- 1) Facilitates both atherectomy & thrombectomy : **Mixed morphology**
- 2) Front Cutting : **CTOs**
- 3) Expandable Blade Technology : **Single Device Solution**
- 4) Circumferential Cutting : **Concentric Lumens**
- 5) Reduce Risk of Embolization : **Active Aspiration**

# Jetstream Studies

## **Feasibility Studies**

- Jetstream Calcium
- Jetstream ISR

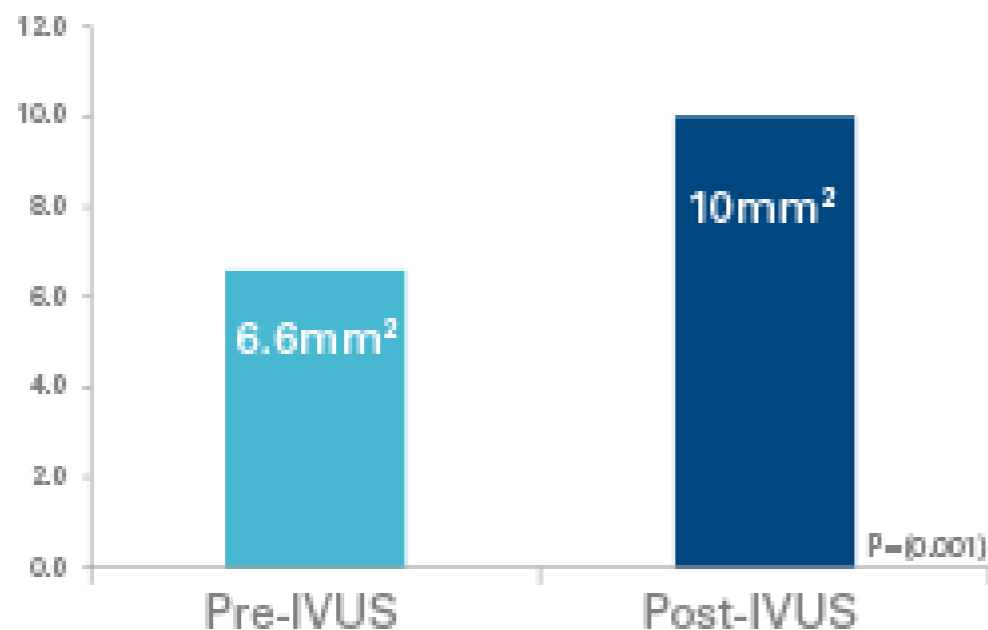
## **Large Registries**

- Pathway PVD
- Jet Registry
- Jet SCE
- Jet ISR (NCT02730234)
- Jet Ranger (formerly Jet PCB) (NCT03206762)

# Jetstream Calcium Study

- Prospective Single Arm, Multicenter study
- Severely Calcified FP artery (superficial calcium > 90°, > 5mm by IVUS)
- 26 patients with moderate – severe calcium
- SFA 76%, Popliteal 33%, CFA 5%
- Denovo lesion 90.5%
- Moderate calcium 33.3%, severe calcium 66.7%

## Lumen Area Increase



**86%**  
of lumen gain was  
directly attributed to  
calcium reduction



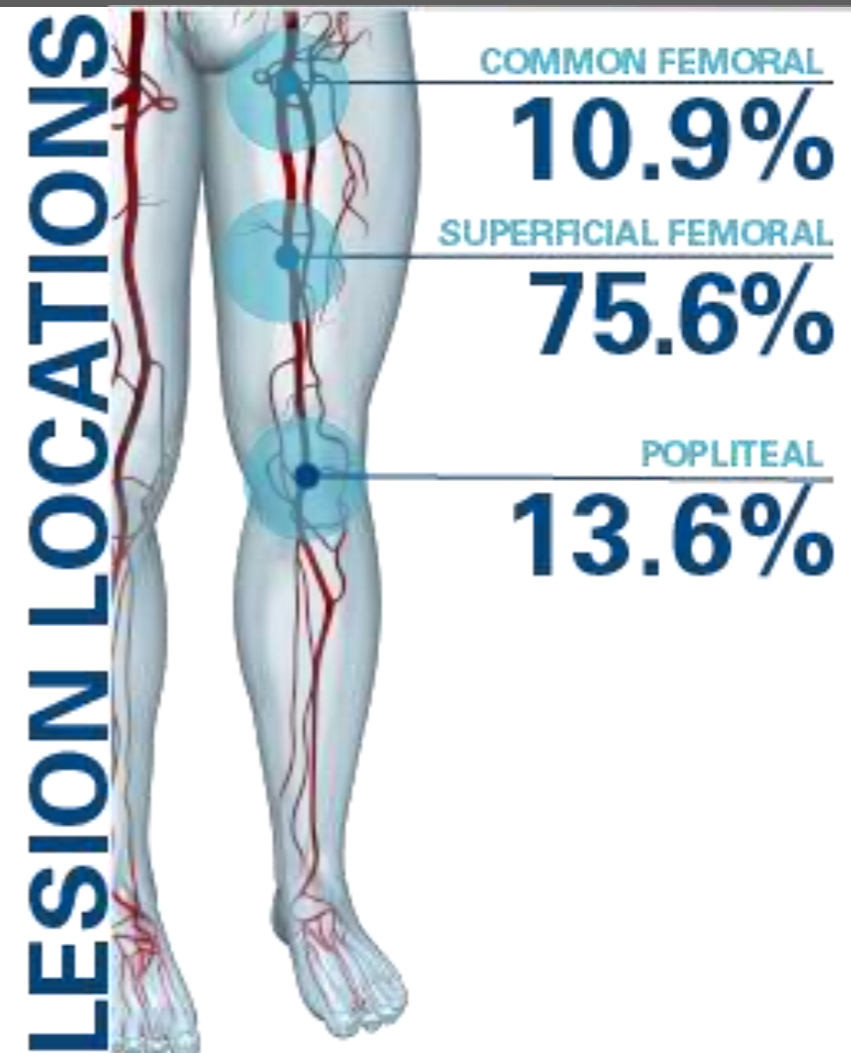
# Jetstream Registry

- Multicenter, open label, non-randomized registry
- 241 patients with FP lesions
- 37 sites in USA
- Key inclusion : R1-3, de novo or restenotic,  $\geq 70\%$  stenosis or occlusion, lesion length  $\geq 4.0\text{cm}$ ,  $\geq 1$  patent runoff vessel
- Primary endpoints : binary restenosis at 12 mos (PSV with DUS  $> 2.5$ )

**241** patients  
41% diabetic

---

258 lesions  
**16.4 cm**  
average lesion length  
36.1% occluded



# Jetstream Registry : Procedures

- 98.3% procedural success ( $\leq 30\%$  residual diameter stenosis post-procedure)
- 84 patients (35%) received adjunctive stents
- embolic protection used in 22.4% of cases

Procedure Time	73.4 $\pm$ 37.5 min
Total Jetstream Run	4.7 $\pm$ 3.5 min
Number of Passes	
Blades Down	2.0 $\pm$ 1.5
Blades Up	1.8 $\pm$ 1.4

Post-treatment stenosis estimated, mean $\pm$ SD	Overall (N=258 lesions)	Non-stent (N=165 lesions)	Stent (N=93 lesions)
Post Jetstream	44.4% $\pm$ 20.0%	38.5% $\pm$ 16.2%	54.8% $\pm$ 22.0%
Post Adjunctive Treatment	9.8% $\pm$ 11.4%	11.6% $\pm$ 11.7%	6.6% $\pm$ 1.02%

# Jetstream Registry : Efficacy & Safety

<b>EFFICACY</b>		Overall Population (N=241)	Non-stent (N=157)	Stent (N=84)
Binary Stenosis, % (n/N)				
30 days		2.6% (3/116)	3.8% (3/80)	0.0% (0/36)
12 months		22.8%	20.5% (8/39)	27.8% (5/18)
<b>SAFETY</b>		30 Days (N=219)	12 Months (cumulative : N=219)	
<b>MACE</b>		<b>2.3%</b>	<b>19.2%</b>	
Death		0	2.3%	
Amputation		0	0.5%	
Myocardial Infarction		0	0	
TVR or TLR		0.9%	17.4% (nonstent 19.4%, Stent 13.8%)	
Distal embolization		1.4%	1.4%	

# Jetstream Registry : Results

**At 12 months results showed ...**



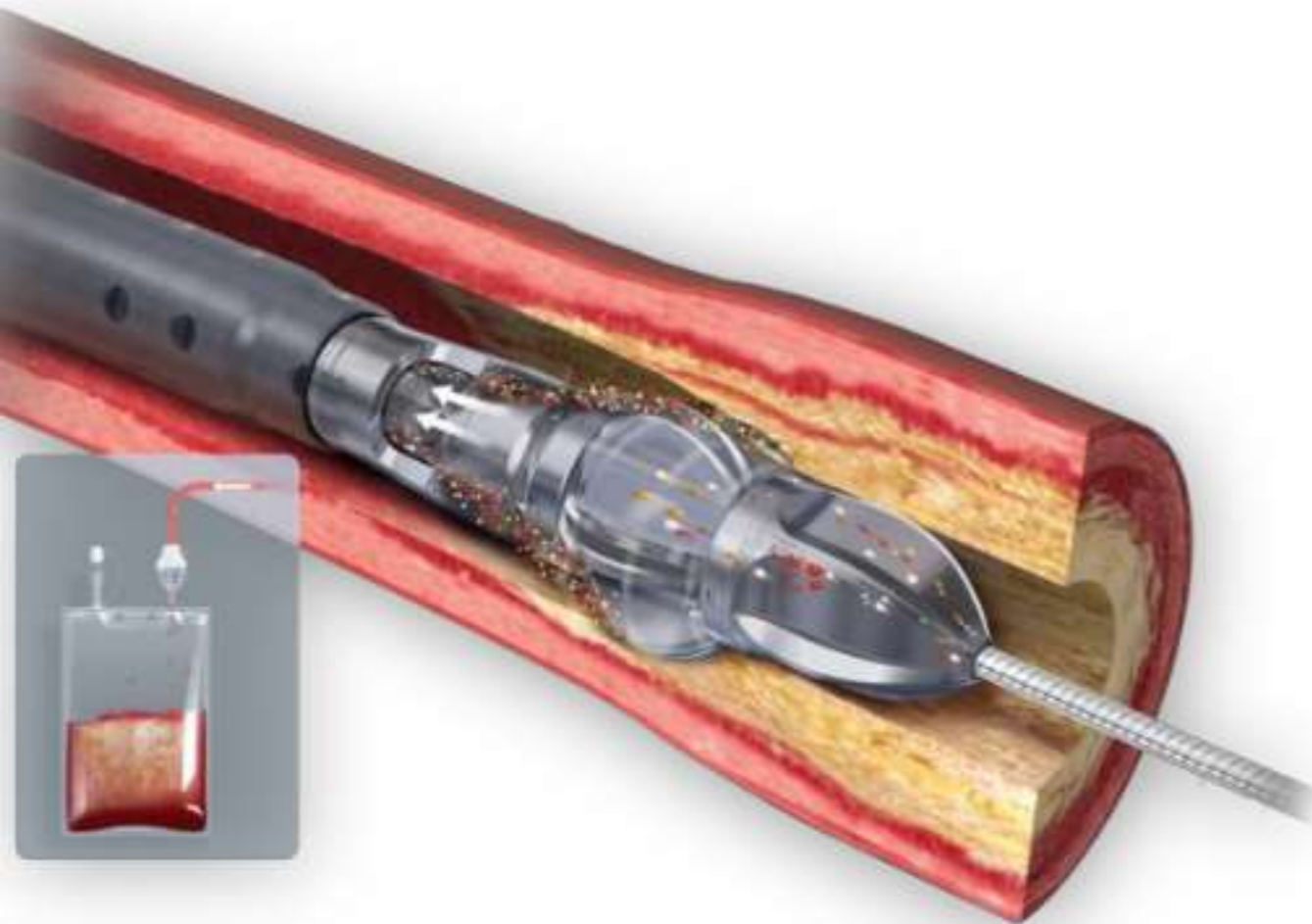
**Post-Procedure: 98.3% of patients had  $\leq 30\%$  residual diameter stenosis**

\*Patency based on a DUS PSVR  $\leq 2.5$ ; Binary Restenosis was reported as 22.8%.

The JET Registry had limited DUS follow-up at 12 months (57/241 patients)

Garcia L, LINC 2017 PI-464229-AA APR 2017

# Jetstream Registry : safety issue



JET Registry results demonstrated a **strong safety profile**.

**1.4%**

**Distal Embolization Rate**

**2.3%**

**Major Adverse Events at 30 days**

# Freedom from TLR in ISR studies



# Distal Embolization with Jetstream in Studies

JetStream ISR Feasibility Study in FP ISR (JEVT 2016) (EFP 50%)  
(19.5cm)

Distal Embolization Requiring Treatment	9.4%
No Filter	6.3%
Spider Filter	3.1%
Nav-6 Filter	0%

xIPAD NAV-6 Experience with Jetstream (all comers, unadjusted)(JIC  
2016) (EFP 59%) (14.5cm)

Without Nav-6	8%
With Nav-6	1.8%

JET Registry (preliminary) N=155 patients Denovo 90% (EFP 19%)  
(22cm)N

Jetstream Calcium Study (EFP 0%)(very short lesion : 2.5cm)

# My selection of Atherectomy Devices

## TURBOHAWK

- . Short Eccentric
- . Short CTO
- . TP trunk, proximal tibial artery

## JETSTREAM

- . Long Concentric
- . Thrombotic Lesions
- . In Stent Restenosis Lesions

# DAARTRAART



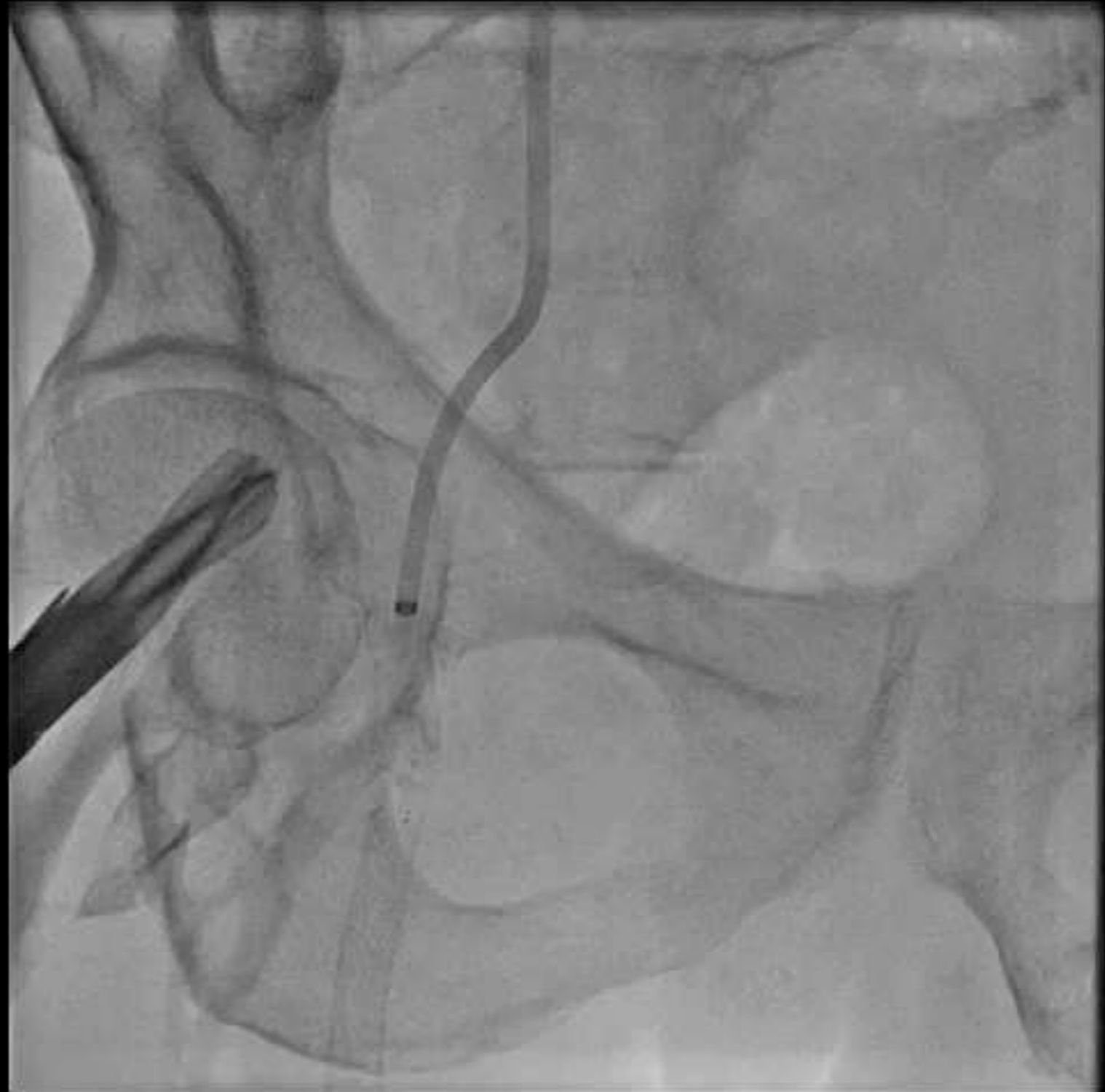
# Reimbursement Guideline for DAART in KOREA

<b>Lesion with Calcium</b>	Atherectomy	Filter	DCB	<b>DAART/RAART OK</b>
	Hawk / Jetstream	Spider FX / Nav-6	IN.PACT / Lutonix	
<b>Lesion without Calcium (length ≥ 10cm)</b>	Atherectomy	Filter	DCB	<b>DAART/RAART OK</b>
	Hawk / Jetstream	Spider FX / Nav-6	IN.PACT / Lutonix	
<b>Lesion without Calcium (length &lt; 10cm)</b>	Atherectomy	OR	DCB	<b>DAART/RAART NO</b>
	Hawk / Jetstream		IN.PACT / Lutonix	

- In ISR lesions Atherectomy with Hawk system is not reimbursed

# Jetstream in Most challenging

- 72 YO Male
- Right LE claudcation about 100 meter for 2 Mos
- ABI 0.65/0.95
- HTN, DM2
- 2 YA, PTA for RSFA CTO  
: 1 SNS at pSFA

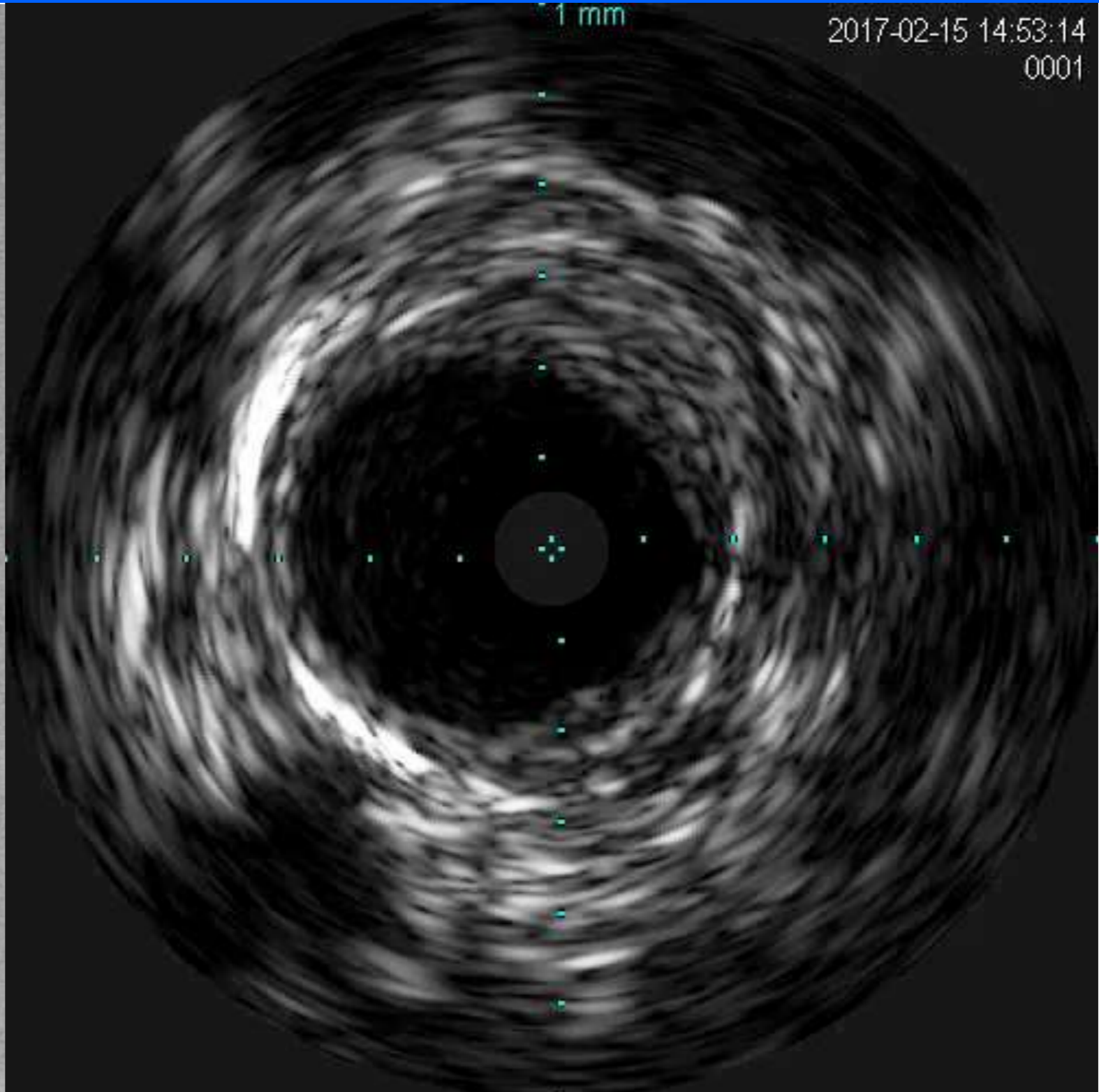
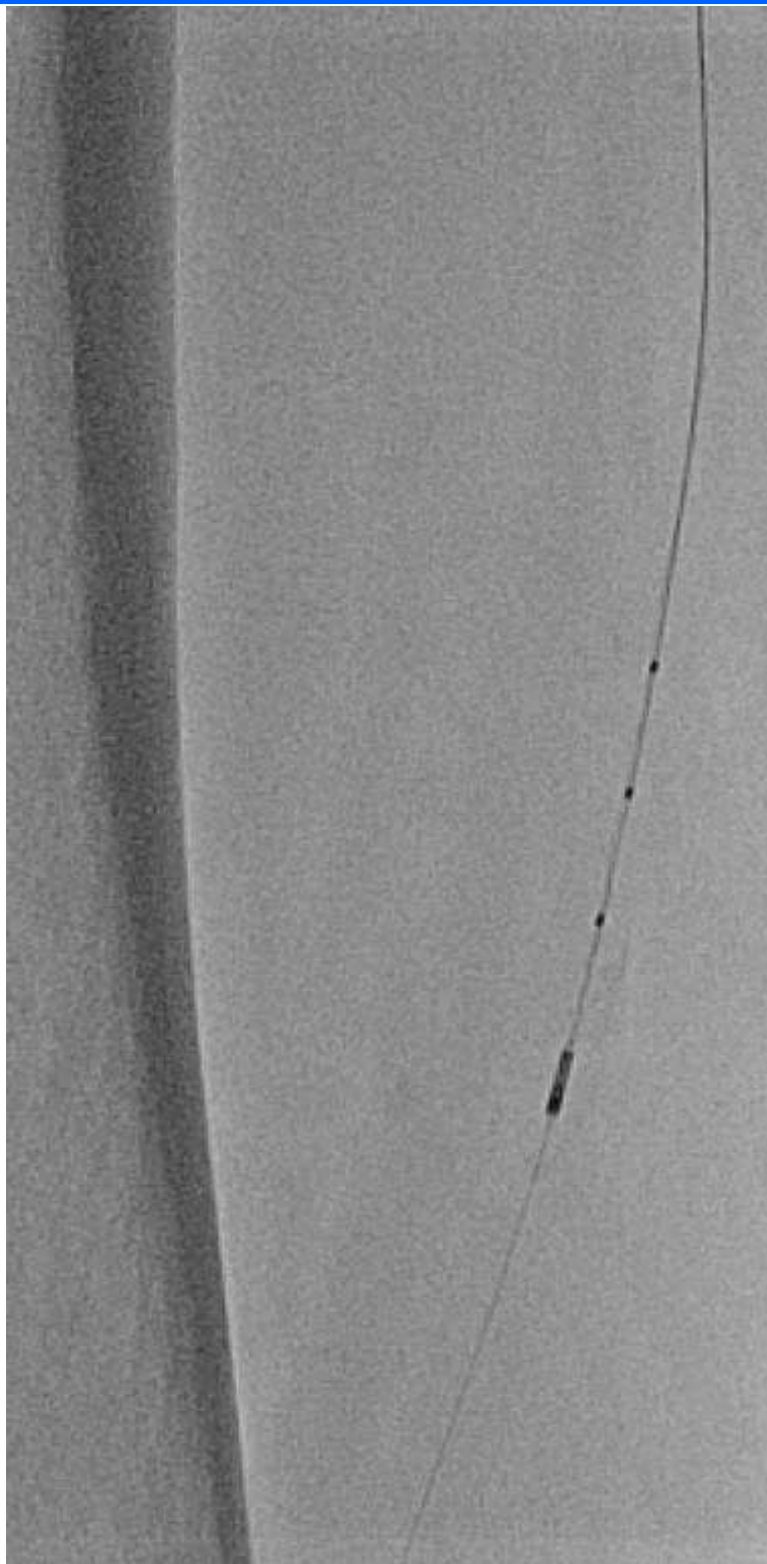


# Jetstream in Most challenging

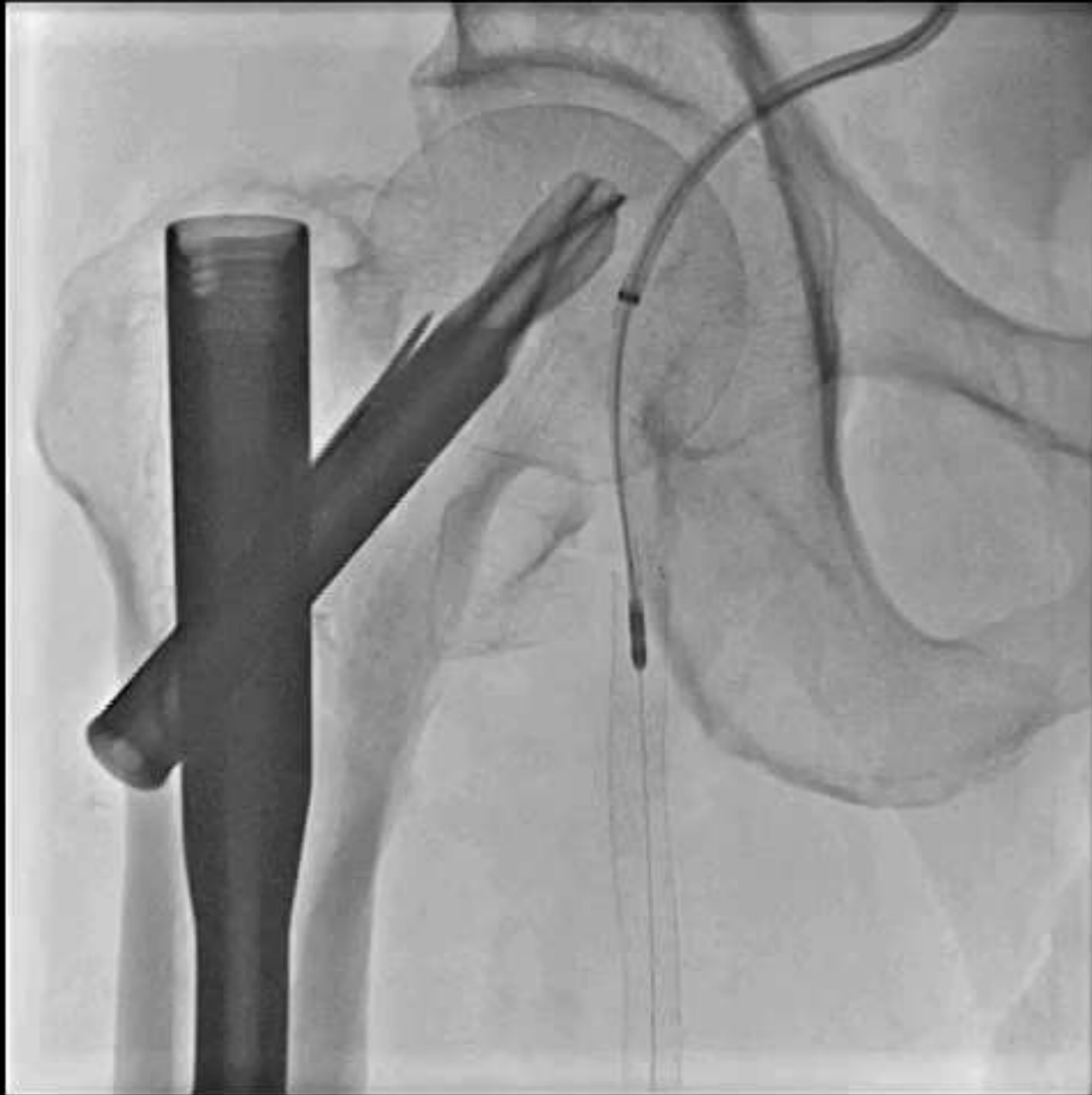


- CXI curved
- Astat XS 20g

# Jetstream in Most challenging



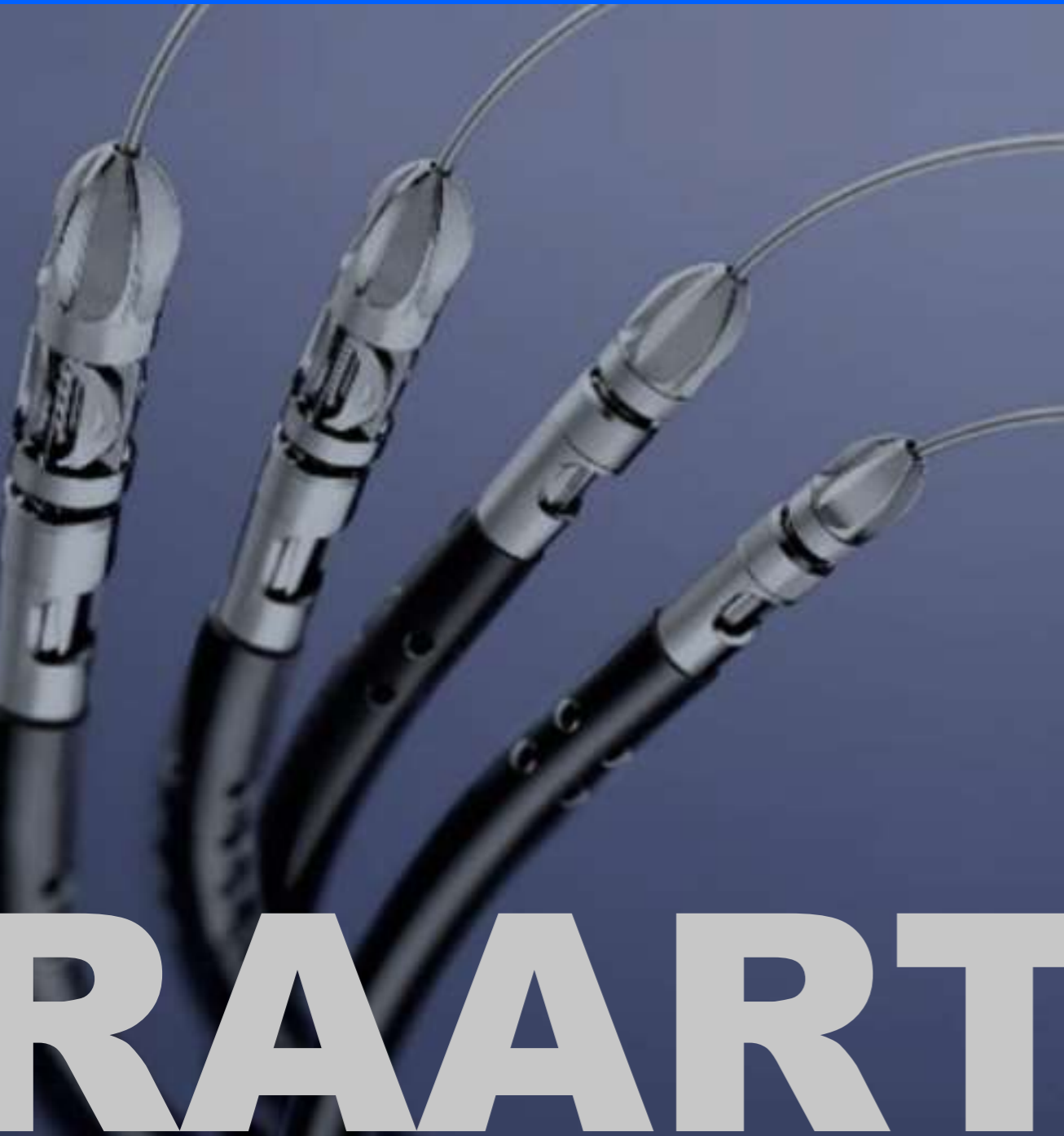
# Jetstream in Most challenging



# Jetstream in Most challenging



# Why Jetstream is Better in Long Calcified FP lesions?



## Many Reasons

- Save Time
- Save Efforts
- Short Learning Curve
- Decrease Radiation Exposure
- Get Concentric Lumen Gain
- Can Cut the Calcification
- Can Aspirate Thrombus
- Useful in ISR : Reimbursed in Korea

An aerial photograph of the Busan Boun Hospital complex, featuring several large, modern multi-story buildings with glass facades and concrete structures. The hospital is situated on a hillside with dense green trees in the background. A parking lot with many cars is visible in the foreground. A road or bridge runs along the bottom right edge of the image. The text "For the Beautiful Leg" and "Many Thanks for Ur Attention" is overlaid in a yellow, sans-serif font across the center of the image.

For the Beautiful Leg  
Many Thanks for Ur Attention