

DÉCLARATION DE LIENS D'INTÉRÊT AVEC LA PRÉSENTATION

Intervenant : Jean-Marc PERNES, Antony

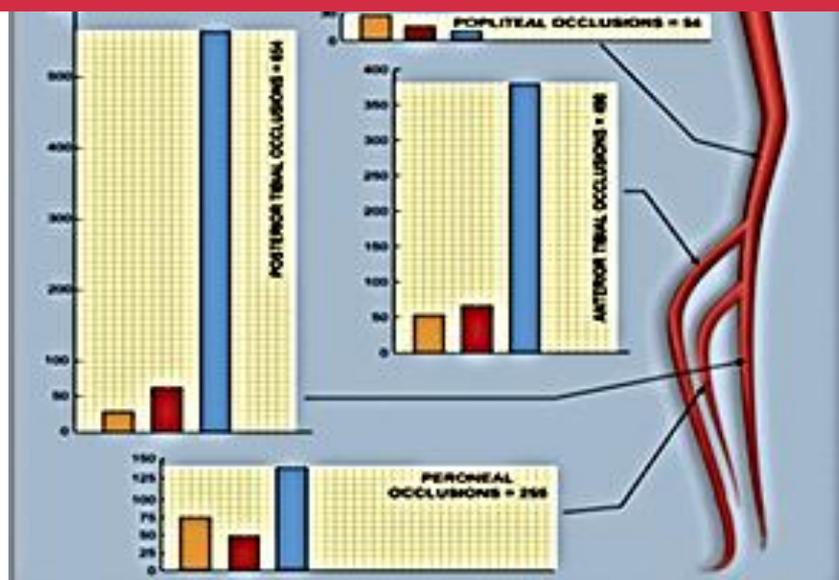
Je n'ai pas de lien d'intérêt à déclarer



CTO OF BTK: C'est pas sorcier.... Hum..un peu quand même !!!

POTENTIEL DE LA METHODE EV:

LIE AU DEFI TECHNIQUE DE LA RECANALISATION



Vascular involvement in diabetic subjects with ischemic foot ulcer: morphologic categorization of disease severity.

Graziani et al. Eur J Vasc Endovasc Surg 2007;33:453.

417 diabetics with CLI-2893 lesions

74% were in the BTK arteries

66% of BTK lesions were occlusions

50% of occlusions were >10cm

STRATEGIE:

ANTEGRADE INTRALUMINALE de 1^{ère} INTENTION :

...+/- OBSESSIONNELLE..

ESCALADE DES GUIDES

Strategies of BTK crossing

1. Antegrade approach

1-1: Intraluminal approach

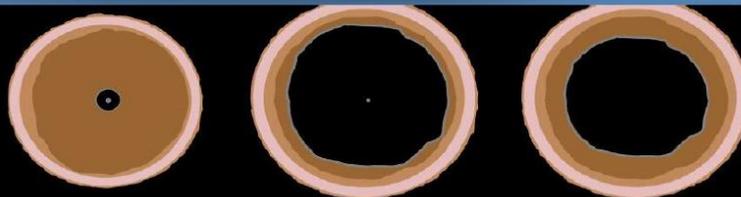
• Japanese art: 0.014-inch GW

Appropriate GW for BTK

0.014 or **0.018** or **0.035**
Japan Euro Not suitable for BTK

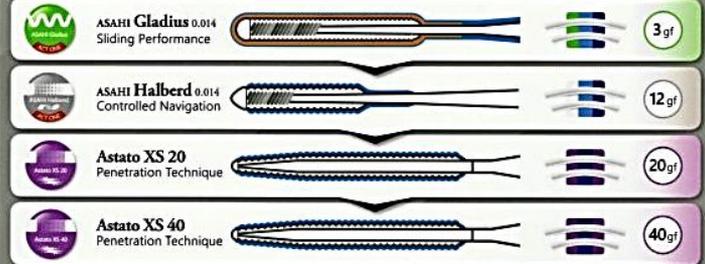
State of art
Japanese technique with 0.014 GW

Antegrade intraluminal approach



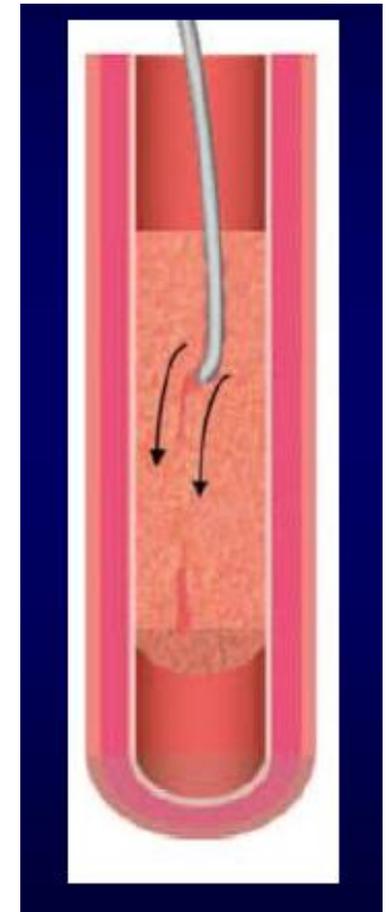
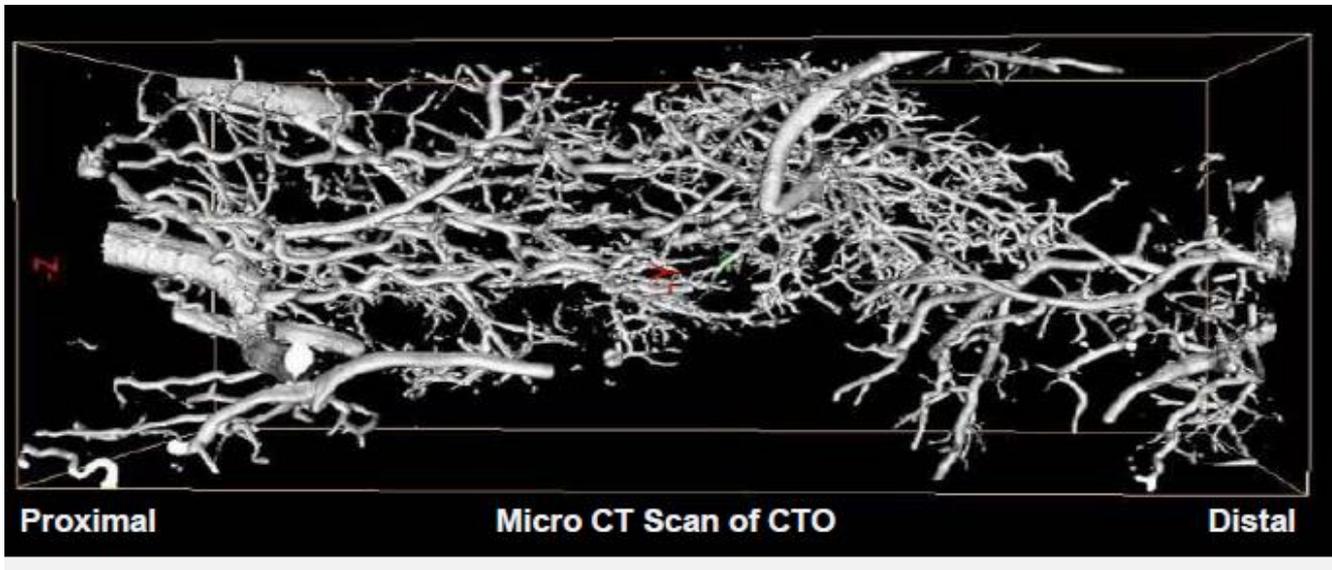
Intraluminal
=
circumferential
treatment

0.36mm (0.014") Antegrade



SLIDING TECHNIQUE

- IDEALE POUR LES OCCLUSIONS « MOLLES »
- GUIDES EFFILES et PEU ANGULES POUR TROUVER LES MICRO CHENAUX DE REVASCULARISATION



GUIDES POLYMERIQUES HYDROPHILES, lubrification++++

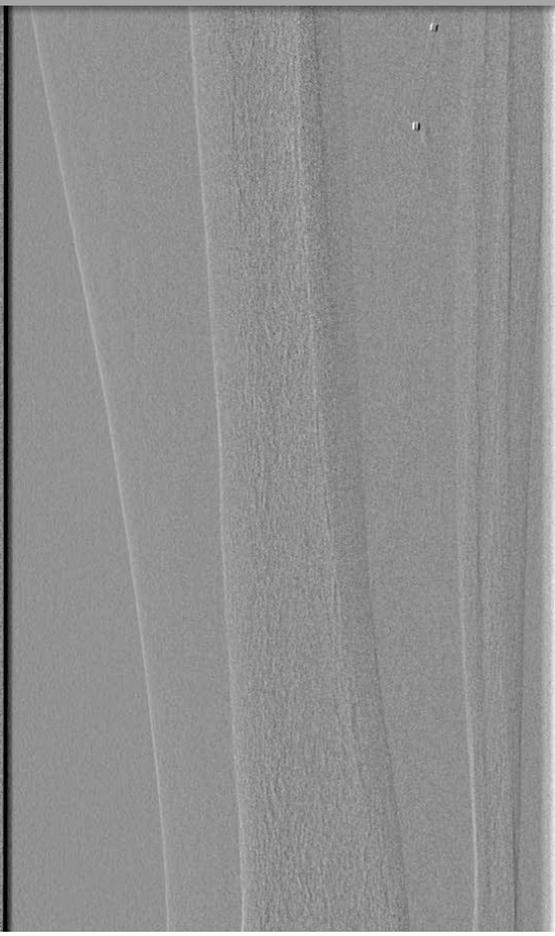
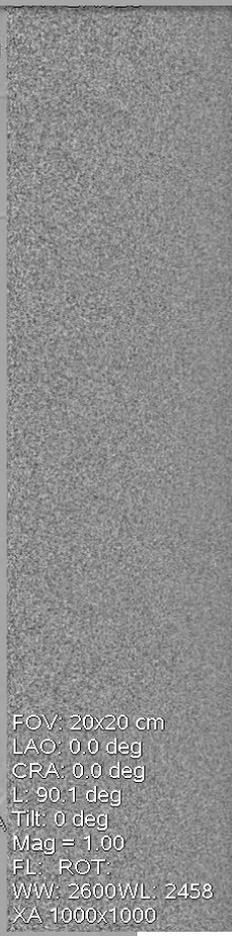
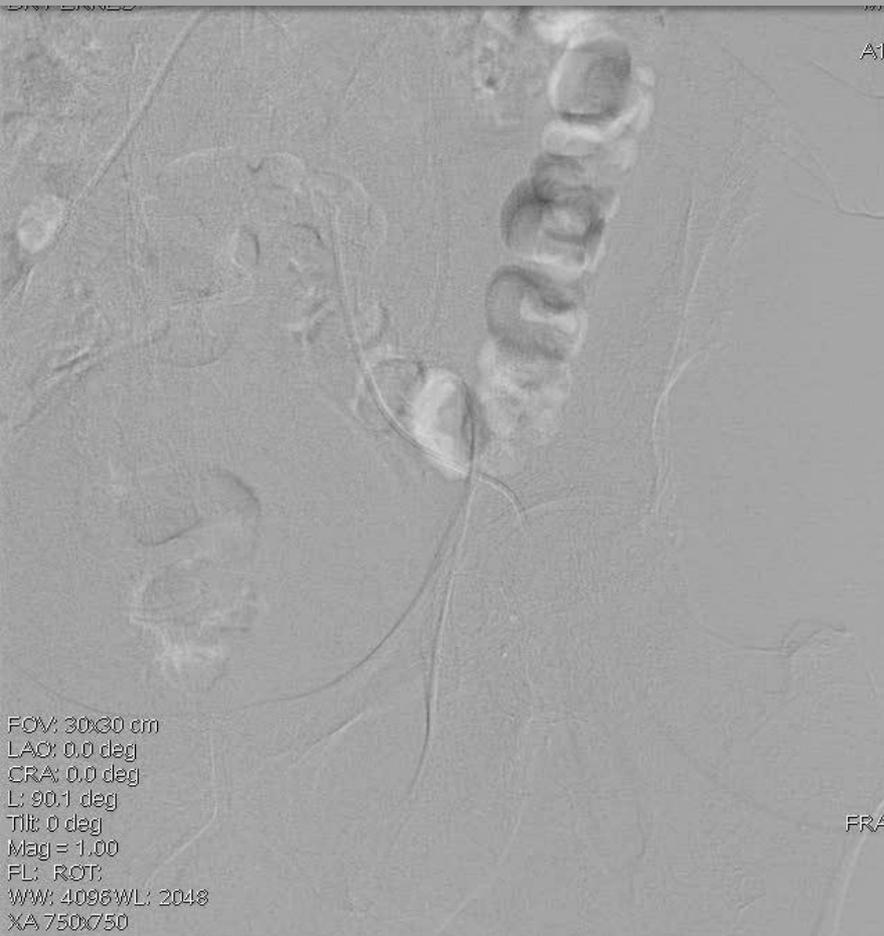
First choice & main guidewire



- **Fielder XT**
- **Regalia XS 1.0**
- **Chevalier**
- **Command**
- **Jupiter FC**
- **Pilot 50, 200**

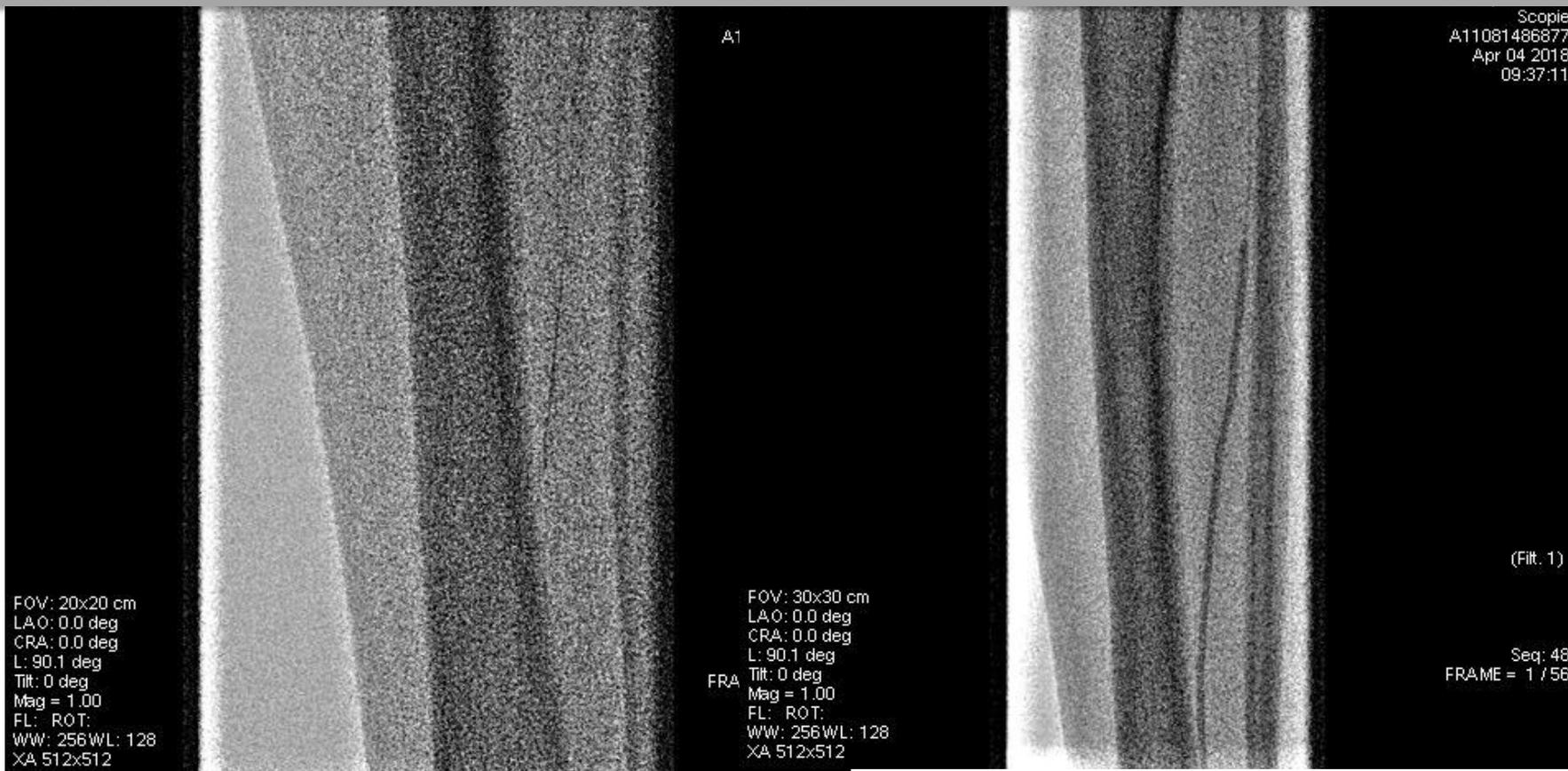
Polymer-jacketed GW

+ MICRO CATHETER SUPPORT



A11081486877
Apr 04 2018
09:29:53

Seq: 32
FRAME = 2 / 10
MASK = 1



FOV: 20x20 cm
LAO: 0.0 deg
CRA: 0.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 256WL: 128
XA 512x512

A1

FRA

FOV: 30x30 cm
LAO: 0.0 deg
CRA: 0.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 256WL: 128
XA 512x512

Scopie
A11081486877
Apr 04 2018
09:37:11

(Fit. 1)

Seq: 48
FRAME = 1 / 56

DR PERNES

FOV: 30x30 cm
LAO: 1.4 deg
CRA: 1.1 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 4096 WL: 2048
XA 750x750

DR PERNES

FOV: 30x30 cm
RAO: 5.9 deg
CAU: 3.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 4096 WL: 2048
XA 750x750



M Sep 12 1949

A11081486877
Apr 04 2018
09:48:47

(Filt. 3)

Seq: 63
FRAME = 2 / 15

A11081
Apr
0

A11081486877
Apr 04 2018
09:57:02

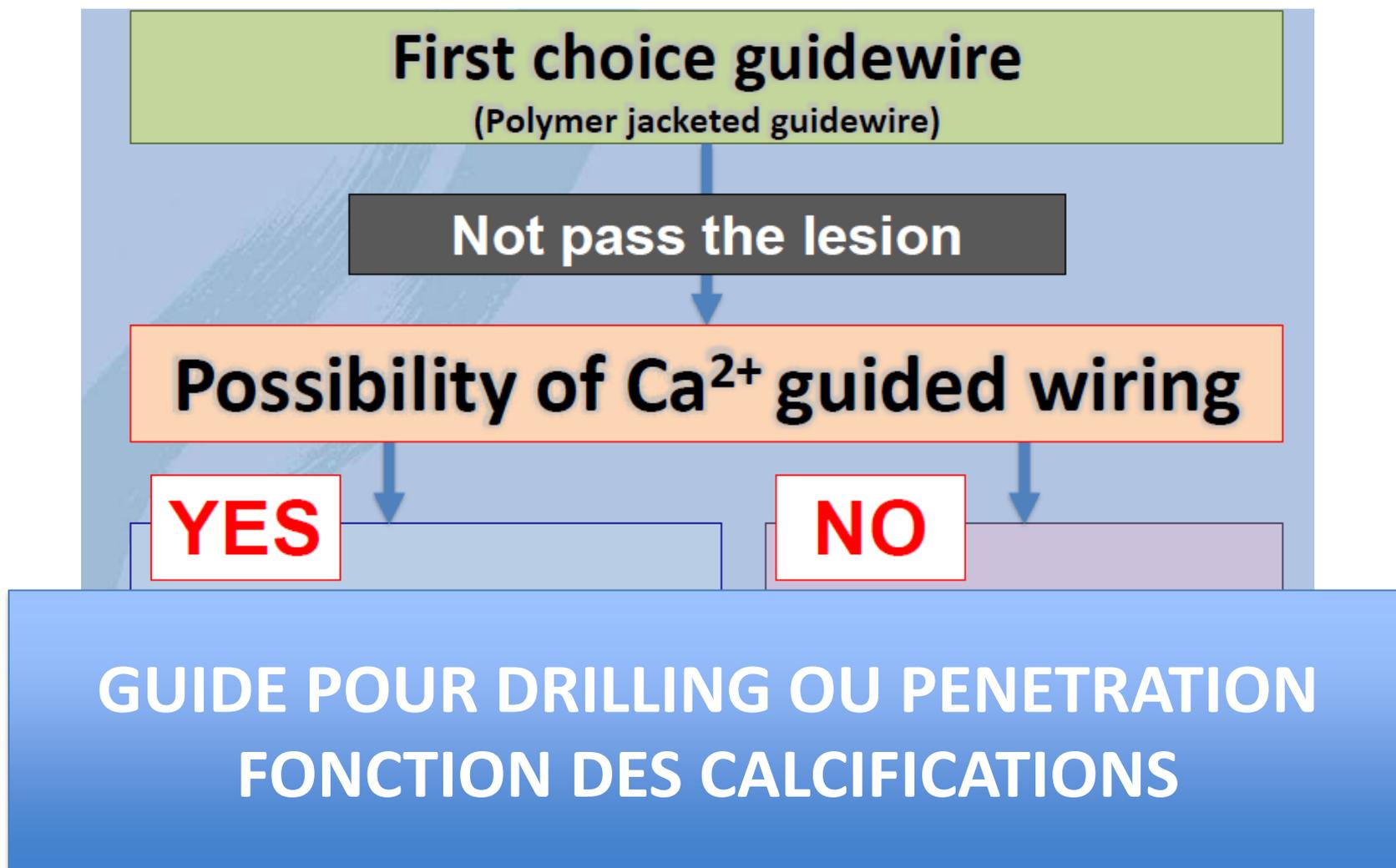
(Filt. 3)

FOV: 30x30 cm
RAC: 5.9 deg
CAU: 3.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT
WW: 4096WL: 2048
XA 750x750

FOV: 30x30 cm
RAC: 22.5 deg
CAU: 4.0 deg
L: 90.1 deg
FRAME Tilt: 0 deg
M: Mag = 1.00
FL: ROT
WW: 4096WL: 2048
XA 750x750

Seq: 68
FRAME = 2 / 13
MASK = 1

OK...SI ON Y ARRIVE PAS COMME CA.....:



PAS TROP CALCIFIE...: Drilling

« INTIMAL et Tissu loose » tracking

0.014 GW

ASAHI : Halberd

Gaia 2 ++++++

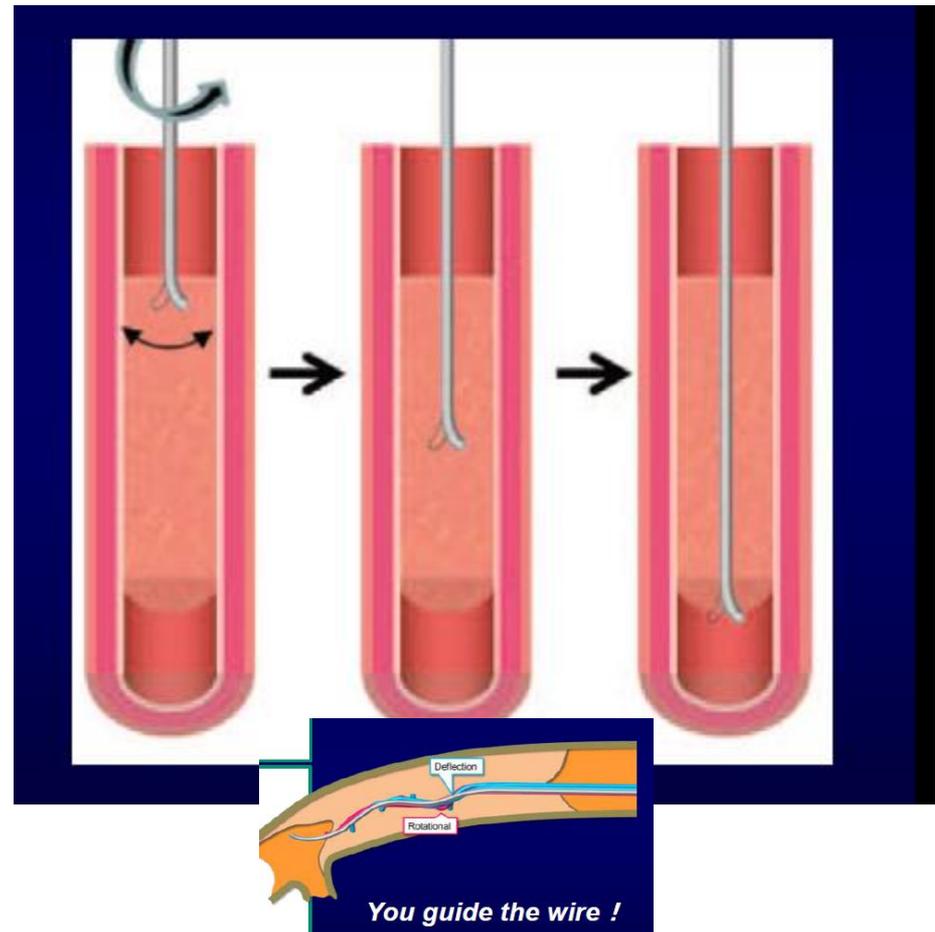
BOSTON: Victory

COOK :

0.018 GW:

Asahi : Treasure 12

Abott : Connect flex



GUIDES NON HYDROPHILES, dirigeables et pouvoir de pénétration 4 à 12g



DR PERNES

F Dec 06 1950
Scopie
A11082358728
Apr 23 2018
19:38:15

FOV: 16x16 cm
LAO: 18.3 deg
CRA: 1.4 deg
L: 90.2 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
W/W: 256 WL: 128
XA 512x512

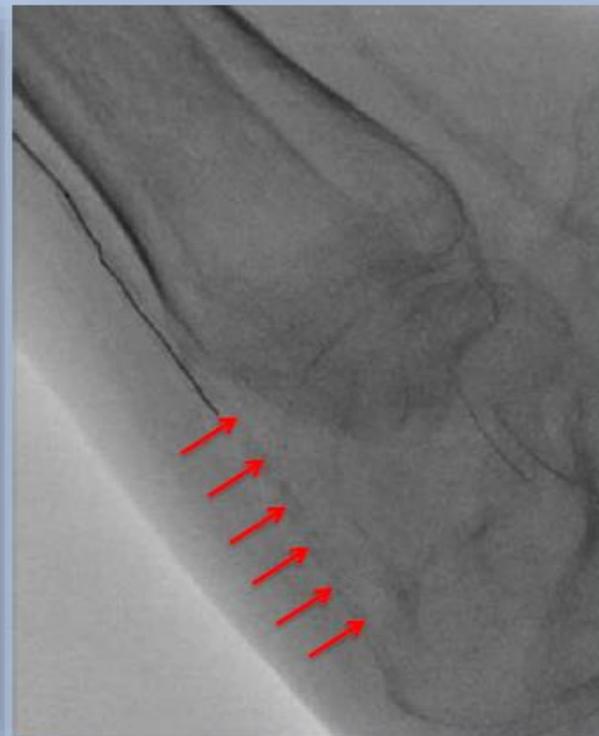
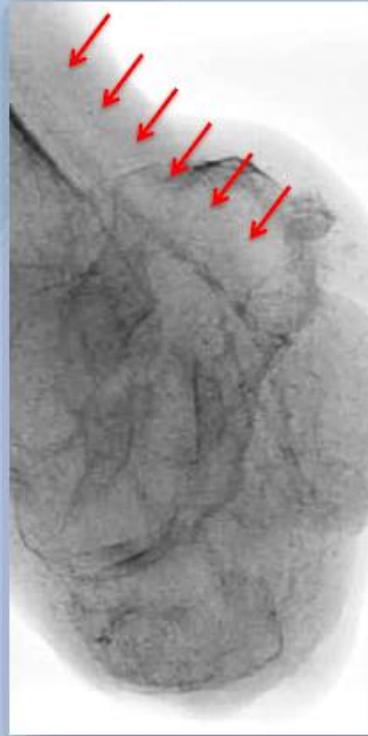
(Filt. 1)

Seq: 23
FRAME = 1 / 450



C'EST BETONNE.....

Calcium tell us the way to go

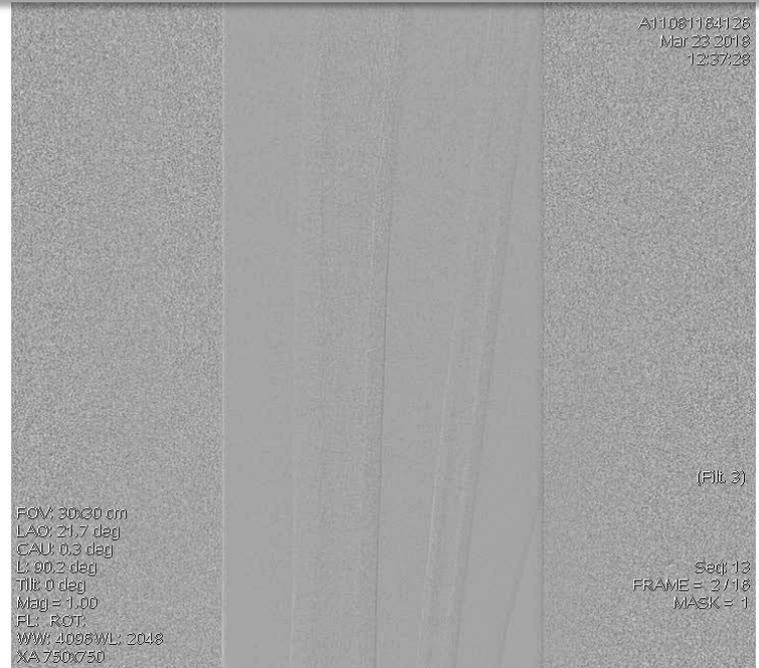
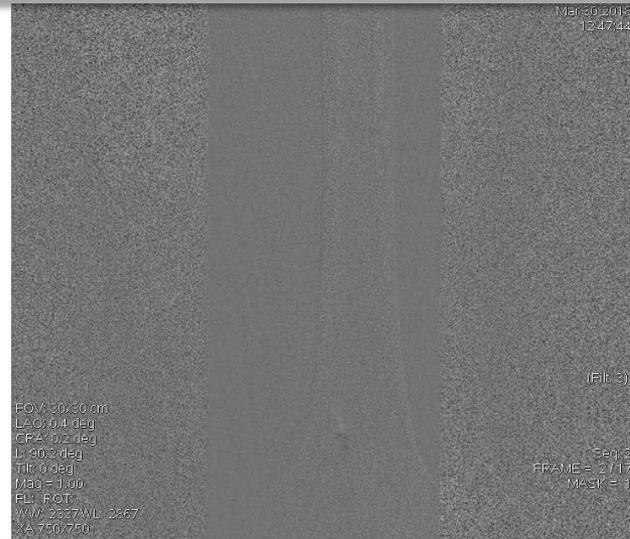


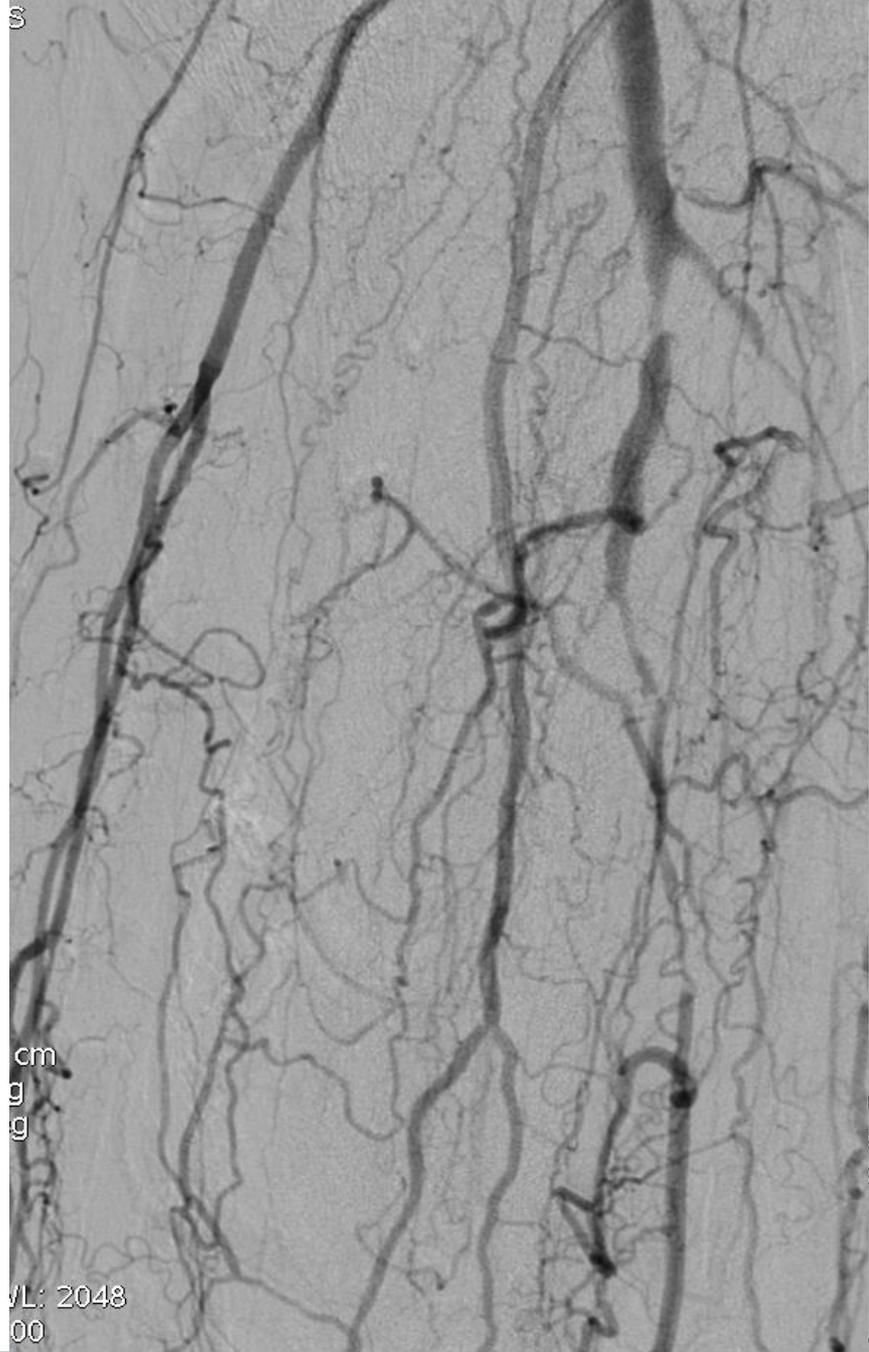
penetration GW

Penetration Power Calculation d

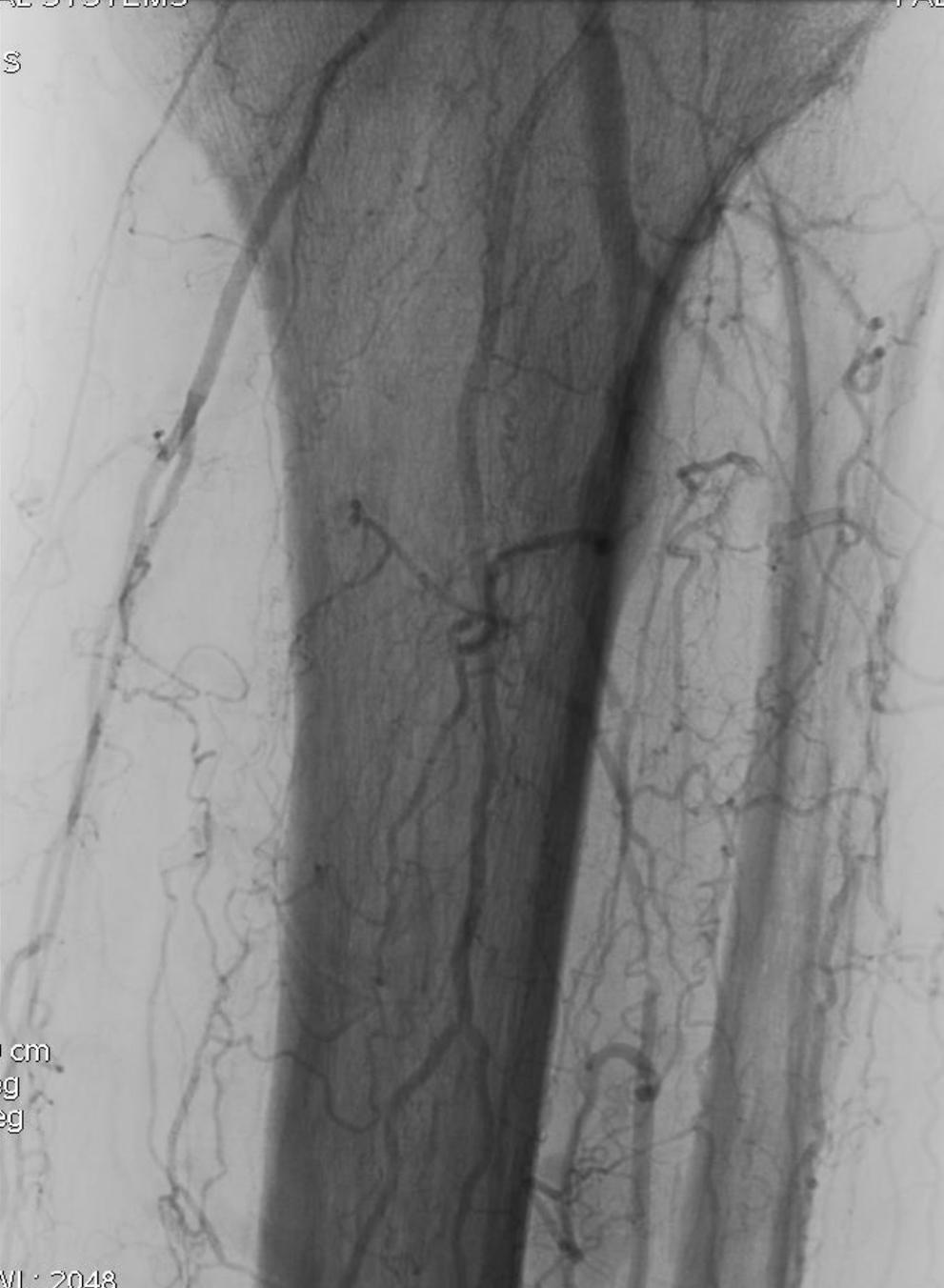
Guide Wire	Manufacturer	Tip Stiffness (Load) (g)	Tip Diameter	Penetration Power (Tip Load/Area of Tip) (kg/in ²)
Fielder XT	Asahi	1.2g	0.009"	19 (polymer cover)
Cross-It 100XT	Abbott	1.7g	0.0105"	20*
MiracleBros 3	Asahi	3.9g	0.0125"	32
MiracleBros 4.5	Asahi	4.4g	0.0125"	36
PROGRESS 40	Abbott	4.8g	0.012"	40
Cross-It 200XT	Abbott	4.7g	0.0105"	54
Cross-It 300XT	Abbott	6.2g	0.0105"	72
MiracleBros 6	Asahi	8.8g	0.0125"	72
PROGRESS 80	Abbott	9.7g	0.012"	80
Cross-It 400XT	Abbott	8.7g	0.0105"	101
MiracleBros 12	Asahi	13.0g	0.0125"	106
PROGRESS 120	Abbott	13.9g	0.012"	120
Confianza 9	Asahi	8.6g	0.009"	135
PROGRESS 140T	Abbott	12.5g	0.0105"	140
Confianza Pro	Asahi	9.3g	0.009"	146
Confianza Pro 12	Asahi	12.4g	0.009"	195
PROGRESS 200T	Abbott	13.3g	0.009"	200

Guides Hydrophobiques , peu dirigeables, risque PERFORATION 280

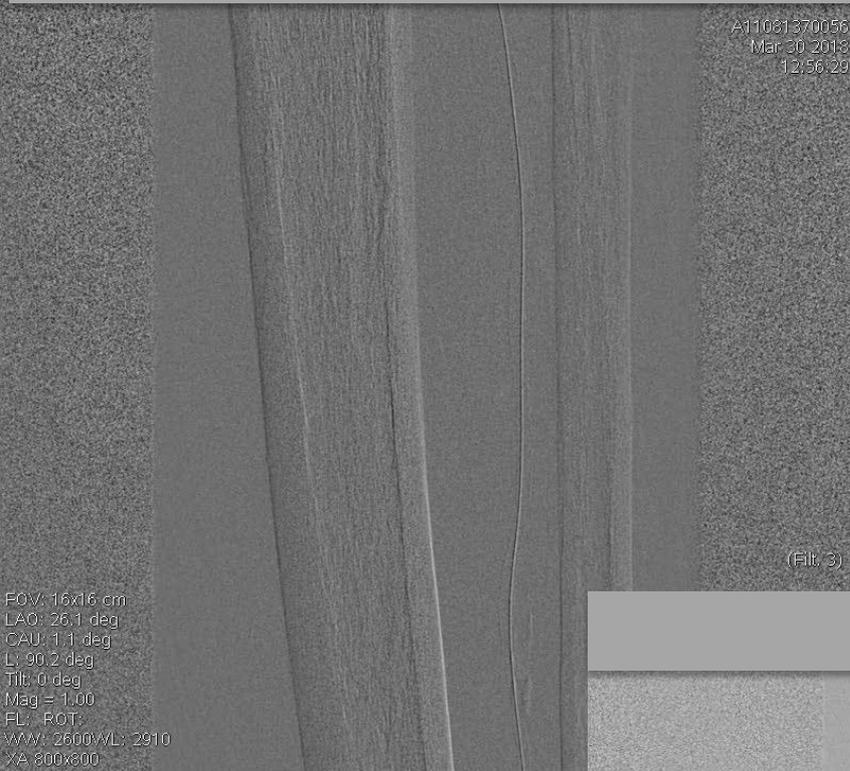




VL: 2048
00



VL: 2048
00



A11081370056
Mar 30 2018
12:56:29

(Filt. 3)

FOV: 16x16 cm
LAO: 26.1 deg
CAU: 1.1 deg
L: 90.2 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT
WW: 2600/YL: 2910
XA 800x800



A11081370056
Mar 30 2018
13:08:55

(Filt. 3)

Seq: 9
FRAME = 2 / 19
MASK = 1

FOV: 20x20 cm



A11081370056
Mar 30 2018
13:28:55

(Filt. 3)

FOV: 30x30 cm
LAO: 28.3 deg
CAU: 3.1 deg
L: 90.2 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT
WW: 4098/WL: 2048
XA 750x750

Seq: 13
FRAME = 2 / 21
MASK = 1

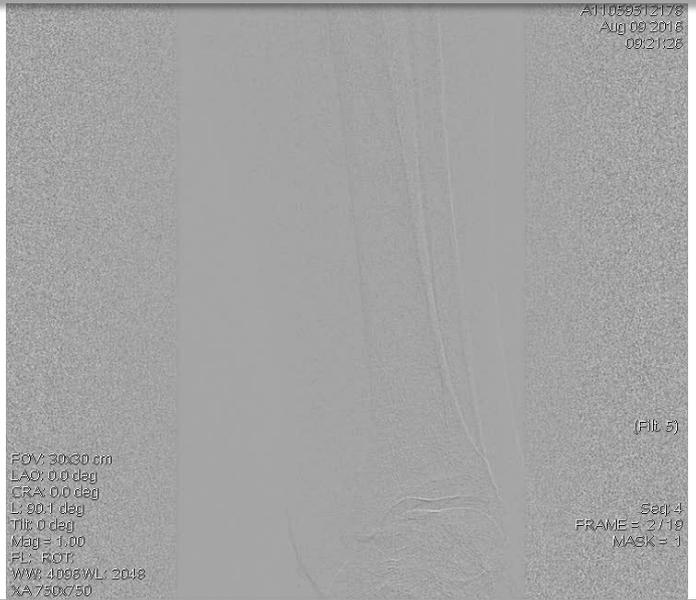
Stiffer GW have risk of **GW perforation**

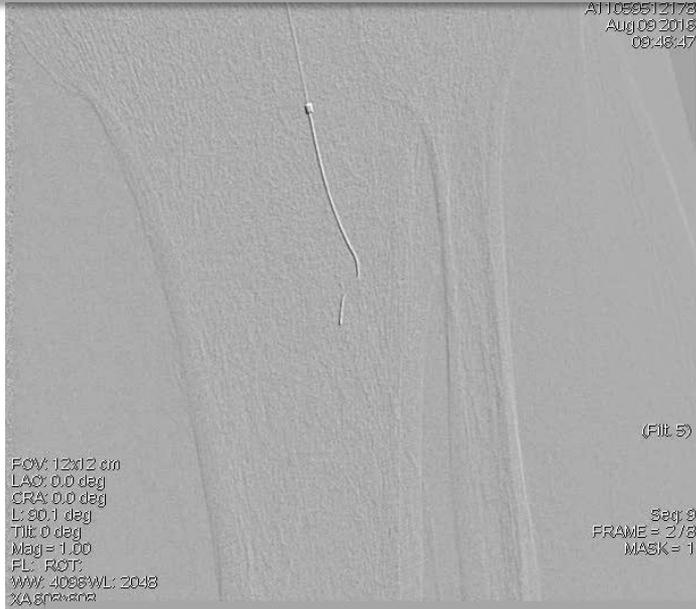
Penetration GW

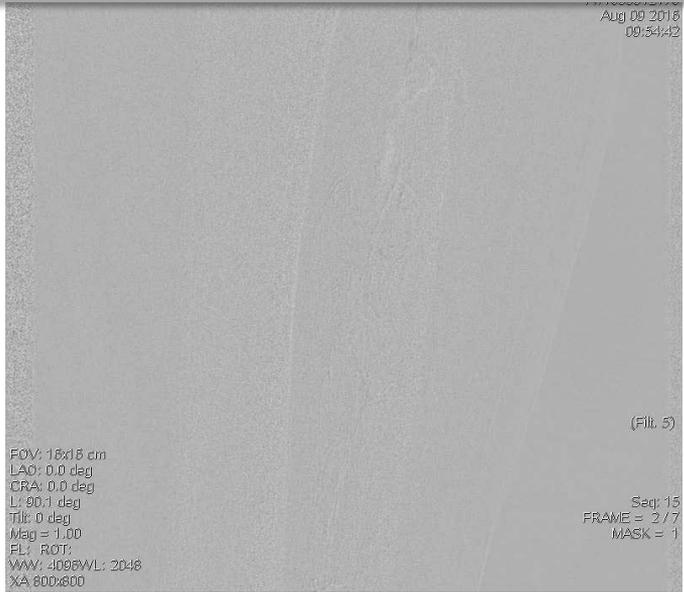
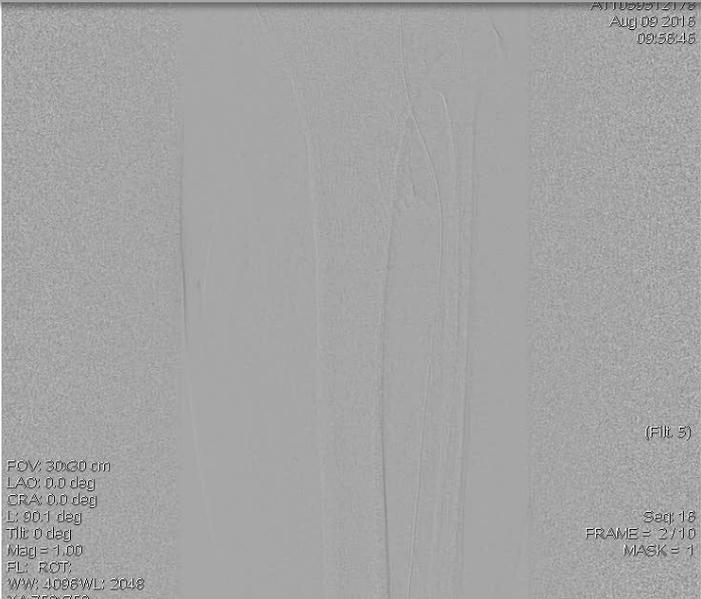


Ca guided wiring

PARFOIS IMPOSSIBLE







A11059512178
Aug 09 2018
10:28:07

(Flt. 5)

FOV: 20x20 cm
RAO: 1.5 deg
CRA: 0.0 deg
L: 90.1 deg

Seq: 27
FRAME = 2 / 7

GE MEDICAL SYSTEMS

DENIEL MONIQUE

Seq: 28
10:28:37

(Flt. 5)

FOV: 20x20 cm
RAO: 1.5 deg
CRA: 0.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FLY: ROT
WWW: 4096WL: 2048
XA: 1000:1000

Seq: 28
FRAME = 2 / 11
MASK = 1

Seq: 29
10:29:01

(Flt. 5)

Seq: 29
FRAME = 2 / 9
MASK = 1

Seq: 30
10:29:30
FOV: 20x20 cm
RAO: 1.5 deg
CRA: 0.0 deg
L: 90.1 deg
Tilt: 0 deg
Mag = 1.00
FLY: ROT
WWW: 4096WL: 2048
XA: 1000:1000

QUAND CA VEUT PAS , CA VEUT PAS....

Antegrade intraluminal approach

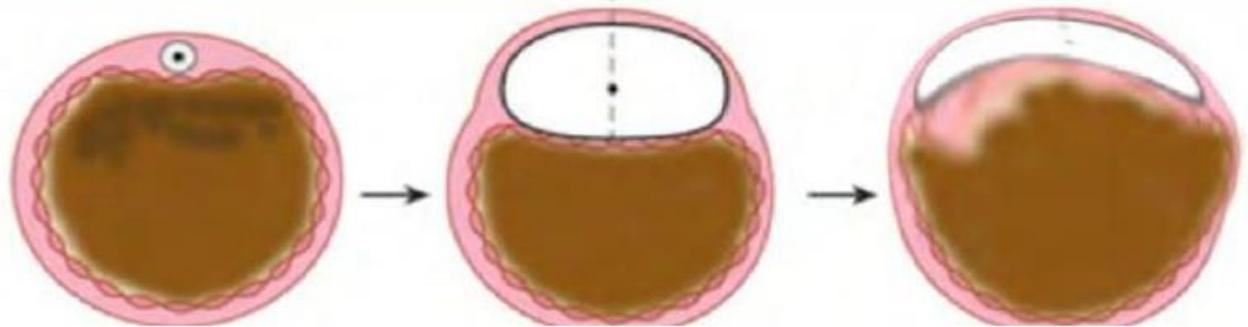
mission
accomplished

65.4 % - 95 %

- Workhorse wire first
- CTO wire if needed
- Guidewire ~ (balloon) cath unit
- (CTO devices)

Antegrade subintimal approach

Subintimal
=
eccentric
plaque
relocation



- Lower technical failure rate :
“not based on blind luck but on technical expertise...”

Strategies of BTK crossing

1. Antegrade approach

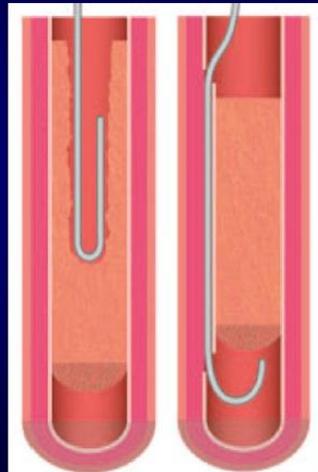
1-1: Intraluminal approach

• Japanese art: 0.014-inch GW

1-2: Subintimal approach (loop technique)

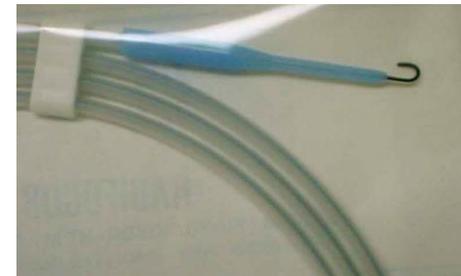
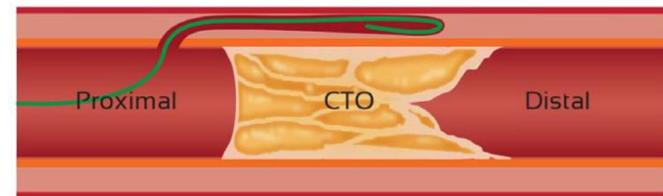
J-loop technique

- Knuckle wire intraluminal (lambda)
- Subintimal tracking
- Requires soft hydrophilic tip
- Needs good shape retention



GUIDES STANDARD:0.014,0.018, BOLIA 0.035

Knuckle Wire



STAR et MINI STAR Technique



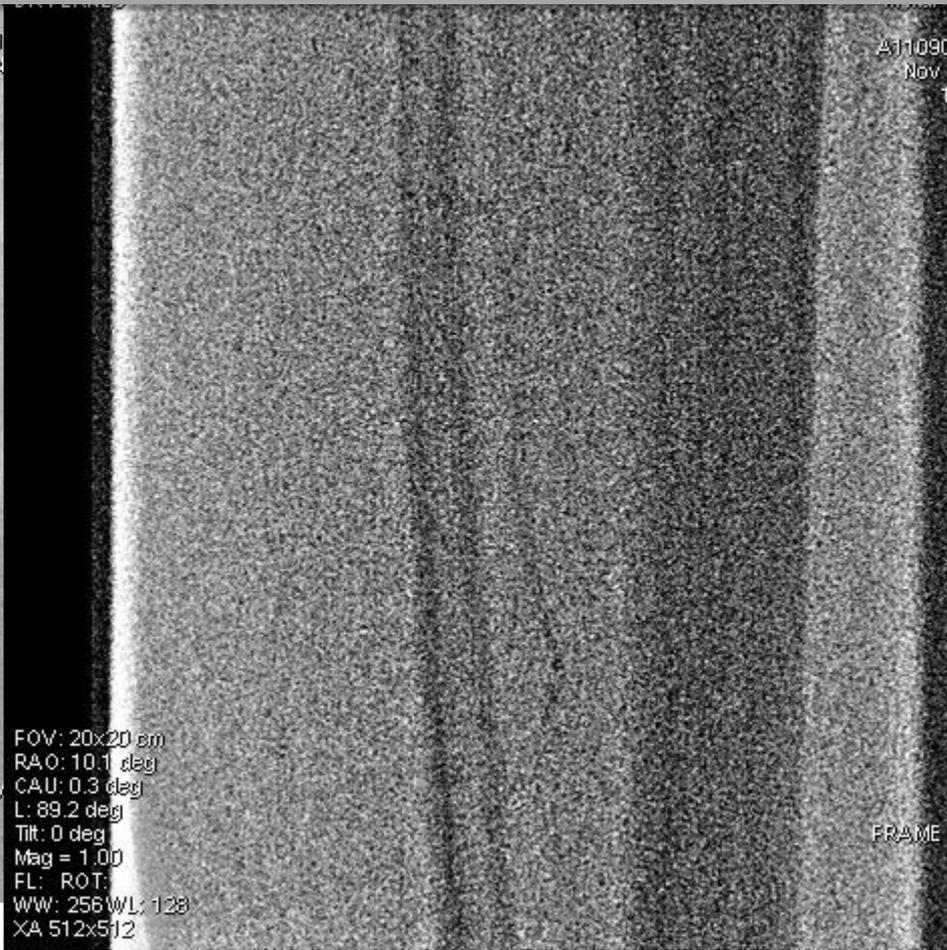




FOV: 20x20 cm
 RAO: 10.1 deg
 CAU: 0.3 deg
 L: 89.2 deg
 Tilt: 0 deg
 Mag = 1.00
 FL: ROT:
 WW: 256WL: 128
 XA 512x512

A11
 A

FRAM

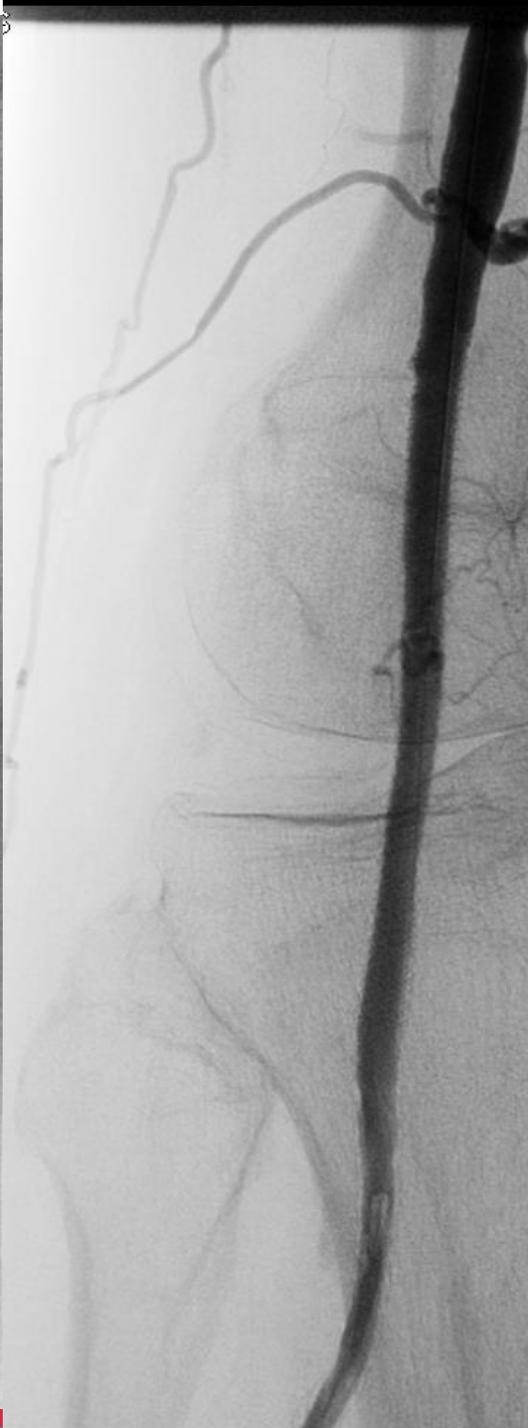


FOV: 20x20 cm
 RAO: 10.1 deg
 CAU: 0.3 deg
 L: 89.2 deg
 Tilt: 0 deg
 Mag = 1.00
 FL: ROT:
 WW: 256WL: 128
 XA 512x512

RE
 78
 46
 Scopie
 A11090336043
 Nov 20 2018
 12:56:37

(Fit. 1)

Seq: 14
 FRAME = 1 / 50



SYSTEMS

2042

Definition of micro-knuckle

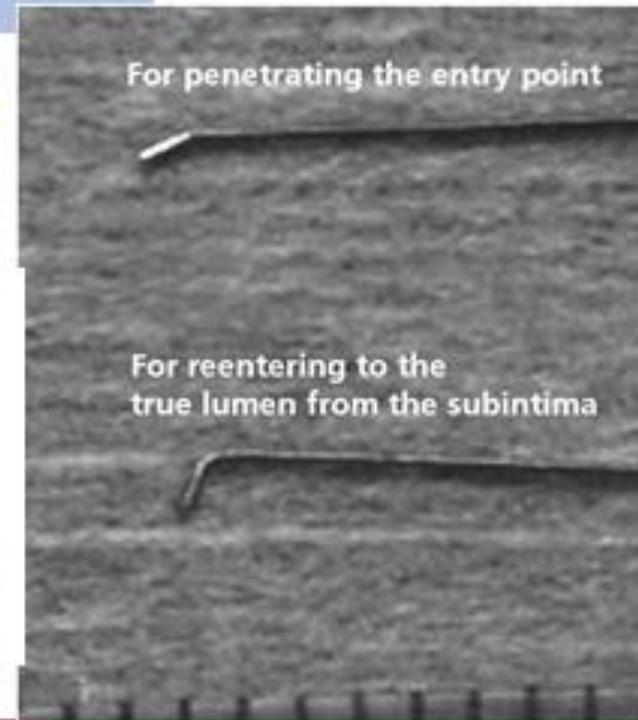
A technique in which a microcatheter
advance into the CTO
without any preceding GW leading

LAST (Limited Antegrade Subintimal Tracking)

Corsair, Finewire, Micro catheter Progreat Terumo

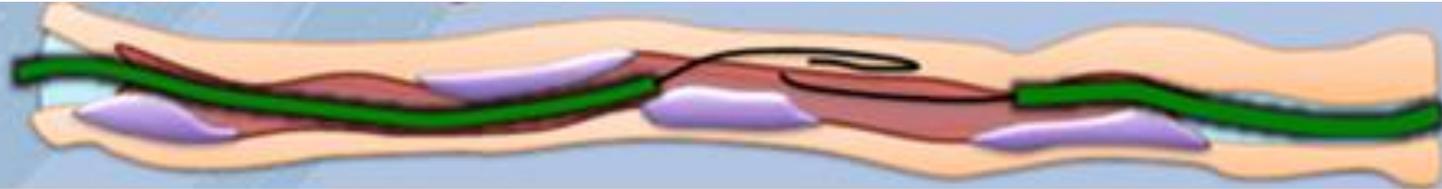


- Pilot 200, Confianza 12, Progress 200



PAS LA PANACEE NON PLUS.....

**TAUX ECHEC DE RE ENTREE :
20%(artères peu calcifiées) à 50%..**



L'ABORD RETROGRADE EST LA CLE DU SUCCES!!!



APPROCHE ANTEROGRADE

APPROCHE RETROGRADE

APP

Ipsilateral Antegrade intraluminal approach

ère)

mission accomplished

ng

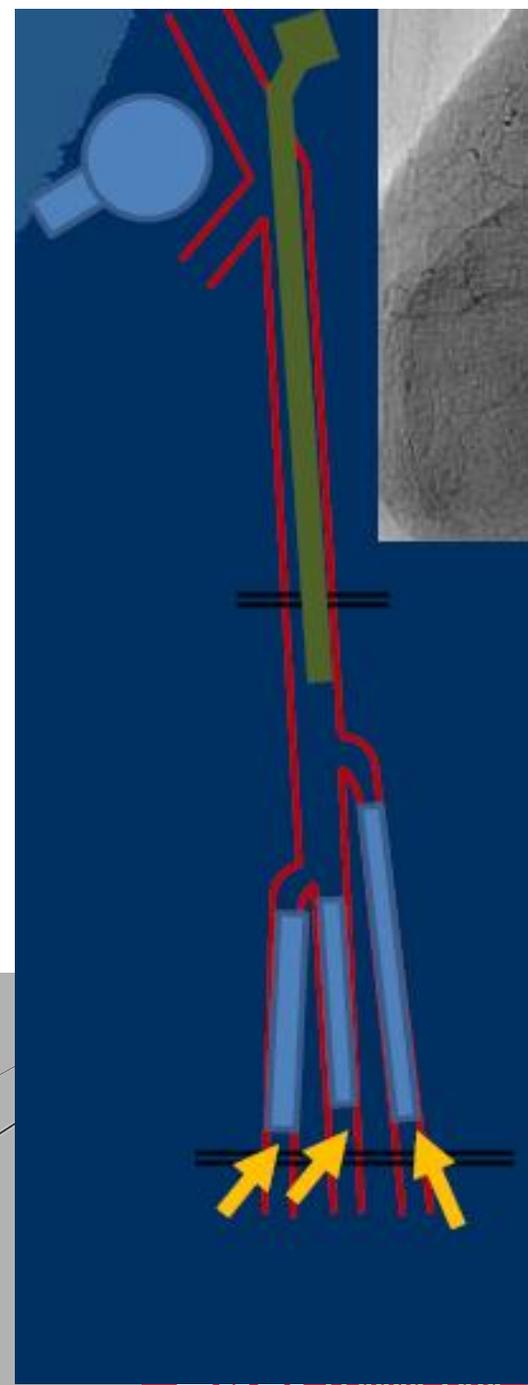
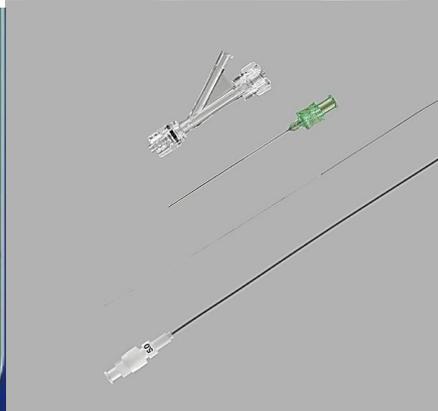
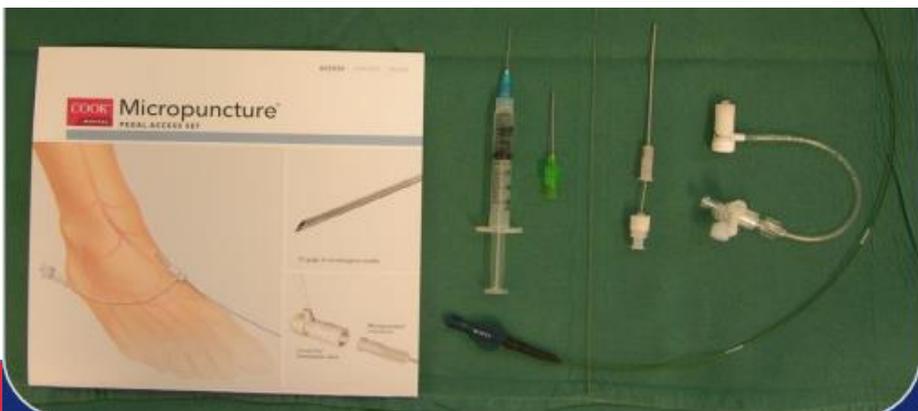
Ipsilateral Antegrade subintimal approach

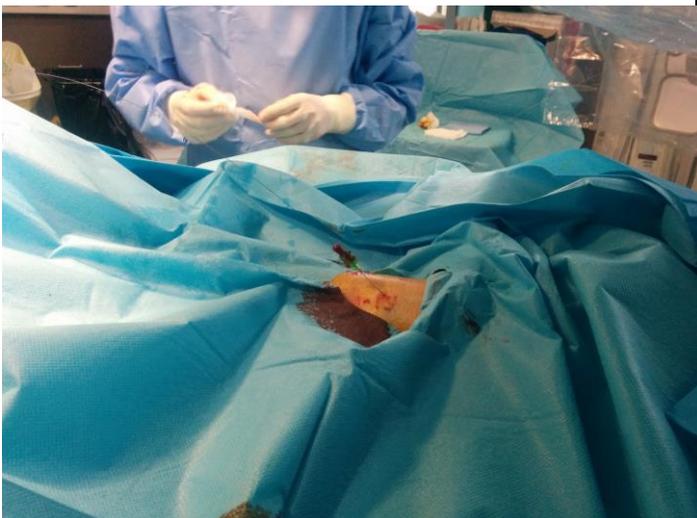
Successful re-entry

Ipsilateral bidirectional approach

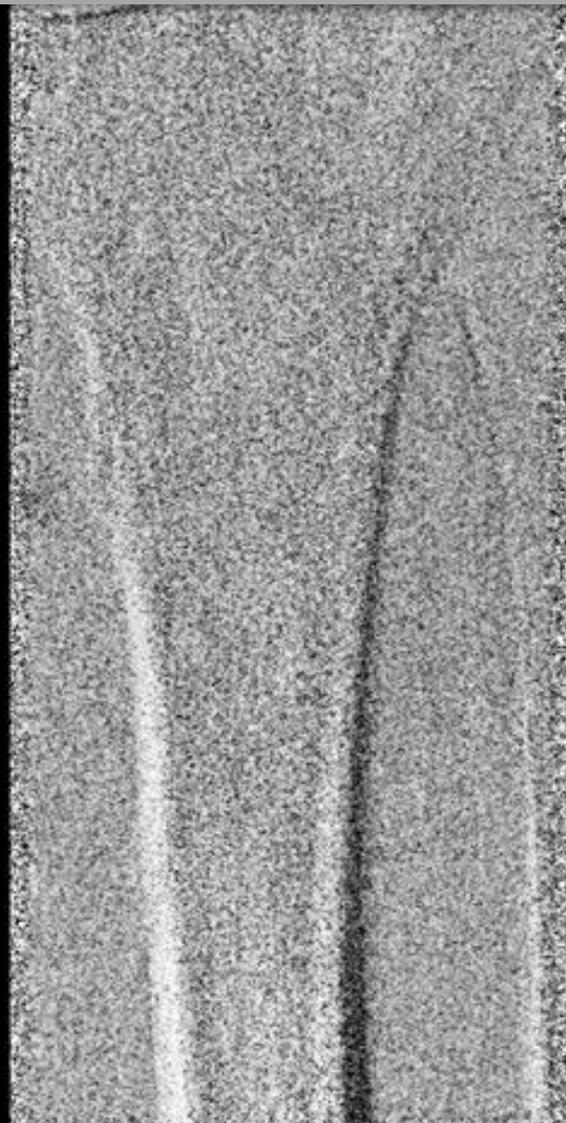
Retrograde Access Technical Aspects

- Ultrasound vs fluoro guidance
- Micropuncture with V18 or Command 18
- CXI or Quickcross CTO microcatheter support
- 3 or 4 Fr sheath if needed (<10% of cases)
- Pass wire from retrograde and externalize, then treat from antegrade direction
- Dorsiflexion and plantar flexion of foot





FOV: 20x20 cm
LAO: 32.9 deg
CAU: 1.7 deg
L: 90.2 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 256 WL: 128
XA 512x512



Scopie
A11082358728
Apr 23 2018
20:05:25

(Filt. 1)

Seq: 32
FRAME = 1 / 297

Various retrograde access technique



Distal site puncture



Trans-collateral



Trans-pedal
(Pedal-plantar loop)

Strategies of BTK crossing

1. Antegrade approach

1-1: Intraluminal approach

- Japanese art: 0.014-inch GW

1-2: Subintimal approach

- Hydro-dynamic boost (SUICA)
- Micro-knuckle

2. Retrograde approach

2-1: Distal puncture

2-2: Trans-collateral or pedal

The fathers of pedal-plantar loop technique



Critical Limb Ischemia: EVI 2006

Leif Erik Engvall and Anders Nilsson
Service of Endovascular Medicine, "Steno-Clinic at Blevins", 23000 Brescia, Italy. www.steno-cv.org/engvall



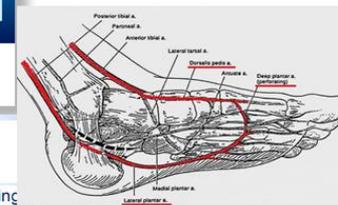
Pedal-Plantar Loop Technique for a Challenging Below-the-Knee Chronic Total Occlusion: A Novel Approach to Percutaneous Revascularization

Massimiliano Fusaro, MD, Luca Dalla Paola, MD, Giuseppe Blondi-Zoccal, MD

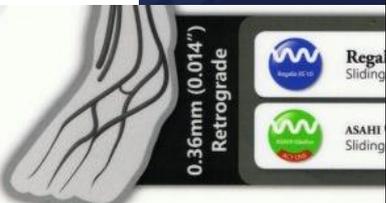
Journal of Cardiovascular Surgery 2009 June;50(3):331-7

Clinical results of below-the-knee intervention using pedal-plantar loop technique for the revascularization of foot arteries

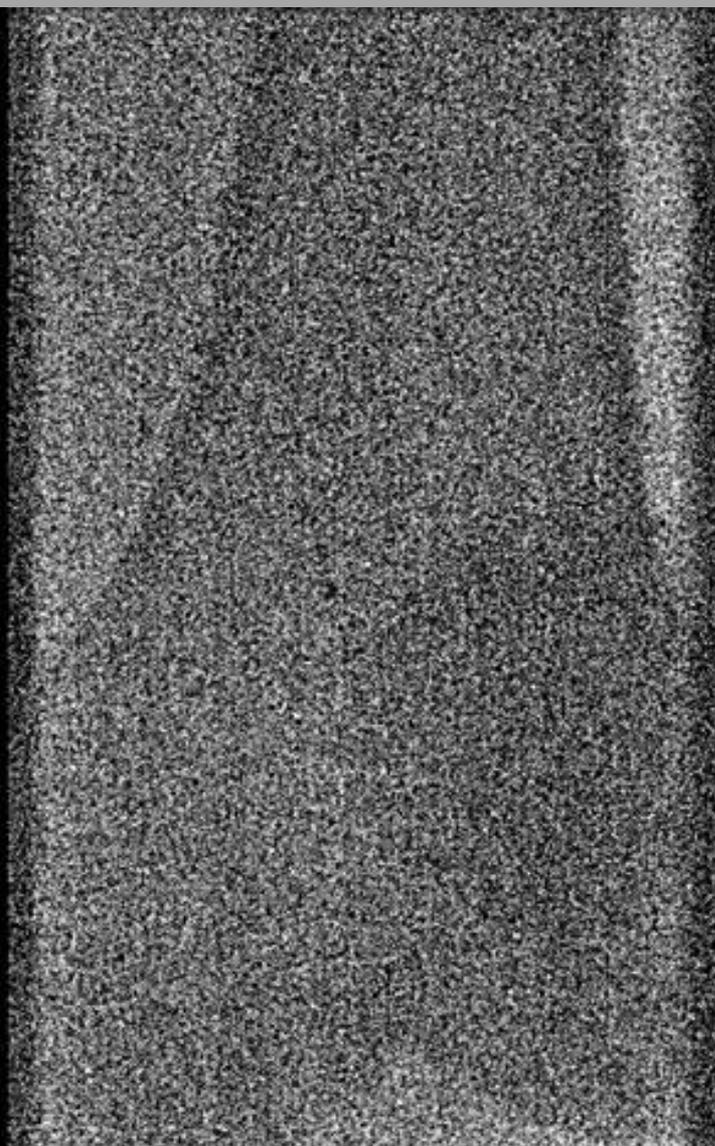
Manni M, 1, Fusaro M, 2, Caraccioli T, 1, Franta G, 1, Dalla Paola L, 3, Brocco F, 3



To pas



Scopie
A11082358728
Apr 23 2018
20:11:03



TIP STYLE	TIP STIFFNESS (GRAM)
Straight	4
Straight	4
Straight	4
Straight	12
Straight	12
Straight	12
Straight	30
Straight	30
Straight	30

Retr



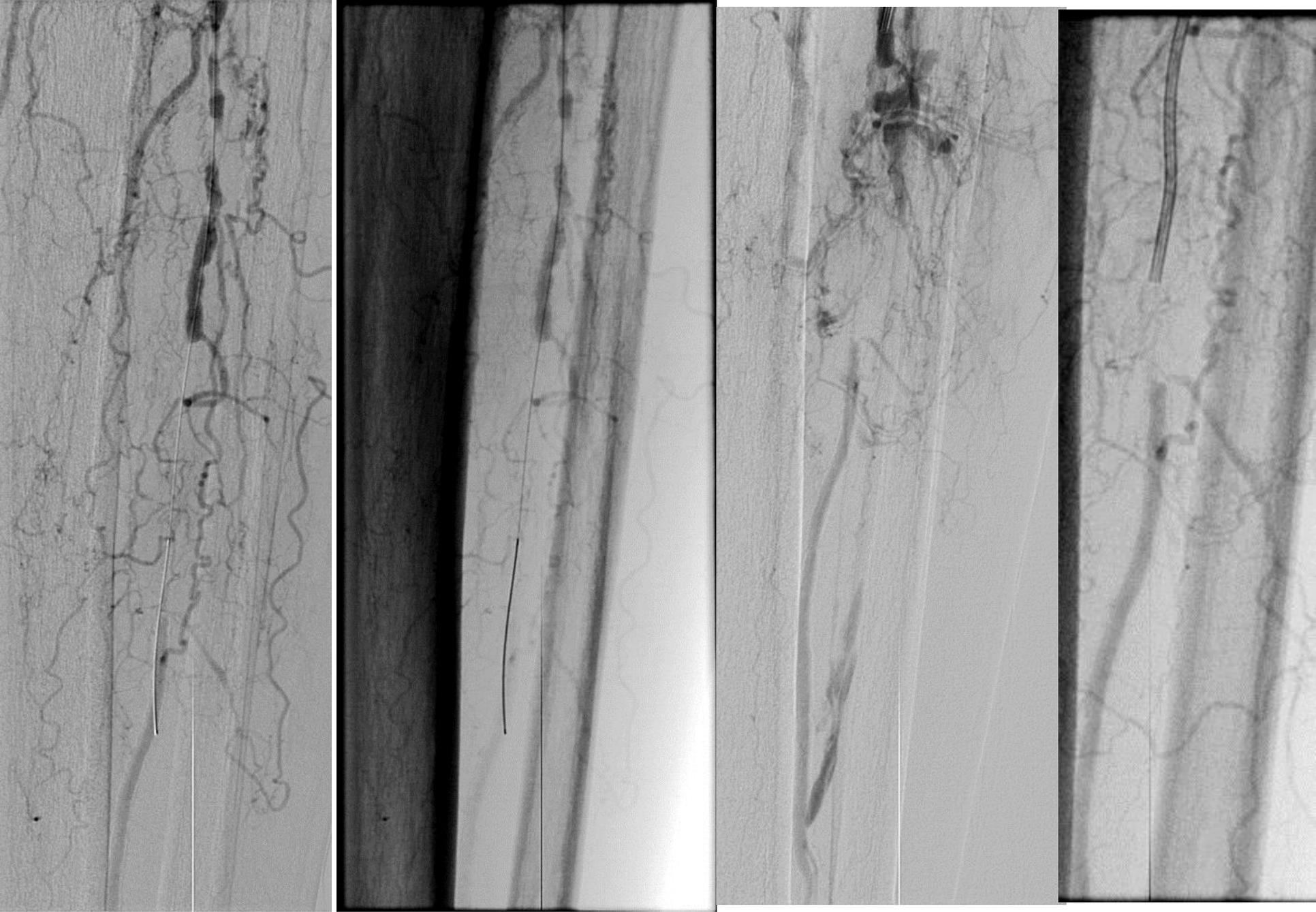
FOV: 16x16 cm
LAO: 11.8 deg
CAU: 1.7 deg
L: 90.2 deg
Tilt: 0 deg
Mag = 1.00
FL: ROT:
WW: 256 WL: 128
XA 512x512

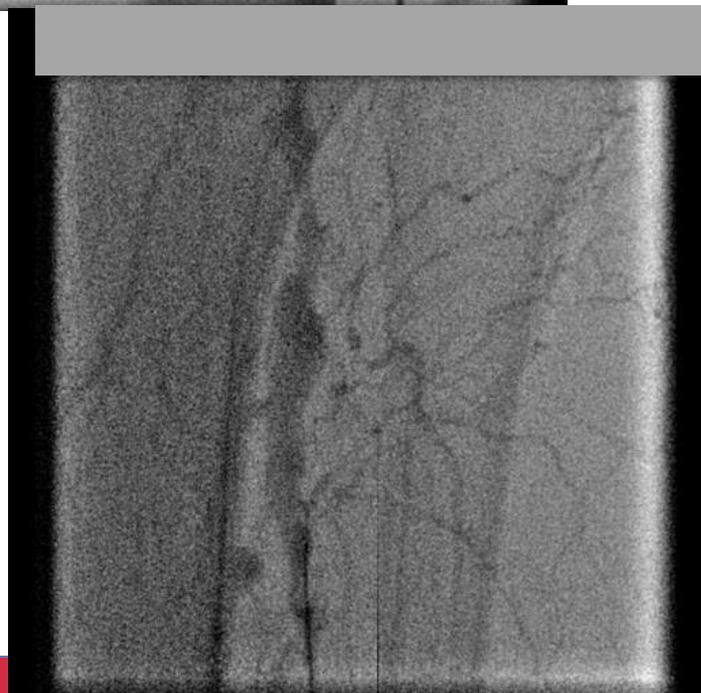
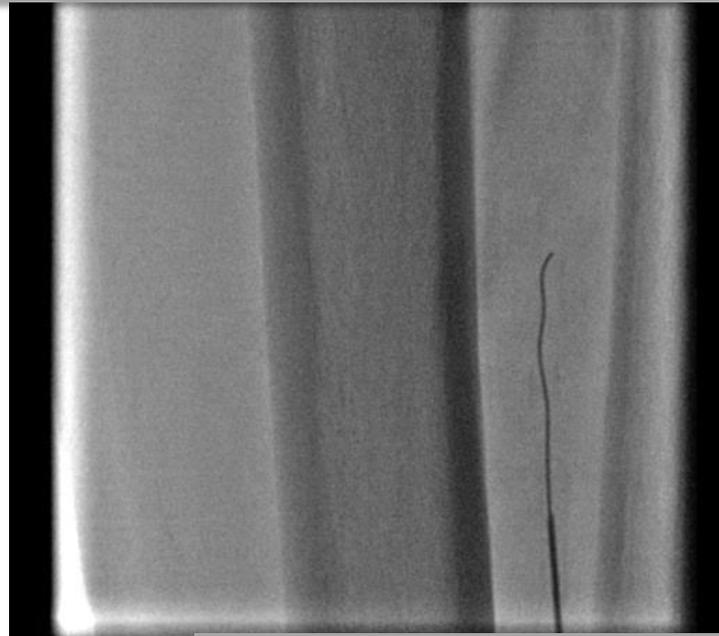
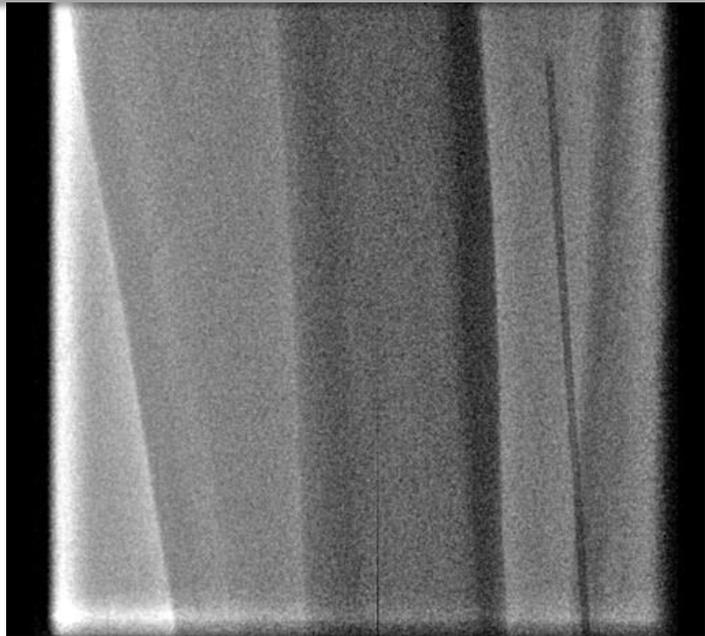
(Filt. 1)

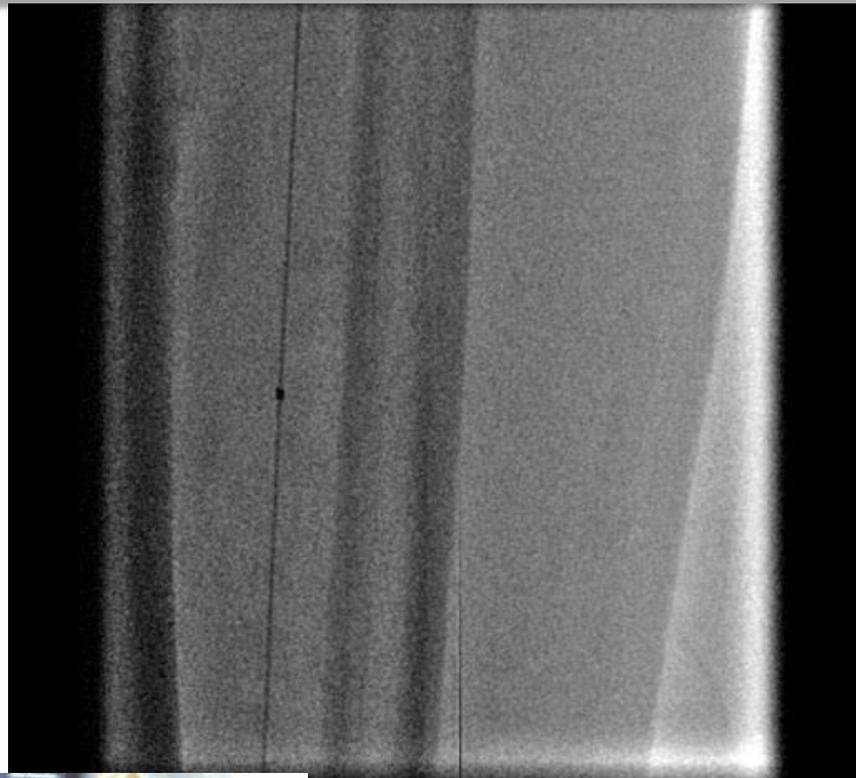
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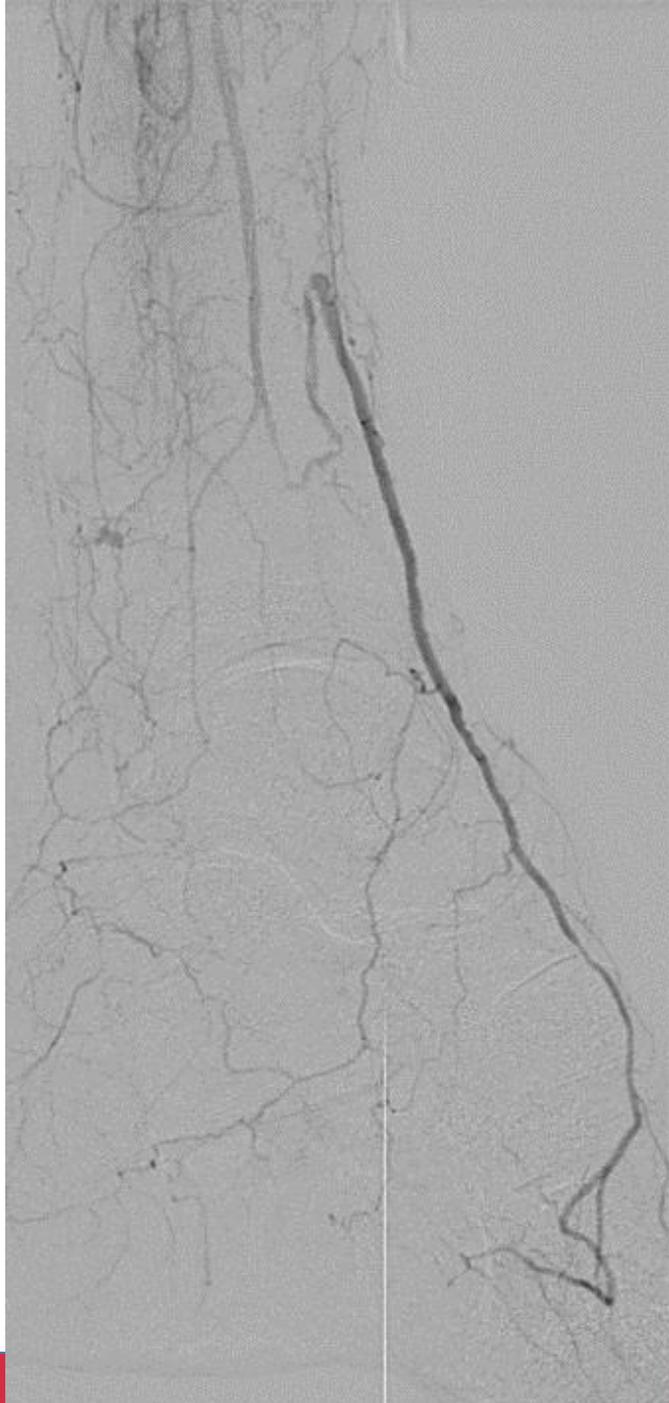
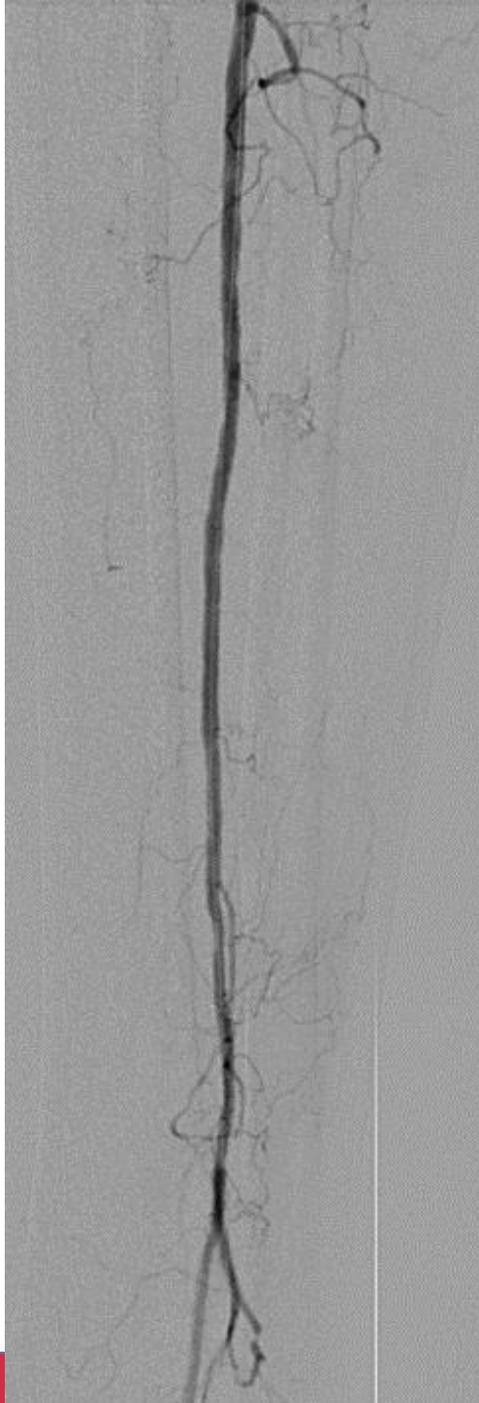
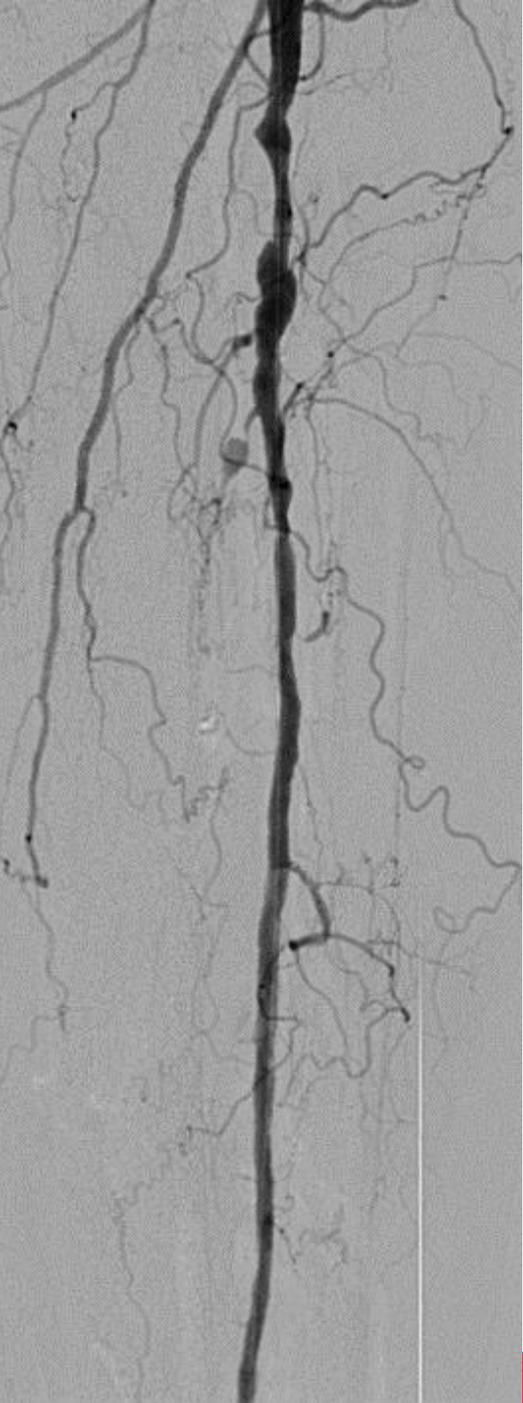
Franchissement rétrograde souvent plus aisé



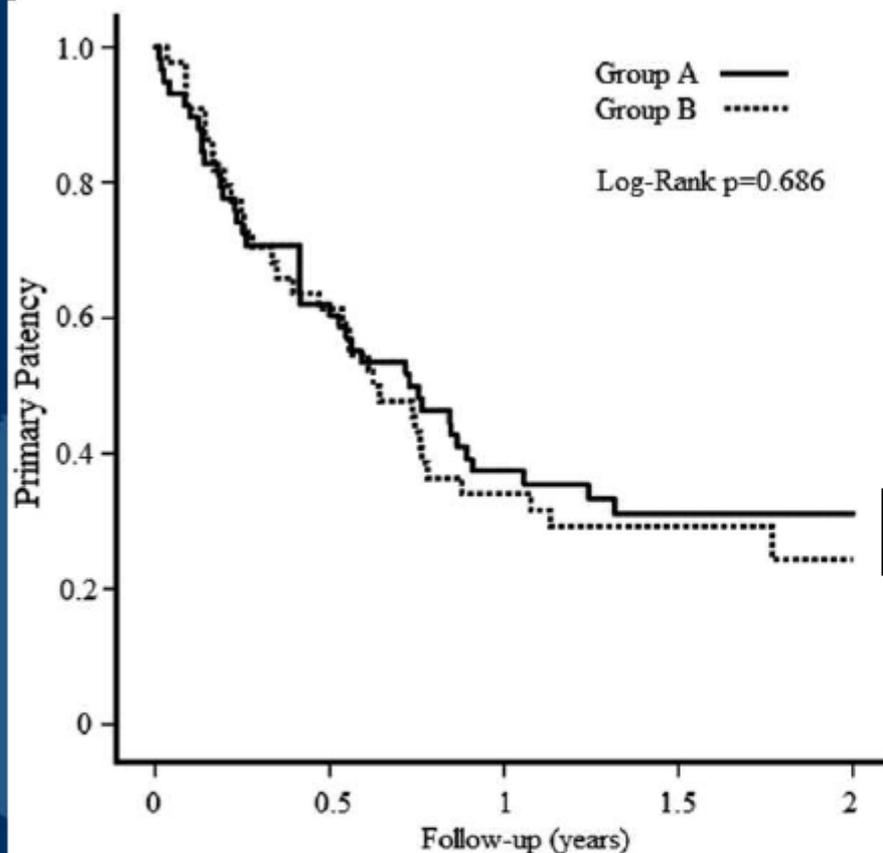








Primary Patency the same, whether using unidirectional or bidirectional access.



Antegrade approach
Antegrade and retrograde

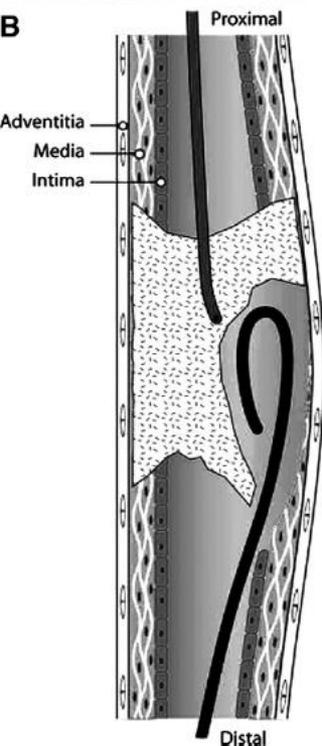
Chou et al.
J Endovasc Ther 2016;23:330

MAIS PAS TOUJOURS EN INTRALUMINAL..PAS DE PANIQUE!!!

BAIL-OUT TECHNIQUES:

- Bolia retro 0.035
- Safari (2 ballons)
- Reverse CART et/ou CART

An overview of connecting antegrade and retrograde channels for successful retrograde cross.



Wire position

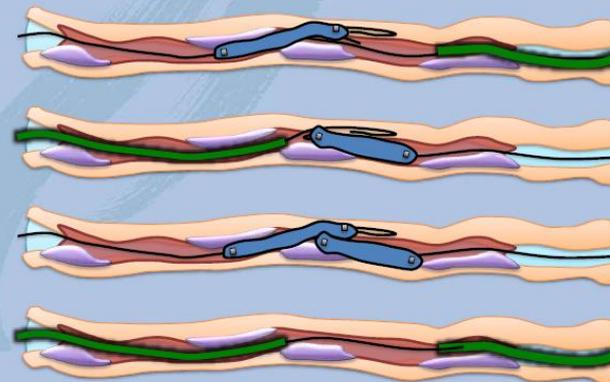
Strategy

Antegrade intimal
Retrograde intimal

Antegrade subintimal
Retrograde subintimal
(*Ideal situation*)

Antegrade intimal
Retrograde subintimal
(*least favourable*)
Antegrade subintimal
Retrograde intimal

After the retro-set up



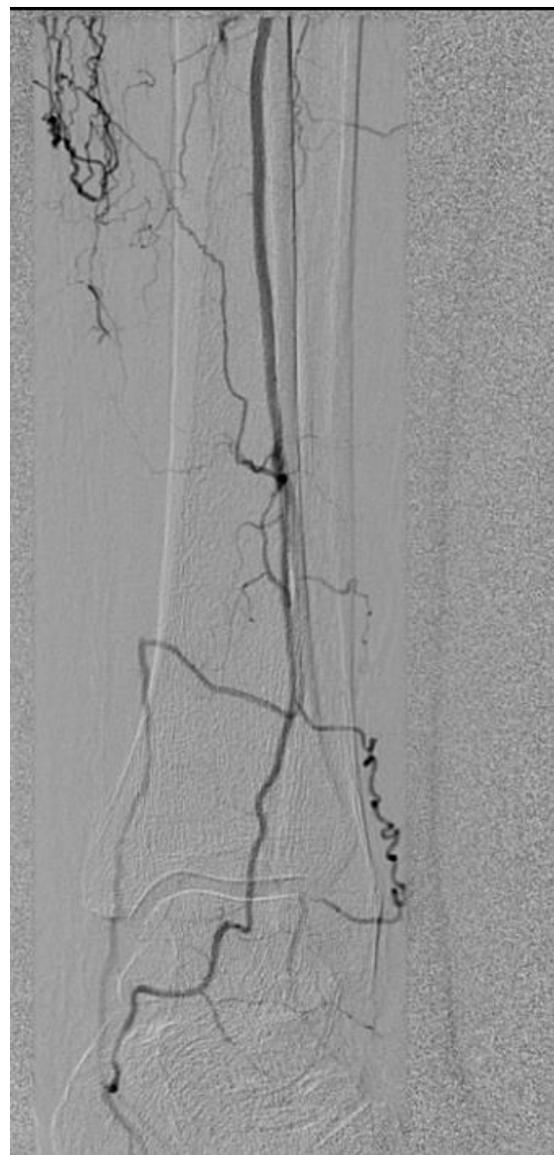
Reverse
CART

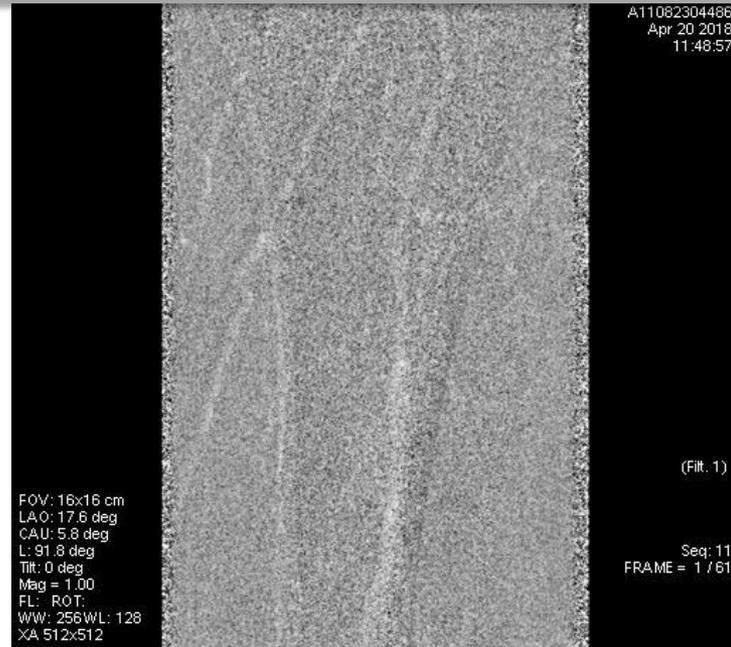
CART

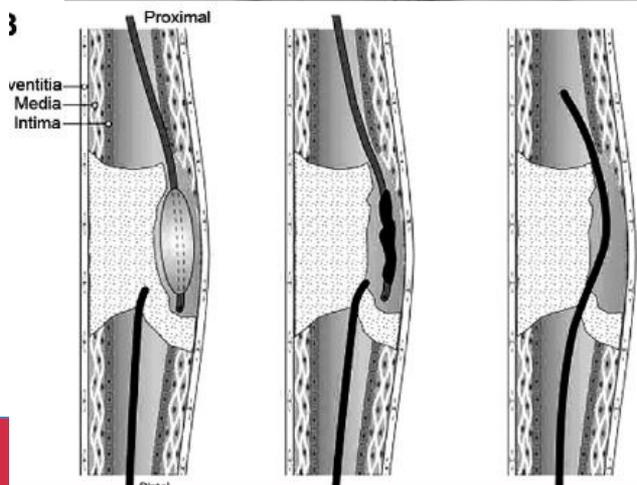
Double
balloon

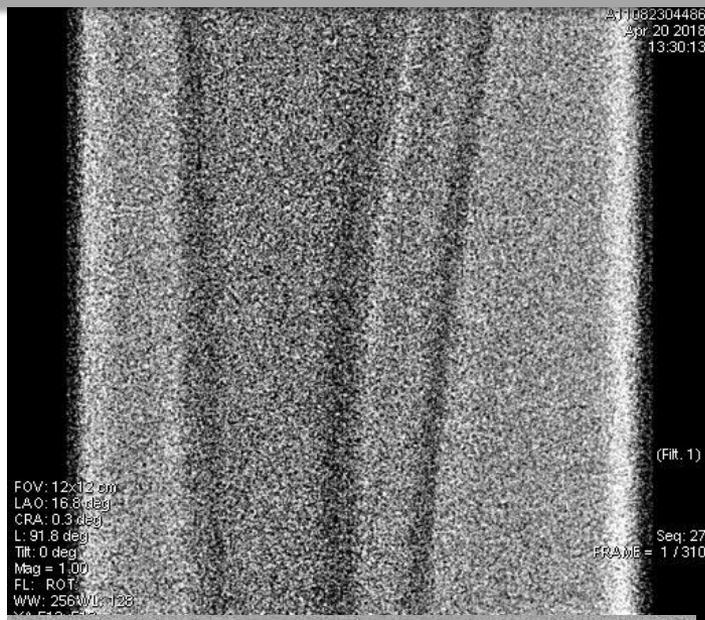
Wire
rendezvous

Several technique for reconstitution

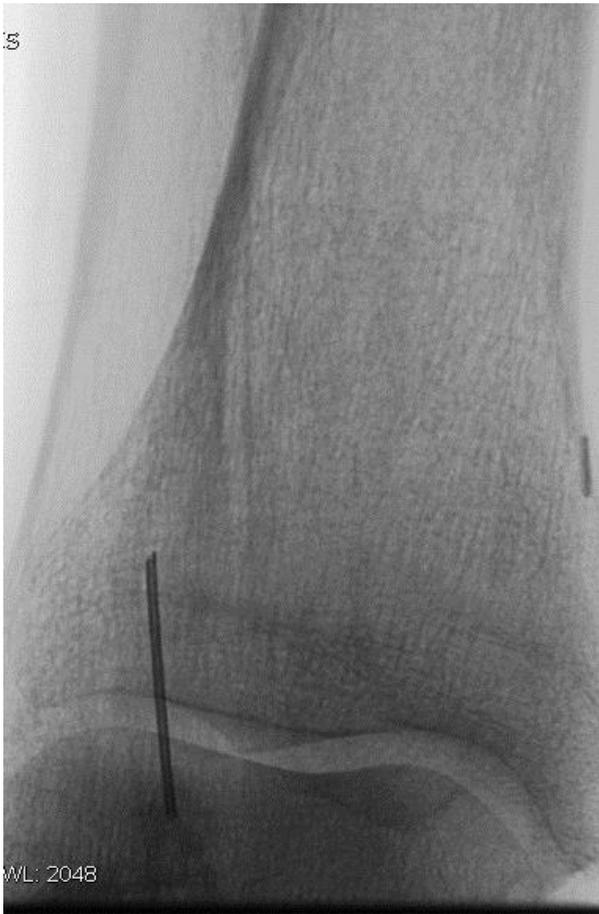


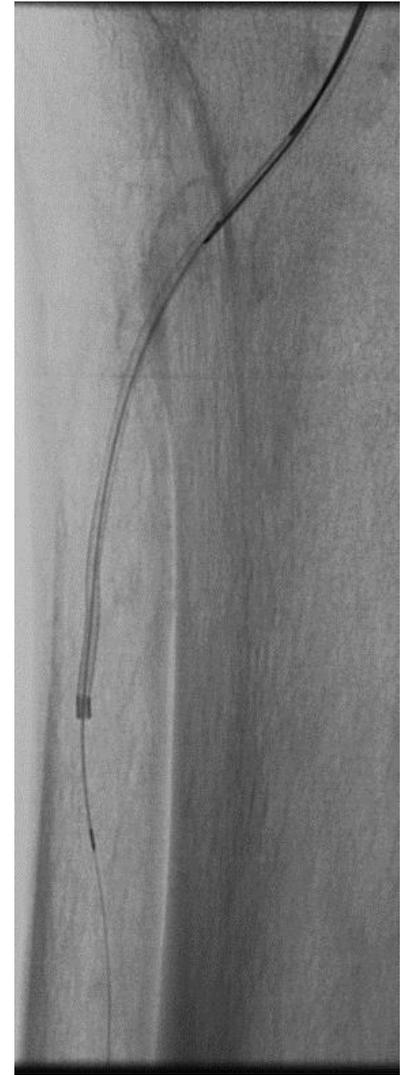
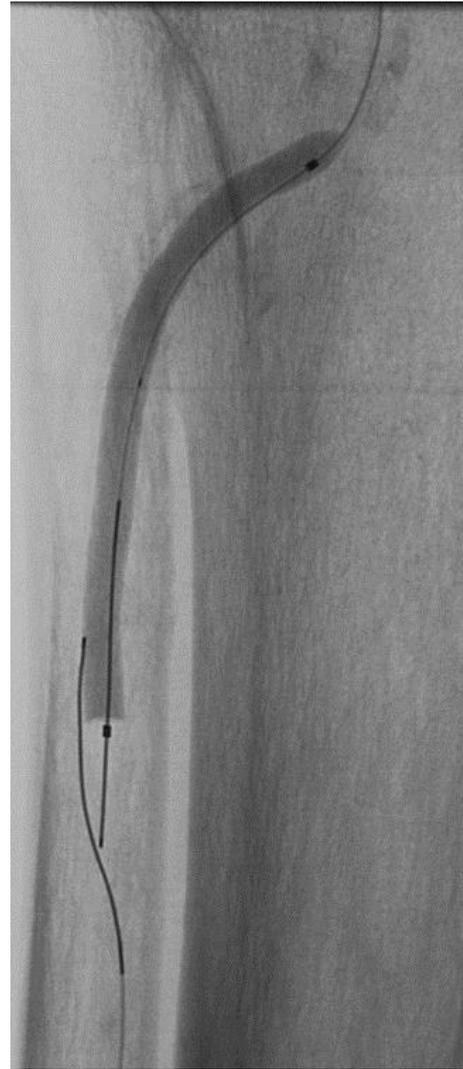
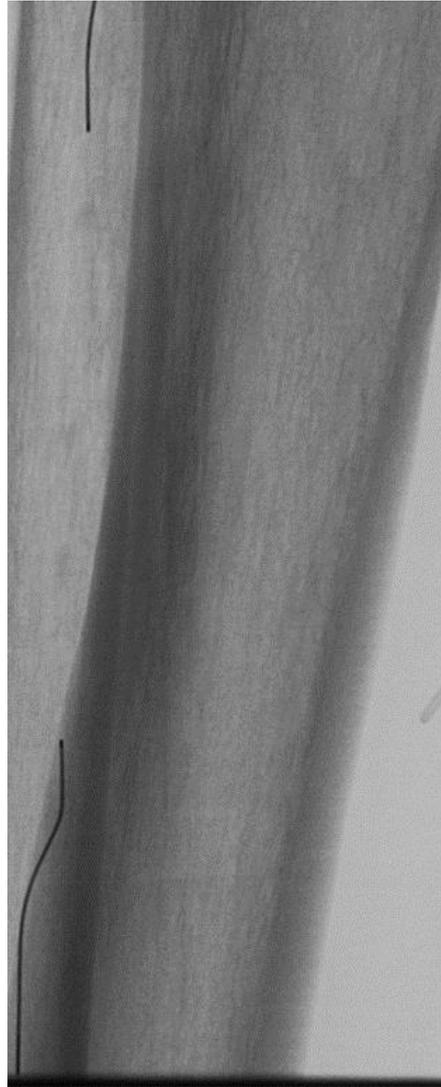


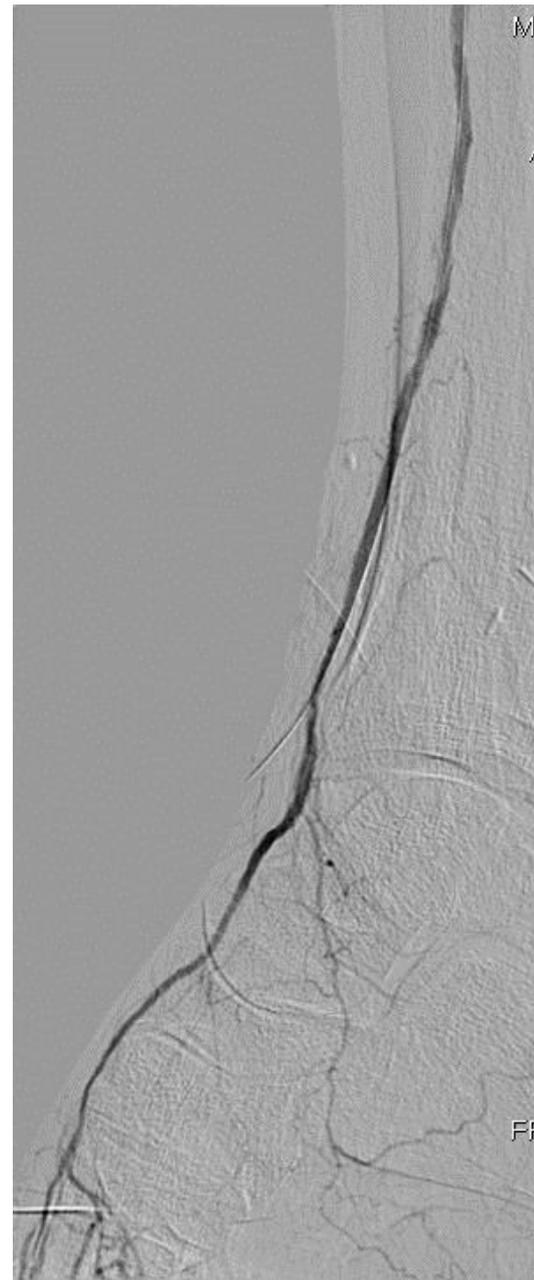
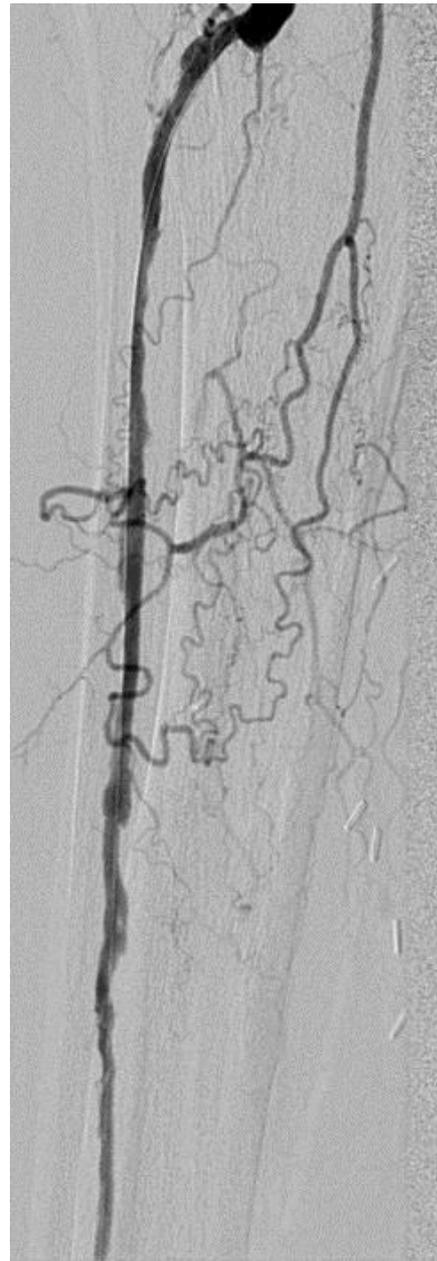
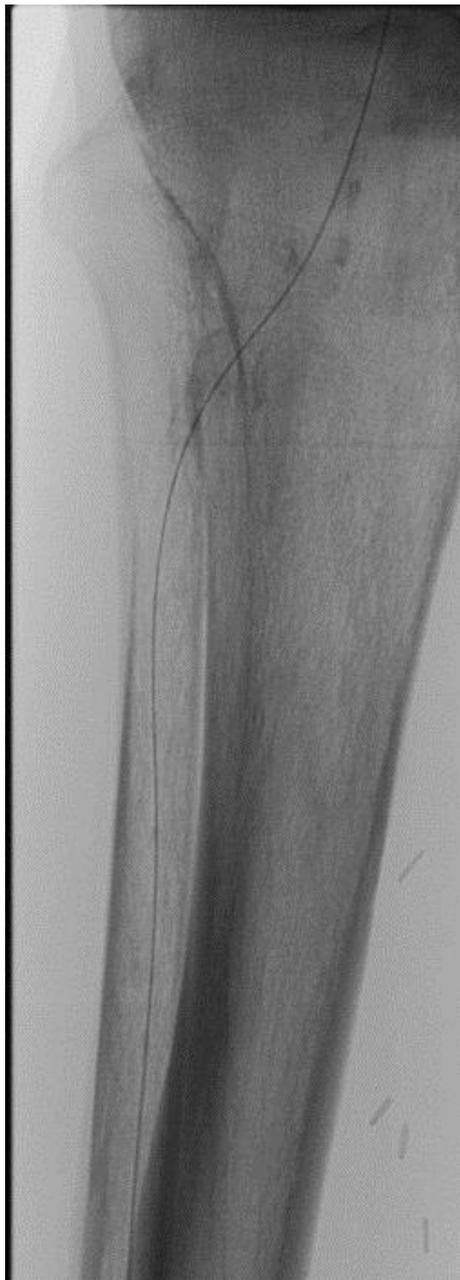










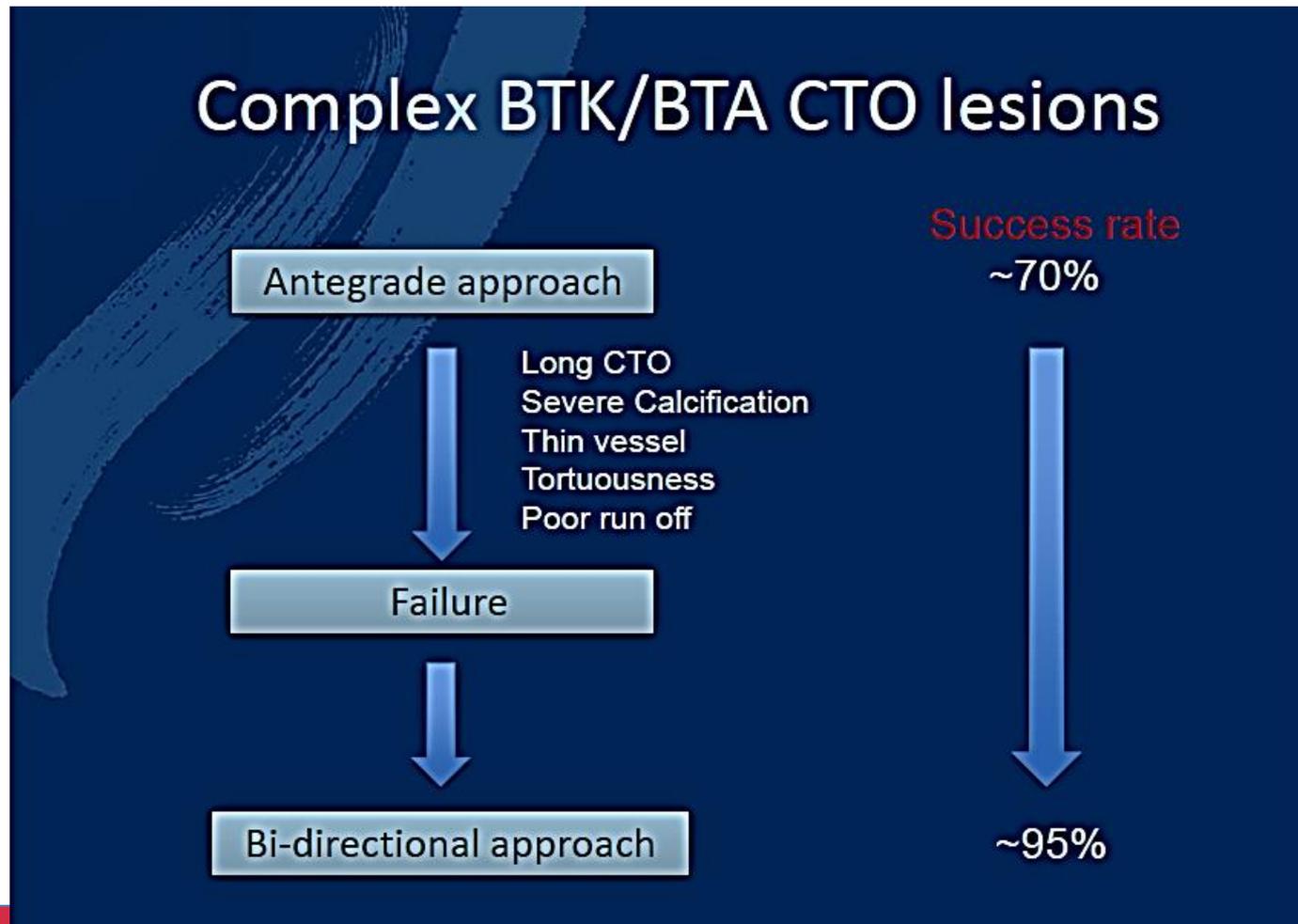


CHANGEMENT DE PARADIGME:

TENDANCE A ZAPPER LE SOUS INTIMAL ANTEGRADE
APRES 15 mn D'ECHEC



RETRO!!





ET LES ANGIOPLASTICIENS!!!!

**L'ALCOOL
EST UN ENNEMI**