# Zilver PTX Stent for CLI –
# Insights from the Japan Post-Market Study

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***On behalf of the Investigators***

# COI Disclosure
# First Author : Hiroyoshi Yokoi

1.Consultation fees ：none
2.Stock ownership/ Profit ：none
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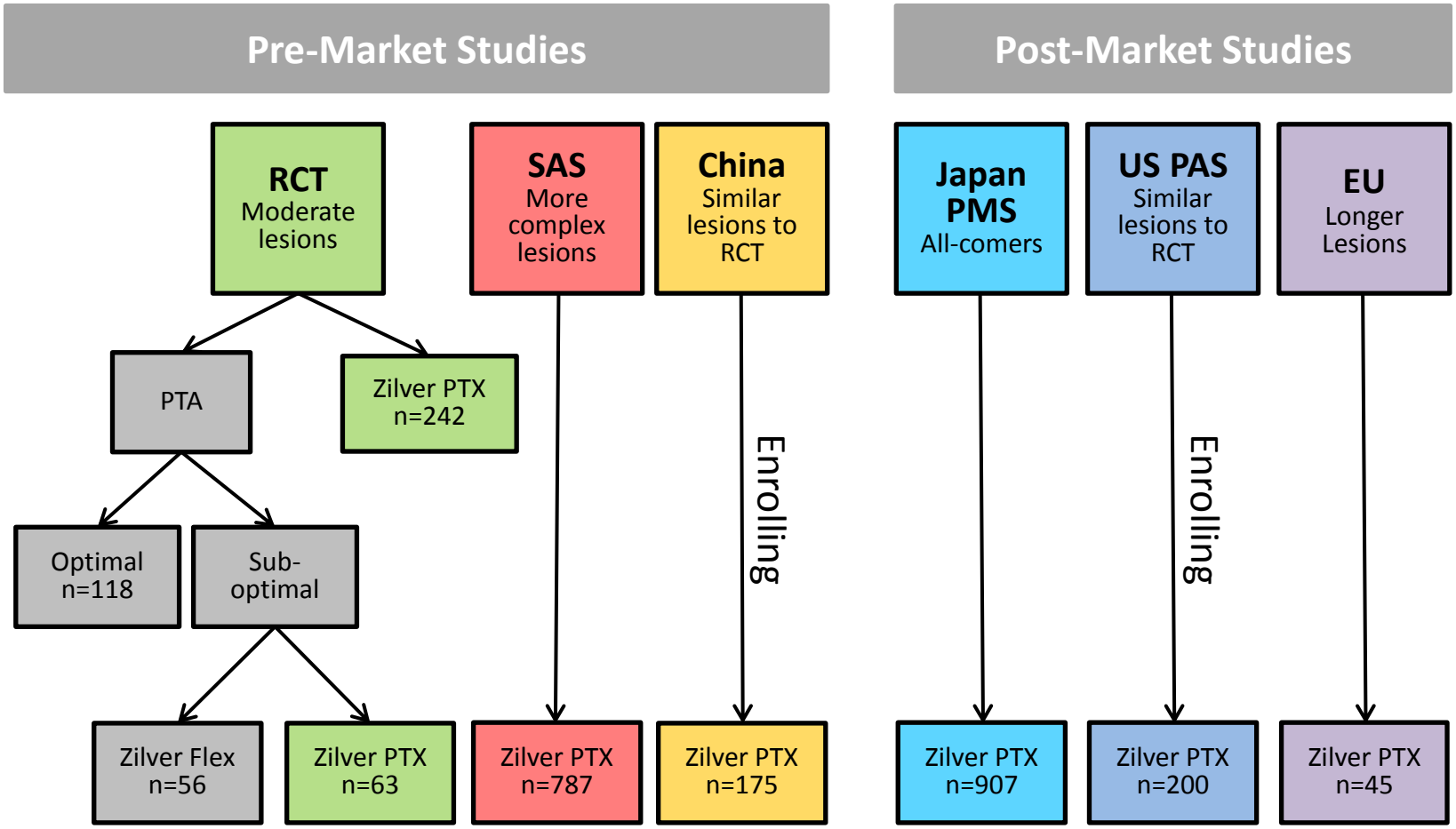
# Global Clinical Program




**More than 2400 patients to be included in current Zilver PTX clinical program**

# Japan PMS Compared to RCT and SAS

<table>
<tr><th></th><th>Zilver PTX RCT</th><th>Zilver PTX SAS</th><th>Zilver PTX Japan PMS</th></tr>
<tr><td rowspan="7">Key Study Criteria</td><td colspan="2">No significant untreated inflow tract stenosis</td><td rowspan="7">ALL patients treated with Zilver PTX enrolled (up to enrollment limit), NO exclusion criteria</td></tr>
<tr><td colspan="2">At least one patent runoff vessel</td></tr>
<tr><td>Maximum 2 Zilver PTX stents per lesion</td><td>Maximum 4 Zilver PTX stents per patient</td></tr>
<tr><td>Lesion length ≤ 14 cm</td><td rowspan="2">No exclusions</td></tr>
<tr><td>One lesion per limb</td></tr>
<tr><td>No prior stent in SFA</td><td>ISR included</td></tr>
<tr><td>Excluded if serum creatinine > 2.0, renal failure, or dialysis</td><td>No exclusions</td></tr>
<tr><td>Antiplatelets</td><td colspan="3">Clopidogrel or ticlopidine recommended for 60 days, aspirin indefinitely</td></tr>
<tr><td>Follow-up</td><td>5 years</td><td>2 years</td><td>5 years</td></tr>
<tr><td>Patency</td><td>DUS core laboratory analysis</td><td colspan="2">DUS site analysis</td></tr>
<tr><td>Stent Integrity</td><td colspan="3">X-ray core laboratory analysis</td></tr>
</table>

**Increasingly complex patients and lesions**

# Patient Demographics and Comorbidities

| | Zilver PTX RCT | Zilver PTX SAS | Zilver PTX Japan PMS |
|---|---|---|---|
| **Patients** | 236 | 787 | 907 |
| **Age (years)** | 68 ± 10 * | 67 ± 9 * | 74 ± 9 |
| **Male** | 66% | 73% | 70% |
| **Diabetes** | 50% * | 36% * | 59% |
| **High cholesterol** | 76% * | 58% | 61% |
| **Hypertension** | 89% | 80% * | 85% |
| **Pulmonary disease** | 19% * | 9% | 8% |
| **Renal Failure (eGFR< 60 and/or "on Dialysis")** | 0% (10% renal disease*) | Not assessed (11% renal disease*) | 36% (44% renal disease) |

* $p < 0.01$ compared to Japan PMS

**Japan PMS patients were older, more diabetic, and had more renal failure**

# Baseline Lesion Characteristics

| | | Zilver PTX RCT | | Ziver PTX SAS | | Zilver PTX Japan PMS |
|---|---|---|---|---|---|---|
| **Lesions** | | 247 | | 900 | | 1075 |
| **Lesion length (cm)** | | 6.6 ± 3.9 * | | 10.0 ± 8.2 * | | 14.7 ± 9.7 |
| **Diameter stenosis (%)** | | 81 ± 17 * | | 85 ± 16 * | | 92 ± 11 |
| **Total occlusions** | | 33% * | | 38% | | 42% |
| **In-stent restenosis** | | 0% * | | 15%* | | 19% |
| **Patent runoff vessels** | **0** | 0% | | 0% | | 7% |
| | **1** | 22% | * | 19% | * | 32% |
| | **2** | 35% | | 35% | | 32% |
| | **≥3** | 42% | | 45% | | 29% |

* $p < 0.05$ compared to Japan PMS

**Japan PMS lesions were more complex (e.g., longer, more ISR, fewer patent runoff vessels)**

# Baseline Clinical Assessment

| Pre-procedure Clinical Assessment | | Zilver PTX RCT | | Zilver PTX SAS | | Zilver PTX Japan PMS |
|---|---|---|---|---|---|---|
| Rutherford | 1-3 (Claudication) | 91% | * | 89% | * | 78% |
| | 4-6 (CLI) | 9% | | 11% | | 22% |
| ABI | | 0.67 ± 0.19 | * | 0.64 ± 0.26 | | 0.63 ± 0.18 |

* $p < 0.01$ compared to Japan PMS

**22% of patients in Japan PMS had critical limb ischemia (Rutherford 4-6)**

# Thrombosis/occlusion

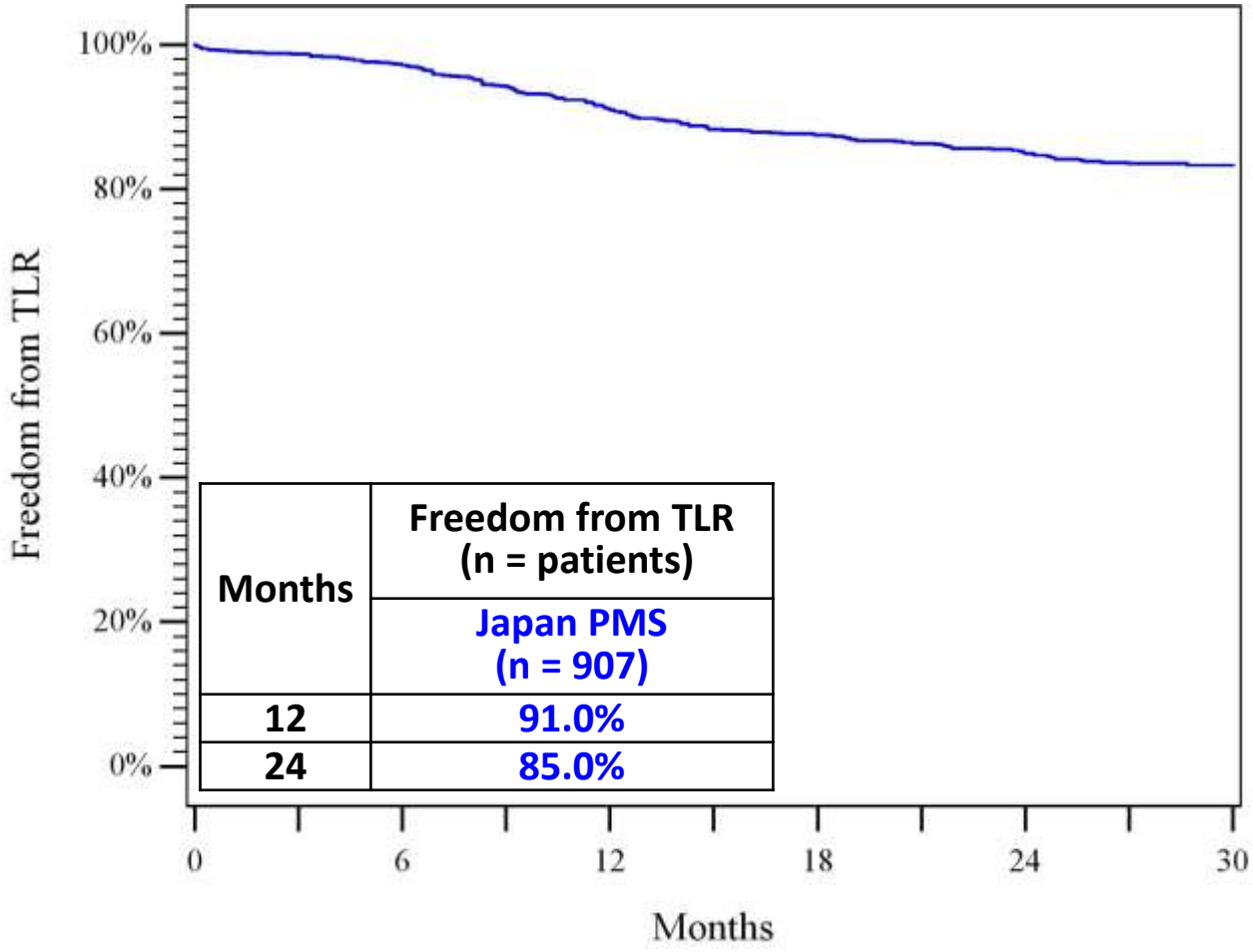
- SFA stent thrombosis can be difficult to distinguish from total occlusion caused by restenosis
  - No standardized classification
  - Easier to distinguish thrombosis from restenosis at earlier timepoints (e.g., < 30 days), more difficult at later timepoints

# Thrombosis/occlusion

| Time After Procedure | Cumulative Occurrence Rate |
|---|---|
| 12 months | 3.0% |
| 24 months | 3.6% |

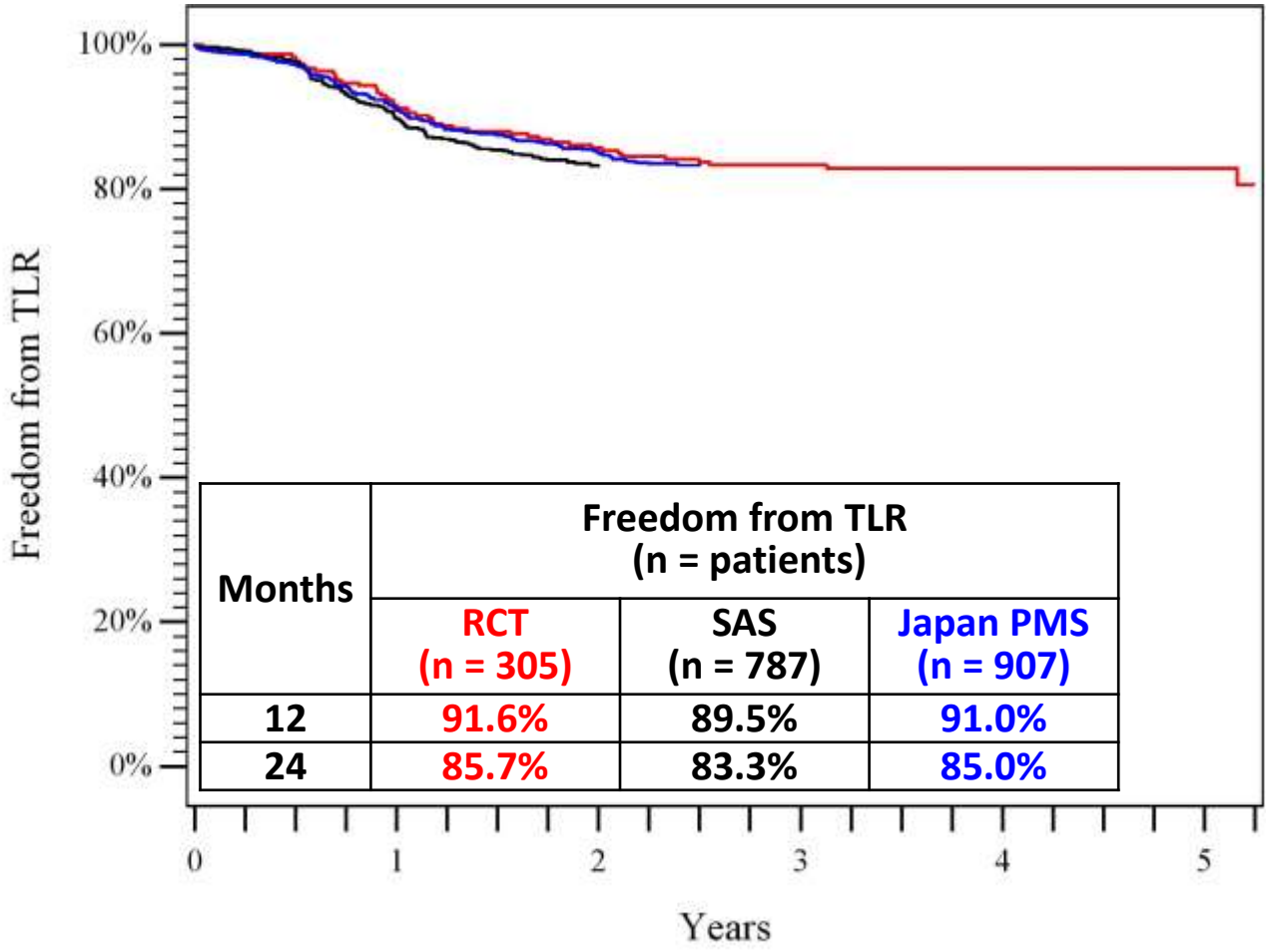
- 3.6% rate of site-reported total occlusion of suspected thrombotic origin through 24 months
  - Rate similar to Zilver PTX in RCT (2.2%) and SAS (3.5%), bare Zilver in RCT (3.6%), and 30-day to 12-month BMS and PTA rates in literature (2-4%)

# Freedom from TLR




| Months | Freedom from TLR (n = patients) |
|---|---|
| | Japan PMS (n = 907) |
| 12 | 91.0% |
| 24 | 85.0% |

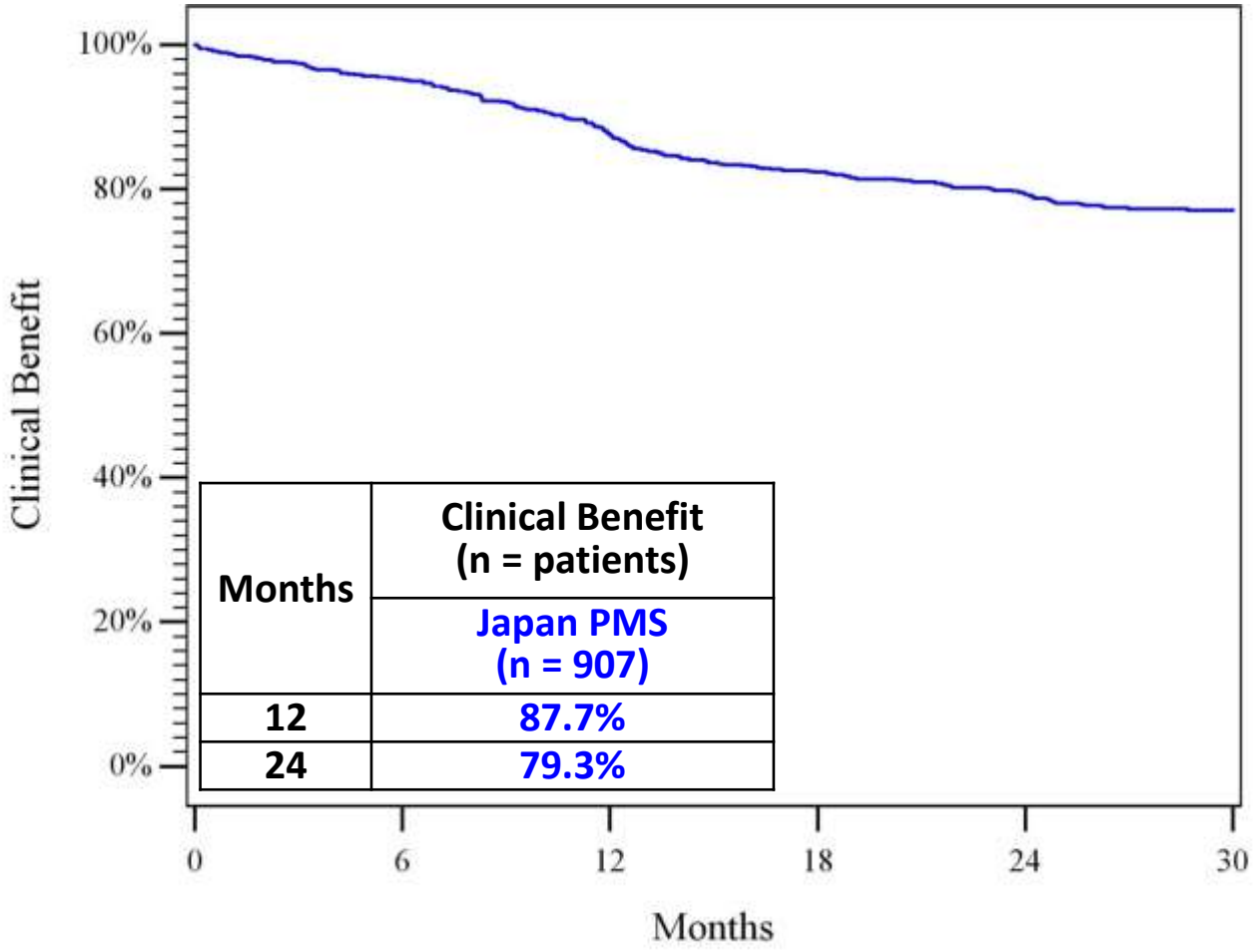
# Freedom from TLR




| Months | Freedom from TLR (n = patients) | | |
|---|---|---|---|
| | RCT (n = 305) | SAS (n = 787) | Japan PMS (n = 907) |
| 12 | 91.6% | 89.5% | 91.0% |
| 24 | 85.7% | 83.3% | 85.0% |

**Freedom from TLR rate in PMS remains high and consistent with both pre-market studies**

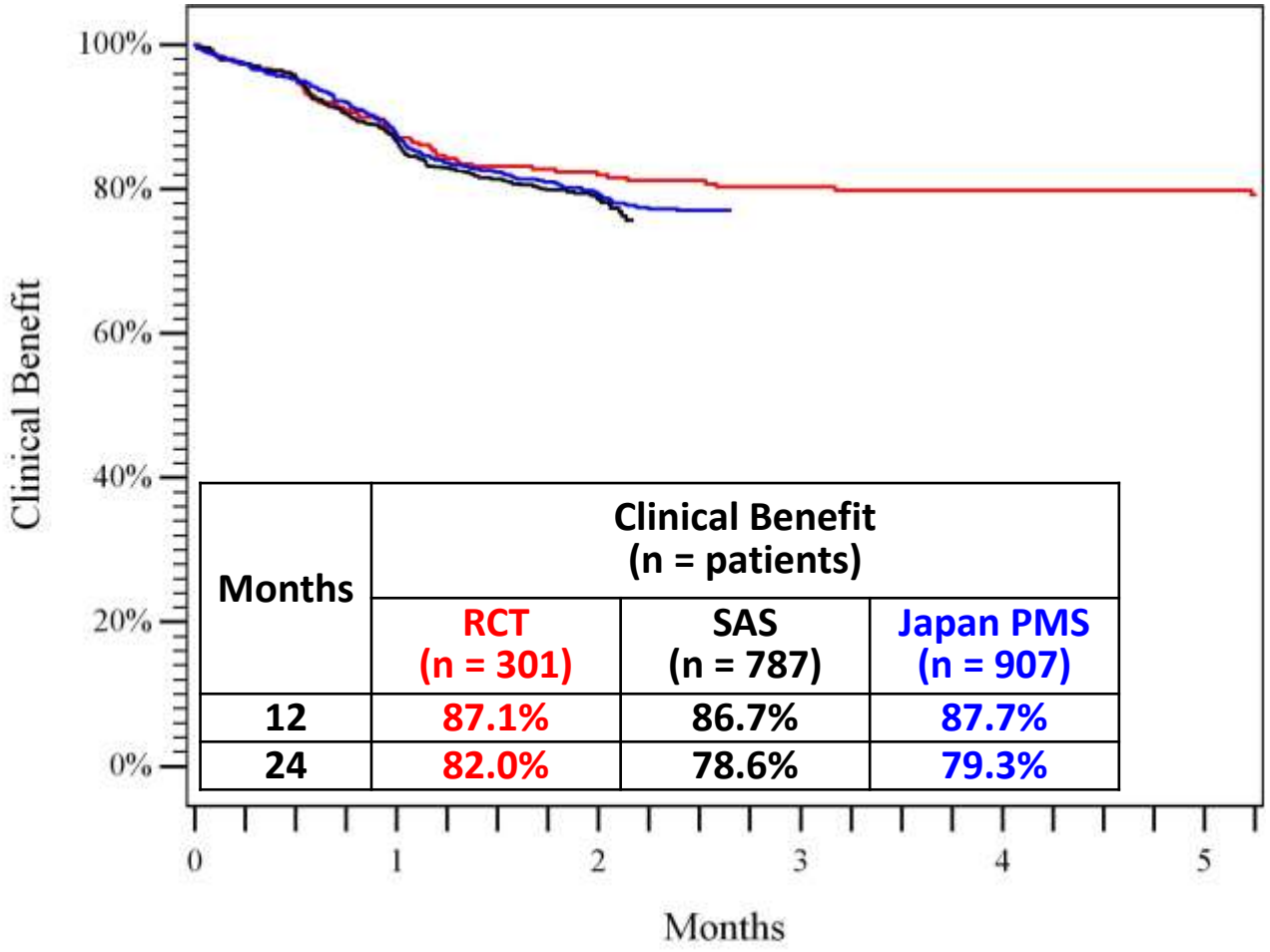
# Clinical Benefit




| Months | Clinical Benefit (n = patients) |
|---|---|
| | Japan PMS (n = 907) |
| 12 | 87.7% |
| 24 | 79.3% |

**Clinical benefit is defined as freedom from persistent or worsening claudication, rest pain, ulcer, or tissue loss**

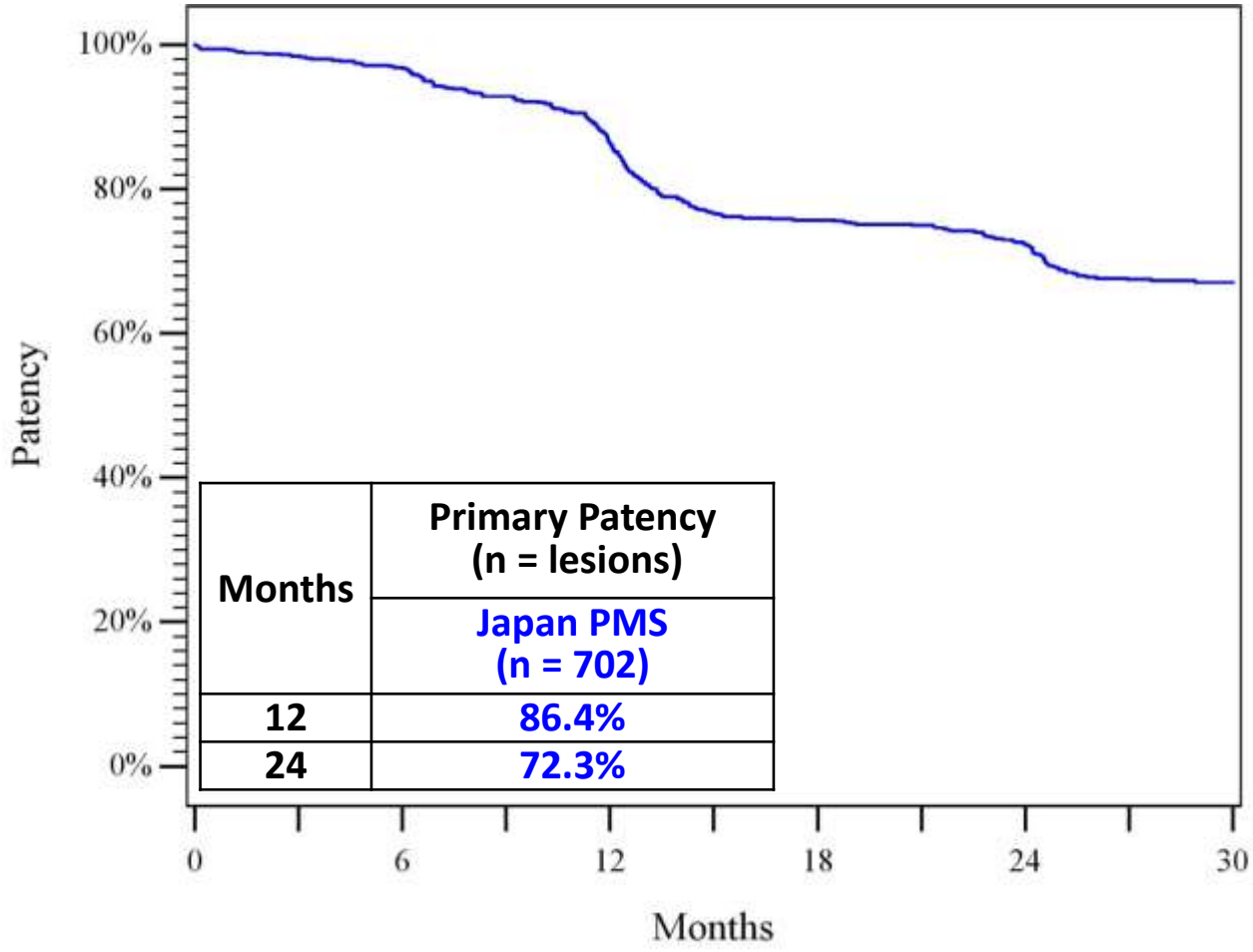
# Clinical Benefit




| Months | Clinical Benefit (n = patients) | | |
|---|---|---|---|
| | RCT (n = 301) | SAS (n = 787) | Japan PMS (n = 907) |
| 12 | 87.1% | 86.7% | 87.7% |
| 24 | 82.0% | 78.6% | 79.3% |

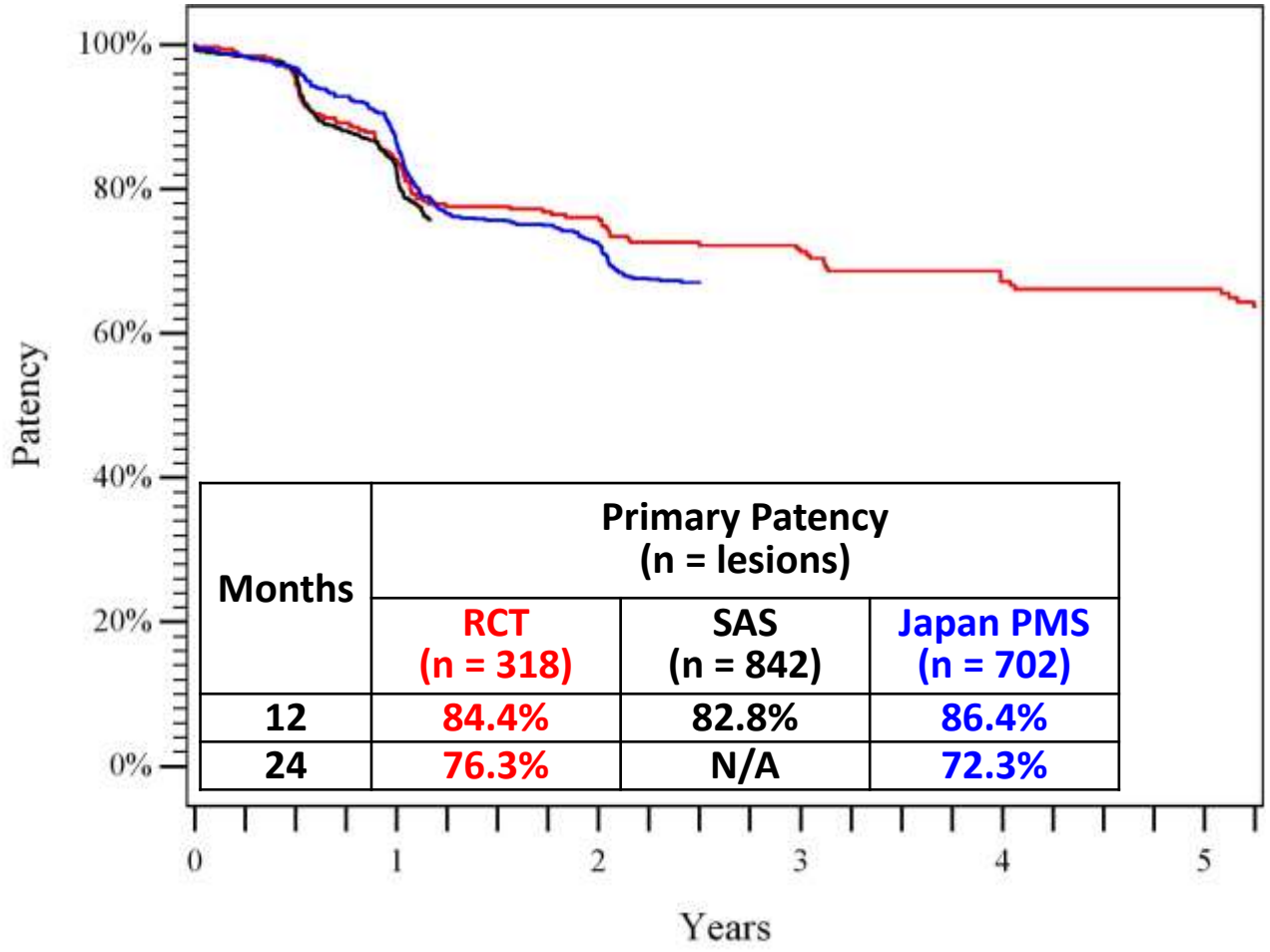
**Clinical benefit in the Japan PMS is similar to both pre-market studies**

# Primary Patency by Duplex Ultrasound




| Months | Primary Patency (n = lesions) |
|---|---|
| | Japan PMS (n = 702) |
| 12 | 86.4% |
| 24 | 72.3% |

# Primary Patency by Duplex Ultrasound




| Months | Primary Patency (n = lesions) | | |
|---|---|---|---|
| | RCT (n = 318) | SAS (n = 842) | Japan PMS (n = 702) |
| 12 | 84.4% | 82.8% | 86.4% |
| 24 | 76.3% | N/A | 72.3% |

**Primary patency rate in the Japan PMS is similar to both pre-market studies**

# Analysis of Critical Limb Ischemia Patients

- 22% of patients (n=188) enrolled in Japan PMS were classified as critical limb ischemia (Rutherford 4-6)

# CLI and non-CLI Demographics and Comorbidities

| | Zilver PTX Japan PMS | JPMS non-CLI | JPMS CLI |
|---|---|---|---|
| **Patients** | 907 | 670 | 188 |
| **Diabetes*** | 59% | 56% | 73% |
| **High cholesterol*** | 61% | 63% | 54% |
| **Hypertension** | 85% | 85% | 87% |
| **Renal Failure (eGFR< 60 and/or "on Dialysis")*** | 36% (44% renal disease) | 30% (37% renal disease) | 57% (67% renal disease) |

* $p < 0.05$ comparing non-CLI and CLI groups

**CLI patients had higher prevalence of diabetes and renal failure**

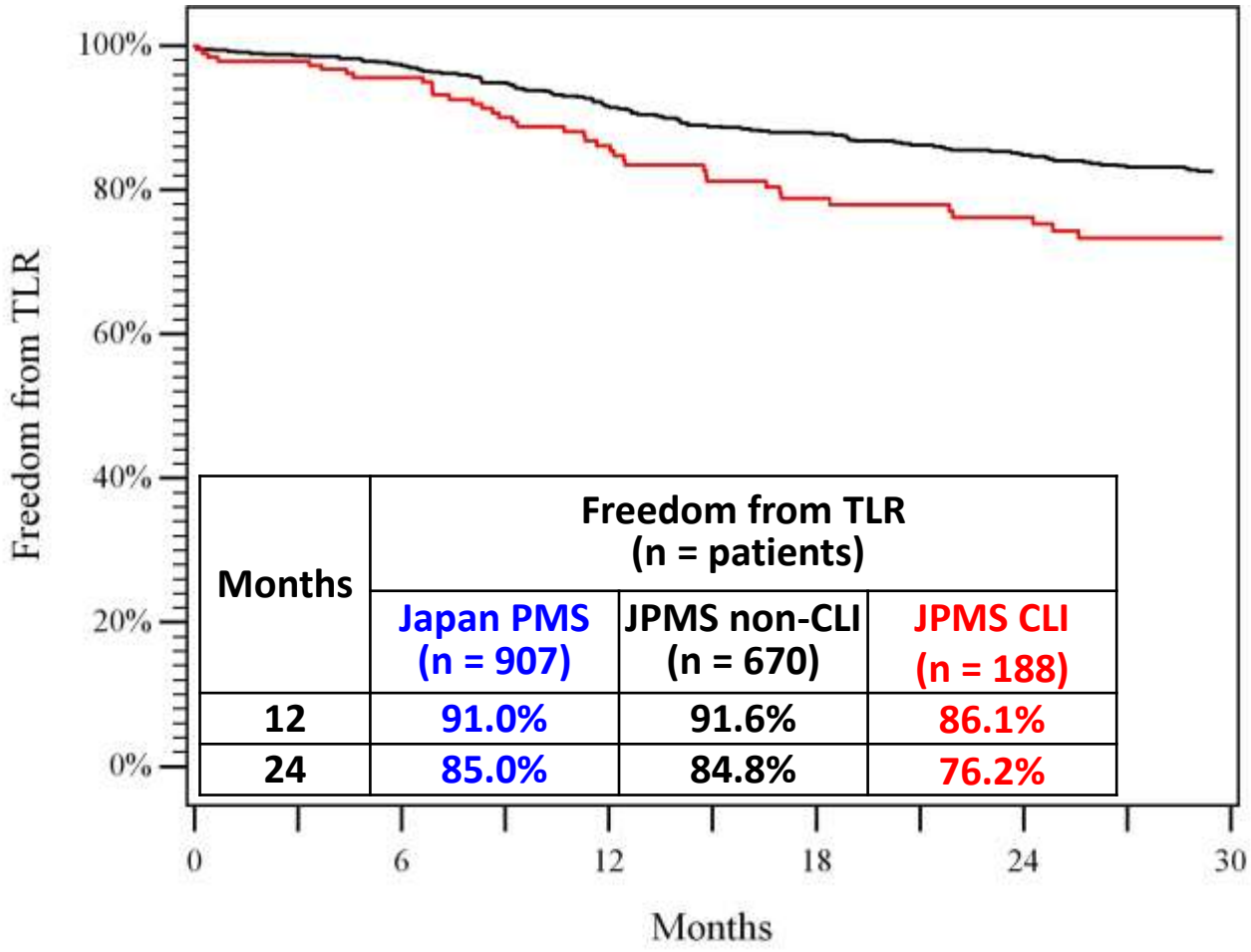
# CLI and non-CLI Baseline Lesion Characteristics

| | | Zilver PTX Japan PMS | JPMS non-CLI | JPMS CLI |
|---|---|---|---|---|
| **Lesions** | | 1075 | 802 | 218 |
| **Lesion length (cm)*** | | 14.7 ± 9.7 | 14.3 ± 9.6 | 15.9 ± 9.6 |
| **Total occlusions** | | 42% | 40% | 46% |
| **In-stent restenosis** | | 19% | 18% | 20% |
| **Patent runoff vessels*** | **0** | 7% | 5% | 14% |
| | **1** | 32% | 29% | 42% |
| | **2** | 32% | 35% | 26% |
| | **≥3** | 29% | 32% | 18% |
| **ABI*** | | 0.63 ± 0.18 | 0.64 ± 0.16 | 0.56 ± 0.22 |

* $p < 0.05$ comparing non-CLI and CLI groups

**CLI patients had longer lesions, fewer patent runoff vessels, and lower ABI**

# Freedom from TLR in CLI and non-CLI Patients




| Months | Freedom from TLR (n = patients) | | |
|---|---|---|---|
| | Japan PMS (n = 907) | JPMS non-CLI (n = 670) | JPMS CLI (n = 188) |
| 12 | 91.0% | 91.6% | 86.1% |
| 24 | 85.0% | 84.8% | 76.2% |

**Favorable freedom from TLR results in CLI patients**

# 80s male, CLI without dialysis

Infective gangrene on 4th toe

Risk factors

Type II DM, Hypertension

Hyperlipidemia

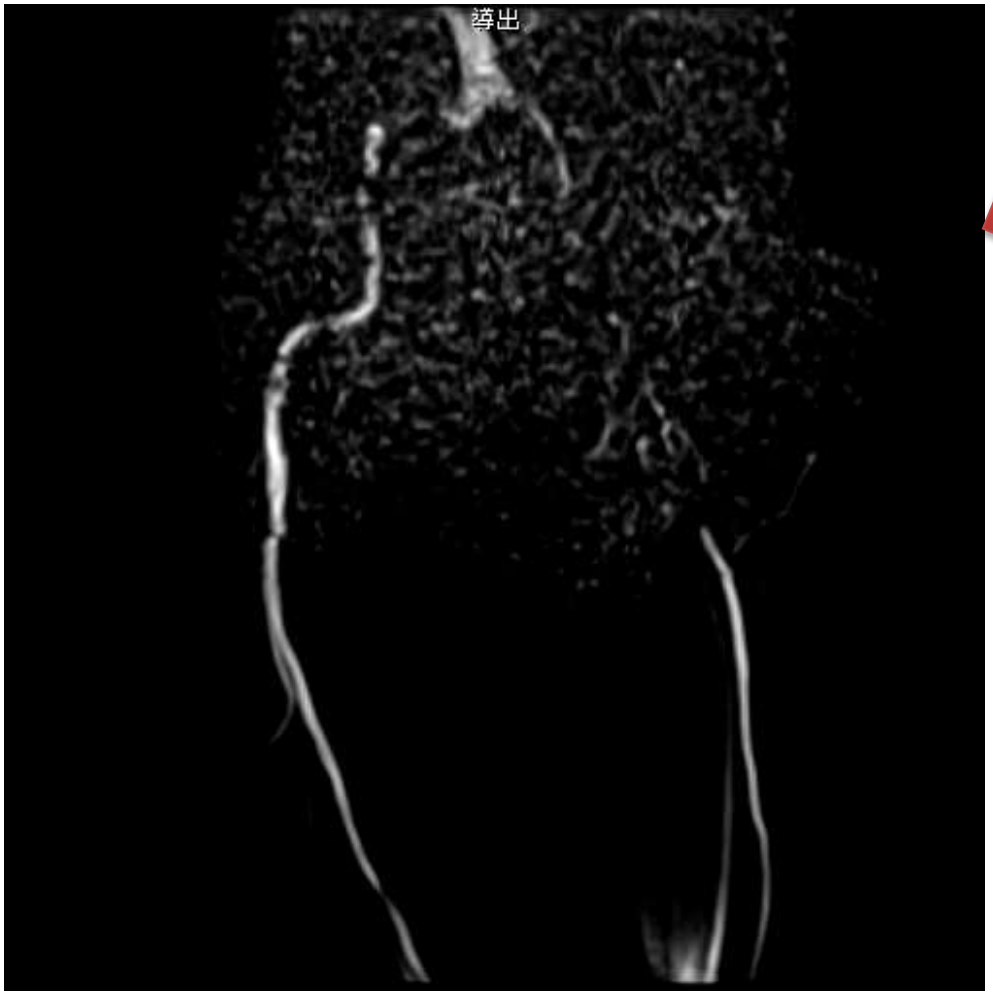
Previous History of

Post CABG

Post CVA

Severe AS

# Lower extremities MRA

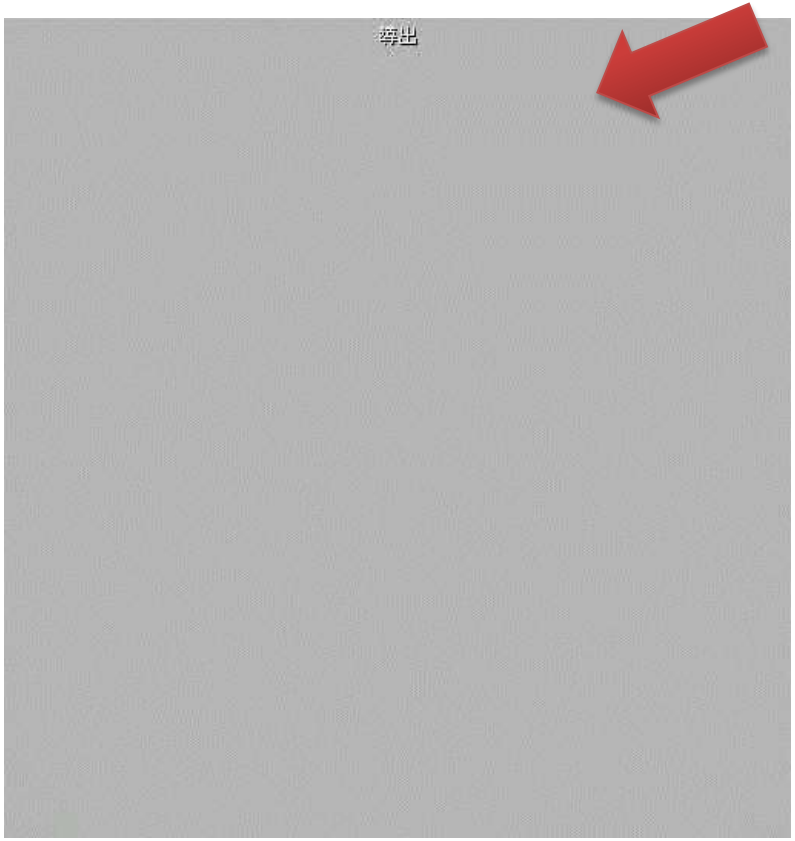



**Lt CIA Occusion**

**Lt SFA Occusion**

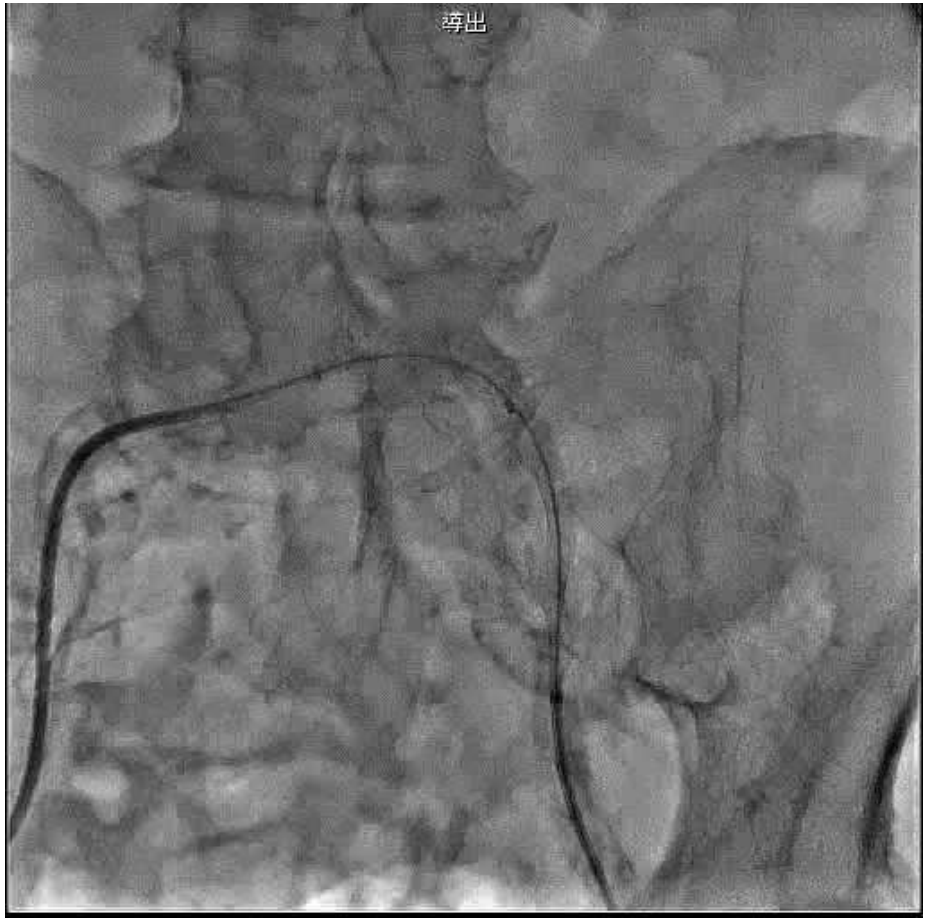
ABI: Rt 0.72, Lt not measure
SPP: RT 48/32. Lt 15/7

# Lt CIA Ostial Flash Occusion



# Antegrade approach (0.018 wire)

# Retrograde and antegrade stent implantation



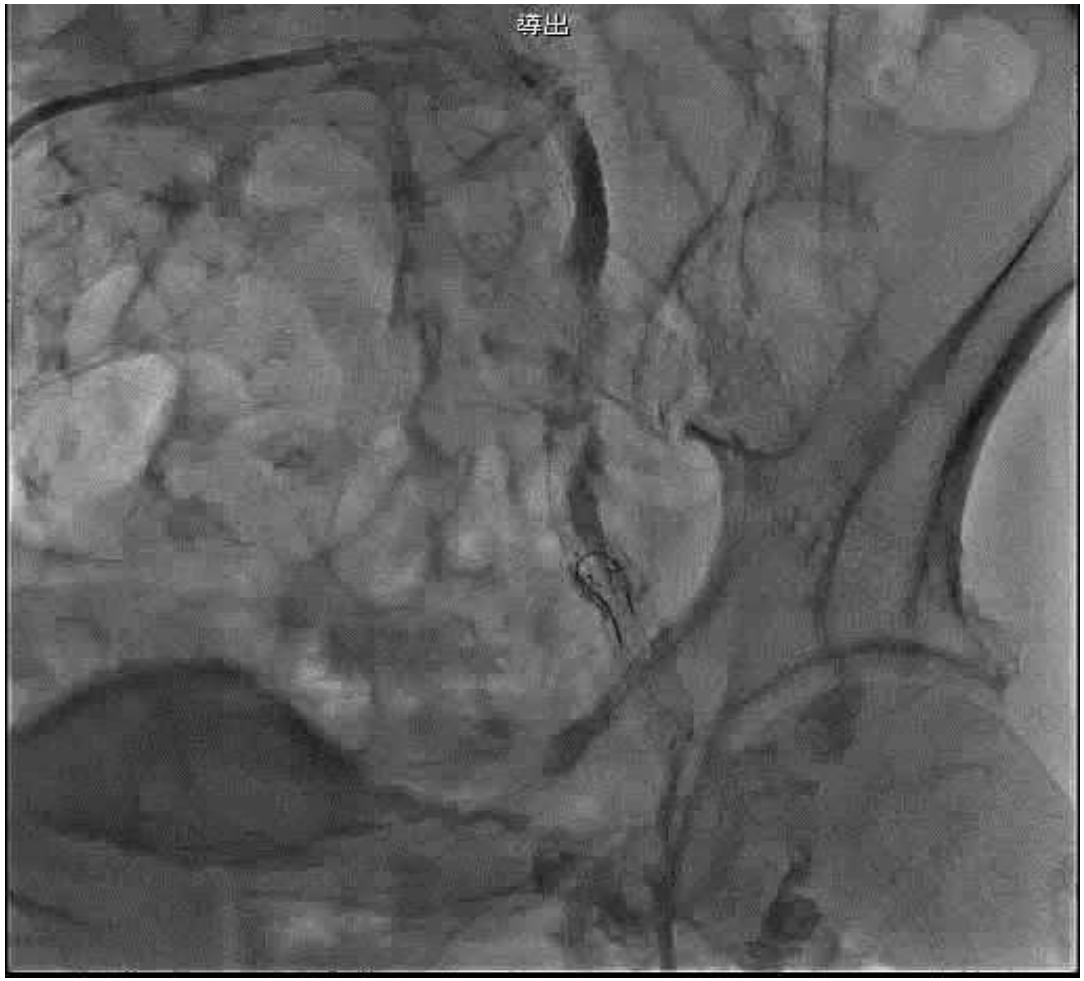

Retrograde CIA-EIA stent

(Epic：8.0×120mm)

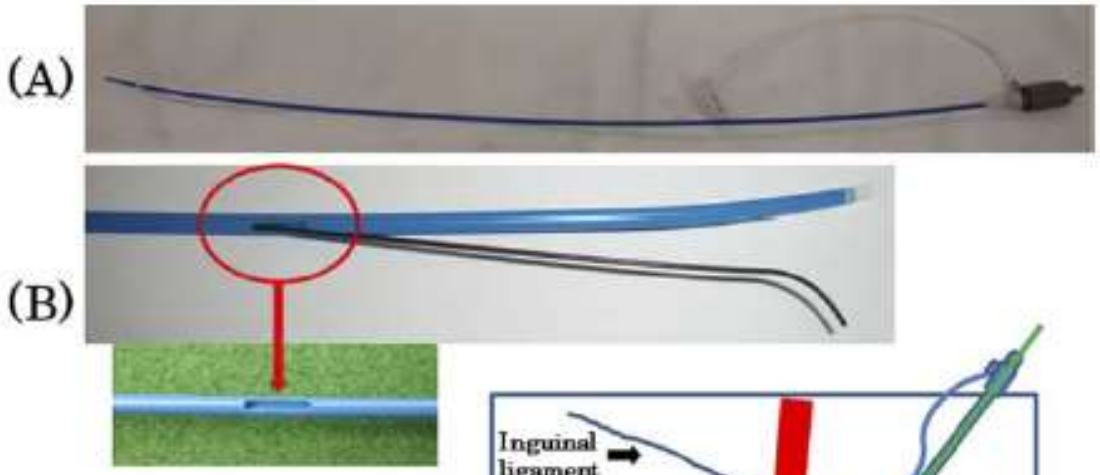

Antegrade EIA stent

(Epic：8.0×40mm)

# Final Ango (1st session)



# Novel Side-Grooved Guiding Sheath



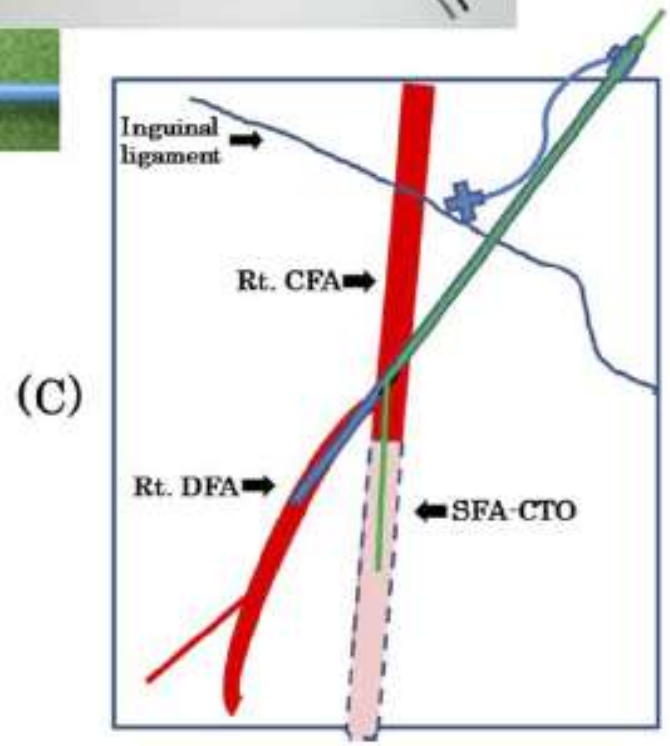

*Case Report*

## A Side-Grooved Guiding Sheath as an Effective Treatment Strategy for Femoro-Popliteal Artery Lesions

Shinichiro Yamaguchi, MD, Kan Zen,* MD, PhD, and Daisuke Kambayashi, MD

During revascularization for chronic total occlusion (CTO) of the proximal superficial femoral artery (SFA), the guiding sheath may prolapse out of the common femoral artery (CFA) or may not be fully inserted during treatment. Therefore, we have developed a treatment strategy using a novel side-grooved guiding sheath, whereby a 5.0-Fr guiding sheath (45 cm long) with a 1.0 mm × 5.0 mm rectangular side-groove is inserted into the deep femoral artery, the side-groove is aligned with the bifurcation, and the SFA lesion treatment is performed via the side-groove. This technique provides good stability and maintains the wire's torque performance, while avoiding sheath prolapse from its position in the CFA. We have successfully treated seven cases of SFA-CTO with this guiding sheath, and did not observe any increase in complications, procedure time, or amount of contrast media (vs. the conventional procedure). Therefore, our side-grooved guiding sheath appears to be safe and effective for treating SFA-CTO, and we hope to perform additional development of this technique. 

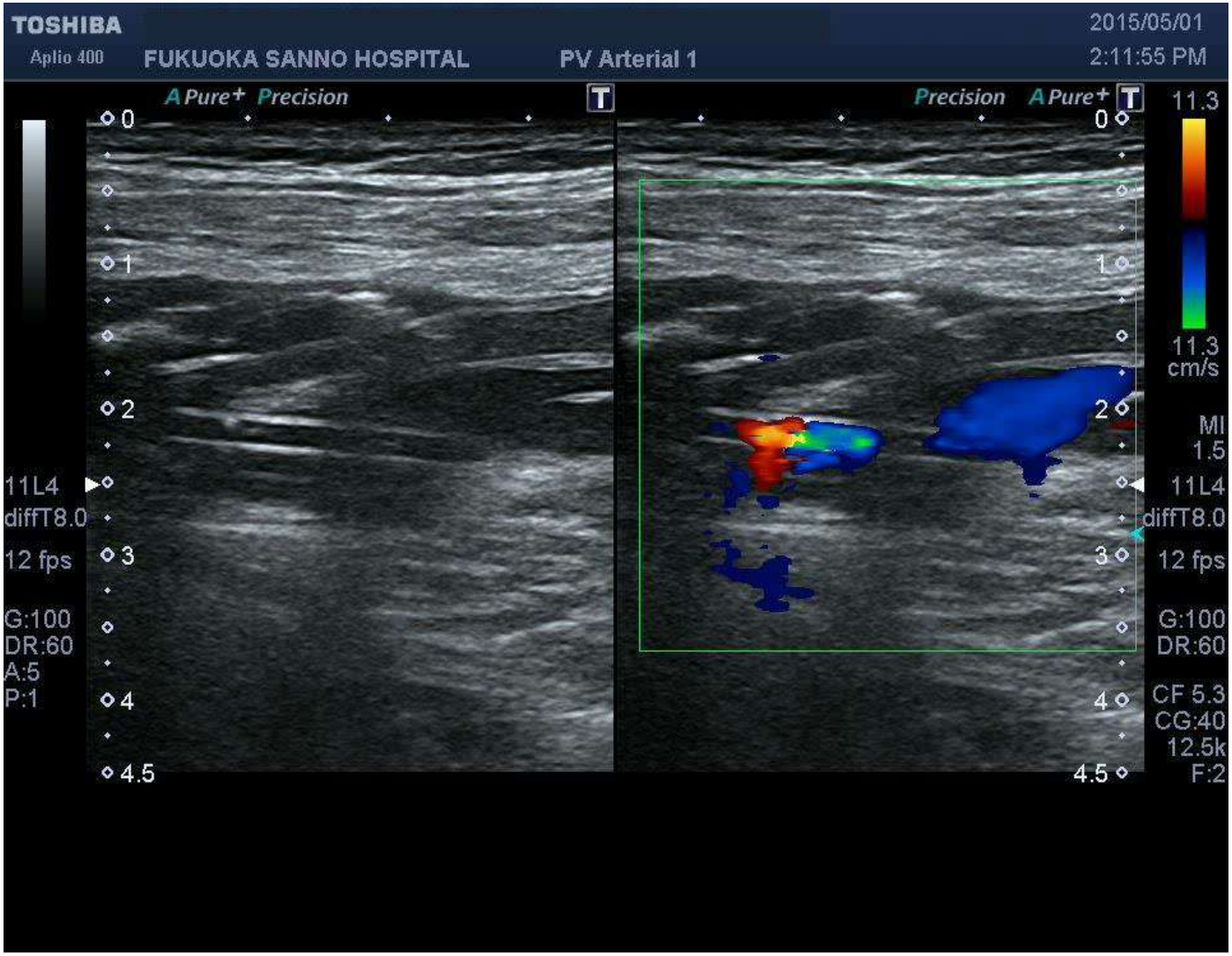
Key words: superficial femoral artery; lesion treatment; chronic total occlusion



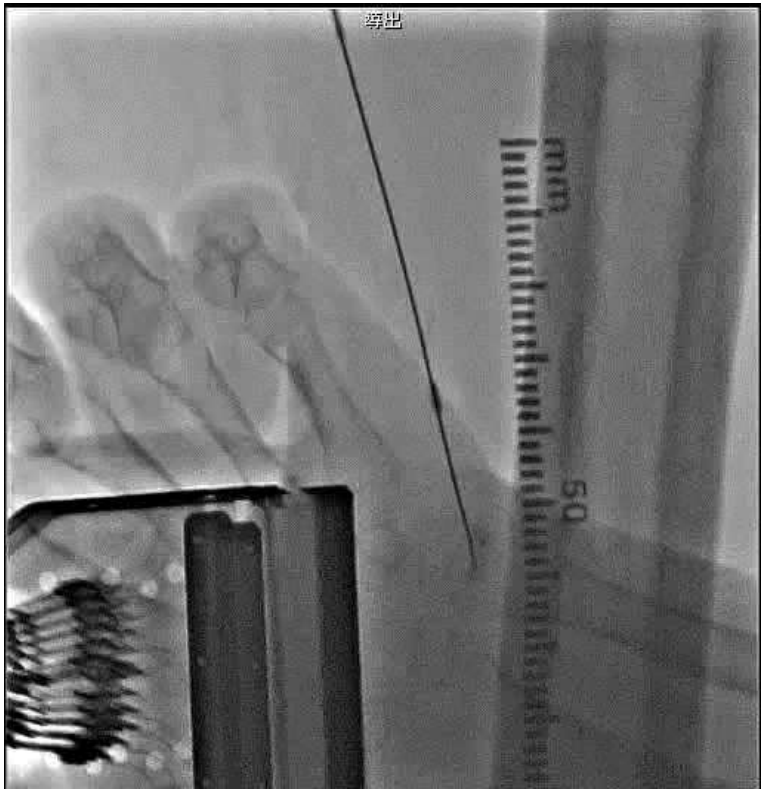
# 5Fr Novel Side-Grooved sheath

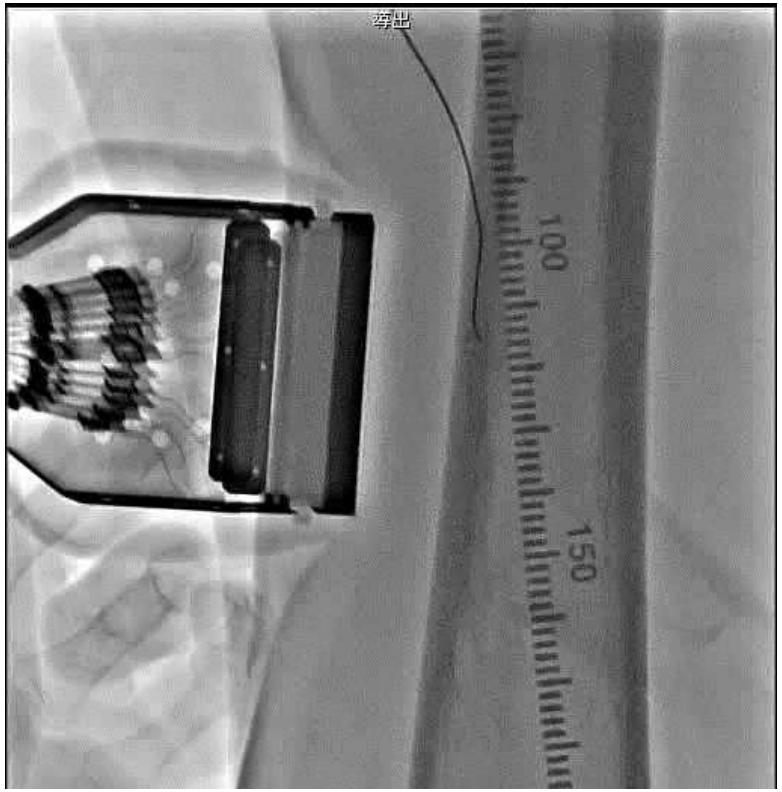
# 0.018 Treasure GW manipulation with 4F CXI catheter through novel side-grooved sheath by surface echo guidance

# Echo guide (SFA-DFA Bif)

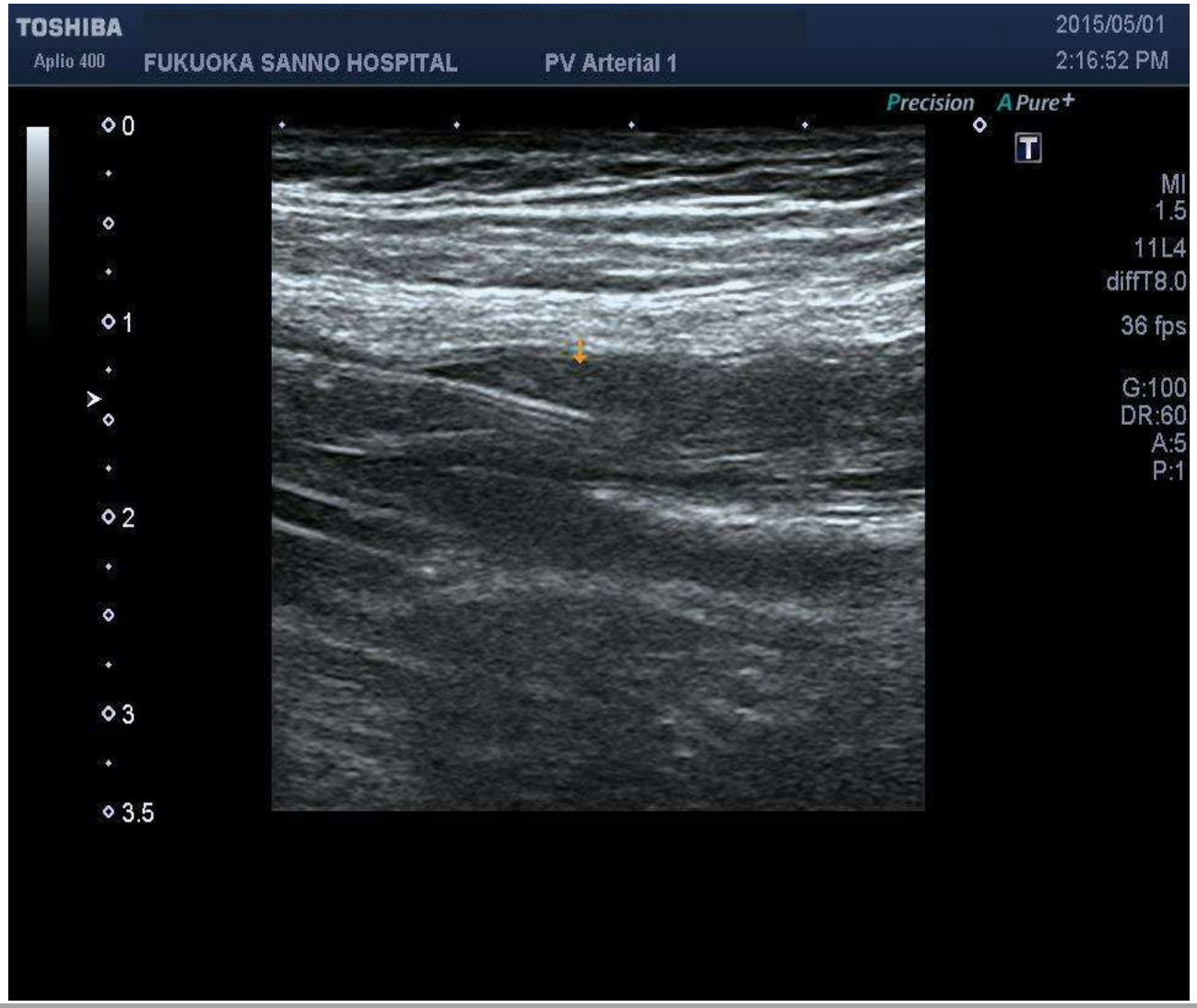


# Severe calcification in SFA dsital



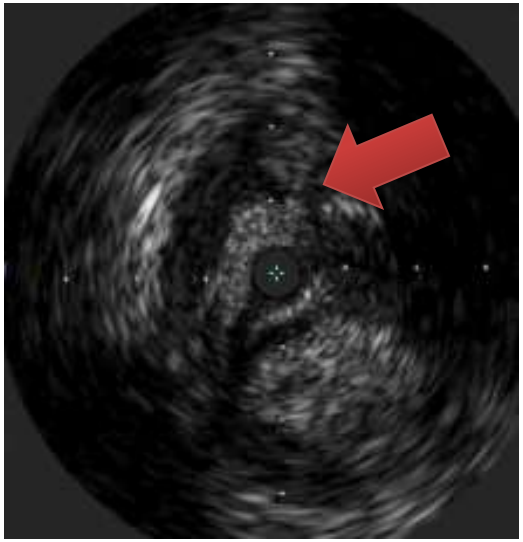



# Successful SFA CTO wire cross (distal SFA)

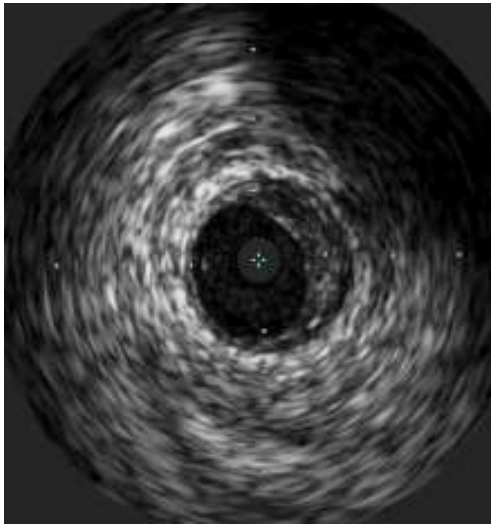


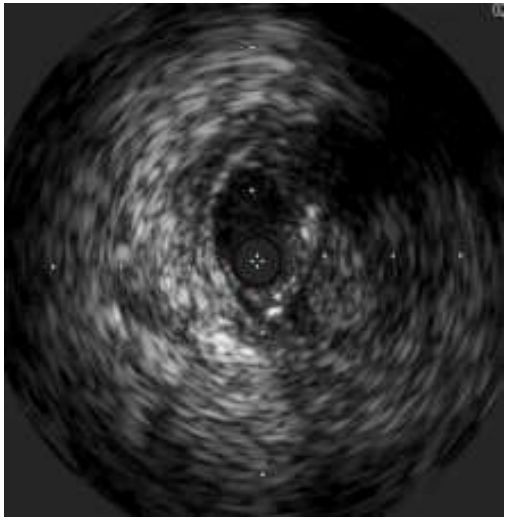
# 1st IVUS after BA

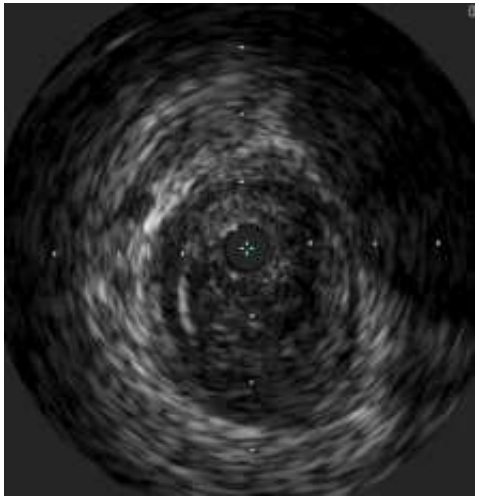
*High probability to capture the true lumen*



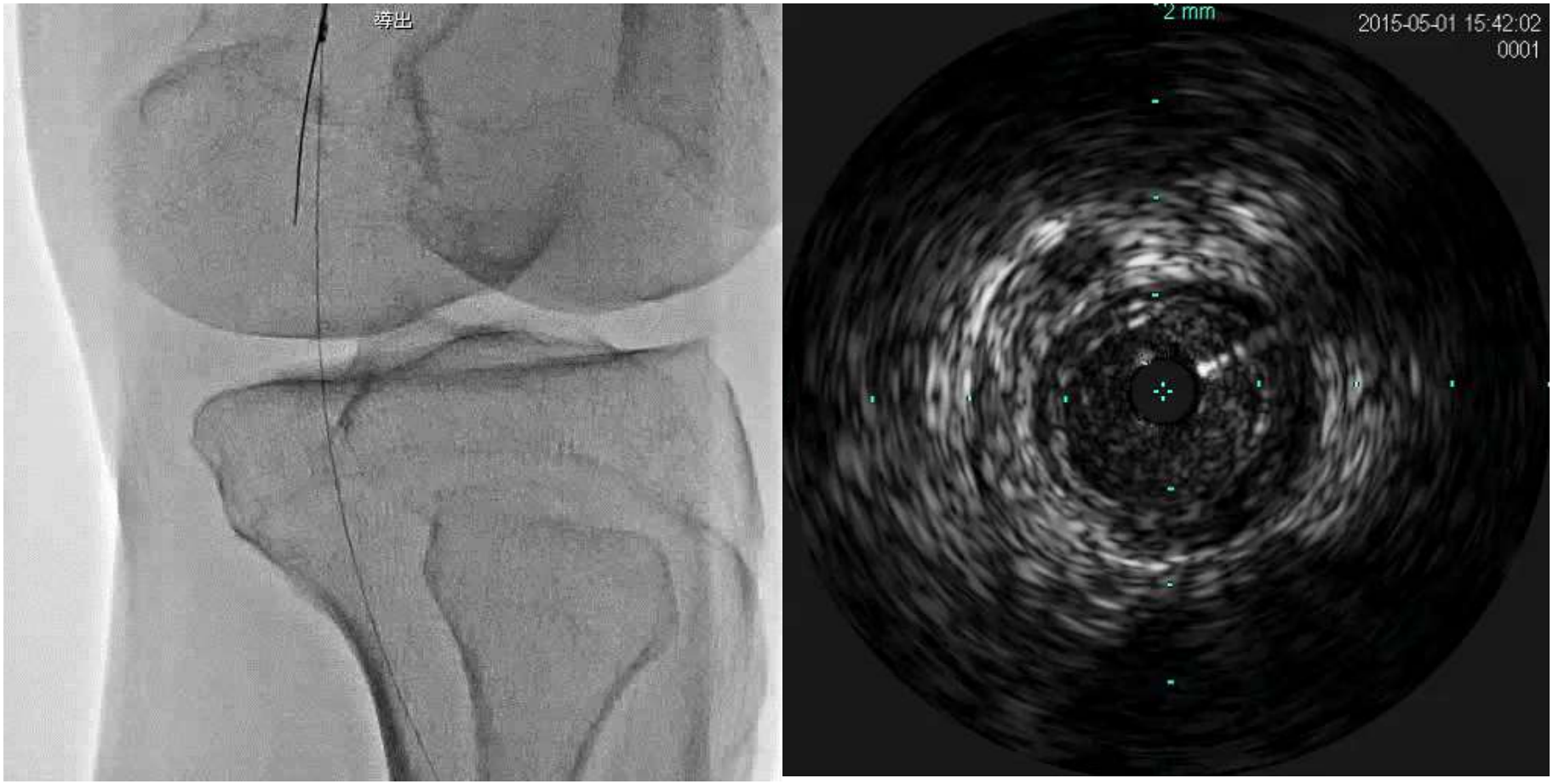
Subintimal Space







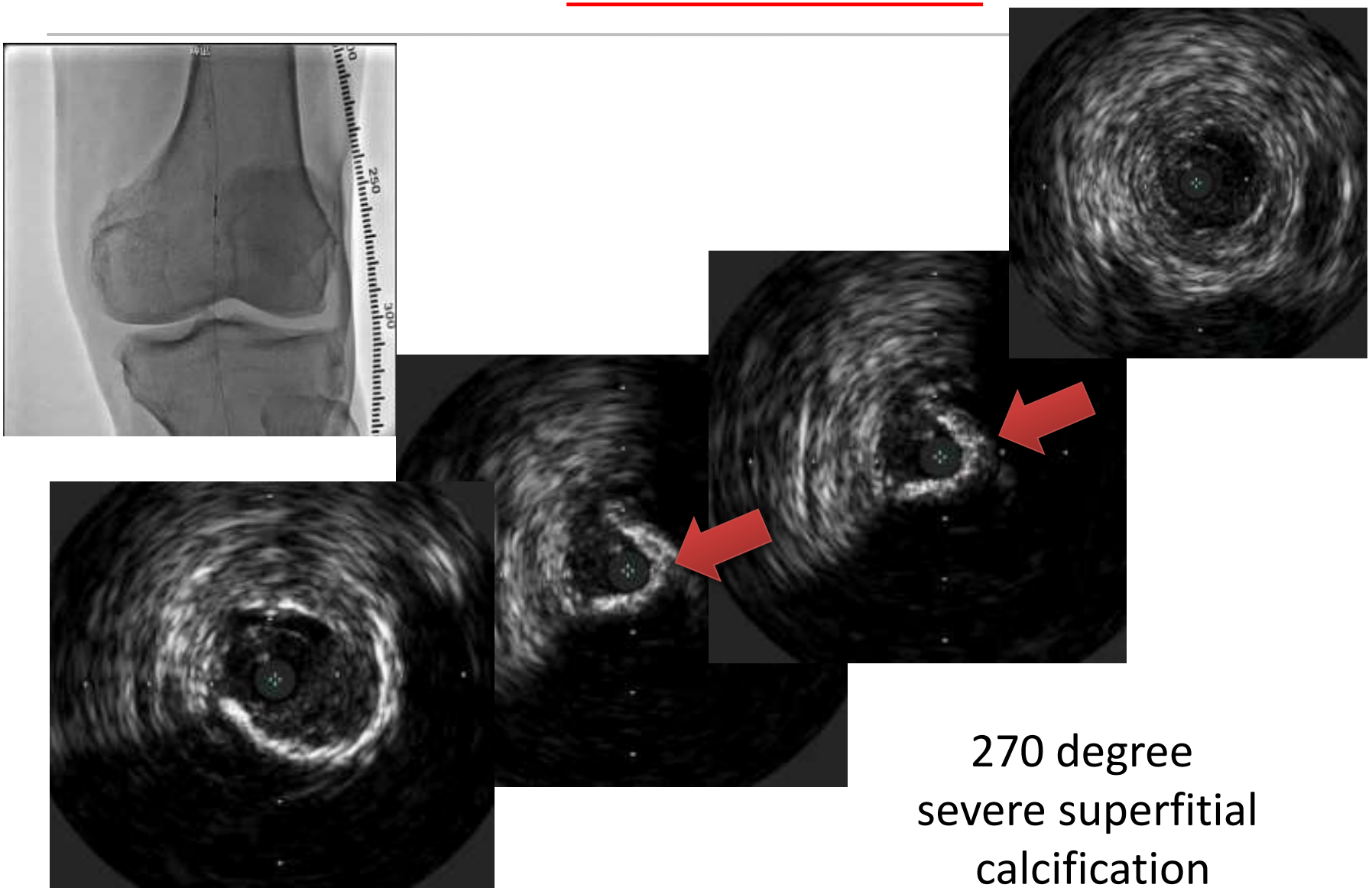
# IVUS guided 0.014 Astato 9-40 wire re-manipulation to get the intraluminal lumen with Prominent micro-catheter



# SFA CTO BA 2nd
# (Ultraverse：4.0×220mm)

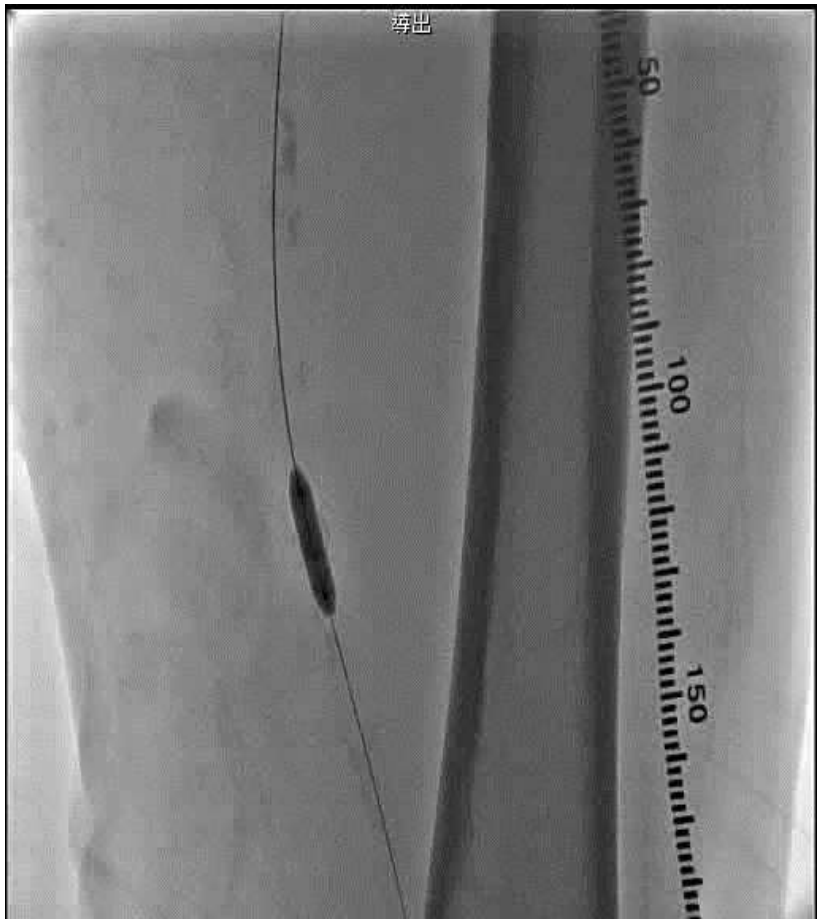
# 2nd IVUS after BA

*Determine when lesion preparation should be considered*



270 degree
severe superfitial
calcification

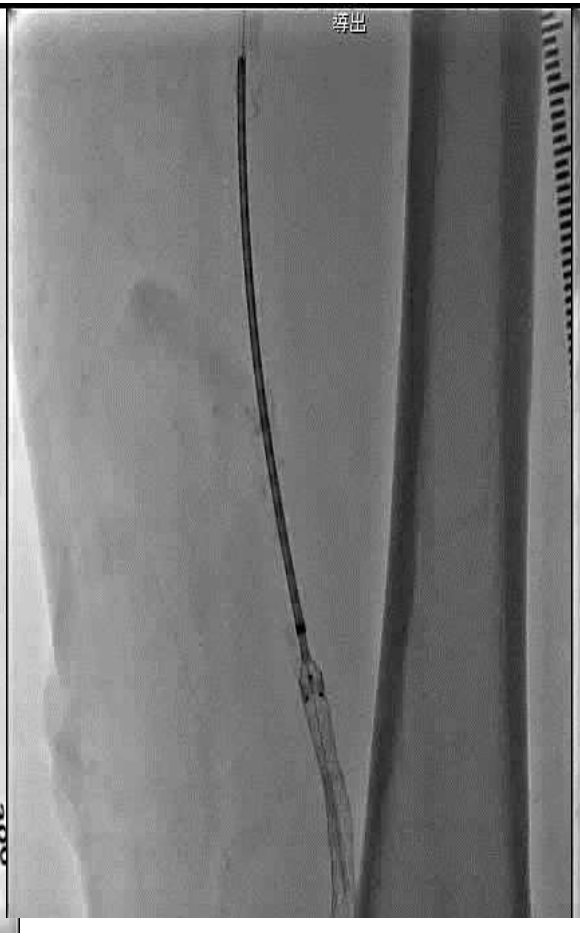
# Lesion Preparation
# (Cutting BA 4.0×15mm)



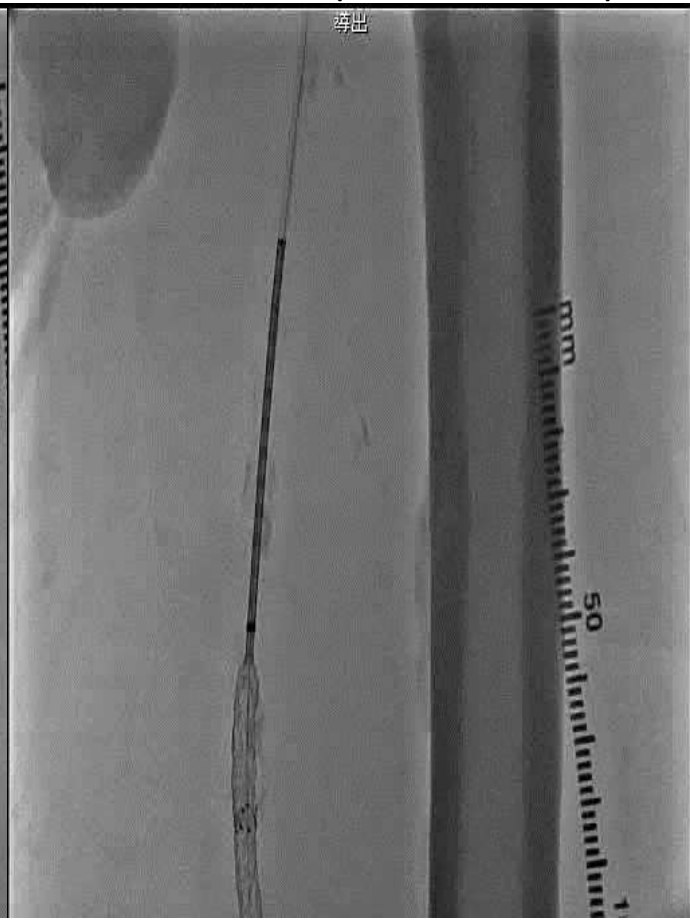

# DES Implantation

Zilver PTX(6.0 × 100mm)


Zilver PTX(6.0 × 100mm)

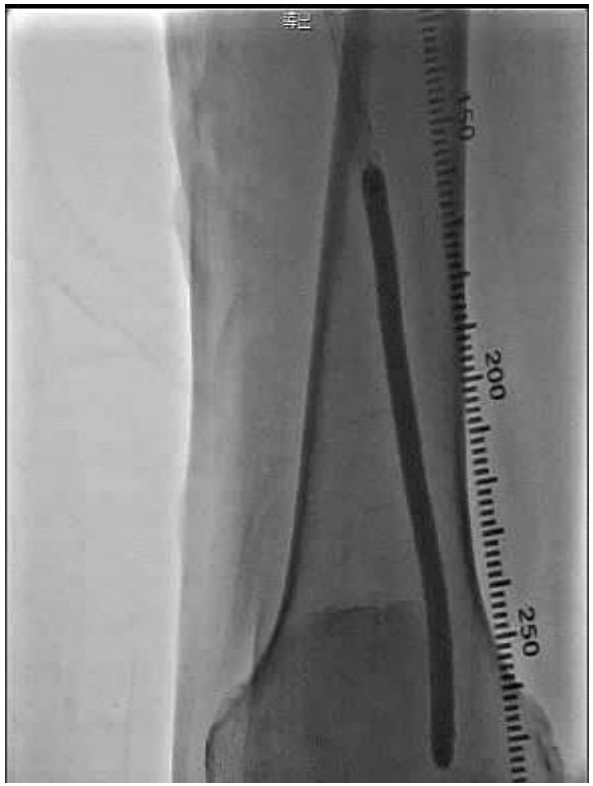


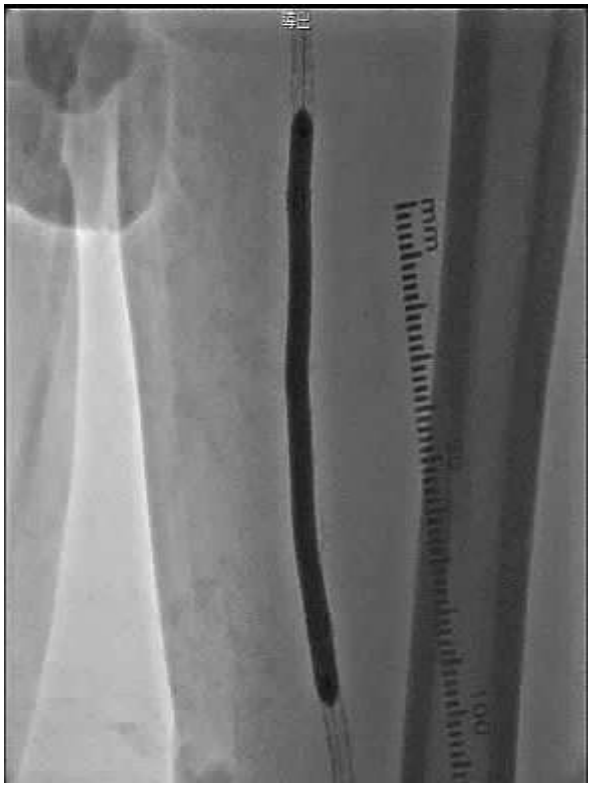

Zilva PTX (7.0 × 100mm)



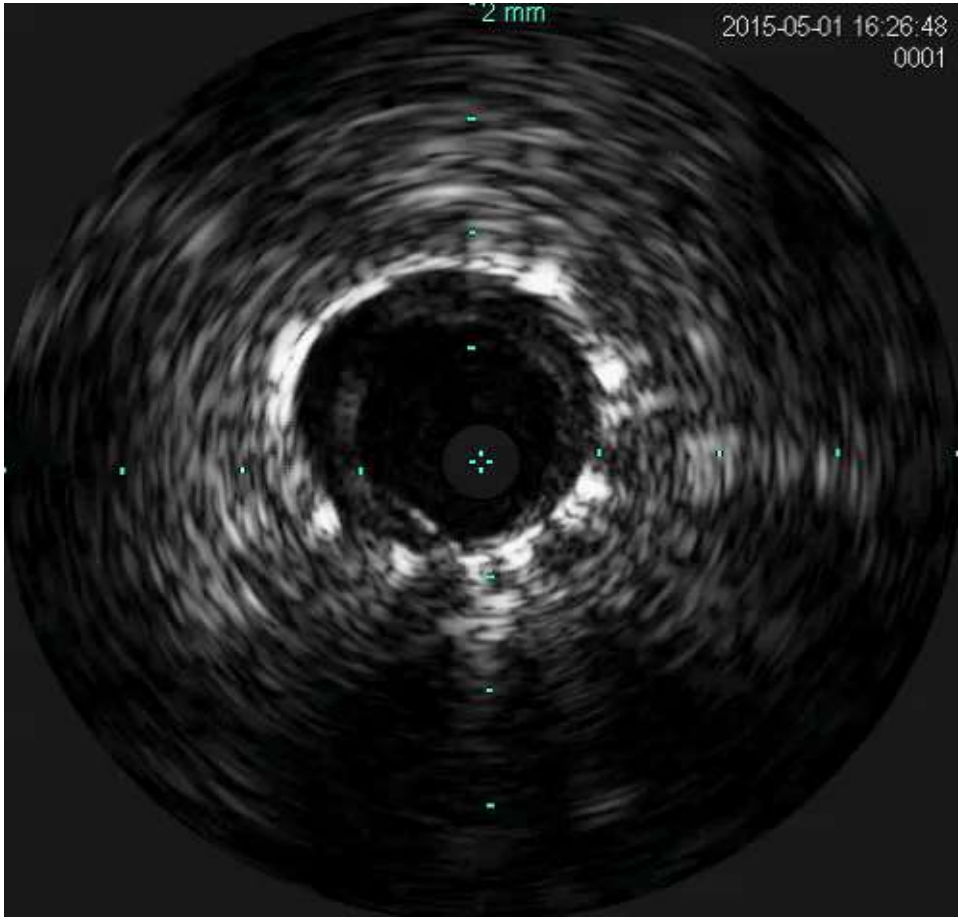

Identify proximal and distal reference segment landing zones and accurately select stent size and length to maximize stent dimensions

# Post Stent dilatation with high-pressure (18atm)  BA dilatation (5.0×100mm)



# IVUS (Post BA)




*Identify maximize stent cross-sectional area relative to reference.*

# Final Angio

# After minor amputation, wound was completely healed

# 18 months later (No restenosis)


# Conclusions

- Large amount of clinical data ranging from carefully controlled Level I evidence to large, global, real-world experience
- As expected, patient population and lesion characteristics become more challenging in real-world, all-comer studies
  - 22% of patients in Japan PMS had CLI
- 24-month Japan PMS results are positive and confirm the long-term benefit of the Zilver PTX technology
  - Favorable results in challenging CLI patient population
- Consistent results across studies provide added support for the established long-term performance of the Zilver PTX technology
  - Reaffirms long-term safety and effectiveness


■Date

2/23 FRI ▸ 25 SUN 2018

■Venue

**Knowledge Capital Congres Convention Center, Grand Front Osaka**

■President

**Yoshiaki Yokoi**

MD, FJCC, FSCAI, FACC
Departments of Cardiology,Kishiwada Tokushukai Hospital