



**JORNADAS CIENTÍFICAS
Y GREMIALES CACI 2021**
4 Y 5 DE DICIEMBRE 2021
HOTEL HILTON - PRESENCIAL



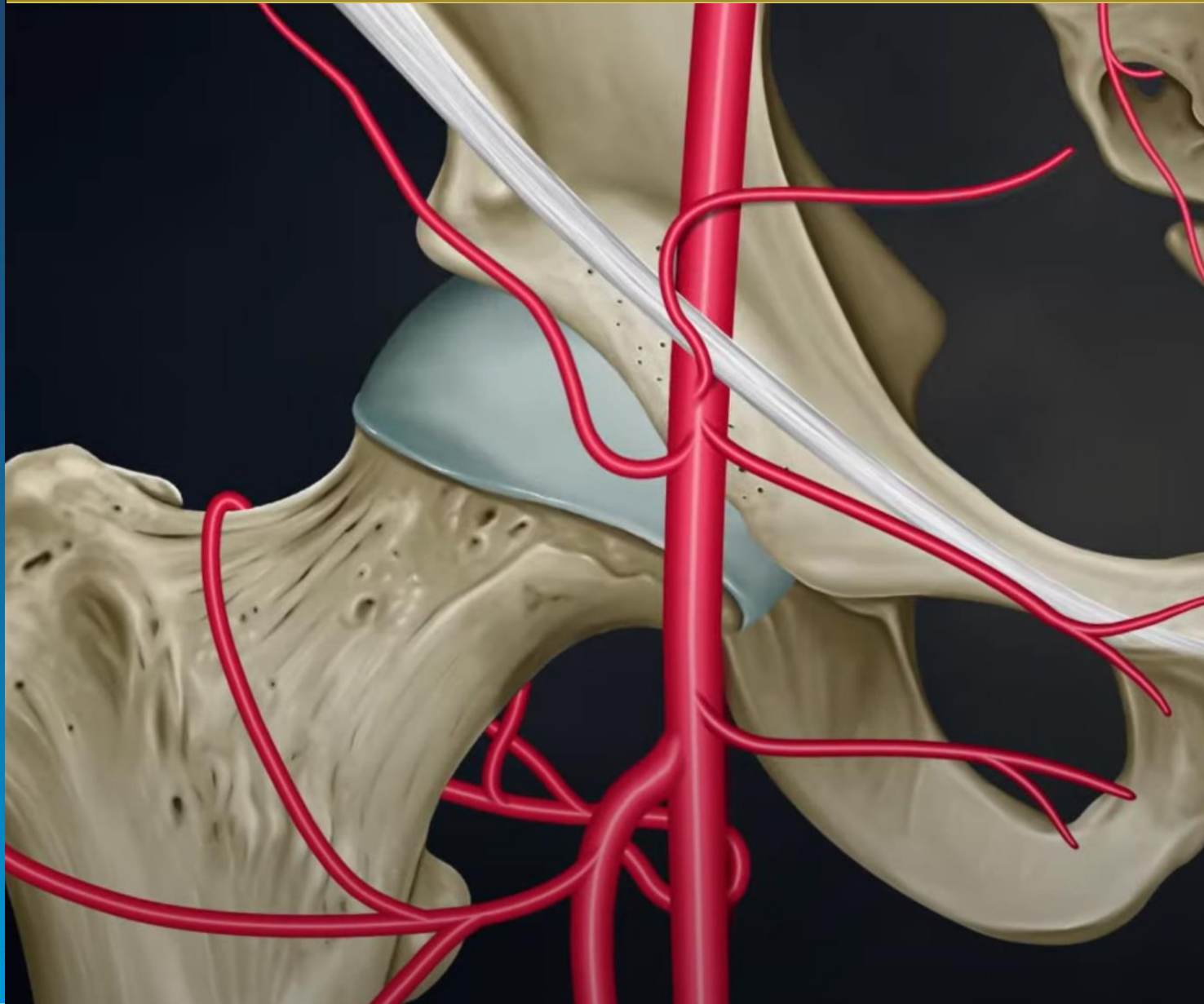
Novedades en angioplastia poplítea y de zonas de flexión

Dr. Alejandro Álvarez Iorio

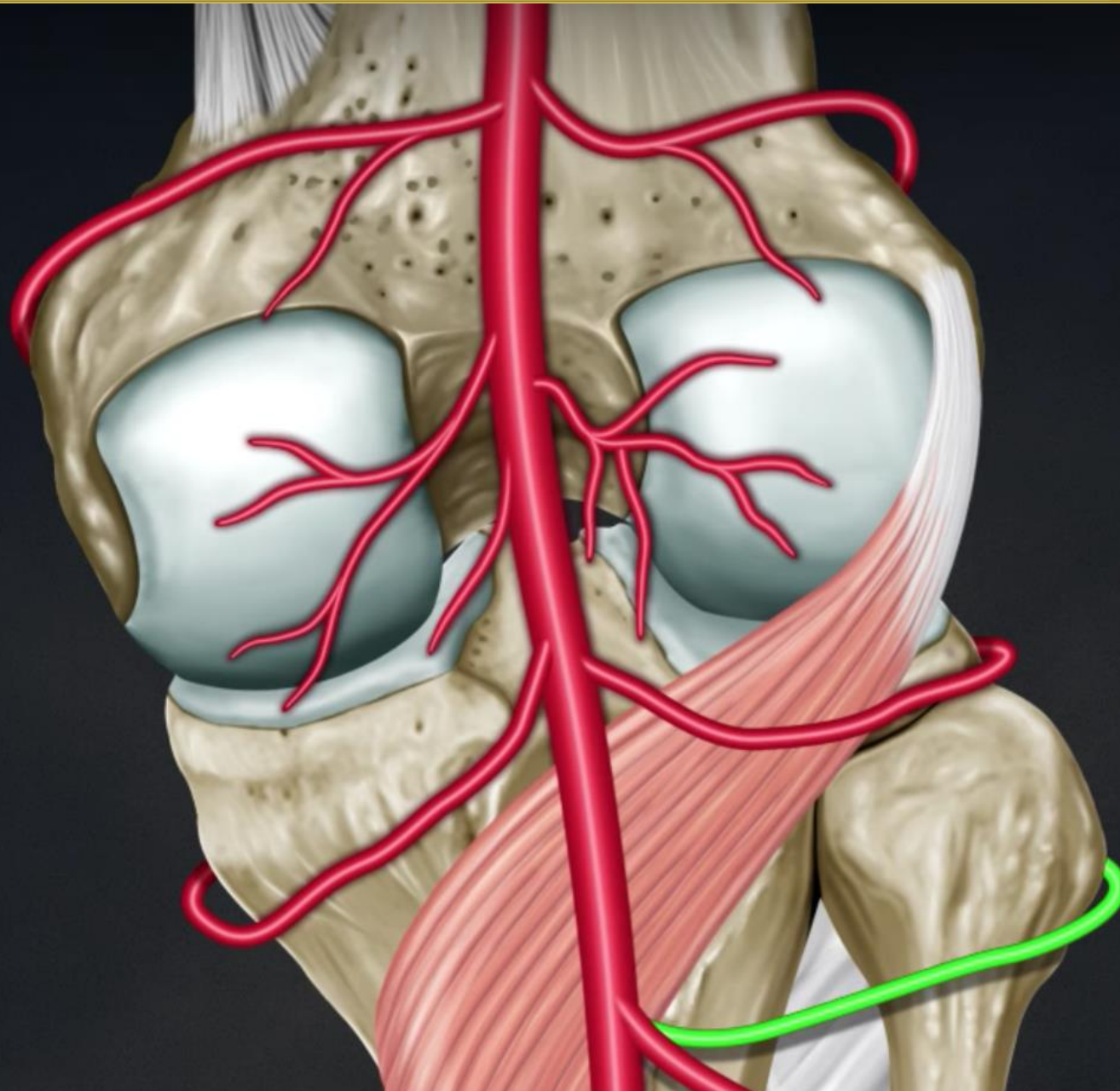


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ARTERIA FEMORAL COMUN



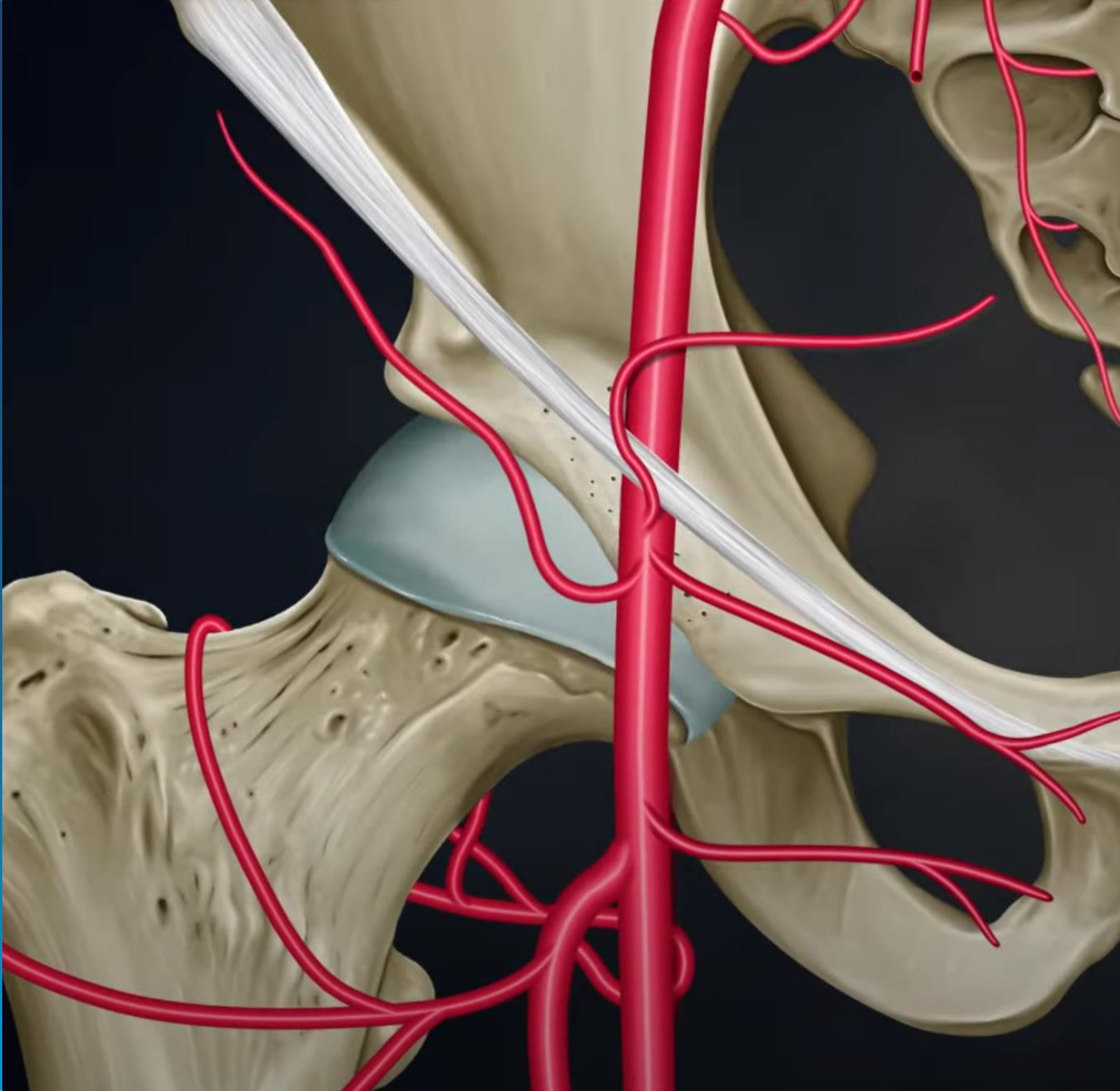
ARTERIA POPLITEA



ESCENARIOS ANATOMINCOS

- Calcium
- In-stent restenosis
- Chronic total occlusions (CTOs)
- Soft plaque
- Thrombus (thrombectomy)





ENDARTERECTOMIA **(gold standart)**



Tecnicas Quirurgicas

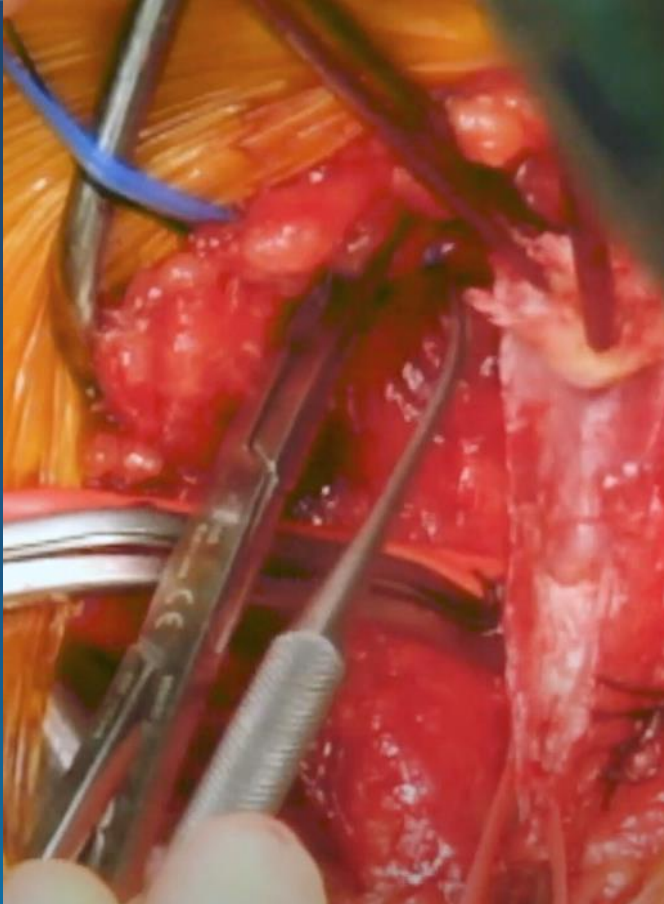
- Tromboendarterectomia

- Embolectomia



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EFICACIA



Permeabilidad primaria a 1-5 años: 90-100%

Tasa de salvataje del M.I.: => 85-100%



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MORTALIDAD



Bien tolerado: Mort.: 1,5%
Nguyen et al: 3,5%



LIMITACIONES



- EPOC

- Cicatriz quirurgica

- Obesidad

- Uso de esteroides

- Morbilidad: 5-21 %

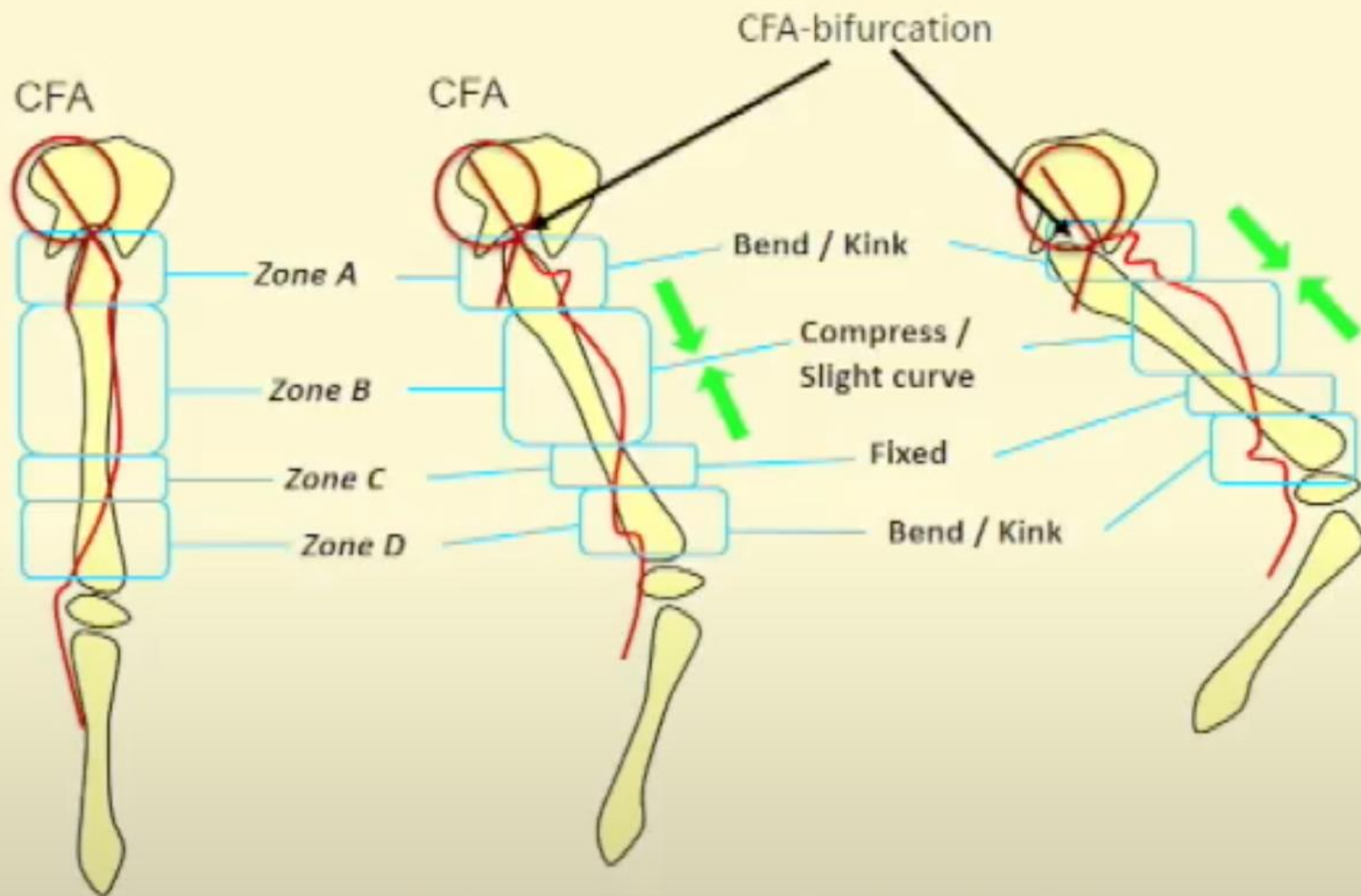
Hematoma mayor

Infeccion de herida

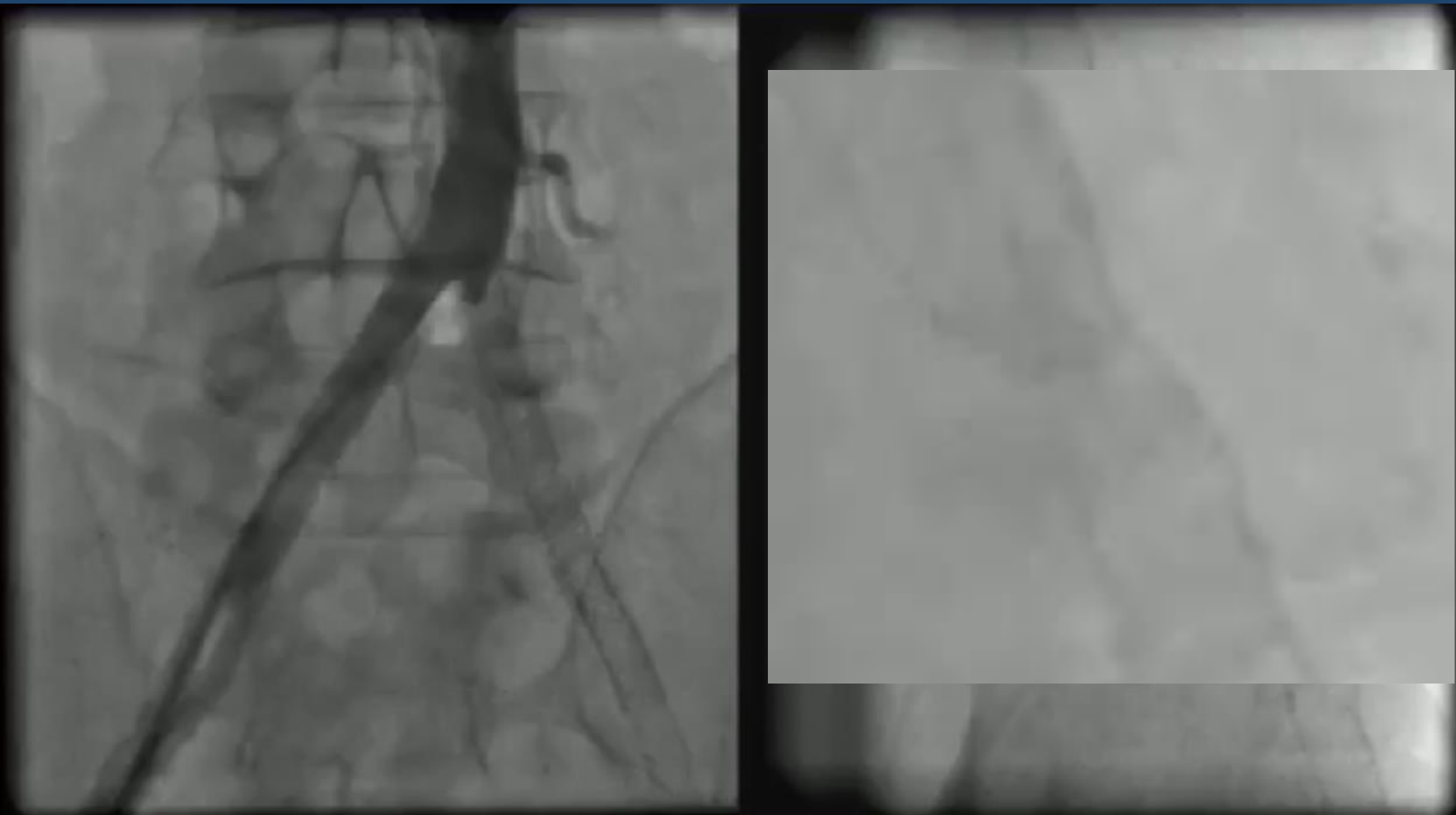
Reintervencion quirurgica



Femoro-popliteal Artery - Biomechanics



Modified according to Lansky, A; Angiographic Analysis of Strut Fractures in the SIROCCO Trial. TCT 2004



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STENT vs BALON



	Stented (n = 133)	Nonstented (n = 227)	OR 95% CI	P Value
Failure	2.2%	10.1%	0.70 (0.06-0.69)	0.005
Complications	7.5%	5.7%	1.34 (0.57-3.14)	0.510
Restenosis	20.0%	31.8%	0.53 (0.29 0.97)	0.046
1-Year TLR	13.1%	23.6%	0.49 (0.26-0.91)	0.021



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The logo for LINC (Línea de Investigación en Neurociencias) features the letters 'LINC' in a white, sans-serif font. To the left of the text is a stylized graphic of a brain with a red and orange ribbon-like shape curving around it, set against a dark blue background with light blue brushstroke patterns.

LINC



**A randomized comparison of
endovascular *versus* surgery treatment of
common femoral artery disease:
Results from the TECCO trial**
(TECCO randomized clinical trial, NCT01353651)

**Y. Gouëffic, N. Della Schiava, F. Thaveau, E. Rosset, J.P. Favre,
L. Salomon du Mont, J.M. Alsac, R. Hassen-Khodja, T. Reix, E.
Allaire, E. Ducasse, R. Soler, B. Guyomarc'h and B. Nasr.**
On behalf of AURC



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Procedures

Open repair

At the discretion of the physician (bypass, endarterectomy...)

Endovascular repair

- Anaesthesia: at the discretion
- Over the bifurcation, ipsilateral or brachial approaches
 - Primary stenting
- Antiplatelet treatment: at the discretion



Primary endpoint



Modified intent to treat analysis

	Surgery (n=61)	Stenting (n=56)	p
Morbid-mortality rate @ 1 month, n (%)	16 (26)	7 (12.5)	0.05

Per protocol analysis

	Surgery (n=58)	Stenting (n=47)	p
Morbid-mortality rate @ 1 month, n (%)	16 (26)	3 (6.4)	0.005

General complications

(Modified intent to treat analysis)



	<i>Surgery (N=61)</i>	<i>Stenting (N=56)</i>
Death, n(%)	0 (0)	0 (0)
Stroke, n(%)	0 (0)	1 (1.8)
Myocardial infarction, n(%)	0 (0)	0 (0)
Major amputation, n(%)	0 (0)	0 (0)

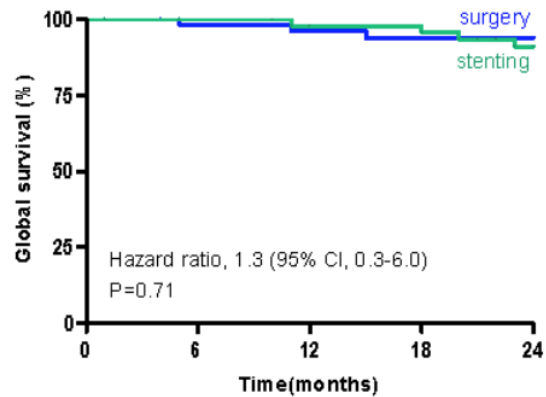
Local complications

(Modified intent to treat analysis)



	Surgery (N=61)	Stenting (N=56)
Hematoma	3 (5)	0 (0)
Thrombosis	0 (0)	1 (1.8)
<u>Lymphorrhoea</u>	2 (3.2)	0 (0)
Delayed wound healing	10 (16.4)	0 (0)
False aneurysm	0 (0)	0 (0)
<u>Arteriovenous fistula</u>	0 (0)	0 (0)
<u>Paresthesia</u>	4 (6.5)	0 (0)
Local infection	3 (5)	1 (1.8)
Vascular perforation	0 (0)	1 (1.8)

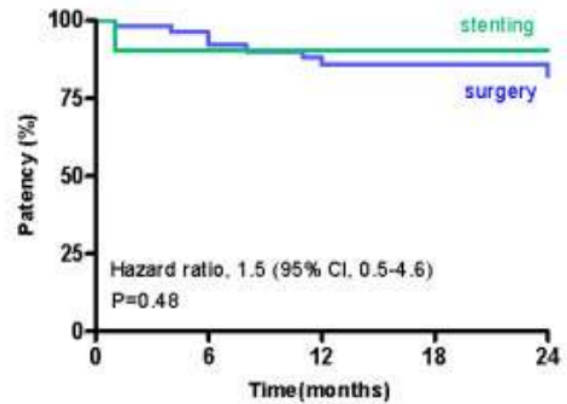
Survival @ 24 months



No. at Risk

	0	6	12	18	24
Surgery	59	52	48	44	30
Stenting	55	55	46	45	31

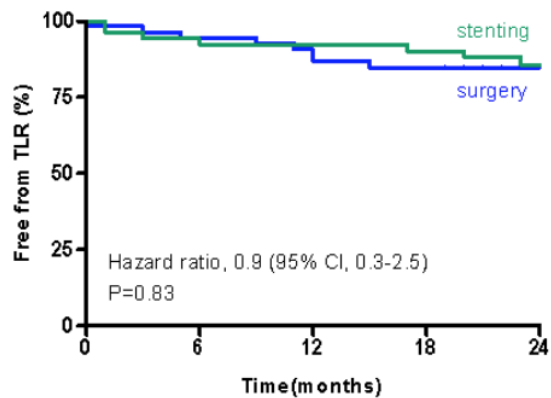
Patency @ 24 months



No. at Risk

	0	6	12	18	24
Surgery	59	48	41	37	24
Stenting	55	48	36	35	22

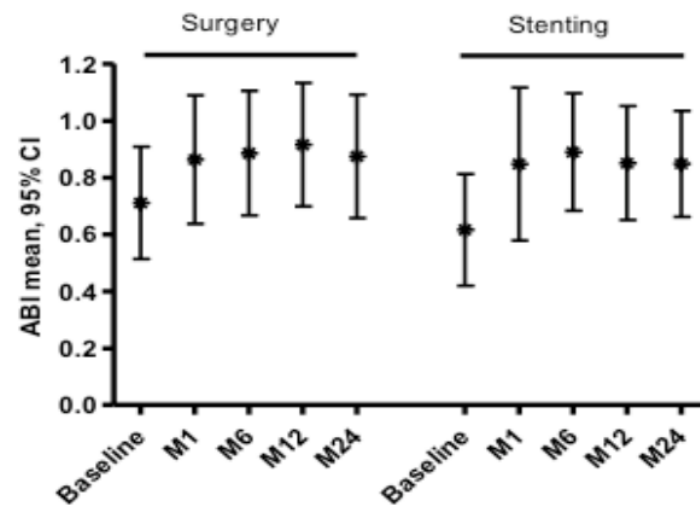
Freedom from TLR @ 24 months



No. at Risk

	0	6	12	18	24
Surgery	59	51	47	40	26
Stenting	55	48	46	42	27

Haemodynamic improvement @ 24 months



SOLUCION POTENCIAL (DEB con/sin ATERECTOMIA)



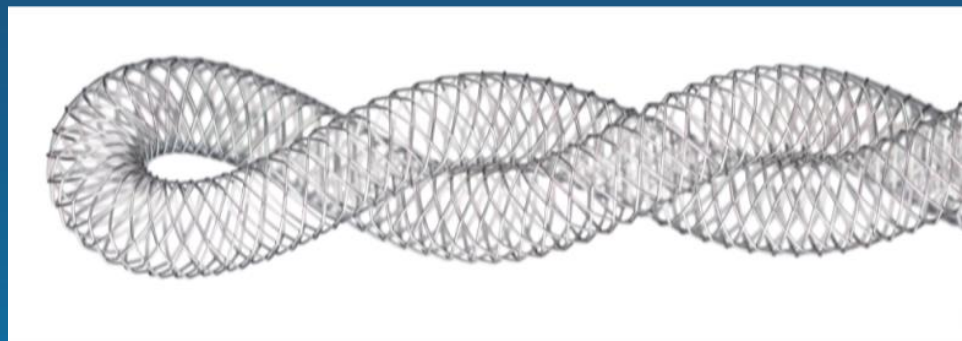
	Atherectomy (N=25) %	PTA +stent (N=335) %	RR	95% CI	P value
Failures	4.0	7.5	0.51	0.07 – 3.98	1
Complications	0.	6.9	0.26	0.01 – 4.42	0.38
Restenosis	11.8	28.7	0.35	0.07 – 1.48	0.16
1 yr TLR	4.8	20.9	0.18	0.02 – 1.42	0.09



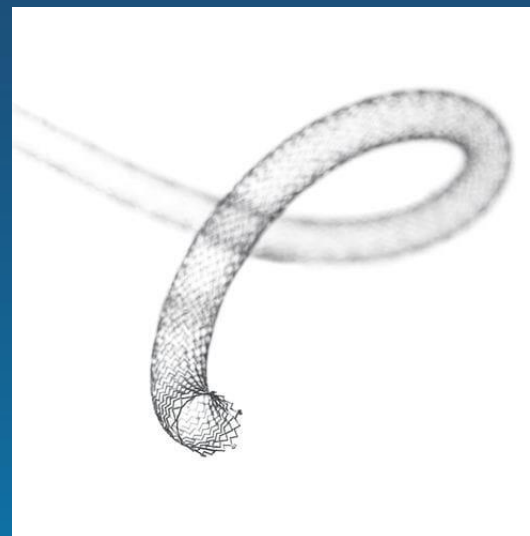
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STENT DEDICADOS



SUPERA



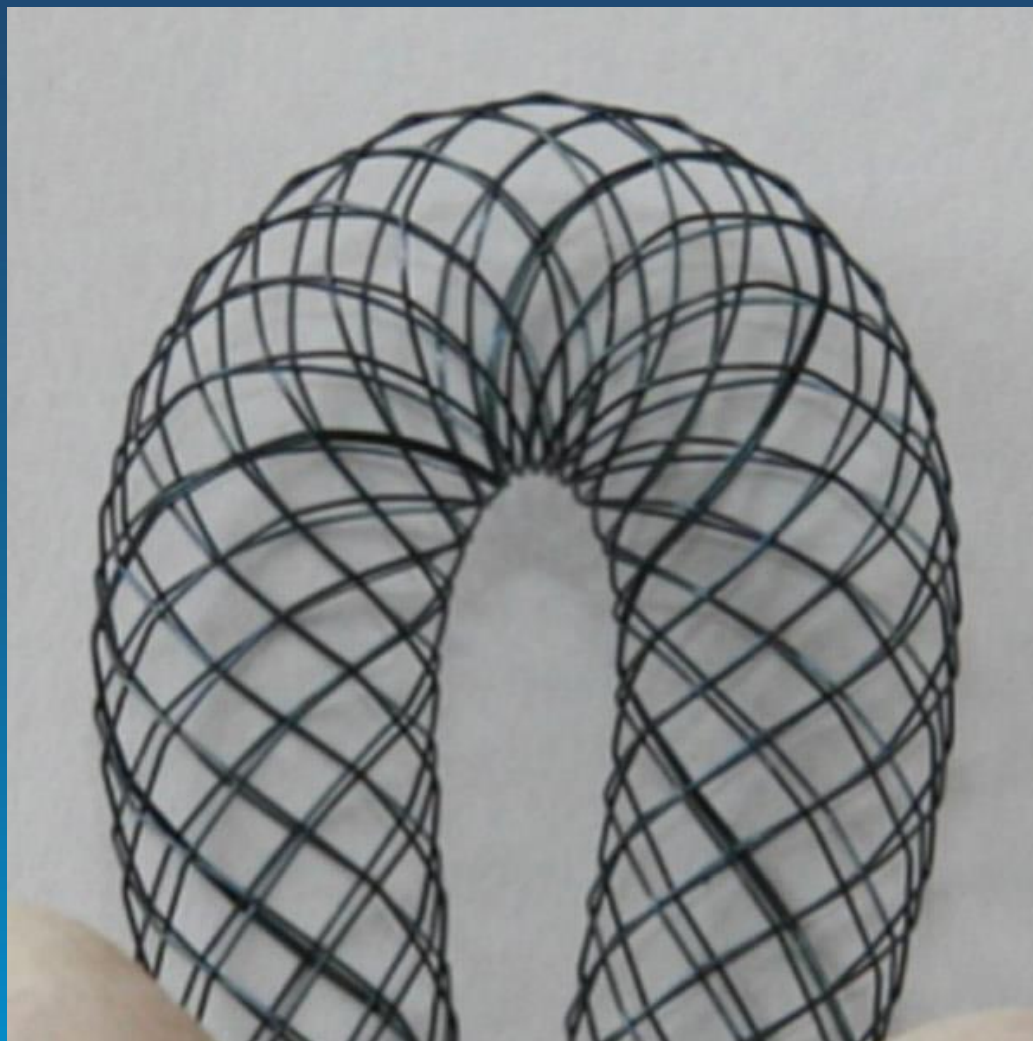
LIFESTENT



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JAGUAR



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Jaguar

woven „one wire” nitinol technology

No kinking effect in tortuous vessels

Exceptional flexibility

Zero fractures observed after 20 million cycles in Bending Test

Very high flexibility and fatigue strength



LIMITACIONES CLINICAS DEL DEB



Calcium as a Barrier

Calcium Limits Vessel Expansion¹

Significant difference in vessel compliance leads to overstretch in non-diseased tissue causing dissections, recoil, excessive injury, and poor outcomes

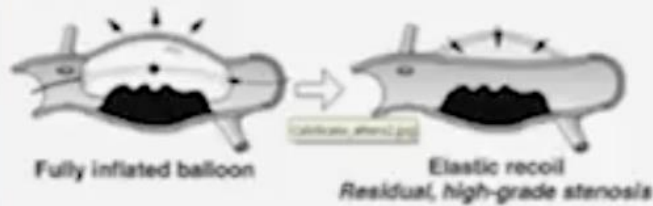
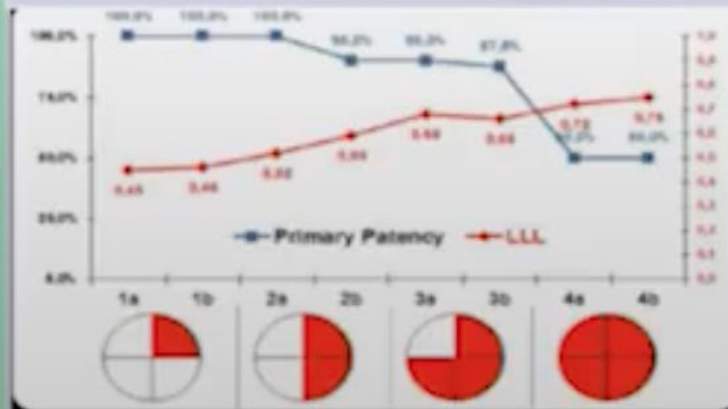


Figure 12.1. Elastic Recoil After PTCs of Calcified Lesions

Author: Dan Cardwell for JACC, published stenosis, PTC, a severe stenosis of the circumflex artery that will require stent scaffolding (2008).

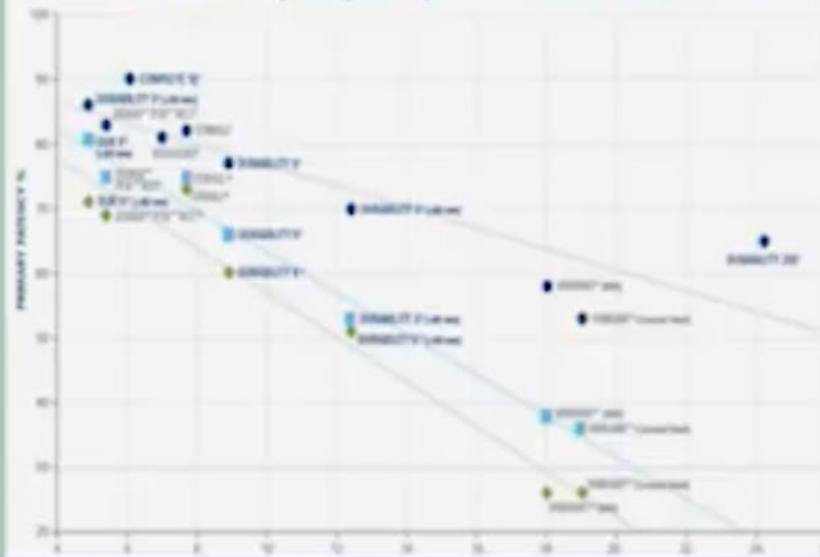
From: JACC, Volume 42, Number 1, January 14, 2004, pp 12-19

Calcium May Limit Drug Effect²



Longer Lesion Length

12, 24 and 36-Month Primary Patency Summary



Increased lesion length is an independent predictor of decreased patency⁵.

From: JACC, Volume 42, Number 1, January 14, 2004, pp 12-19. Author: Dan Cardwell for JACC, published stenosis, PTC, a severe stenosis of the circumflex artery that will require stent scaffolding (2008).



MANEJO DEL CALCIO



REMOVER LA PLACA: ATERECTOMIA

MODIFICAR LA PLACA: LITOTRIPSIA






COMPRIMIR LA PLACA: STENT



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DISPOSITIVOS DE ATERECTOMIA



	Jetstream™ Atherectomy System (Boston Scientific)	Peripheral Rotablator™ Rotational Atherectomy System (Boston Scientific)	Diamondback 360™, Stealth 360™ Atherectomy System (Cardiovascular Systems, Inc)	SilverHawk™, TurboHawk™ Plaque Excision System (Covidien)	Turbo-Elite™ Laser Atherectomy Catheter (Spectranetics)
					
Front-Cutting	✓	✓			N/A
Differential Cutting	✓	✓	✓		N/A
Active Aspiration	✓				
Concentric Lumens	✓	✓			
Lesion Morphology:					
Calcium	✓	✓	✓	✓	✓
Soft/Fibrotic Plaque	✓			✓	✓
Thrombus	✓ (indicated for thrombectomy and atherectomy)				✓





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DEFINITIVE LE Subgroups



Subgroup	Claudicants (n=743)		CLI (n=279)	
	Patency (PSVR \leq 2.4)	Lesion Length (cm)	Patency (PSVR \leq 2.4)	Lesion Length (cm)
All (n=1022)	78%	7.5	71%	7.2
Lesion type				
Stenoses (n=806)	81%	6.7	73%	5.8
Occlusions (n=211)	64%	11.1	66%	10.3
Lesion Location				
SFA (n=671)	75%	8.1	68%	8.6
Popliteal (n=162)	77%	6.0	68%	5.4
Infrapopliteal (n=189)	90%	5.5	78%	6.0

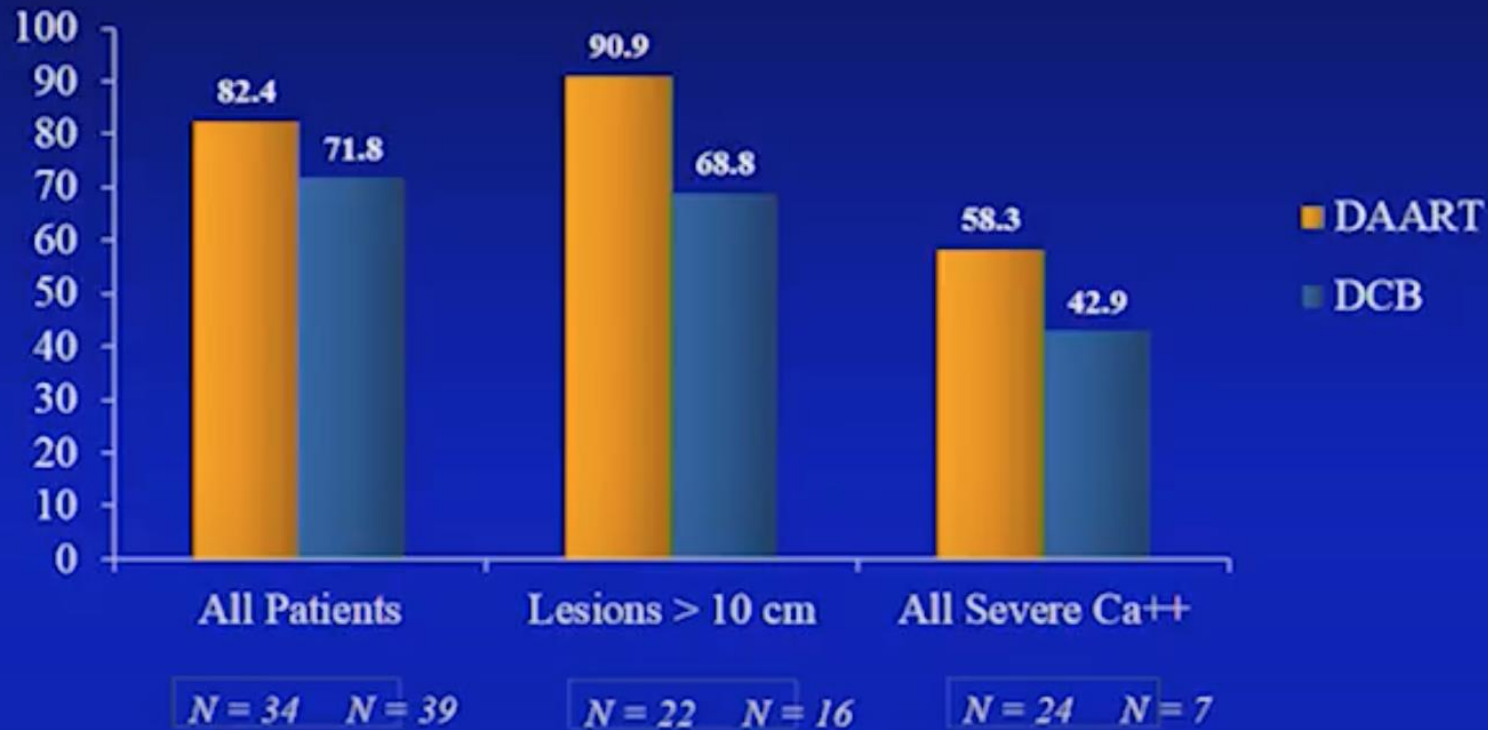


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Key Study Outcome at 12 Months

Angiographic Patency shows similar pattern



Results for all patients who returned for angiographic follow-up



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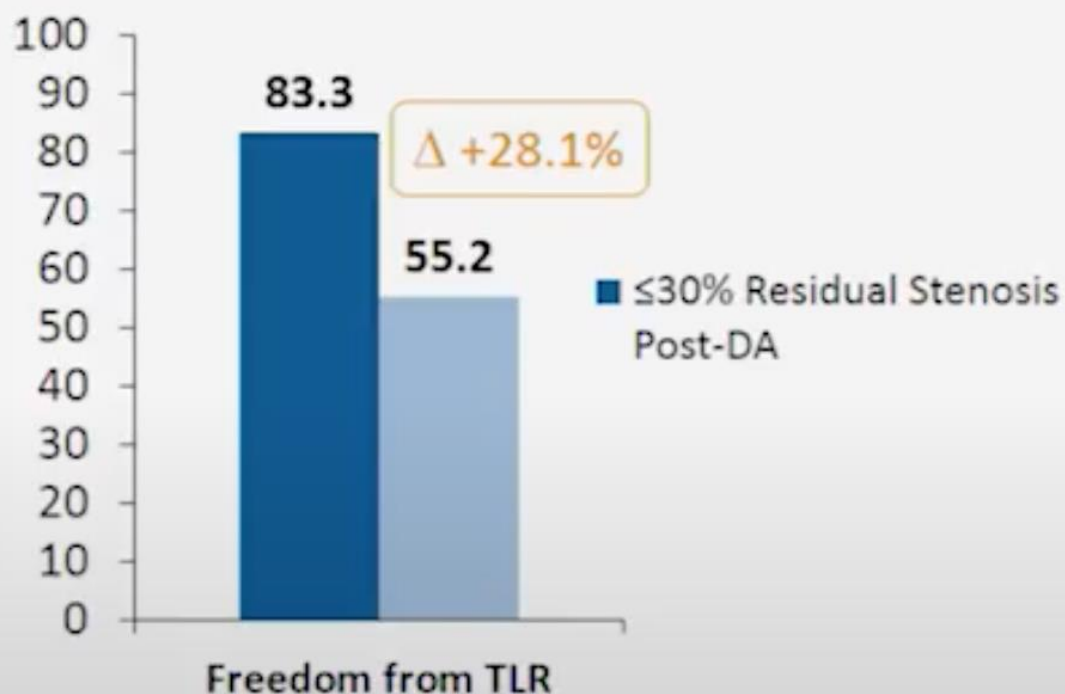
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DEFINITIVE AR Study – Extension

Achieving optimal lumen gain ($\leq 30\%$ residual stenosis) following DA leads towards improved outcomes

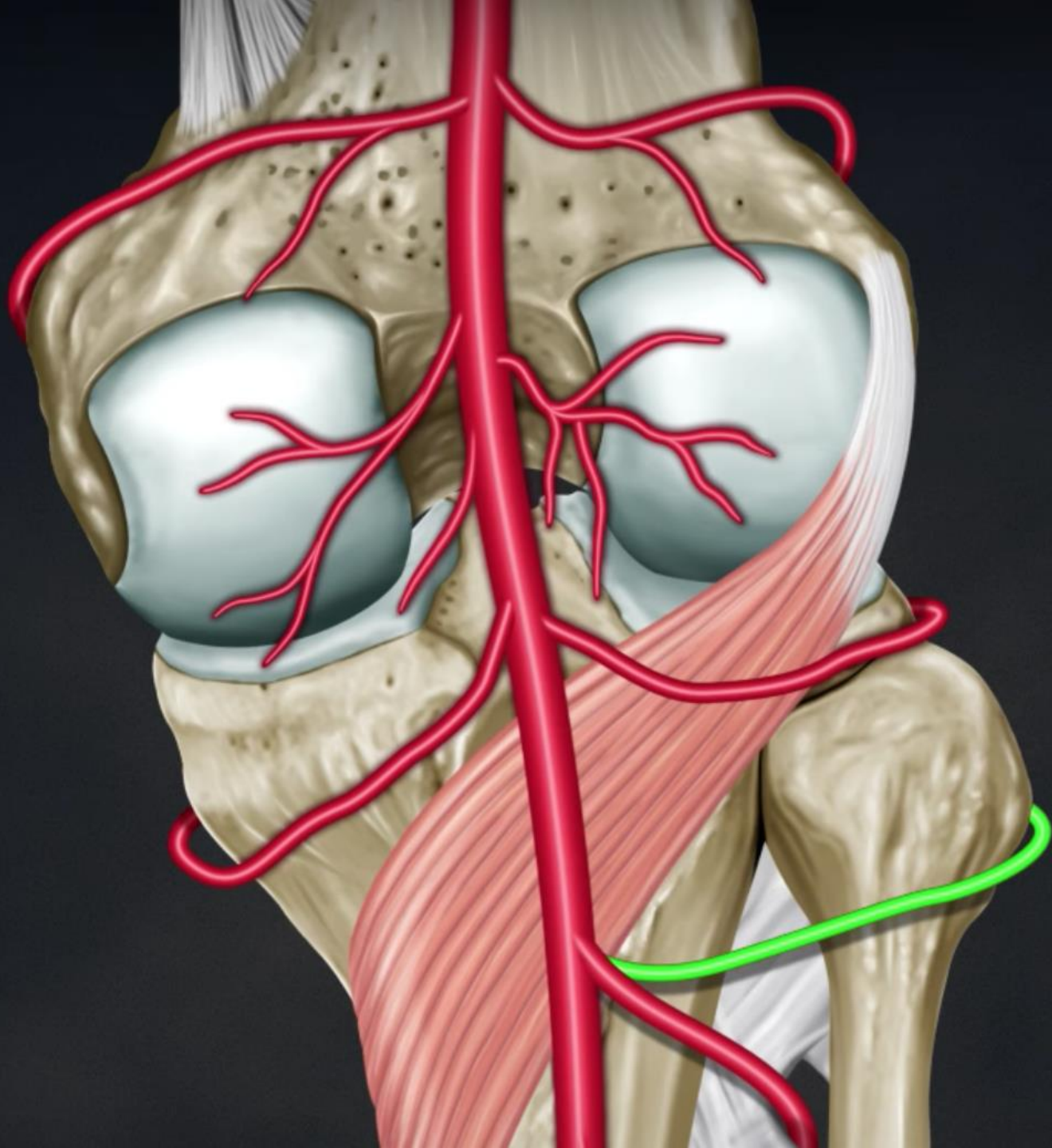


Freedom from TLR at 24 Months: $\leq 30\%$ residual stenosis

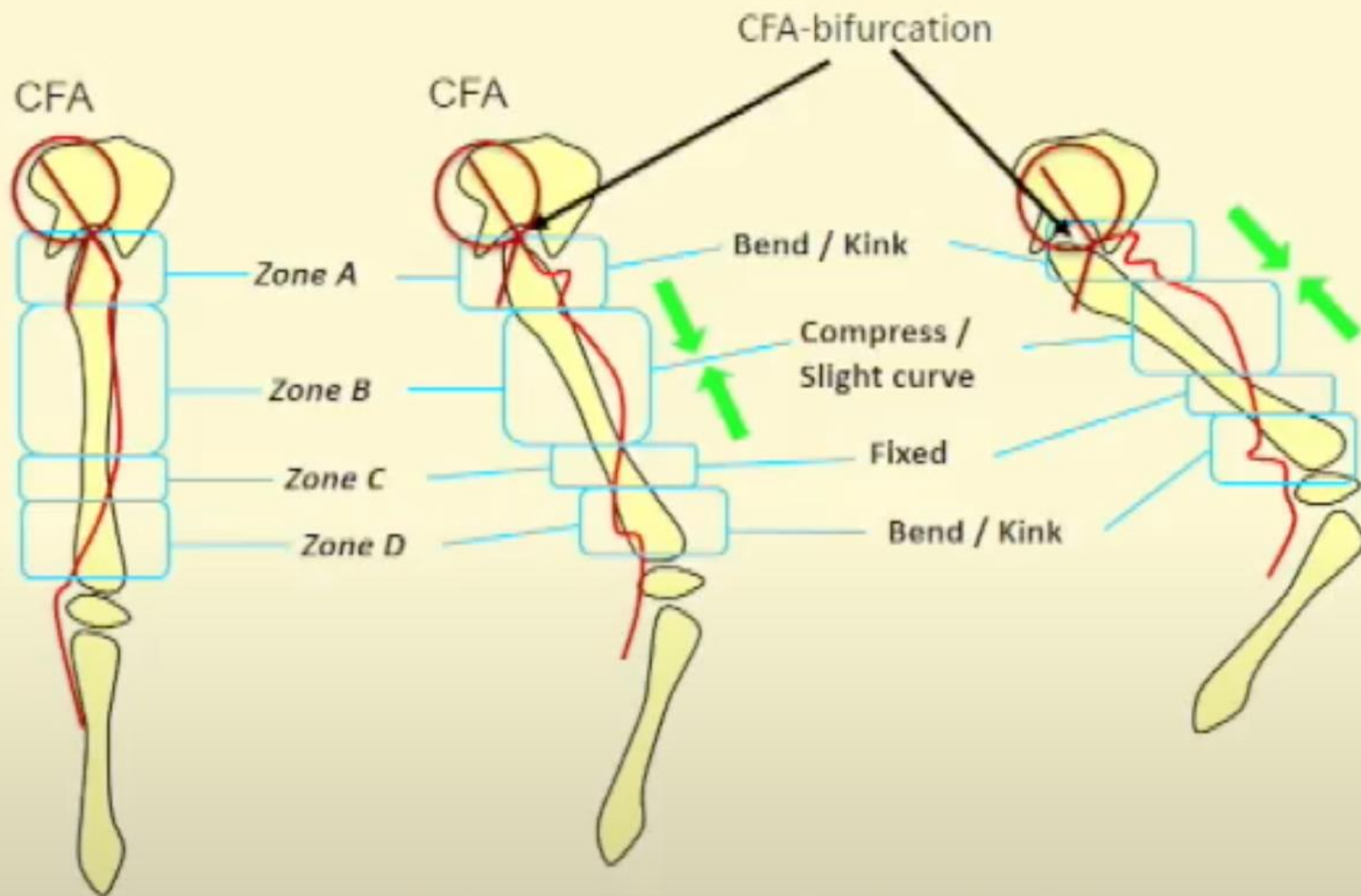


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Femoro-popliteal Artery - Biomechanics



Modified according to Lansky, A; Angiographic Analysis of Strut Fractures in the SIROCCO Trial. TCT 2004

ZONA HOSTIL



Straight Leg (SL)



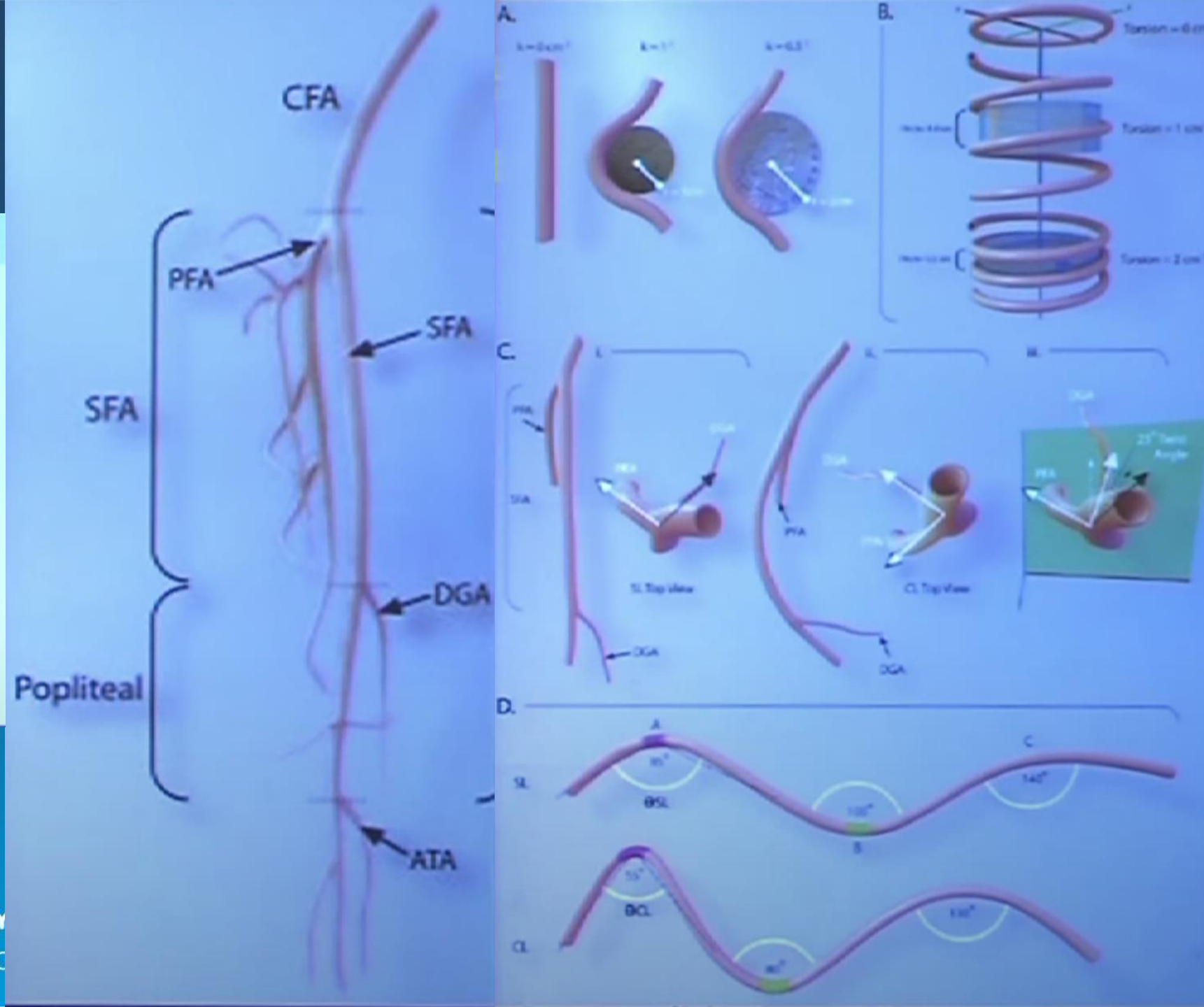
Crossed Leg (CL)

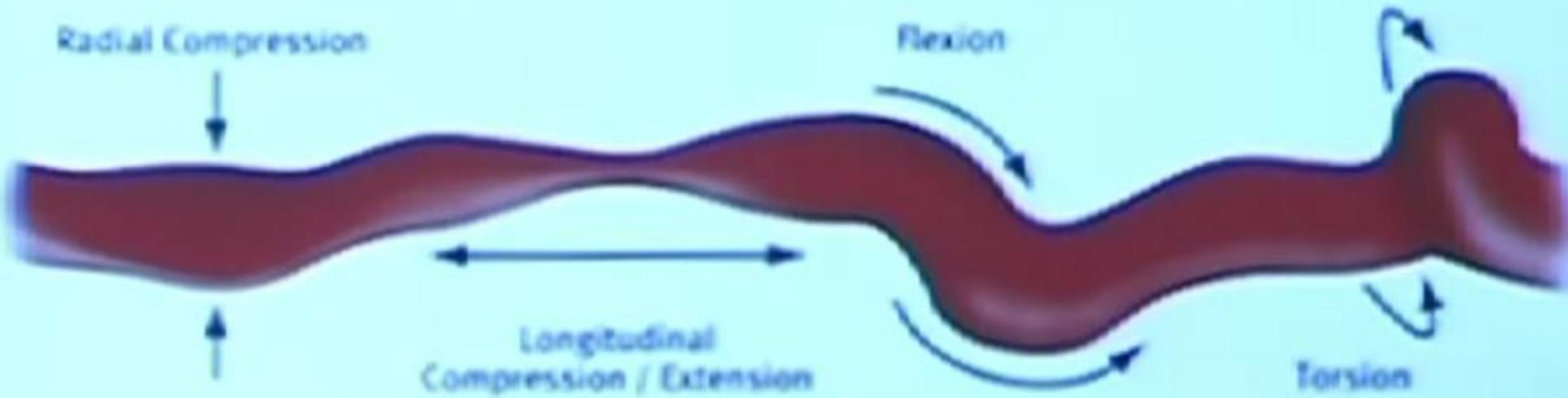


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	SFA	Popliteal
Shorten	18mm	32mm
Increased curvature	0.04cm	0.20cm
Twist	46 degrees	61 degrees
Flexion points (>15 degrees)	2 of 10	10/10 Avg 2.4 per art





Con la rodilla flexionada la arteria poplitea tiene mayor curvatura

A MAYOR CALCIFICACION de la arteria poplitea, mayor curvatura



ENDO o CIRUGIA-BY-PASS?



CIRUGIA: Cuando hay compromiso de toda la arteria poplitea.

CIRUGIA: Fallo del tratamiento endovascular temprano < 6 meses.



DESAFIOS DEL TRATAMIENTO ENDOVASCULAR



Flexion, deformación longitudinal, compresión extrínseca, rotación.

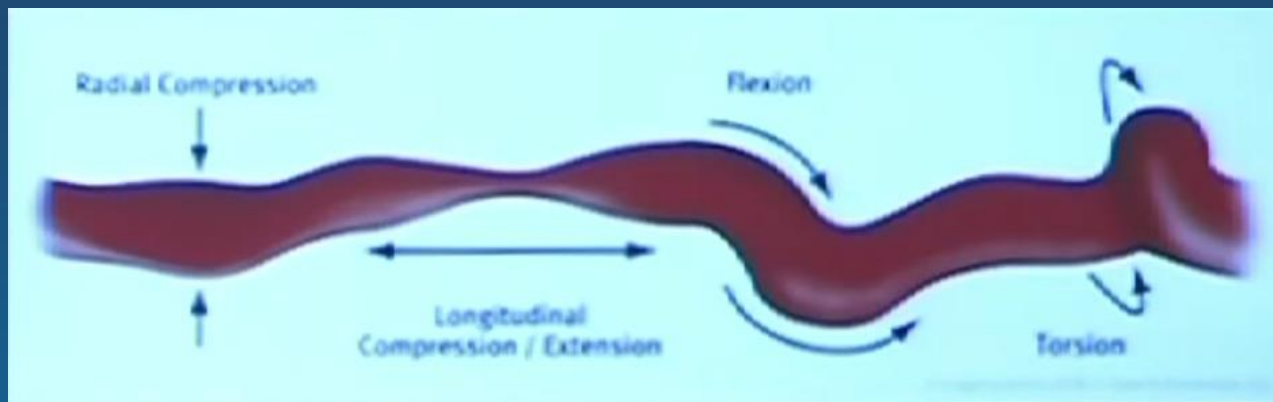
Protección de las colaterales geniculares.

Reentrada en oclusiones totales.



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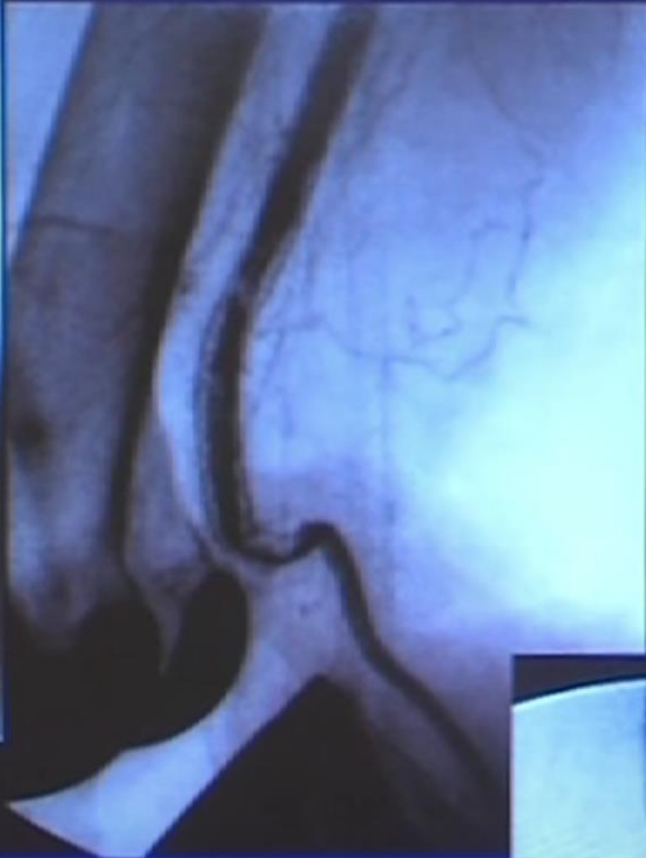
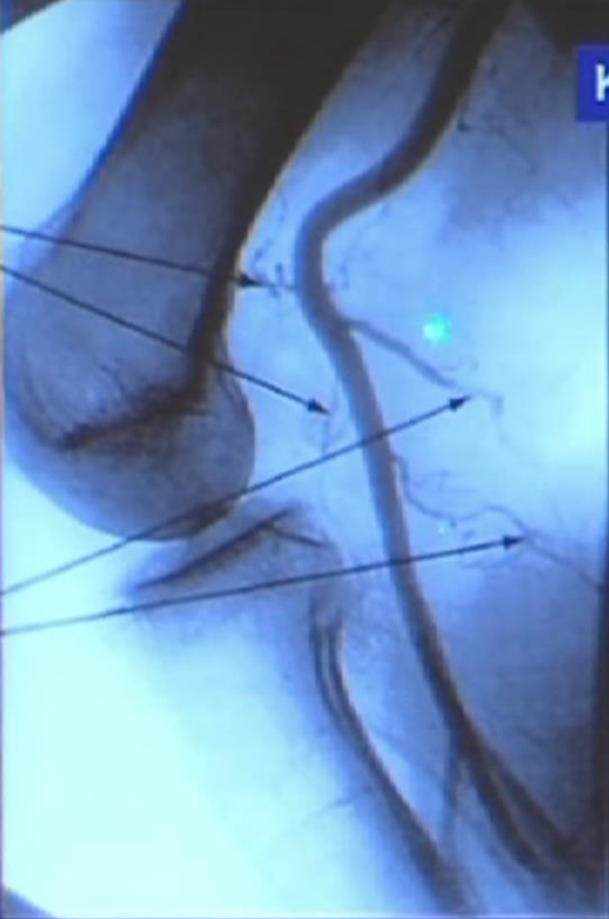
COMPRESION LONGITUDINAL CON LA RODILLA FLEXIONADA 90 GRADOS



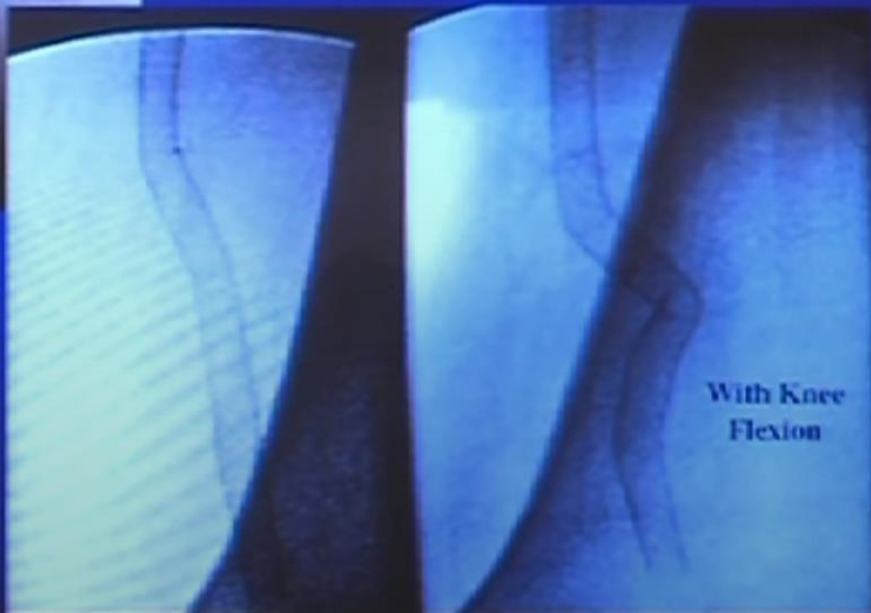
Location	Native	Stented
Middle SFA	9%	3%
Distal SFA/Prox popliteal	23%	6%
Popliteal	14%	11%



Kink at end of the stent.



Kink at proximal popliteal.



The artery is somewhat fixed at the adductor and also by perigenicular collaterals.

Iida et al. Am J Cardiol 2006;98:272.
Sirocco J Endovasc Ther 2008;13:701.
Scheinert et al. JACC 2005;45.



Major US Stent Studies and Approved Stents



Parameter (study start)	LifeStent* Resilient (July 04)	Everflex* Durability II (August 07)	Smart* Stroll (August 08)	Complete SE Vascular	Zilver PTX* (March 05)	SUPERA Superb
FDA Approval	Feb 13, 2009	Mar 7, 2012	Nov 7, 2012	no	Nov 14, 2012	March 28, 2014
Subjects	206 (72 PTA)	287	250	196	479 (241 ZS / 238 PTA)	264
Lesion Length (Min, Max)	61.85 57.2 PTA	109.6 (10.0, 180.0)	77.31 (15.73, 200.10)	61	54.6 / 53.2 PTA	78
12 m Primary Patency <2.0	81.5% 36.7% PTA	67.7%	66.5%	72.6	82.7% 27.9% PTA	86%
TLR (1 year)	94.6% 54.1%- PTA (Freedom From)	13.9% -	13.6%	8.4%	9.6% 16.3% PTA	10%
Design	2:1 RCT PTA	OPC*	OPC	OPC	1:1 RCT PTA	OPC

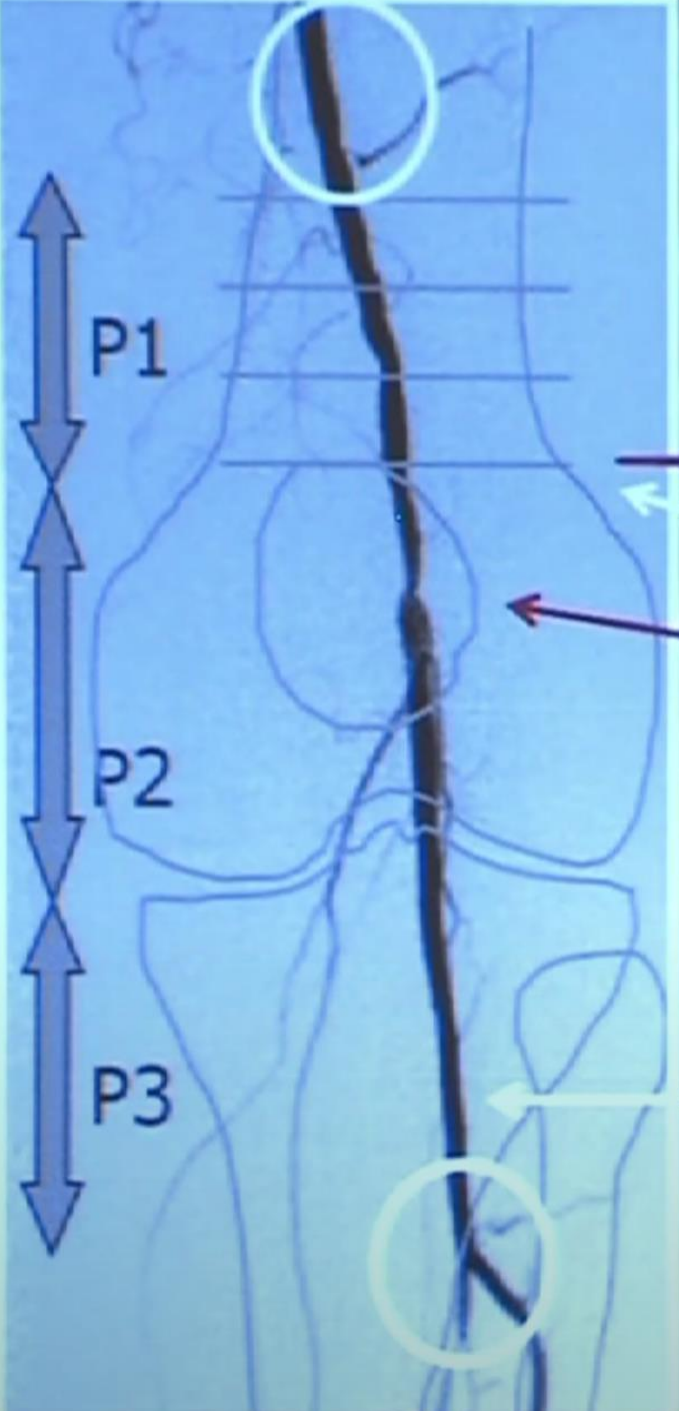
67-86% one year patency



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LESIONES 4-15 cm

Studies Including Popliteal Artery



- Durability Study-Everflex 2.1%
- Stroll Trial-SMART 15.6%
- Zilver Trial-Zilver PTX 7.2%
- Superb Trial-Supera
- SFA II Trial-In.PACT DCB
- Resilient Study-Lifestent 4.6%

Levant 2 Trial-Moxy DCB

Inferior extent of angiographic inclusion criteria





67% PERMEABILIDAD A LOS 12 MESES



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Jaguar

woven „one wire” nitinol technology

No kinking effect in tortuous vessels

Exceptional flexibility

Zero fractures observed after 20 million cycles in Bending Test

Very high flexibility and fatigue strength



Image size: 800 x 800
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46016 (96 y , 96 y)
Miiz
MIIZ
1



CASO 1

Zoom: 109% Angle: 0
Im: 1/134
Uncompressed
Position: HFS

(Filt. 5)

5/8/21 14:33:06
Made In Horos





Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1

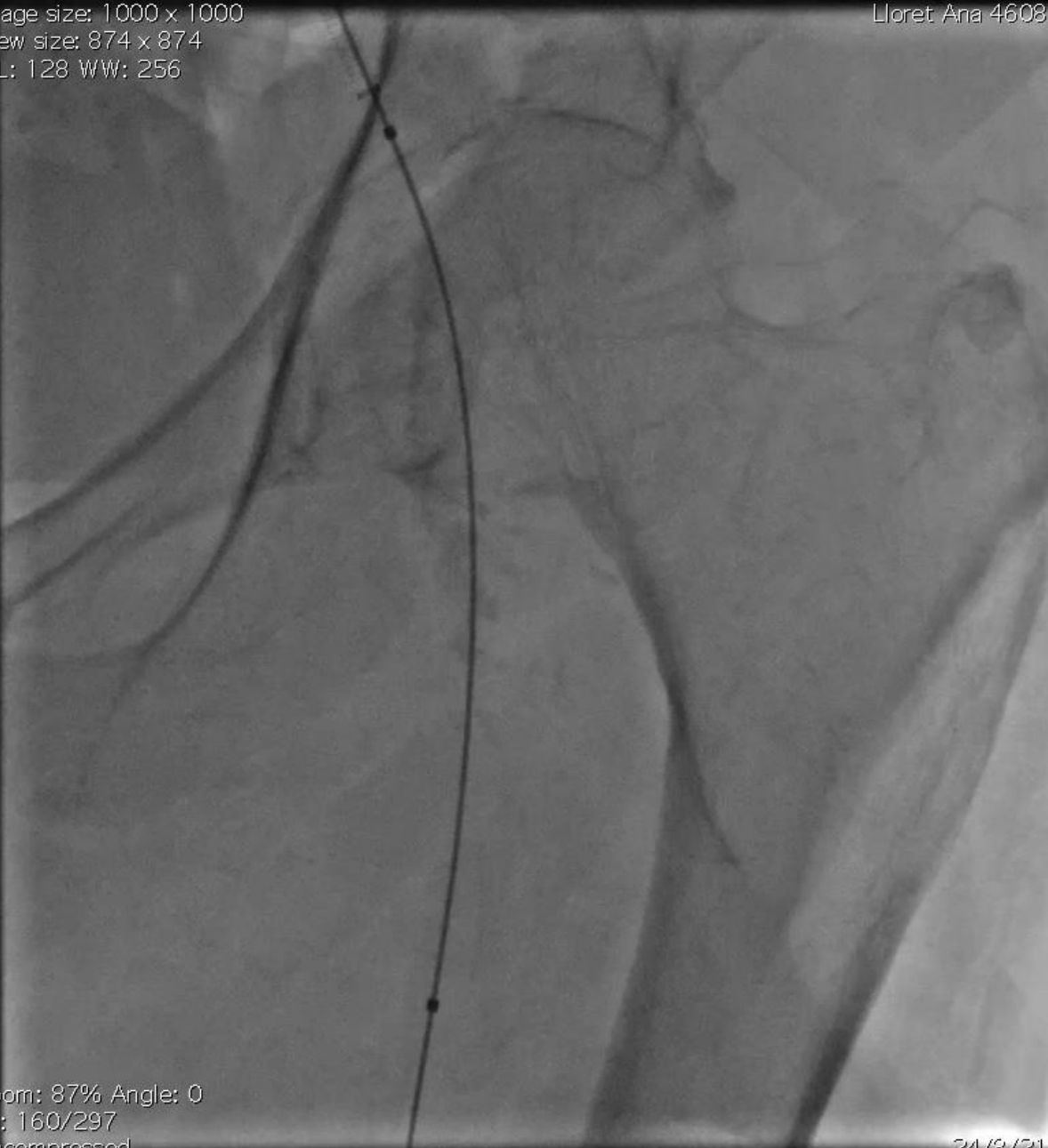
Zoom: 87% Angle: 0
Im: 1/88
Uncompressed
Position: HFS

Zoom: 87% Angle: 0
Im: 1/254
Uncompressed
24/8/21 10:13:38
Made In: HFS

24/8/21 10:13:38
Made In Horos

Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 4608



Zoom: 87% Angle: 0
Im: 160/297
Uncompressed
Position: HFS

Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 97/450
Uncompressed
Mad Position: HFS

24/8/21 10:21:57
Made In Horos

Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 1/10
Uncompressed
Position: HFS

24/3/21 10:27:20
Made In Horos



Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256



Zoom: 144% Angle: 0
Im: 7/22
Uncompressed
Position: HFS

Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256



Zoom: 144% Angle: 0
Im: 1/76
Uncompressed
Position: HFS

Lloret Ana 46083 (-, -)

Atp
ATP
1

24/8/21 10:53:19

Made In Horos

Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 144% Angle: 0
Im: 25/76
Uncompressed
Position: HFS

24/8/21 10:58:19
Made In Horos



Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 1/450
Uncompressed
Position: HFS

24/8/21 11:04:12
Made In Horos





Image size: 608 x 608
View size: 374 x 374
WL: 128 WW: 256

Atp
ATP
1



Zoom: 144% Angle: 0
Im: 1/11
Uncompressed
Position: HFS



Lloret Ana 46083 (- , -)
Image size: 608 x 608
View size: 374 x 374
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1

Zoom: 144% Angle: 0
Im: 4/11
Uncompressed
Position: HFS



24/8/21 11:14:52
Made In Horos

Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (

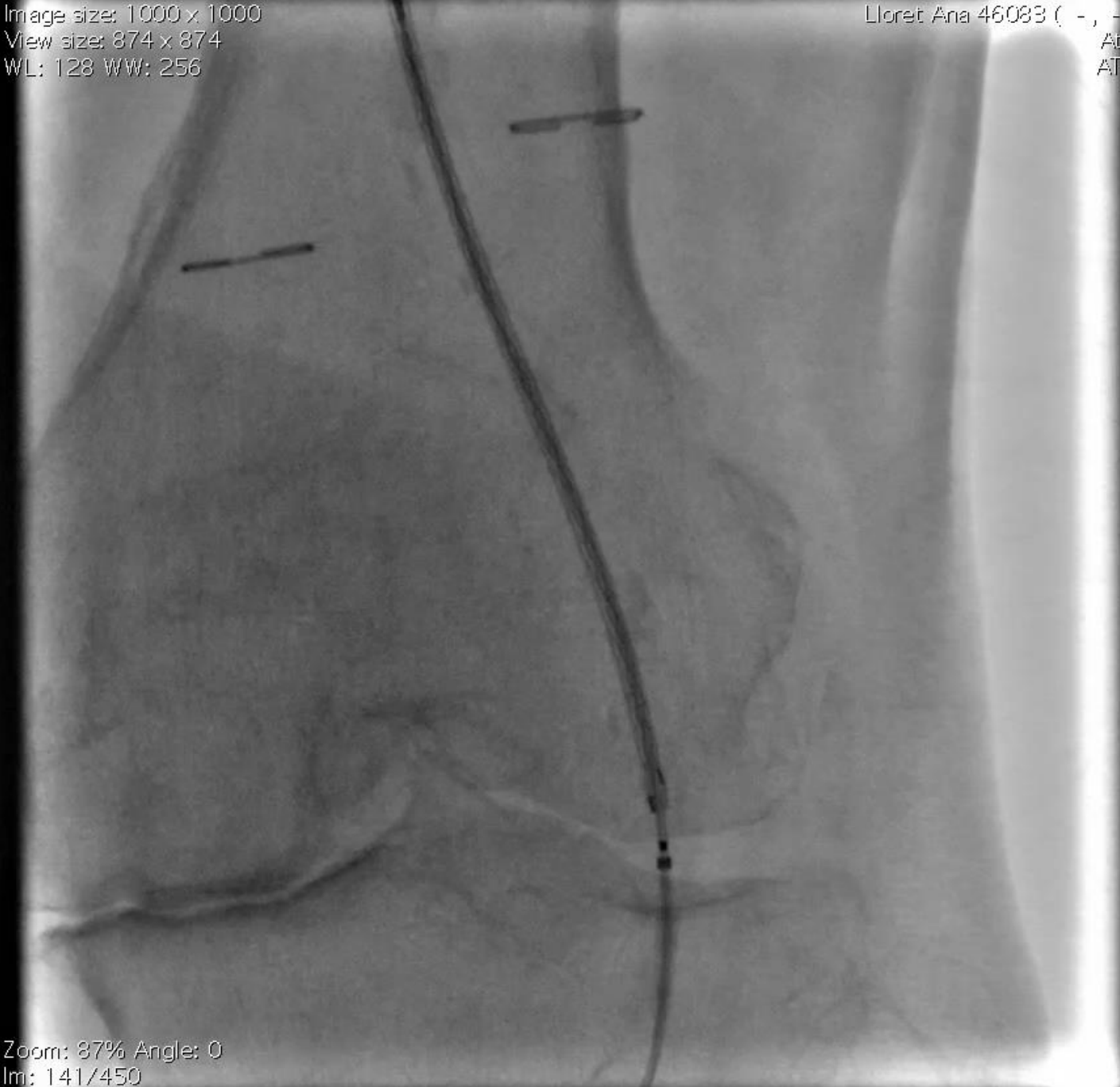
Zoom: 87% Angle: 0
Im: 155/442
Uncompressed
Position: HFS

24/8/21 11:3
Made In



Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 141/450
Uncompressed
Position: HFS

24/8/21 10:57:59
Made In Horos



Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (- , -)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 165/390
Uncompressed
Position: HFS

24/8/21 11:38:46
Made In Horos



Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256

Lloret Ana 46083 (-, -)
Atp
ATP
1



Zoom: 144% Angle: 0
Im: 1/83
Uncompressed
Position: HFS

24/8/21 11:40:15
Made In Horos



Image size: 755 x 755
View size: 874 x 874
WL: 111 WW: 512

vazquez julio 45555 (64 y , 65 y)
Atp
ATP
1



CASO 2



Zoom: 117% Angle: 0
Im: 1/40
Uncompressed
Position: HFS

7/4/21 15:46:24
Made In Horos

Image size: 800 x 800
View size: 874 x 874
WL: 128 WW: 256

Zoom: 109% Angle: 0
Im: 1/68
Uncompressed
Position: HFS

Vazquez Julio
Image size: 800 x 800
View size: 874 x 874
WL: 134 WW: 185

Zoom: 109% Angle: 0
Im: 1/43
Uncompressed
Position: HFS

Vazquez Julio 45553 (64 y , 63 y)

Atp
ATP
1

7/4/21 16:23:25
Made In Horos

Vaz) x 1000
874
56

size: 1000 x 1000
ze: 874 x 874
8 WW: 256



file: 0

87% Angle: 0
6/253
pressed
r: HFS



Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Vazquez Julio 45553 (64 y , 63 y)

Atp
ATP
1



Zoom: 87% Angle: 0
Im: 113/192
Uncompressed
Position: HFS

7/4/21 16:39:20
Made In Horos

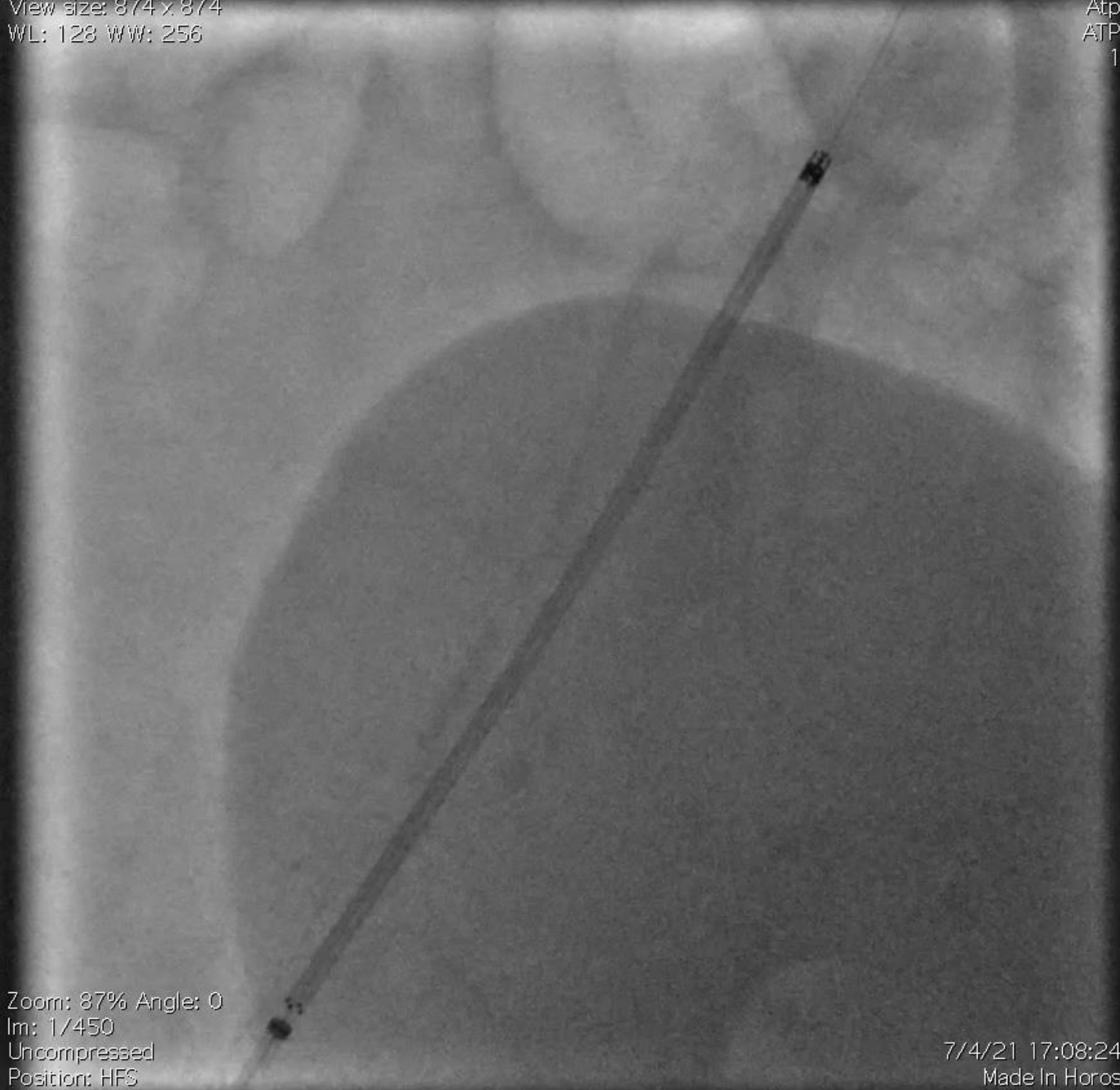


Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256



Zoom: 87% Angle: 0
Im: 1/450
Uncompressed
Position: HFS

Vazquez Julio Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256



Zoom: 87% Angle: 0
Im: 1/450
Uncompressed
Position: HFS

Vazquez Julio 45553 (64 y , 63 y)

Atp
ATP
1

7/4/21 17:08:24
Made In Horos

Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256

Vazquez Julio 45553 (64 y , 63 y)
Atp
ATP
1



Zoom: 144% Angle: 0
Im: 1/116
Uncompressed
Position: HFS

7/4/21 17:16:39
Made In Horos



Image size: 1000 x 1000
View size: 874 x 874
WL: 86 WW: 181

Torres Marta 46075 (67 y , 67 y)
Misi
MISI
1



CASO 3

Zoom: 87% Angle: 0
Im: 38/91
Uncompressed
Position: HFS

20/8/21 13:55:37
Made In Horos



Image size: 608 x 608
View size: 874 x 874
WL: 128 WW: 256

Torres Marta 46505 (67 y, 67 y)

Atp
ATP
1



Zoom: 144% Angle: 0
Im: 1/42
Uncompressed
Position: HFS

30/11/21 13:20:07

Made In Horos

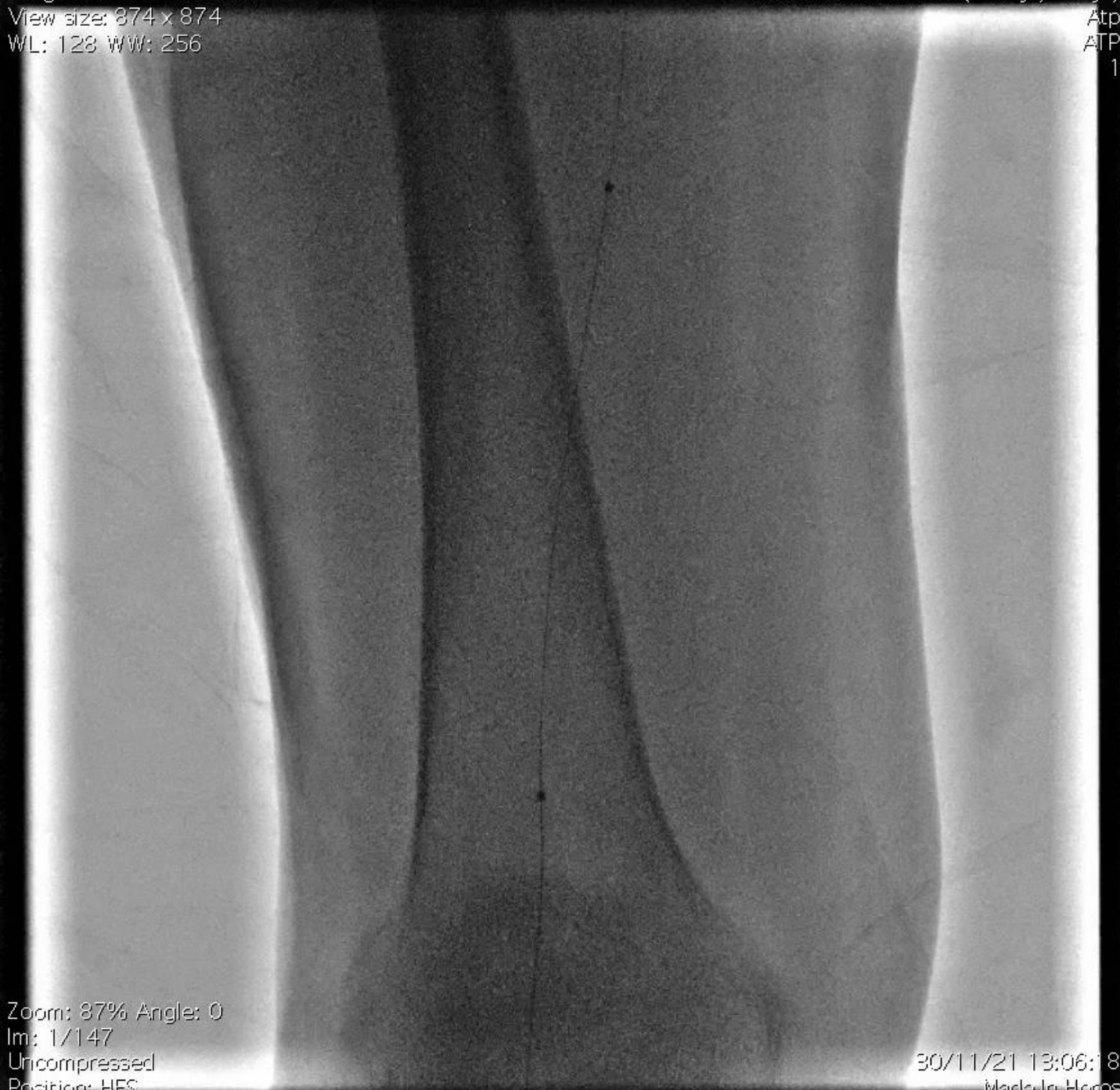


Image size: 1000 x 1000
View size: 374 x 374
WL: 128 WW: 256



Zoom: 87% Angle: 0
Im: 23/24
Uncompressed
Position: HFS

Torres Marta Image size: 1000 x 1000
View size: 374 x 374
WL: 128 WW: 256



Zoom: 87% Angle: 0
Im: 1/147
Uncompressed
Position: HFS

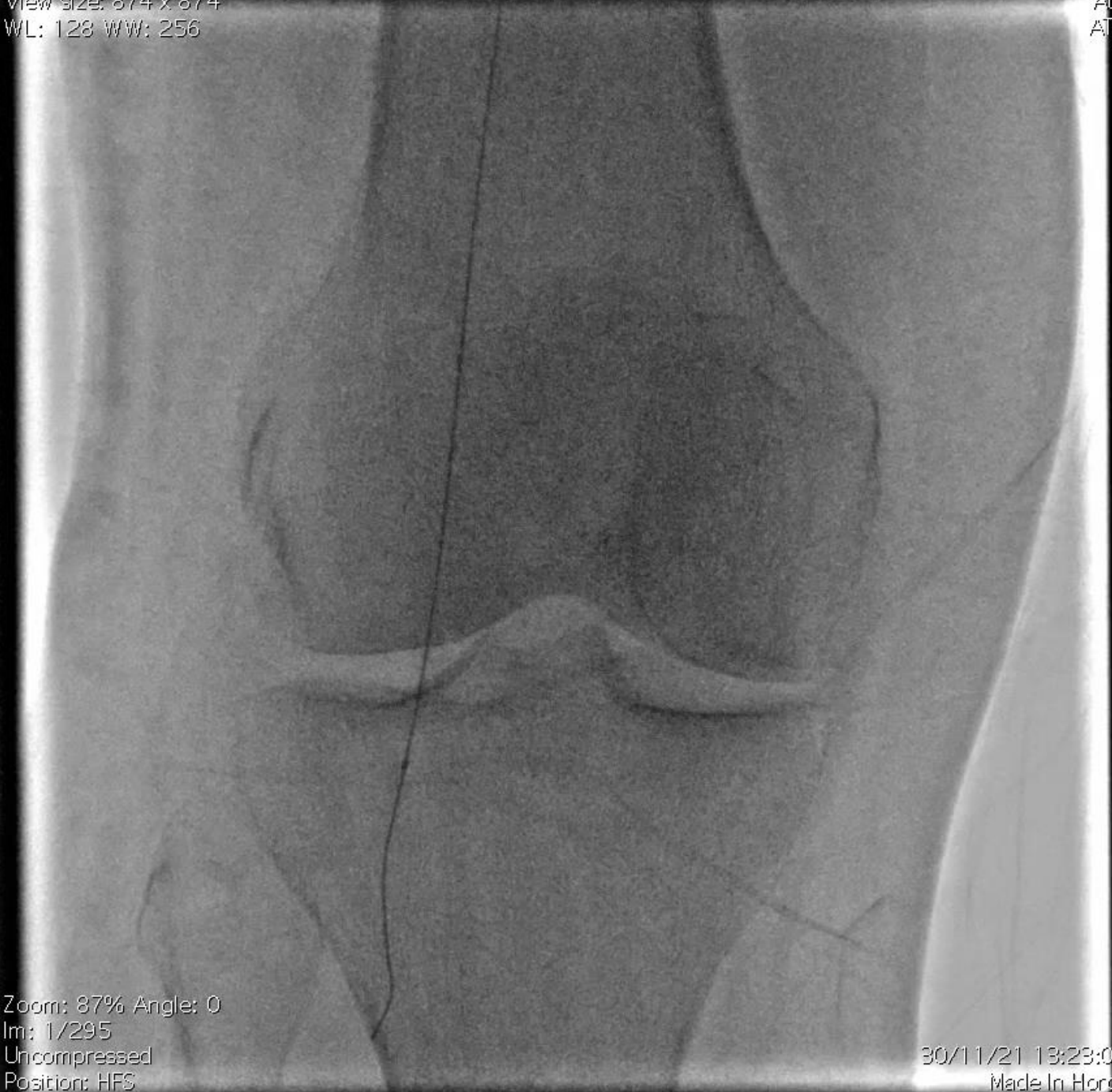
Torres Marta 46505 (67 y , 67 y)

Atp
ATP
1

30/11/21 13:06:18
Made In Horos

Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Torres Marta 46505 (67 y , 67 y)
Atp
ATP
1



Zoom: 87% Angle: 0
Im: 1/295
Uncompressed
Position: HFS

30/11/21 13:29:05
Made In Horos



Image size: 1000 x 1000
View size: 874 x 874
WL: 128 WW: 256

Torres Marta 46505 (67 y , 67 y)

Atp
ATP
1



Zoom: 87% Angle: 0
Im: 1/71
Uncompressed
Position: HFS

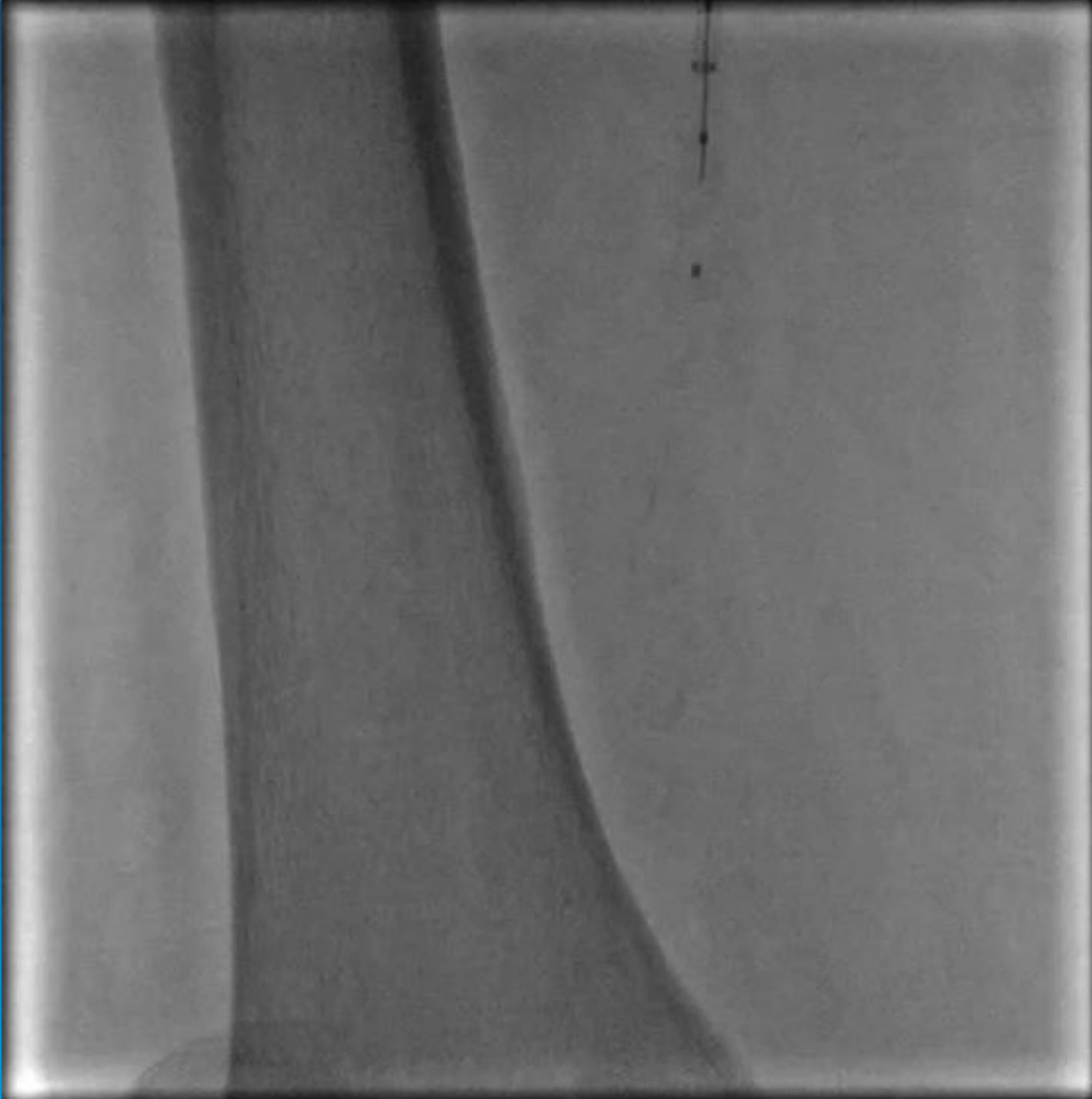
30/11/21 13:32:20
Made In Horos



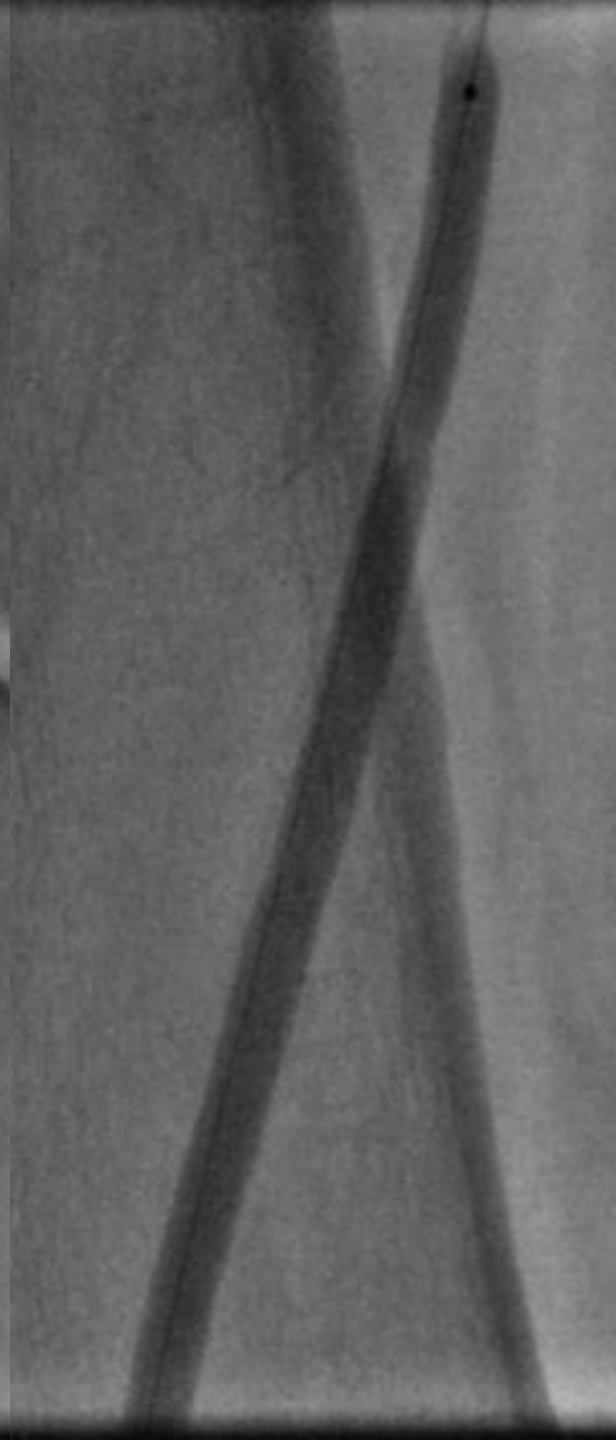
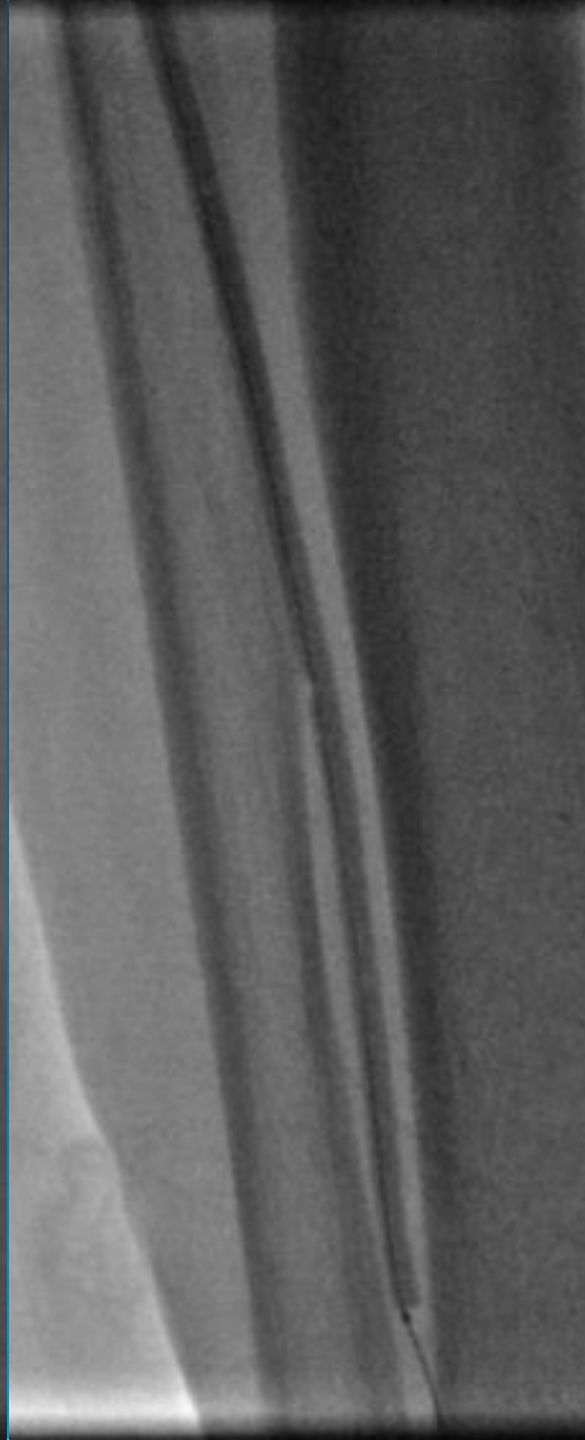


CASO 4



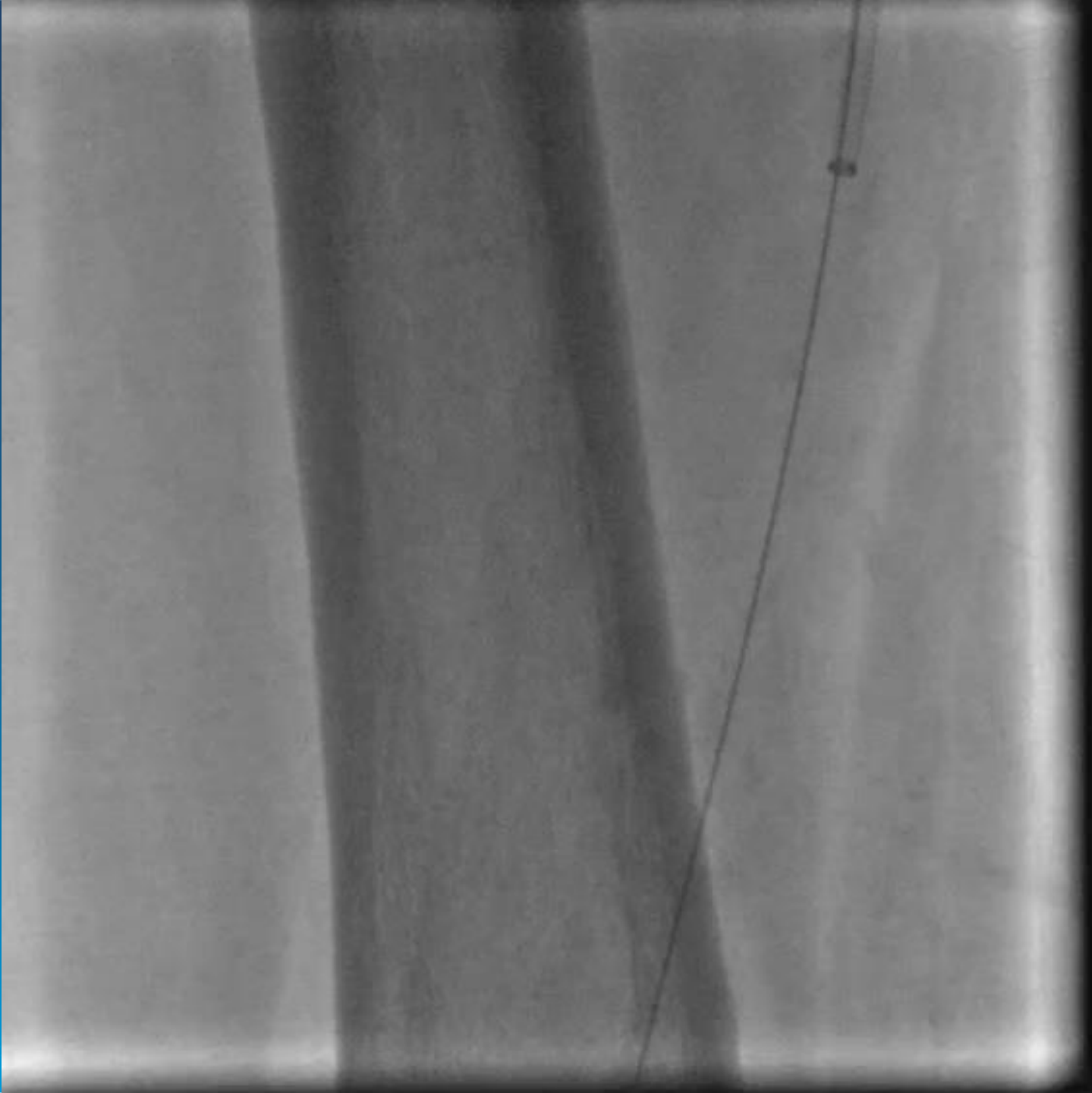






2021













CONCLUSIONES



Zonas hostiles? Tratables con buenos resultados

Planificación de acuerdo al escenario anatómico

Stents dedicados, DEB, Aterectomia, Litotripsia

Fundamental el seguimiento





MUCHAS GRACIAS !!!!



JORNADAS CIENTÍFICAS Y GREMIALES CACI 2021
4 Y 5 DE DICIEMBRE 2021 . HOTEL HILTON - PRESENCIAL

