Luncheon Activities - Know the Difference

Road to Success for Complex PAD Patients

What makes lower limb intervention success? - Japanese Strategy -

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The Key Issue

Bi-directional wiring

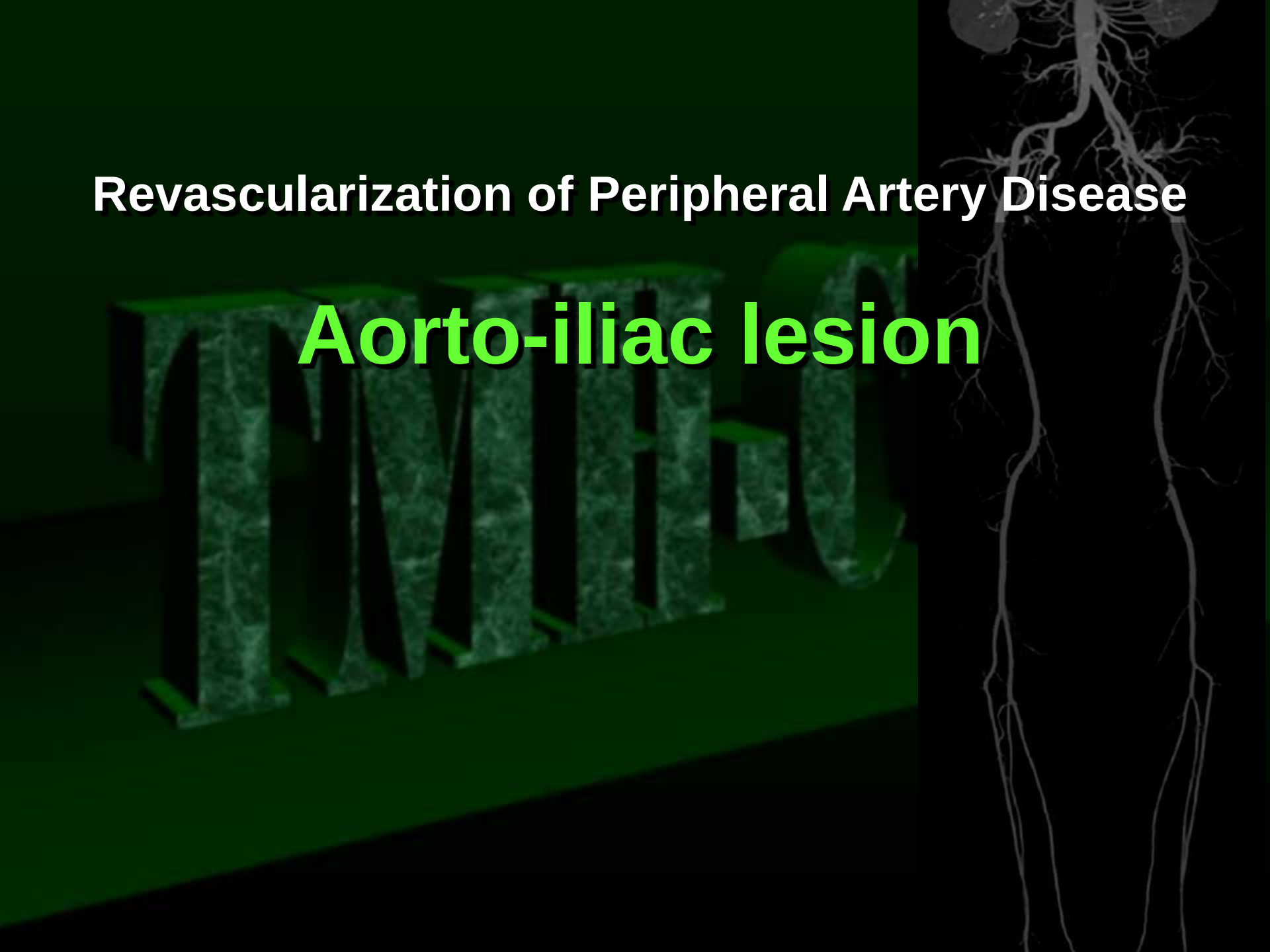
EVT for PAD patients

Current status at TMH-CVC

1. Aorto-iliac lesion
2. Femo-pop lesion
3. BTK lesion

Revascularization of Peripheral Artery Disease

Aorto-iliac lesion

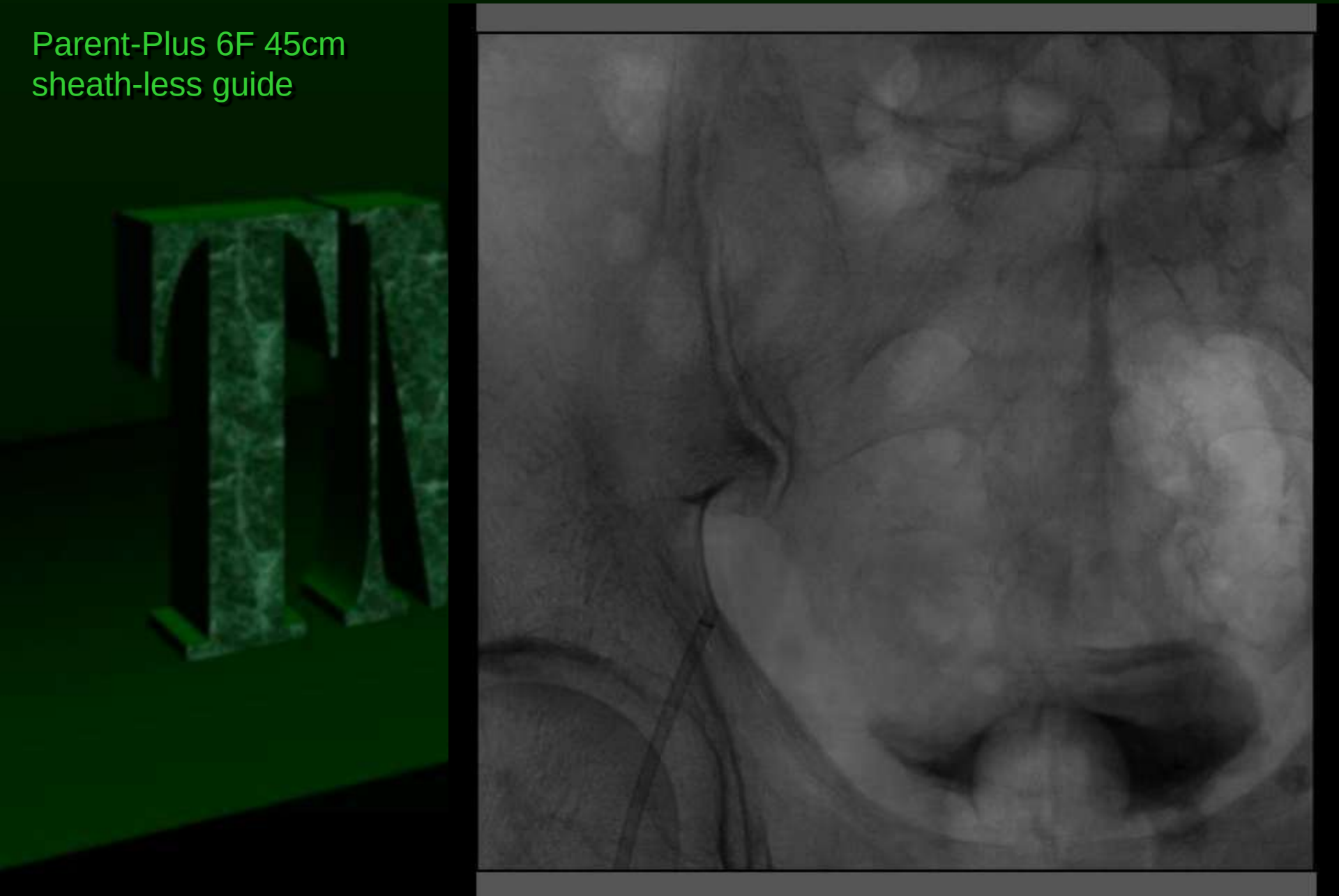


Control angiography (from rt. Brachial artery)

Parent-Plus 4.5F 90cm
sheath-less guide

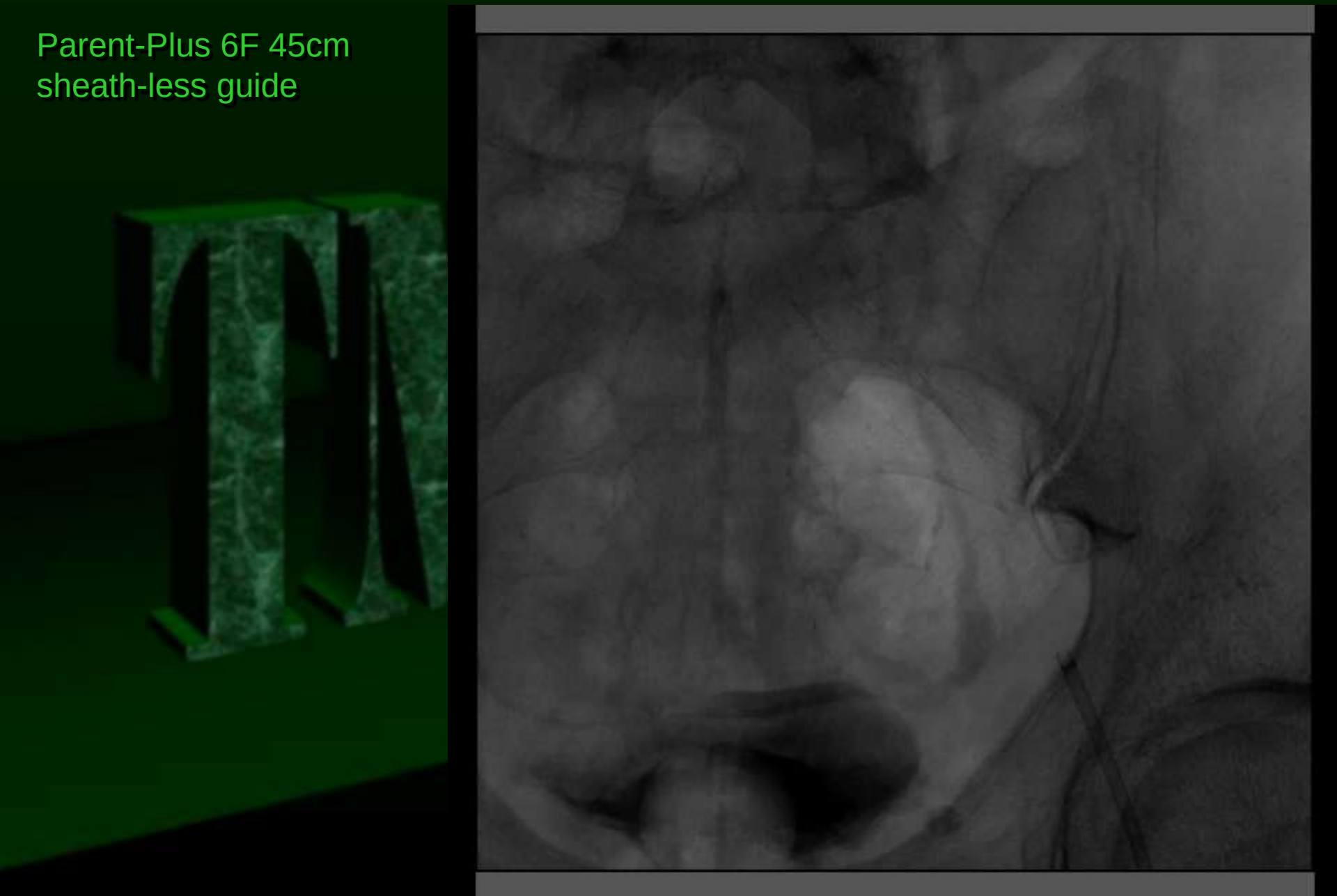
Control angiography (from rt. CFA)

Parent-Plus 6F 45cm
sheath-less guide

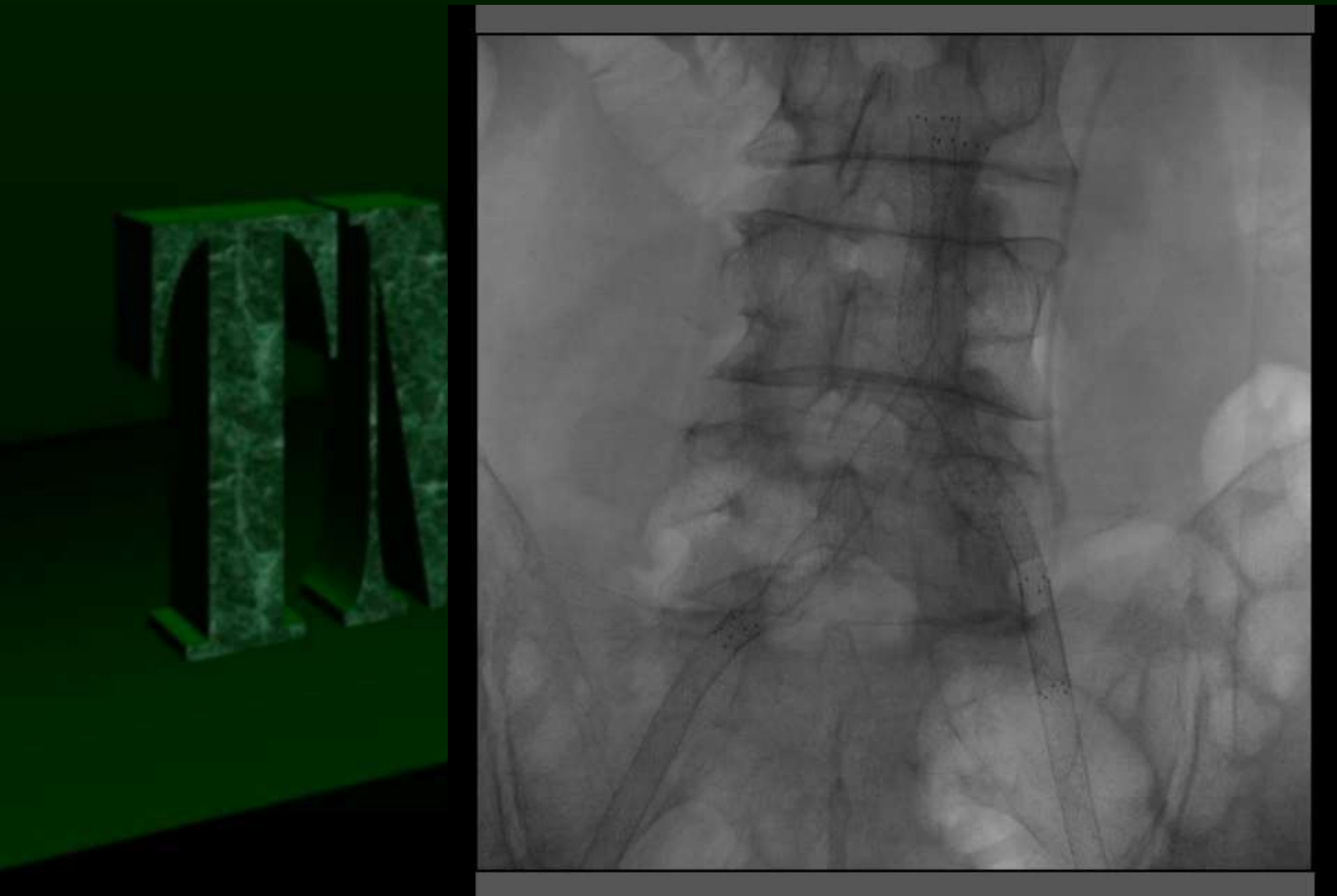


Control angiography (from lt. CFA)

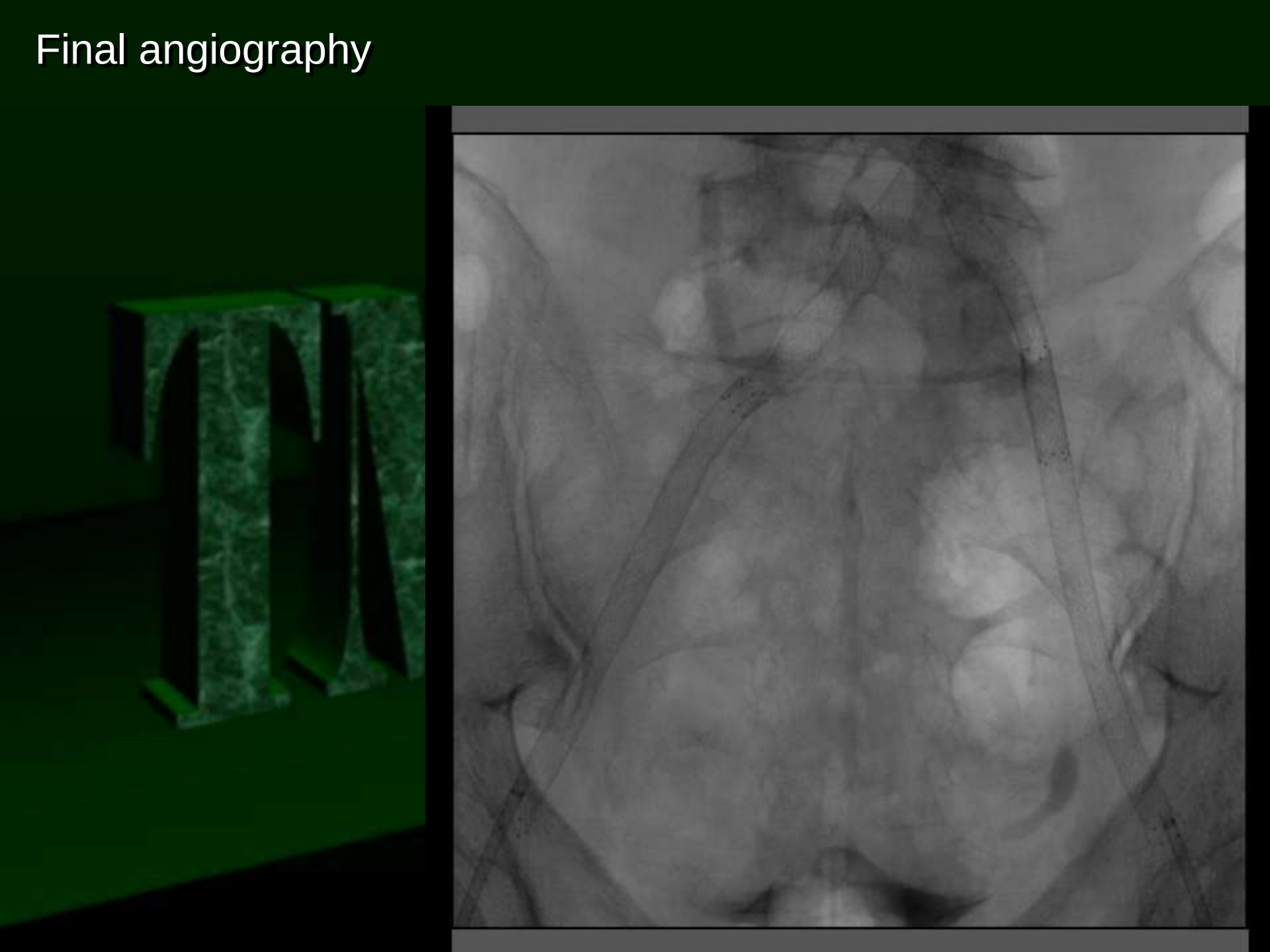
Parent-Plus 6F 45cm
sheath-less guide



Final angiography



Final angiography



Retrospective analysis of Aorto-iliac EVT in TMH-CVC

Enrolment period

Apr. 2011 to Dec. 2012.

Patient population

93 Limbs of 67 patients who had Isolated de novo aorto-iliac lesion.

Patient characteristics

Age	73.2 ± 10.5
Gender	M 53 (79.1%), F 14 (20.9%)
BMI	22.5 ± 3.6
Hypertension	42 (64.6%)
Dyslipidemia	42 (64.6%)
DM	41 (62.1%)
IHD	29 (44.6%)
CVD	16 (24.6%)
CKD (eGFR<60)	27 (40.3%)
HD	9 (13.4%)
Cilostazol	45 (67.2%)

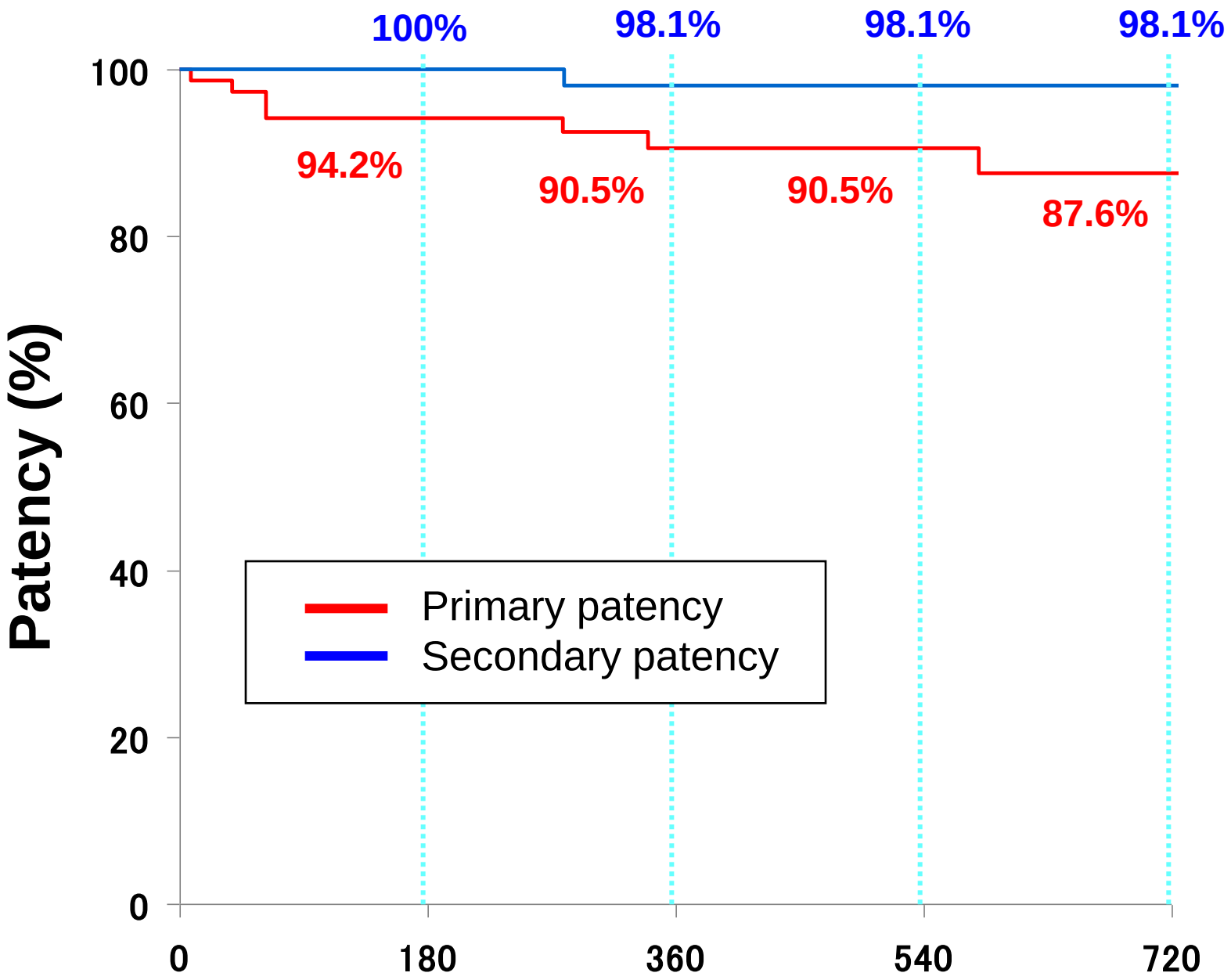
Limb characteristics

Treated limb		R 45 (48.4%), L 48 (51.6%)	
Lesion		Aorta 12 (12.9%), Iliac 81 (87.1%)	
Rutherford	1	2 (2.2%)	
	2	23 (25.8%)	60.6%
	3	29 (32.6%)	
	4	16 (18.0%)	
	5	17 (19.1%)	
	6	2 (2.2%)	
TASC	A,B	55 (59.8%)	
	C,D	37 (40.2%)	
ABI		pre 0.57±0.22, post 0.89±0.20*	
SPP	dorsal	pre 36±23, post 47±18*	
	plantar	pre 38±20, post 48±26*	

* Wilcoxon signed rank test: $p<0.05$

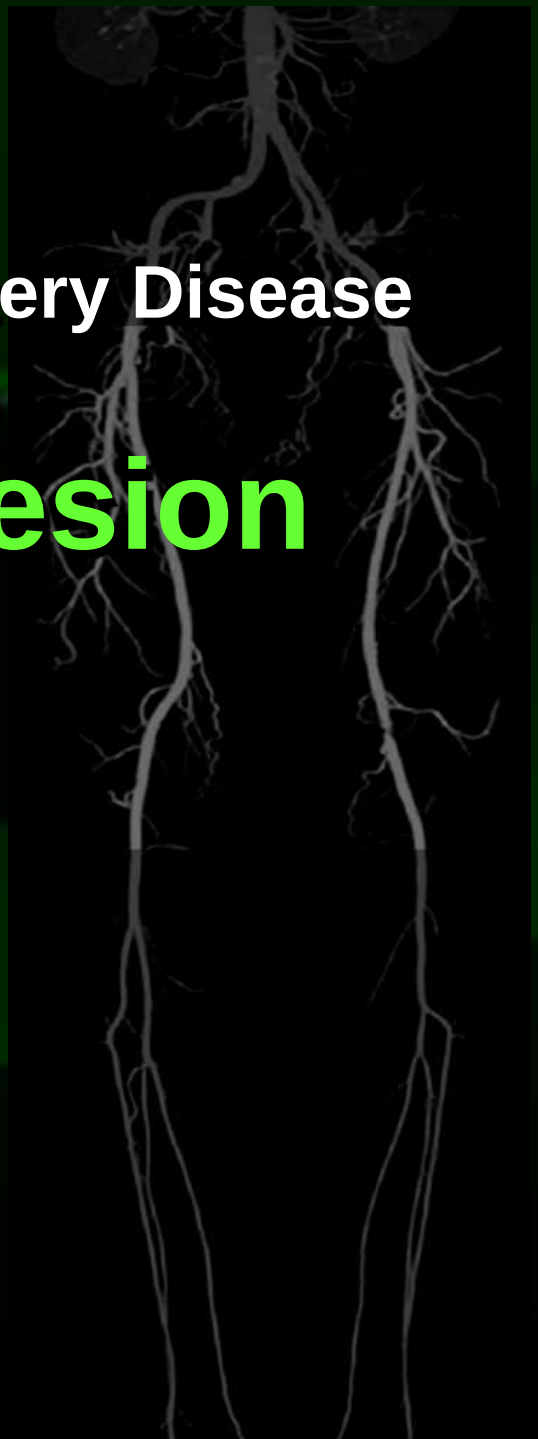
EVT characteristics

Calcification		23 (24.7%)
CTO		30 (32.3%)
Thrombotic occlusion		19 (20.4%)
Reference diameter		8.1±1.3
Lesions length		9.0±6.0
Number of stent		1.4±0.6
Procedure	Stent	129 (97.7%)
	POBA	3 (2.3%)
Stent	Smart	83 (65.9%)
	Zilver Flex	30 (23.8%)
	E-Luminexx	7 (5.6%)
	Express	5 (4.0%)
	Zilver-PTX	1 (59.8%)
CO2 angio		9 (9.7%)
Procedure success		89 (96.7%)


100%
98.1%
98.1%
98.1%
94.2%
90.5%
90.5%
87.6%
Patency (%)
100
80
60
40
20
0
0
180
360
540
720
Primary patency
Secondary patency

Revascularization of Peripheral Artery Disease

Fomoro-popliteal lesion



Wiring methods for long SFA-CTO lesions

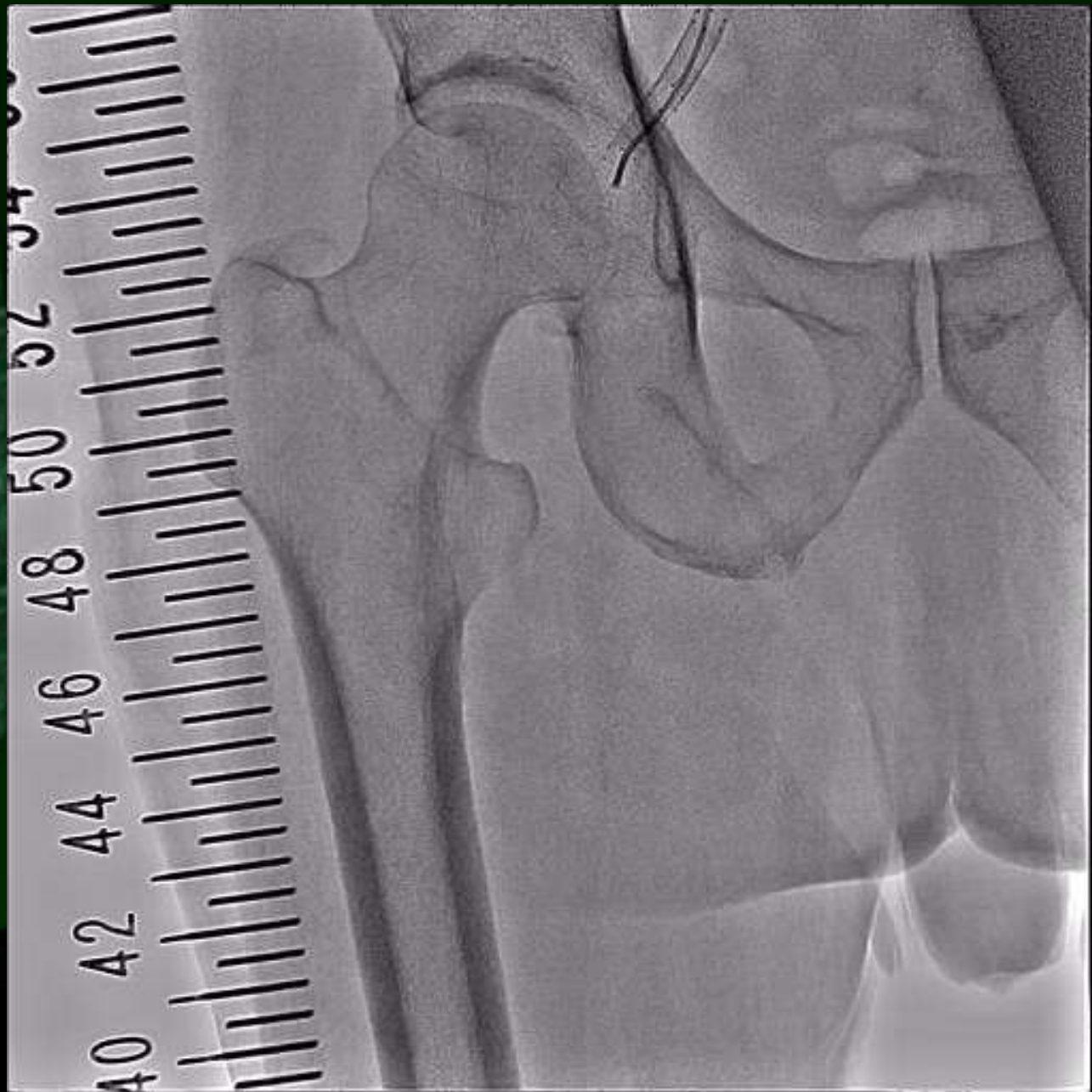
Antegrade wiring

- Tactile sensation-guided wiring
- Duplex echo-guided wiring
- IVUS-guided wiring

Bi-directional wiring

- Trans-collateral angioplasty (TCA)
- Direct SFA puncture
  - Front puncture - Omote-pan
  - Side puncture - Yoko-pan
  - Poorman's Outback Method
- Distal puncture
  - Frontal Popliteal Puncture - Omote hiza-pan
  - Popliteal puncture - Ura-pan
  - Tibial puncture
  - DP puncture

Control angiography



Frontal Popliteal Puncture: Control angiography

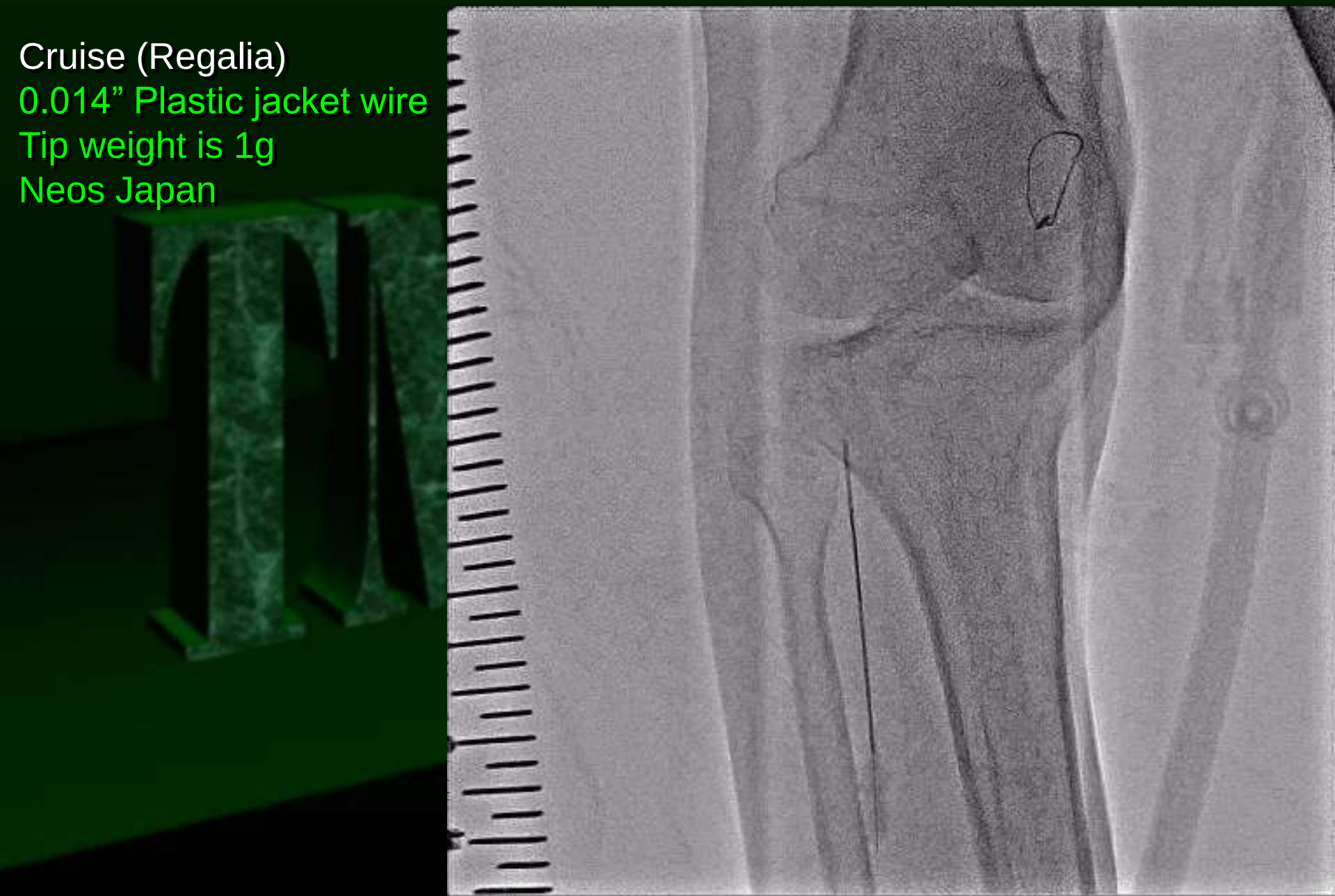
Right anterior oblique 30

Frontal Popliteal Puncture: Puncture

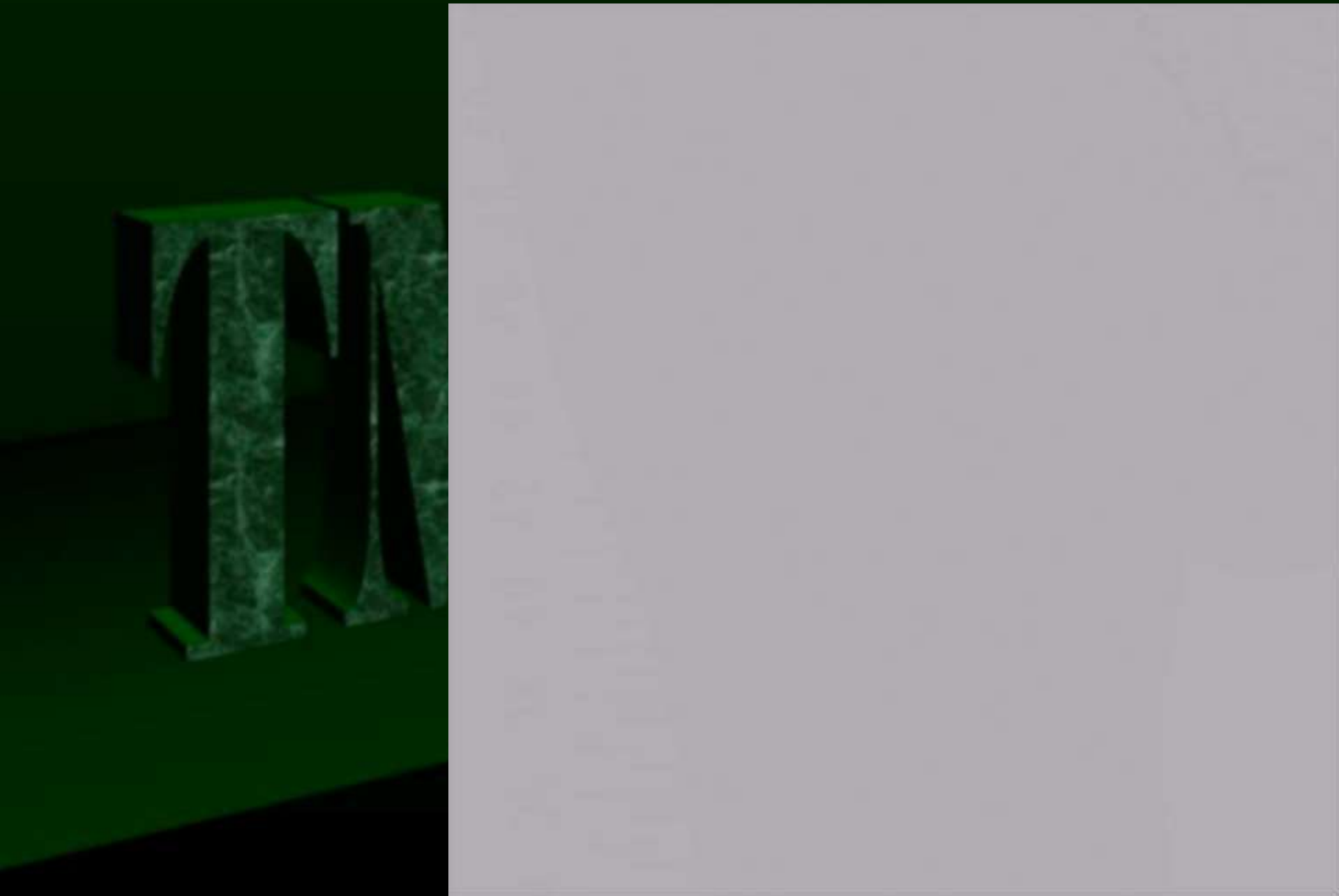
Introducer Needle
20G 105mm needle
Medikit Japan

Frontal Popliteal Puncture: Advance guidewire

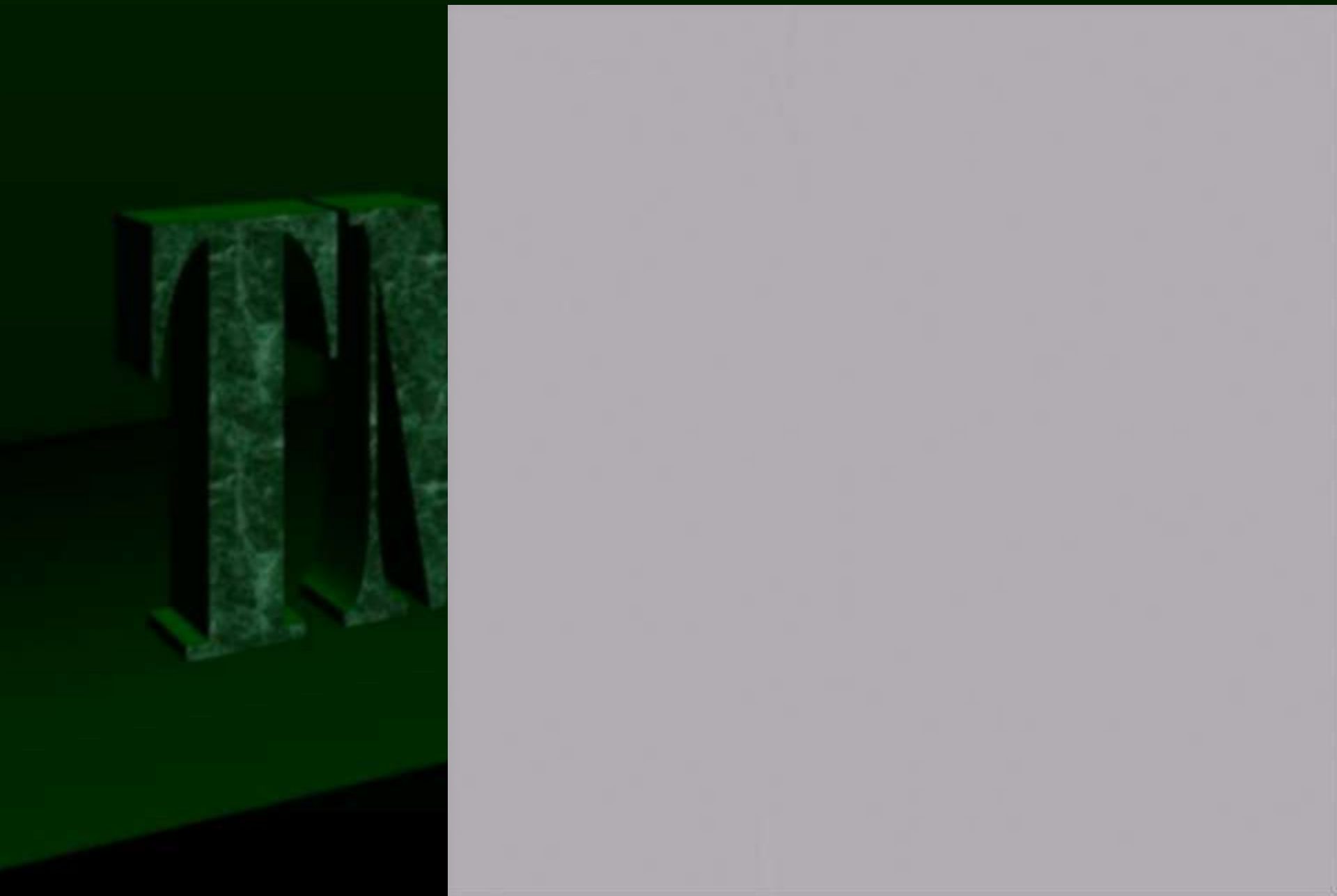
Cruise (Regalia)
0.014” Plastic jacket wire
Tip weight is 1g
Neos Japan



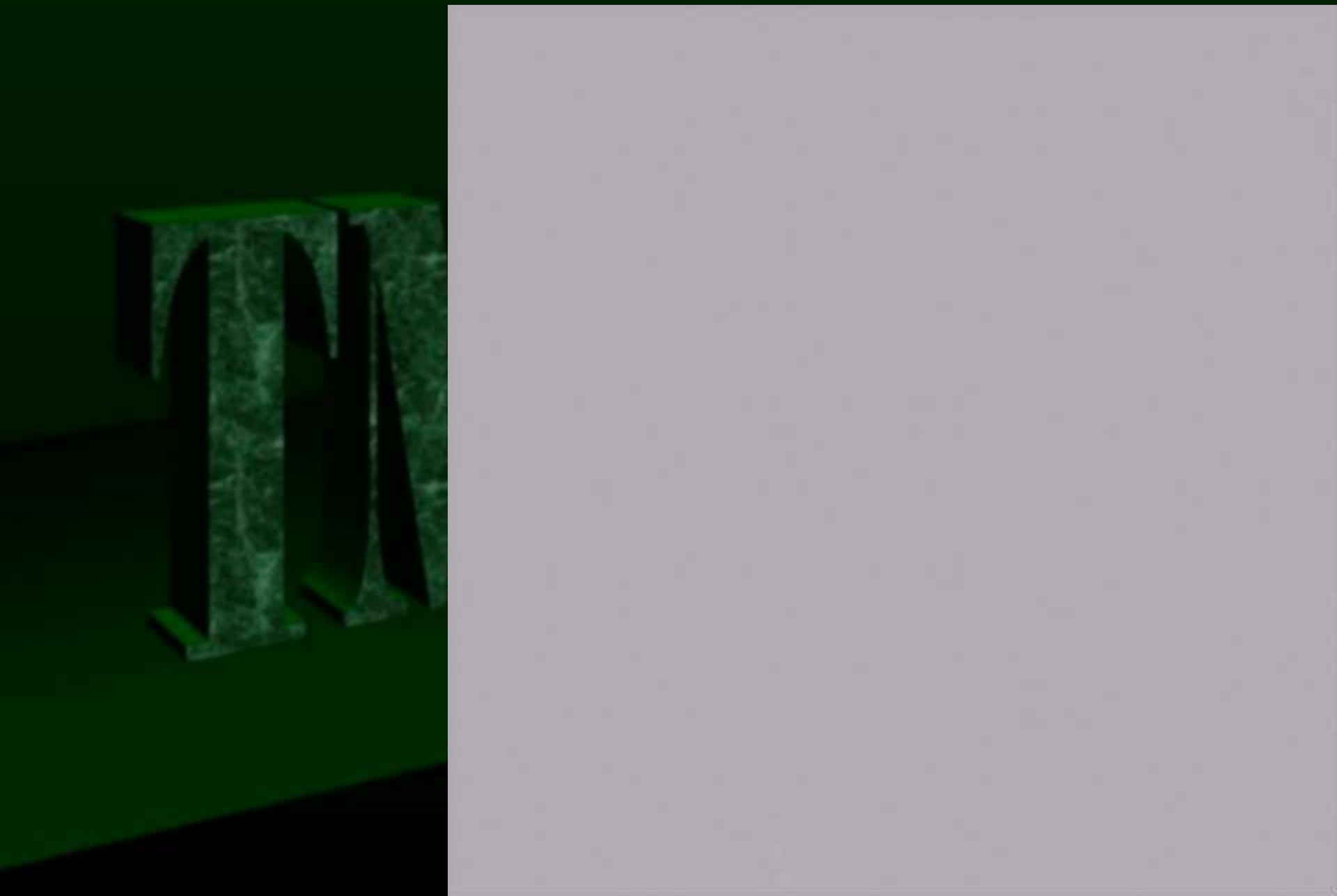
Final DSA: proximal SFA



Final DSA: mid SFA



Final DSA: distal SFA and popliteal artery



Retrospective analysis of Femoro-popliteal EVT in TMH-CVC

Enrolment period

Apr. 2011 to Dec. 2012.

Patient population

107 Limbs of 86 patients who had Isolated de novo femoro-popliteal lesion.

Patient characteristics

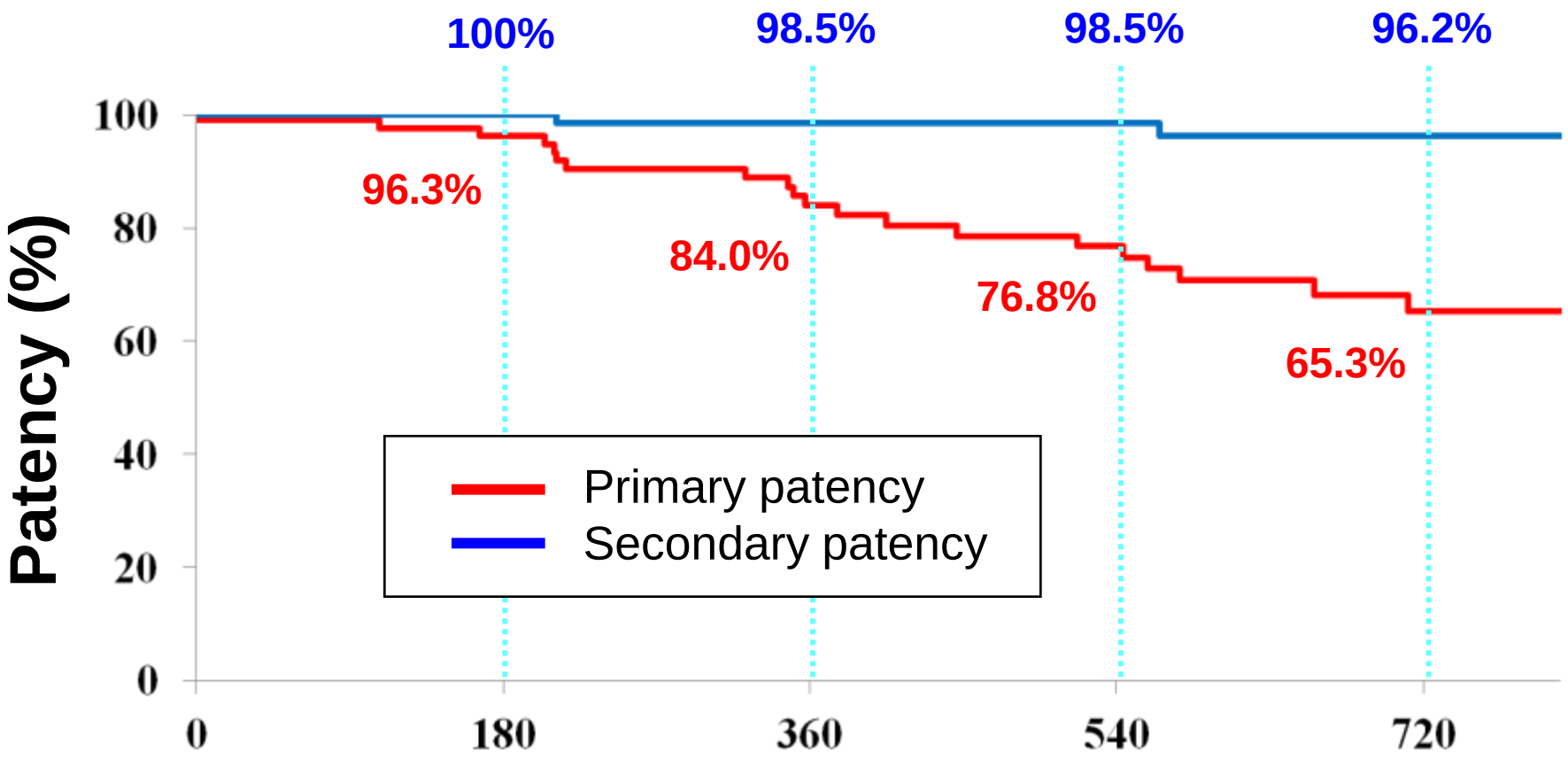
Age	72.6 ± 9.2
Gender	M 56 (65.1%), F 30 (34.9%)
BMI	23.1 ± 3.7
Hypertension	61 (70.9%)
Dyslipidemia	46 (53.5%)
DM	56 (65.1%)
IHD	30 (34.9%)
CVD	28 (32.9%)
CKD (eGFR<60)	45 (52.3%)
HD	16 (18.8%)
Cilostazol	55 (64.0%)

Limb characteristics

Treated limb		R 56 (52.3%), L 51 (47.7%)	
Lesion		CFA 3 (2.5%), DFA 3 (2.5%)	
		SFA 101 (85.6%), POP 11 (9.3%)	
Rutherford	1	6 (5.7%)	
	2	20 (18.9%)	64.2
	3	42 (39.6%)	
	4	25 (23.6%)	
	5	13 (12.3%)	35.8
	6	0 (0.0%)	
TASC	A,B	44 (41.1%)	
	C,D	63 (58.9%)	
Run-off score		1.7±0.7	
ABI		pre 0.63±0.20, post 0.91±0.16*	

EVT characteristics

Calcification		27 (25.2%)
CTO		47 (43.9%)
Thrombotic occlusion		14 (13.1%)
Reference diameter		6.2±0.7
Lesions length		156.0±96.0
Number of stent		1.7±1.0
Procedure	Stent	80 (74.8%)
	POBA	27 (25.2%)
Stent	Smart	113 (67.7%)
	Others	54 (32.3%)
CO2 angio		11 (10.5%)
Procedure success		89 (96.7%)
Bi-directional wiring		30 (28.0, 63.8% of CTO)
0.014” guidewire		106 (99.1%)


100%
98.5%
98.5%
96.2%
96.3%
84.0%
76.8%
65.3%
Patency (%)
100
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180
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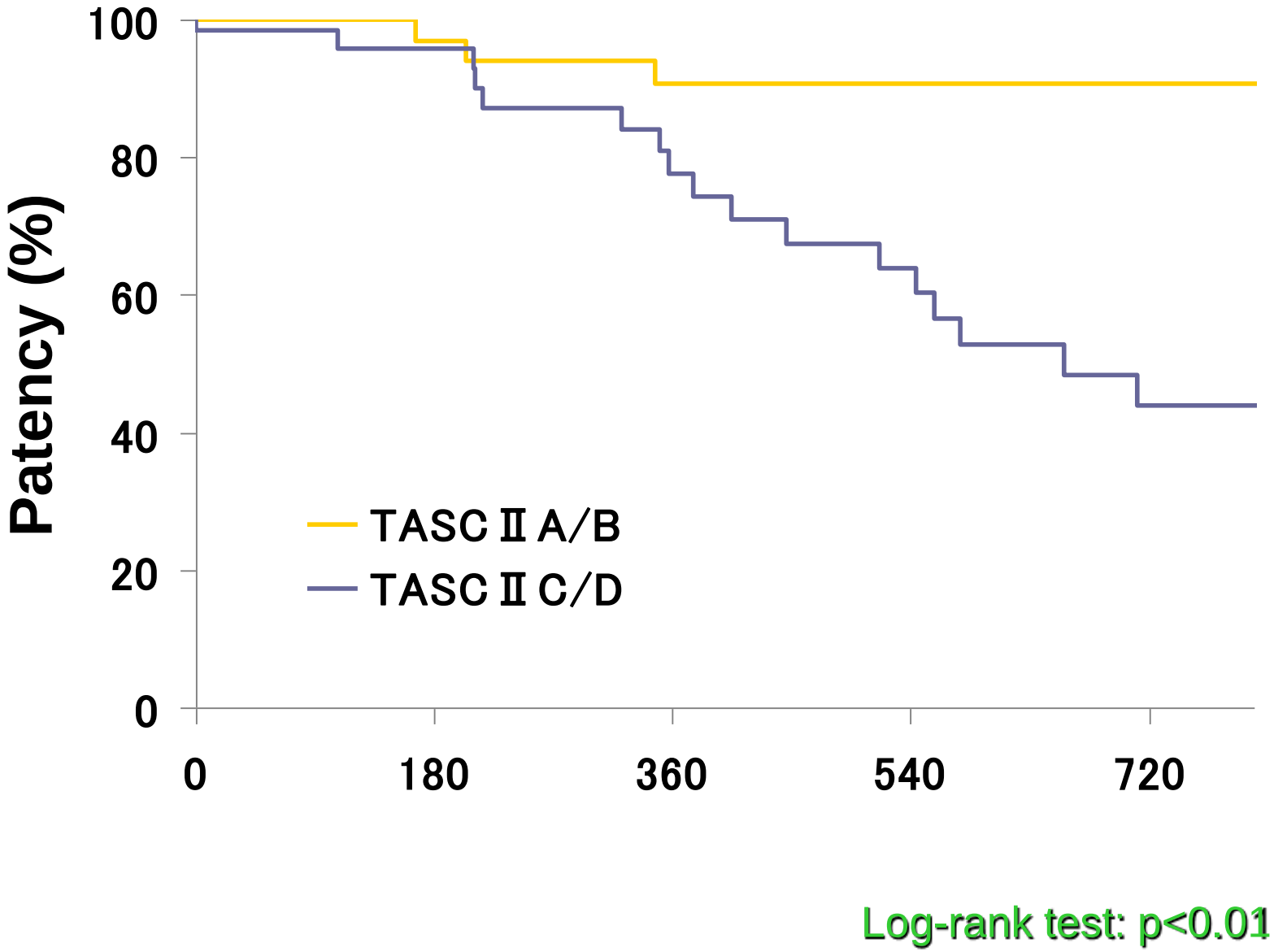
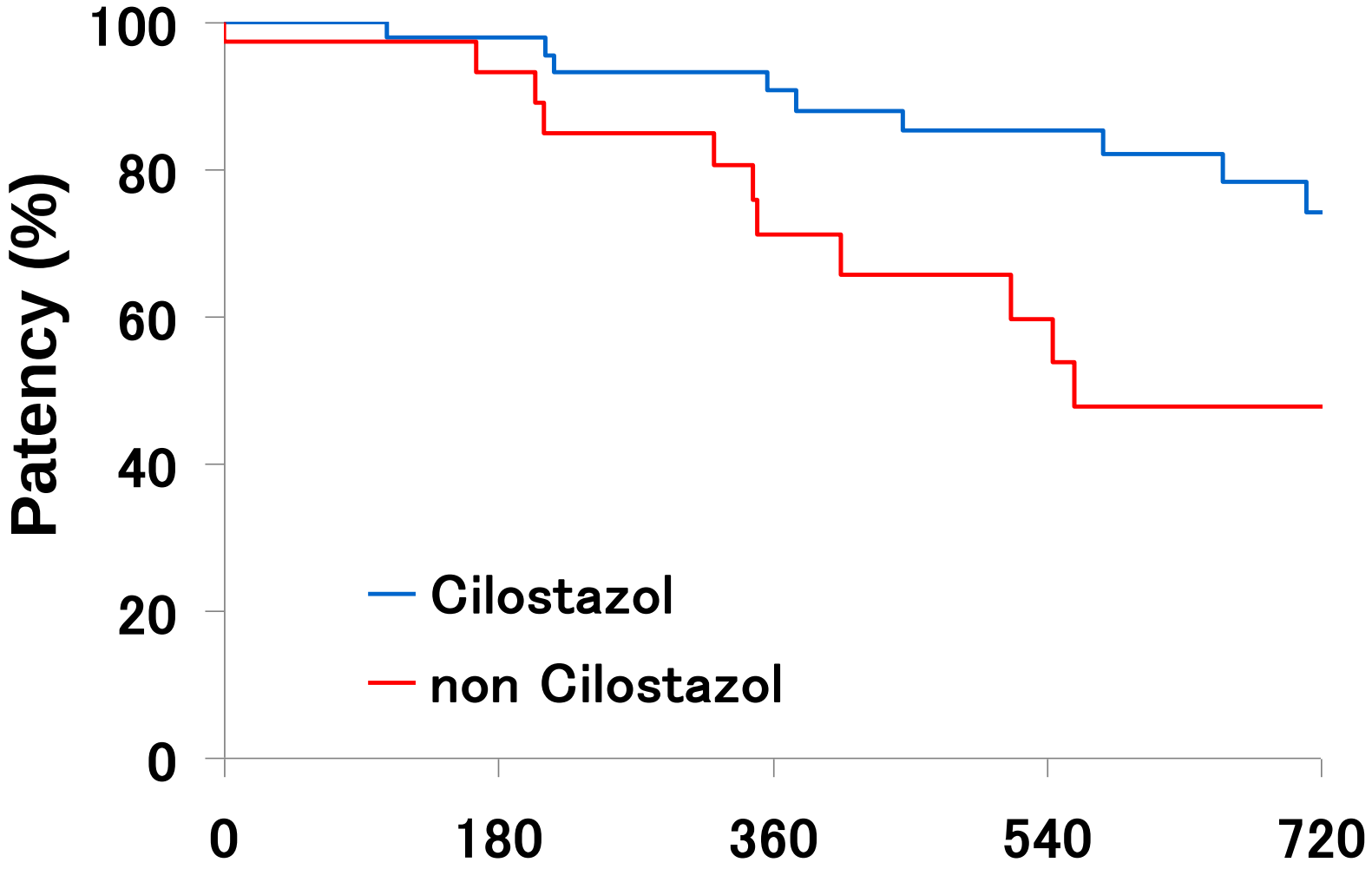
Primary patency
Secondary patency



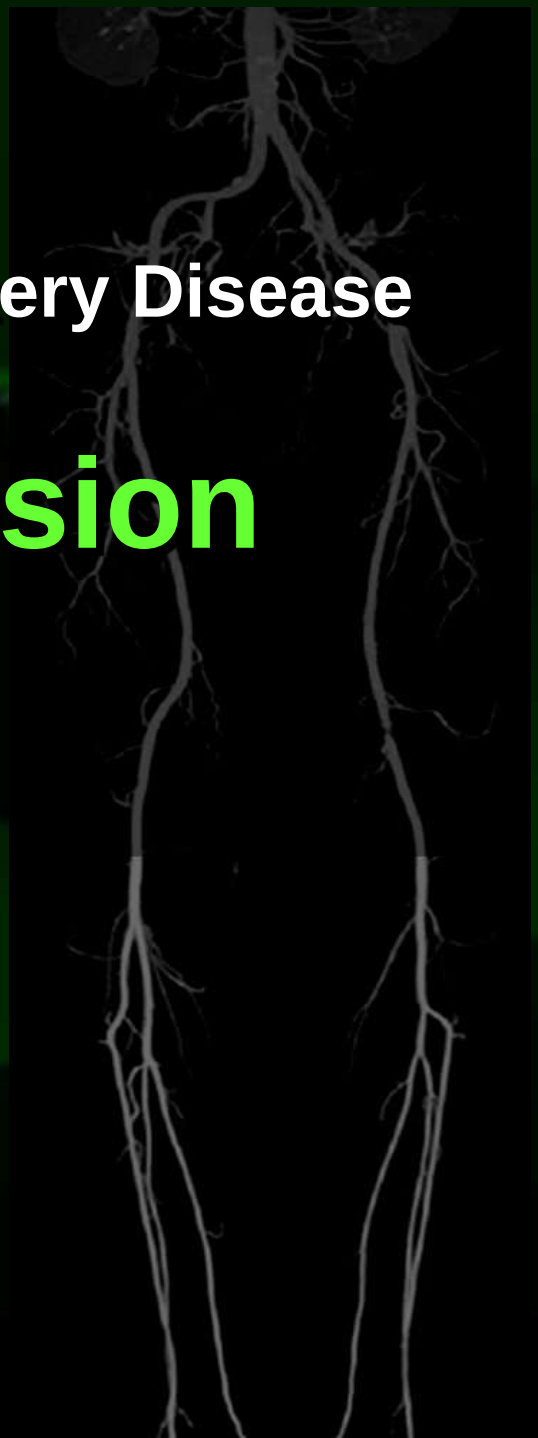
Log-rank test: $p<0.01$



Log-rank test: $p<0.01$

Revascularization of Peripheral Artery Disease

Below-the-knee lesion



Wiring methods for BTK-CTO

1. Antegrade wiring

- Tactile sensation-guided wiring
- Duplex echo-guided wiring
- Knuckle wire technique

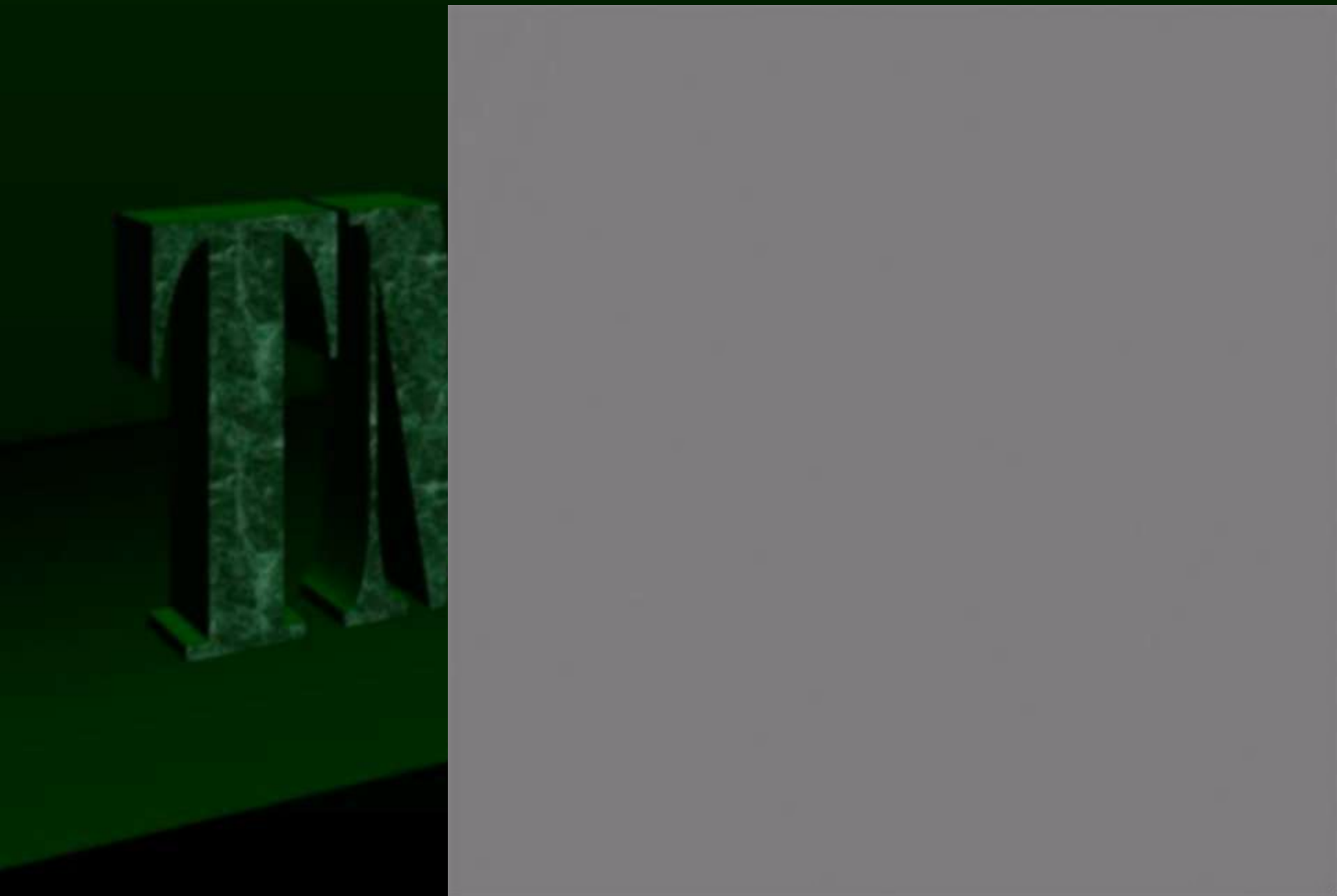
2. Bi-directional wiring with distal puncture

- Dorsalis Pedis
- distal ATA
- distal PTA
- distal PA
- Digital arteries
- Plantar artery

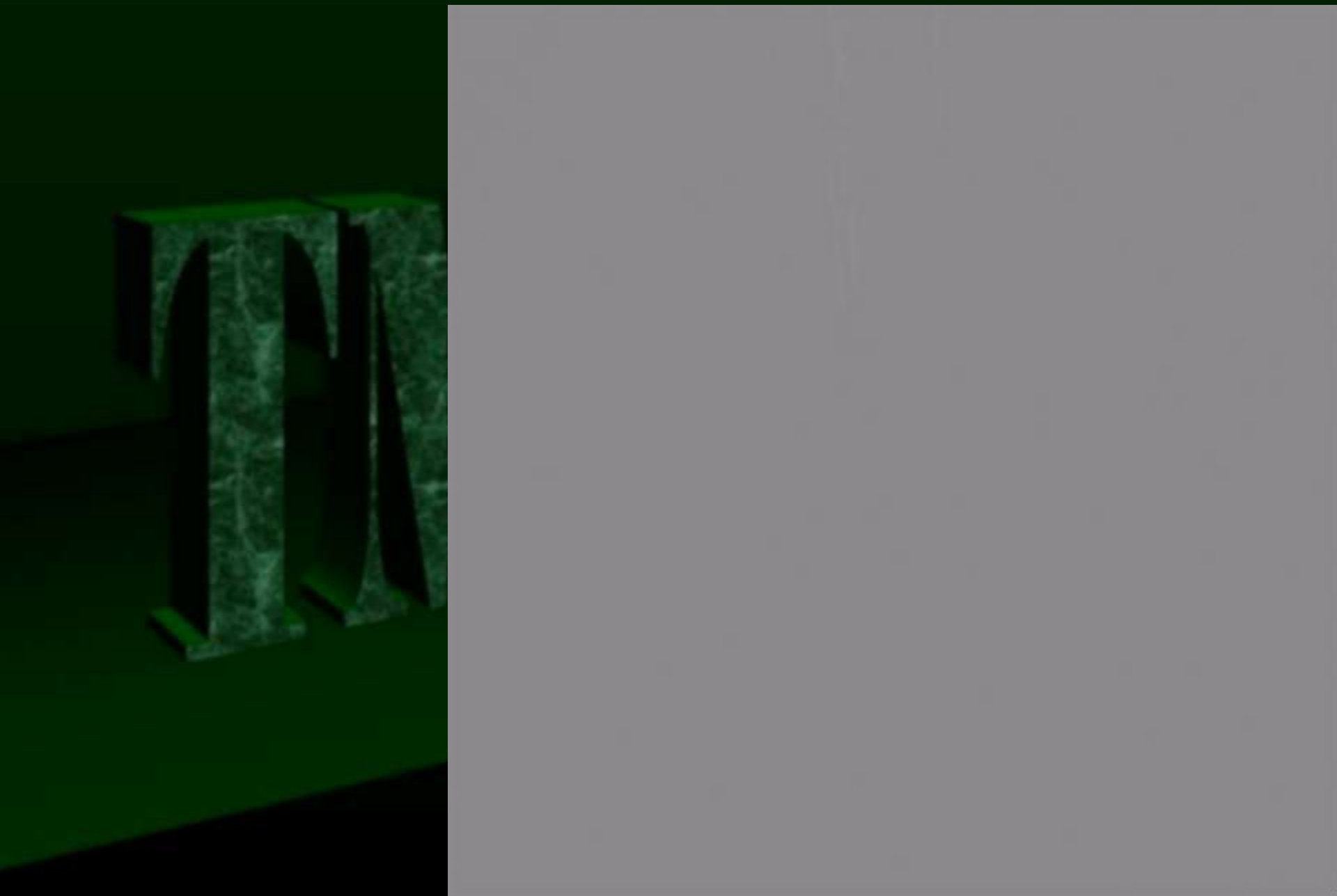
3. Bi-directional wiring using collateral channel

- Trans-collateral angioplasty (TCA)
- Trans-pedal arch angioplasty (TPA)

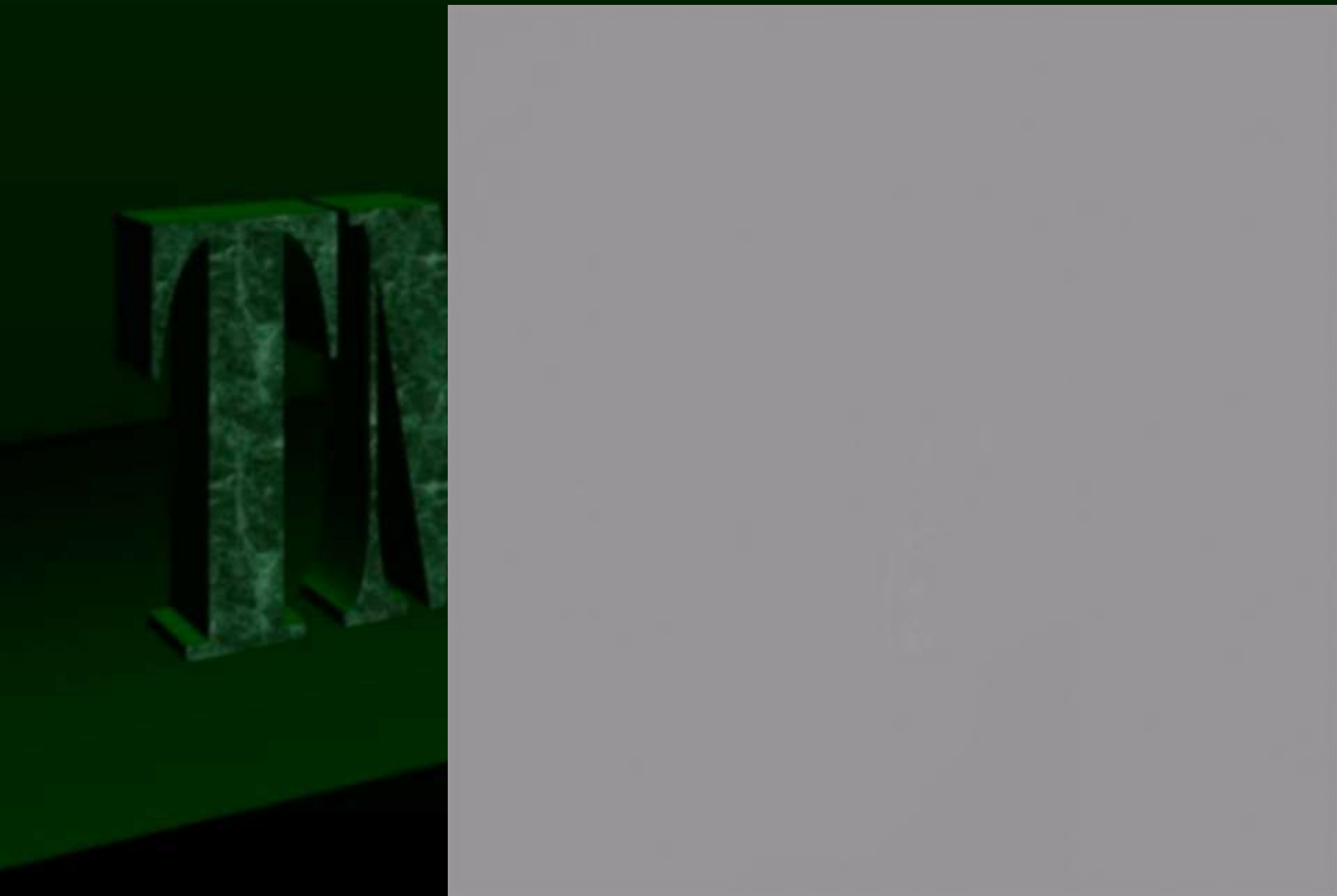
Control carbon dioxide (CO_2) angiography



Control carbon dioxide (CO_2) angiography



Control carbon dioxide (CO_2) angiography

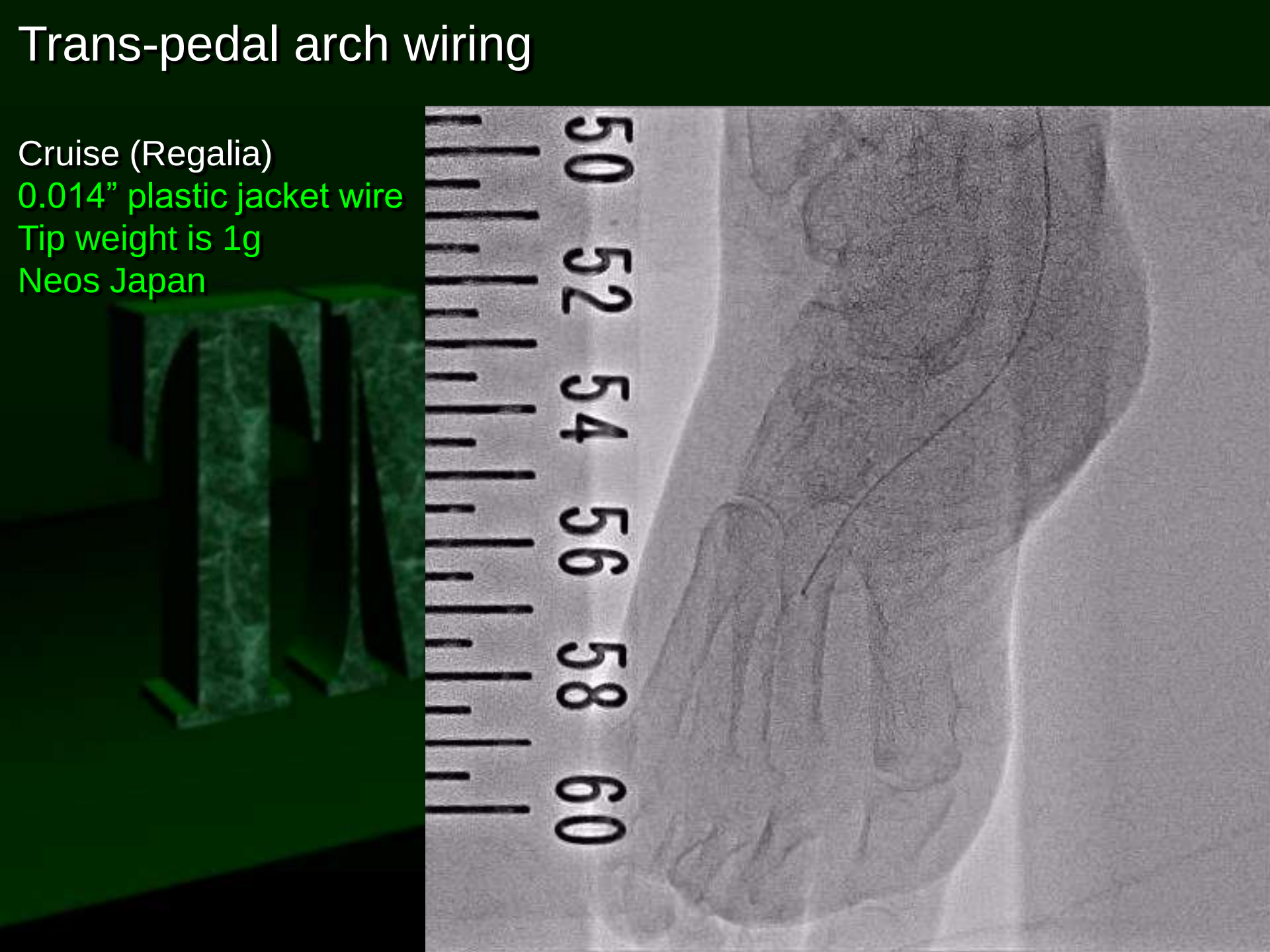


Trans-collateral wiring

Cruise (Regalia)
0.014” plastic jacket wire
Tip weight is 1g
Neos Japan

Trans-pedal arch wiring

Cruise (Regalia)
0.014” plastic jacket wire
Tip weight is 1g
Neos Japan



Final angiography using contrast medium

Contrast medium: 3cc

Retrospective analysis of EVT for BTK lesions in TMH-CVC

Enrolment period

Apr. 2011 to Dec. 2012.

Patient population

103 lesions of 59 limbs from 50 patients who had Isolated de novo BTK lesion.

Patient characteristics

Age	72.8 ± 10.9
Gender	M 37 (74.0%), F 13 (26.0%)
Hypertension	41 (82.0%)
Dyslipidemia	33 (66.0%)
DM	36 (72.0%)
IHD	17 (34.0%)
CVD	18 (36.0%)
CKD (eGFR<60)	41 (85.4%)
HD	27 (54.0%)
Cilostazol	28 (57.1%)

Limb characteristics

Treated limb			R 30 (50.8%), L 29 (49.2%)
Rutherford	4		14 (23.7%)
	5		35 (59.3%)
	6		10 (16.9%)
ABI		pre	0.73±0.28
		post	0.92±0.22
SPP	dorsal	pre	34.9±18.9
		post	41.7±19.4
	plantar	pre	32.9±17.1
		post	39.0±20.6
BTK variation			1A:881.%, 1B:3.4%, 1C:0%, 1D :0%
			2A:3.4%, 2B:0%, 2C:0%
			3A:1.7%, 3B:3.4%, 3C:0%

EVT characteristics

Target vessel	ATA	47.6%,
	PTA	24.3%
	PA	28.2%
Calcification		70 (68.0%)
CTO		78 (75.7%)
Thrombotic occlusion		4 (3.9%)
Reference diameter		2.47±0.43
Lesions length		141.1±98.2
CTO length		101.8±100.7
Balloon size		2.2±0.4
Balloon length		172.8±52.2
CO2 angio		1 (1.7%)
Procedure success		87 (88.8%)

Take Home Message

Bi-directional wiring would be a key to obtain initial success in the complex EVT procedures.

Combination of different techniques such as various distal puncture methods, trans-collateral or trans-pedal arch wiring, and guidewire rendezvous technique would be a great help for your daily practice.

More options, you will have better outcome.