

Kalcifikace a PCI

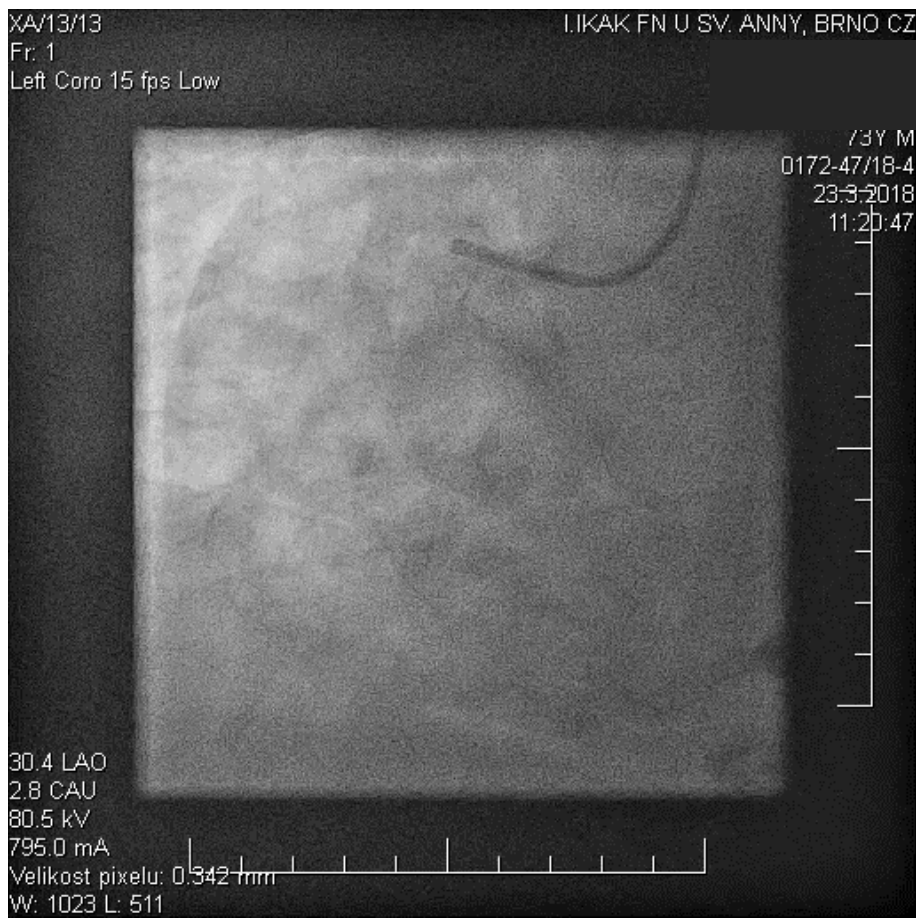
O. Hlinomaz



IKAK, ICRC, FN u sv. Anny, Brno
CINRE, Bratislava

Kalcifikace časté

- Střední až těžké kalcifikace 29%
- Těžké kalcifikace 6%

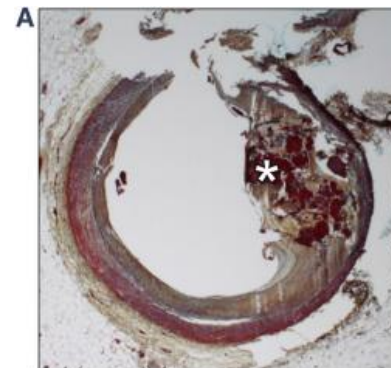
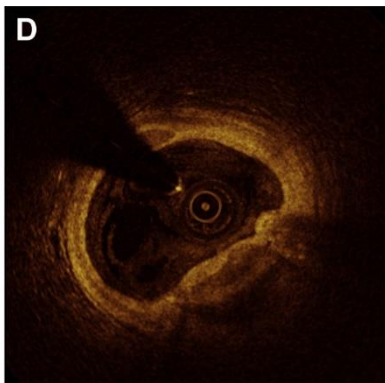
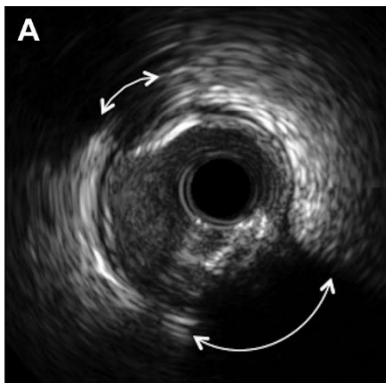


RAVEL	23.3% (27/116)
SIRIUS	17.1% (91/531)
E-SIRIUS	16.1% (28/174)
C-SIRIUS	12.0% (6/50)
TAXUS IV	18.3% (121/660)
TAXUS V	32.5% (185/570)
TAXUS VI	29.7% (65/219)
ENDEAVOR II	23.7% (140/590)
ENDEAVOR III	17.9% (78/436)
ENDEAVOR IV	33.2% (513/1546)
SPIRIT II	31.4% (91/290)
SPIRIT III	27.8% (277/997)
COMPARE	38.5% (693/1799)
Pooled	29.0% (2,315/7,978)

IVUS - OCT

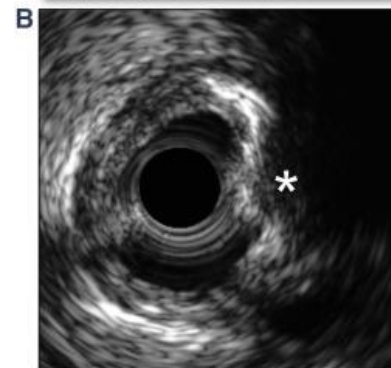
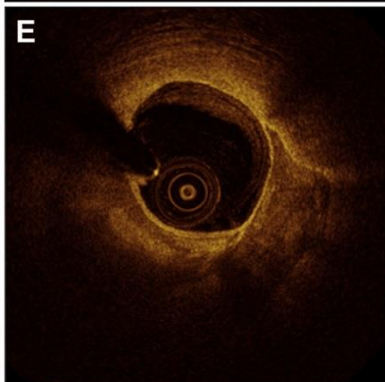
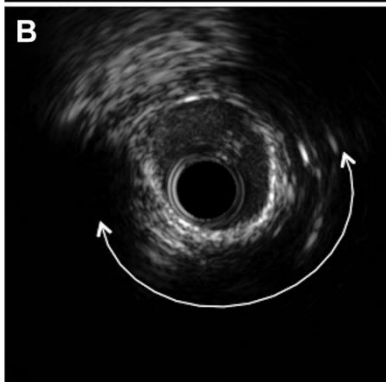
kalcifikace

mírné

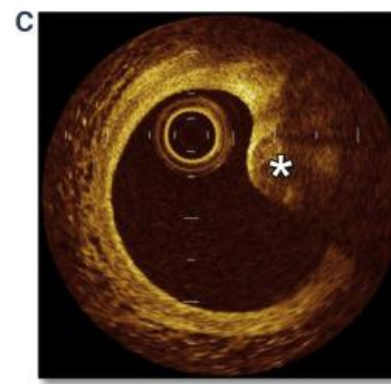
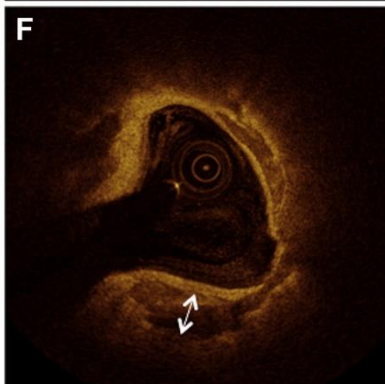
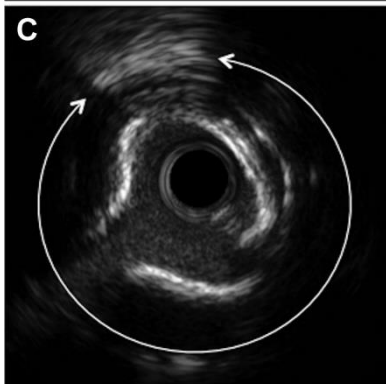


Ca nodule

střední

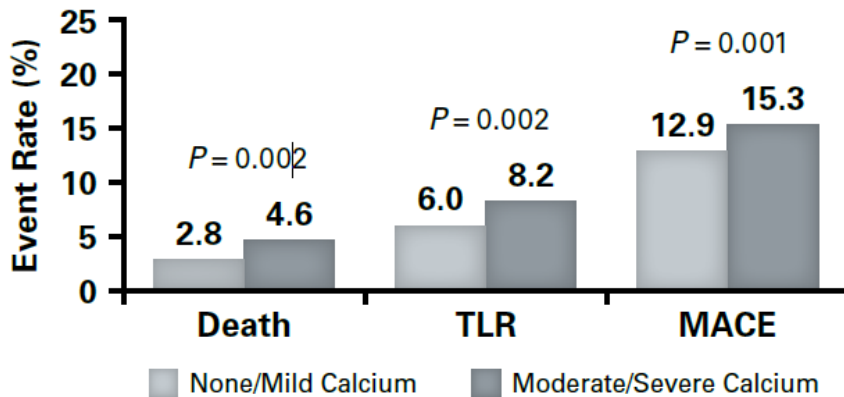


těžké

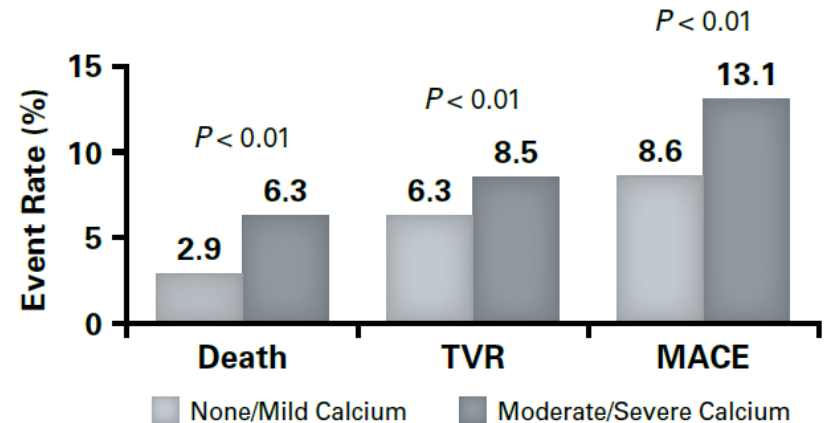


Kalcifikace – horší prognóza

HORIZONS-AMI & ACUITY Trials
1-Year Ischemic Outcomes

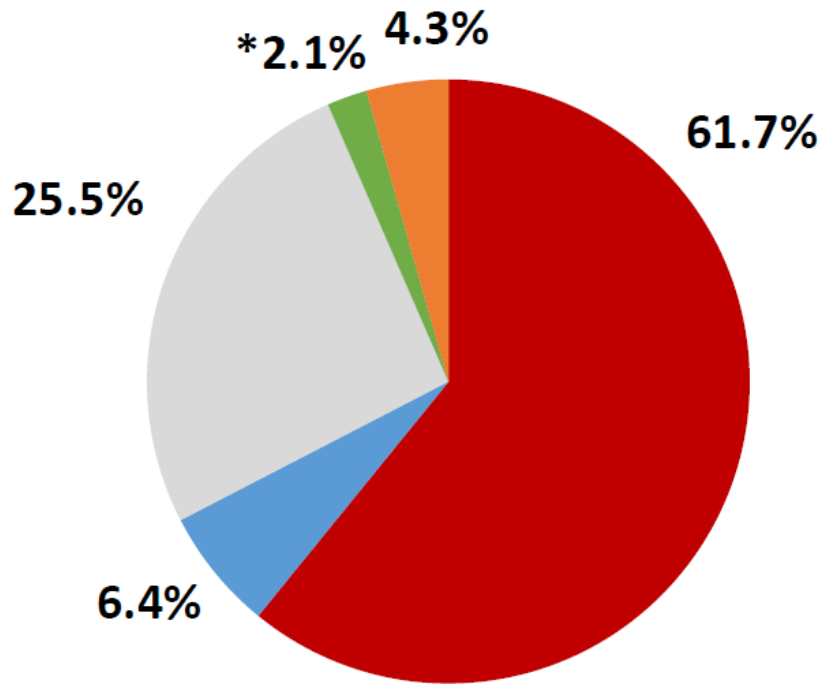


ARRIVE Registry
1-Year Ischemic Outcomes

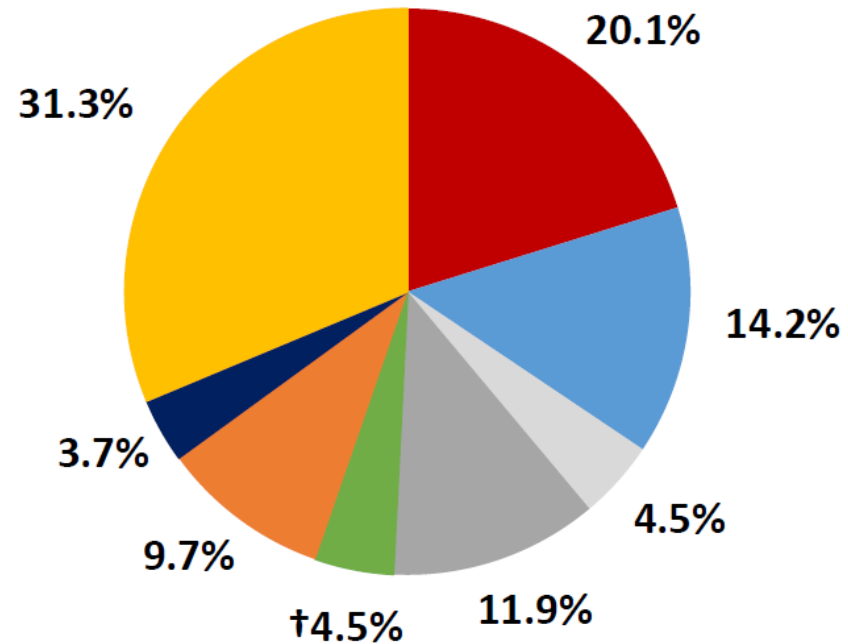


PRESTIGE

(B) Subacute (n=47)



(B) Very late (n=134)

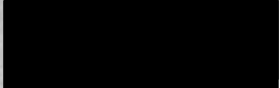


■ Uncovered struts
■ Malapposed struts
■ Underexpansion

■ Restenosis
■ Edge pathology
■ No dominant cause

■ Neoatherosclerosis
■ Other

Left Coro 15 fps Normal



5.8.1947
68Y M
0172-132/16-2
20.1.2016
12:29:08

35.3 RAO
22.8 CRA
77.5 kV
834.0 mA
Velikost pixelu: 0.258 mm
W: 1023 L: 511



Left Coro 15 fps Normal



5.8.1947
68Y M
0172-132/18-2
2011-2016
12:28:08

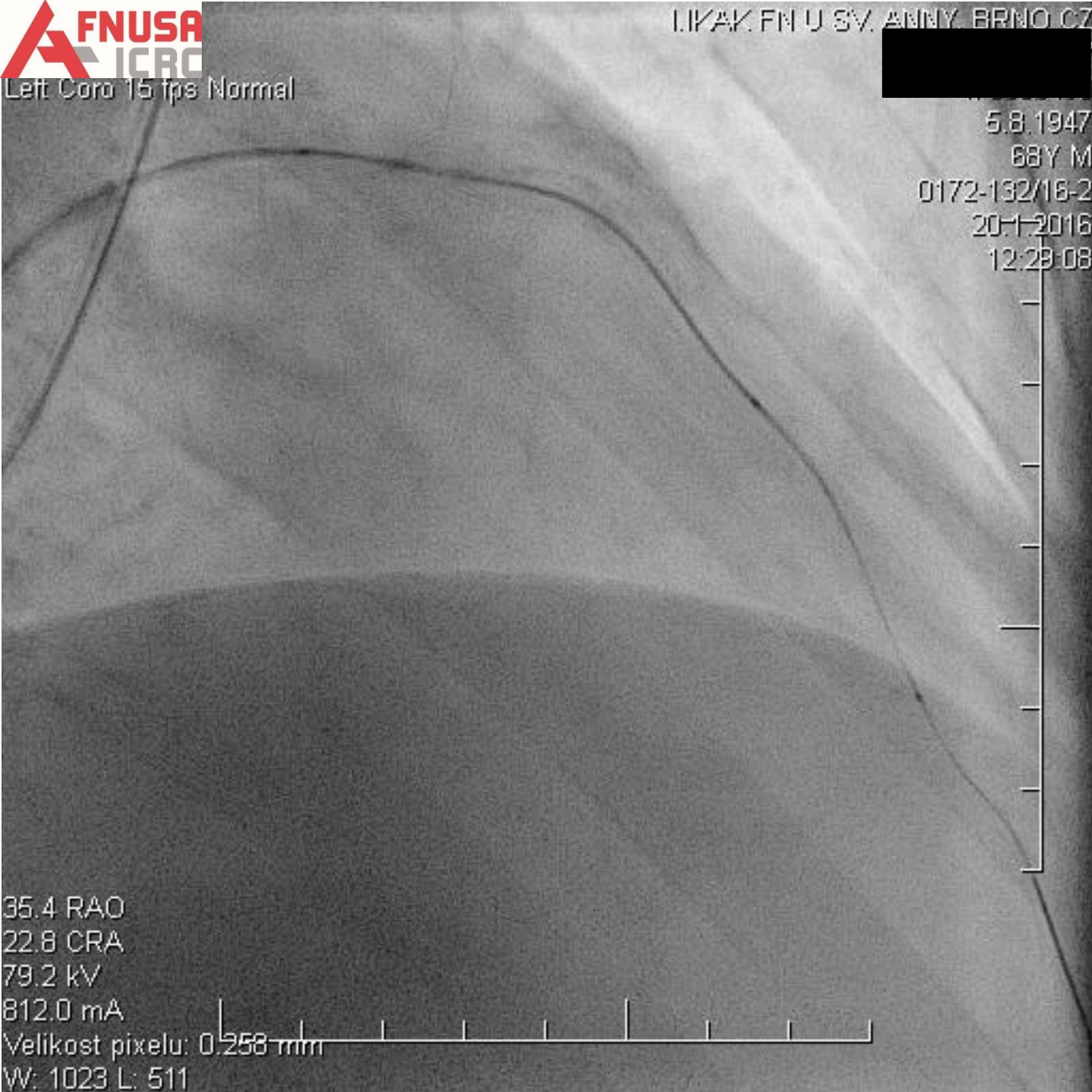
preD 3,0 20 18atm
DES 3,5 32mm
PD NC 3,5 20 18atm

OCT

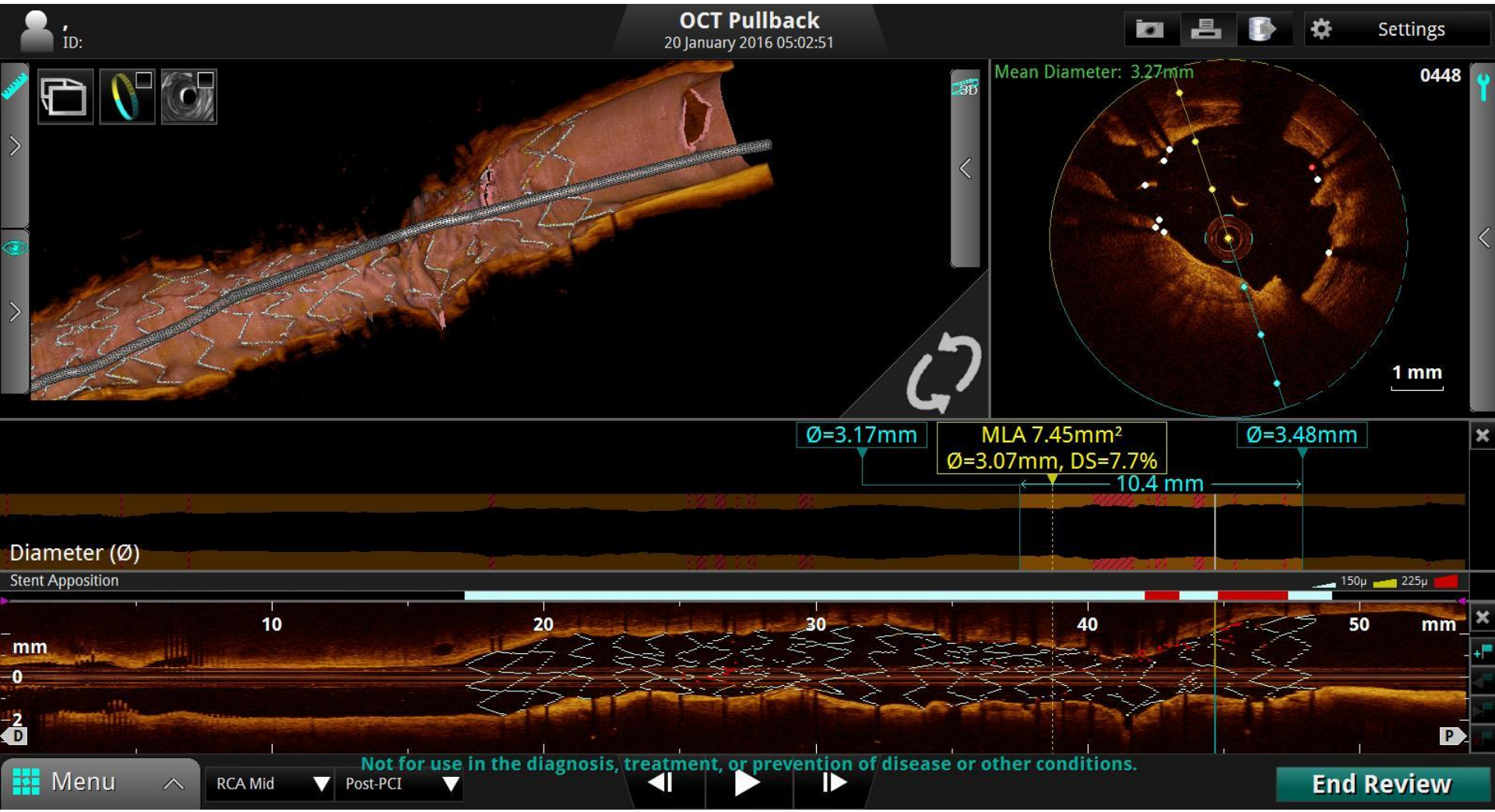
35.4 RAO
22.8 CRA
79.2 kV
812.0 mA

Velikost pixelu: 0,258 mm

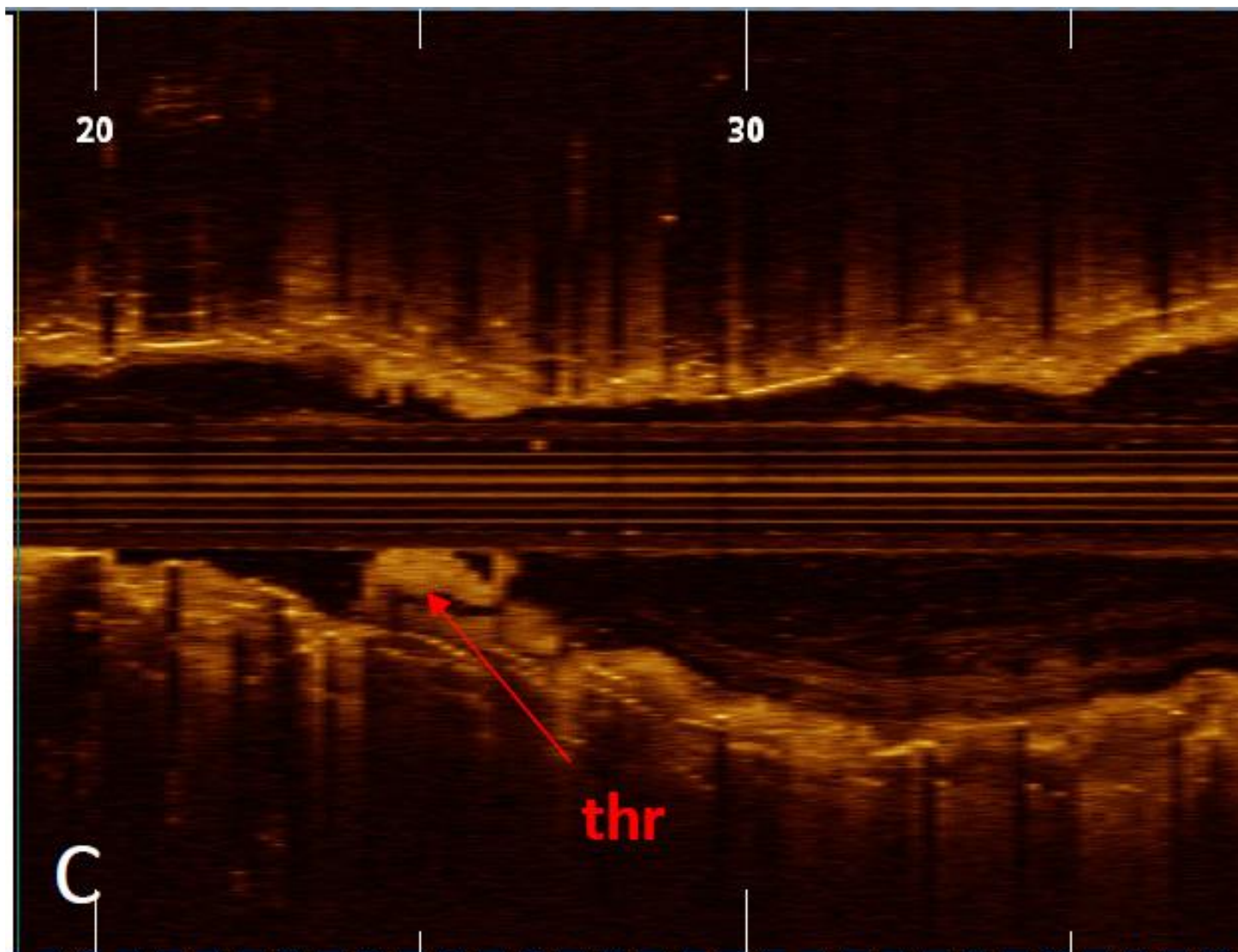
W: 1023 L: 511



Calcium prevents full distension



Nedostatečná expanze stentu =
hrubá chyba zhoršující prognózu



Kvalitní příprava tepny před implantací stentu

- Vysokotlaká dilatace
- Cutting balloon
- Scoring balloon
- Rotační aterektomie (rotablance)
- ShockWave lithotripsie

- Orbitální aterektomie

Vysokotlaková dilatace



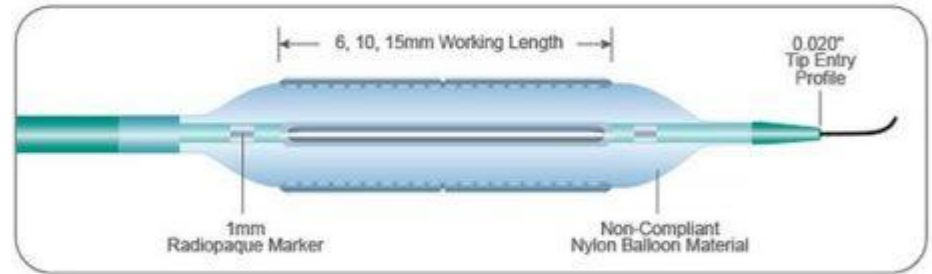
OPN SIS Medical

- 0 dog-bone efekt
- Crossing profil lepší než scoring katetry (2,0mm)
- RBP 35 atm
- Nejnižší compliance

Balloon Compliance:

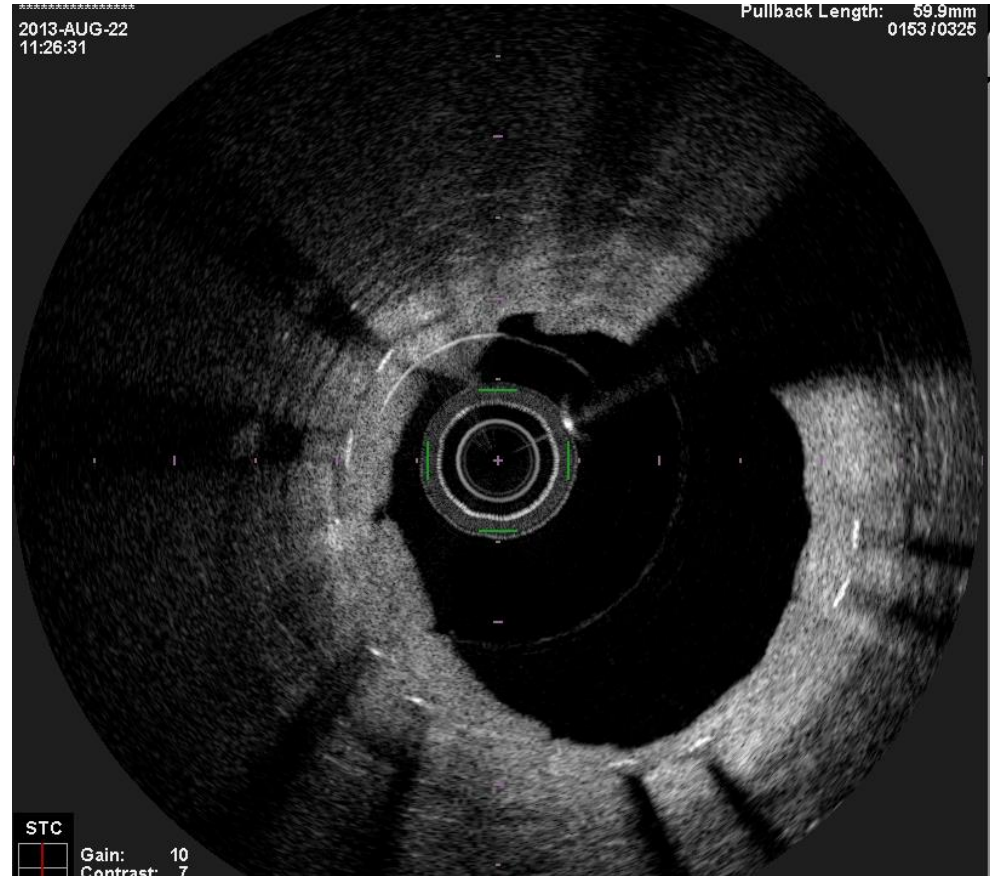
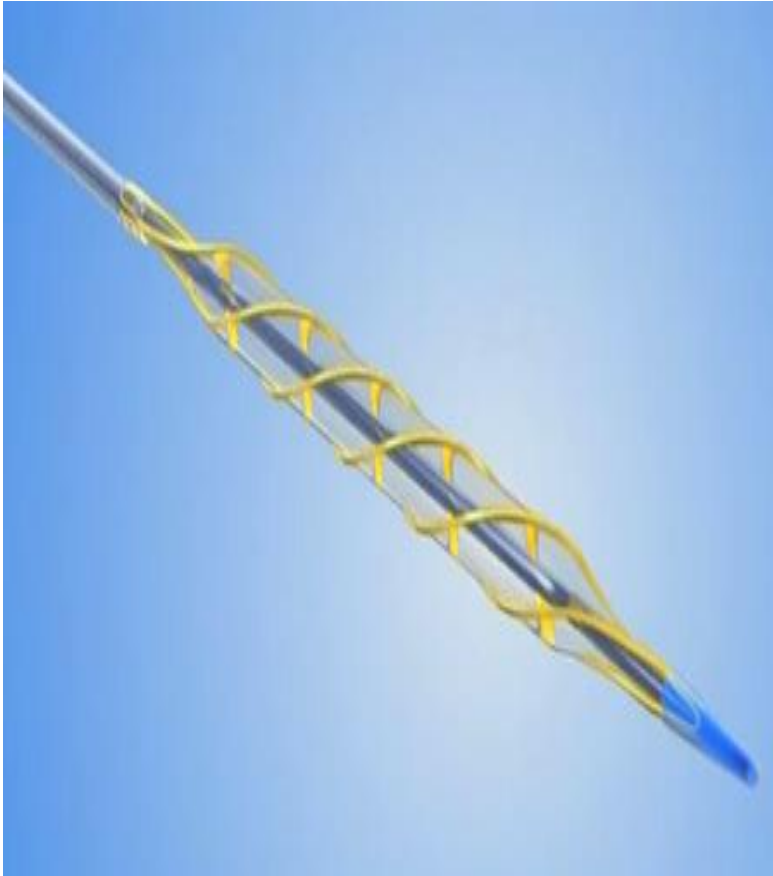
Bar	MPa	mm	
10	1.0	2.50	NOM
20	2.0	2.60	
30	3.0	2.70	
35	3.5	2.77	RBP

Cutting balloon



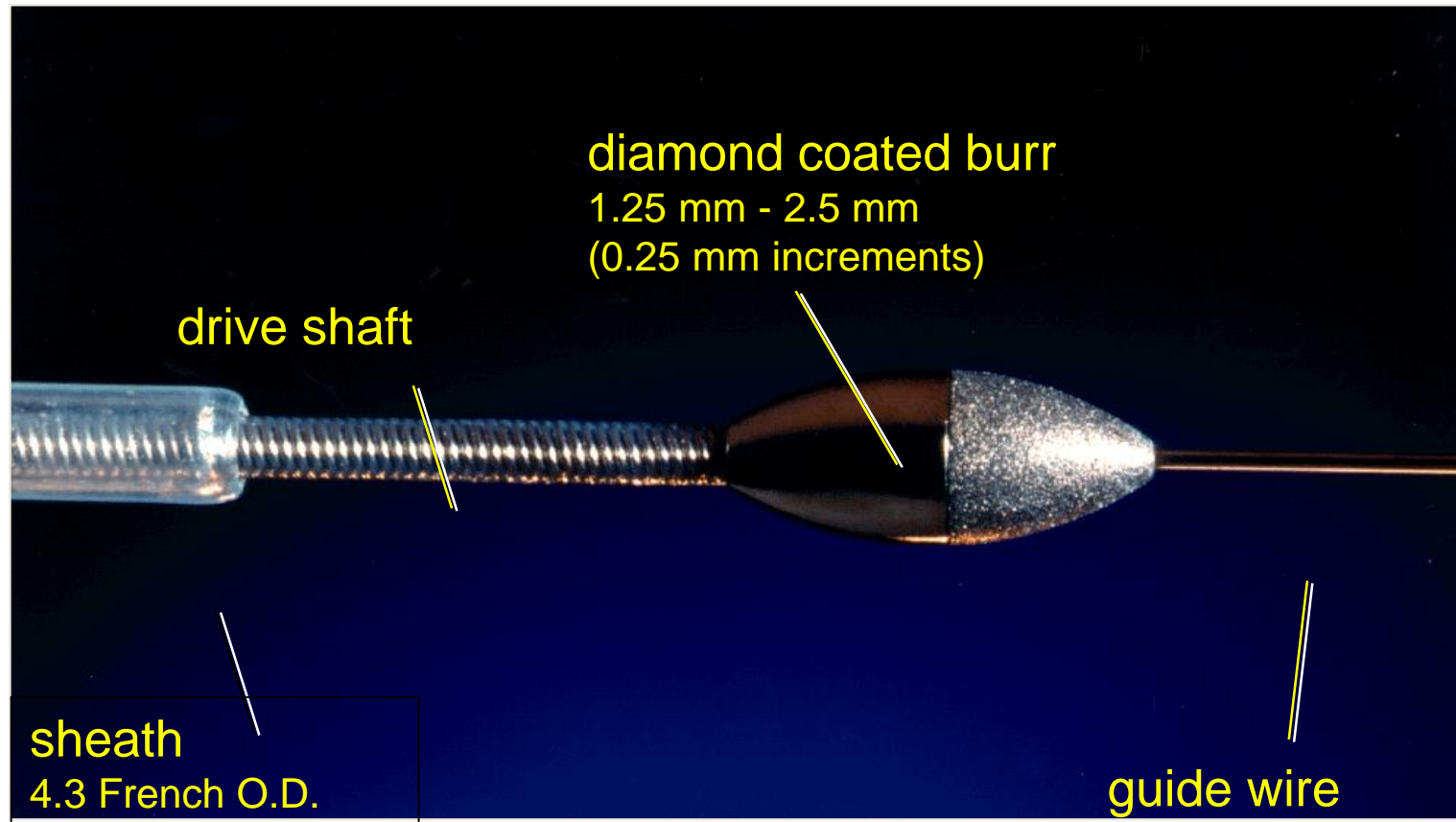
Flextome cutting balloon Boston Scientific

Scoring Balloon



AngioSculpt scoring balloon Biotronic

Rotační aterektomie (rotablance)



ČR 2018:



140 rota při 23799 PCI

26 rota při 1118 PCI

tj. 0,58%

tj. 2,32%

78Y F
0172-743/18-2
17.04.2018
10:57:35

Ž, 78 let
H, DM, HLP

AP CCS III

20.0 LAO
33.6 CAU
76.7 kV
829.0 mA

Velikost pixelu: 0.342 mm

W: 1023 L: 511

78Y F
0172-743/18-2
17.04.2018
10:57:35

14.5 LAO
35.2 CAU
76.4 kV
833.0 mA

Velikost pixelu: 0.342 mm

W: 1023 L: 511

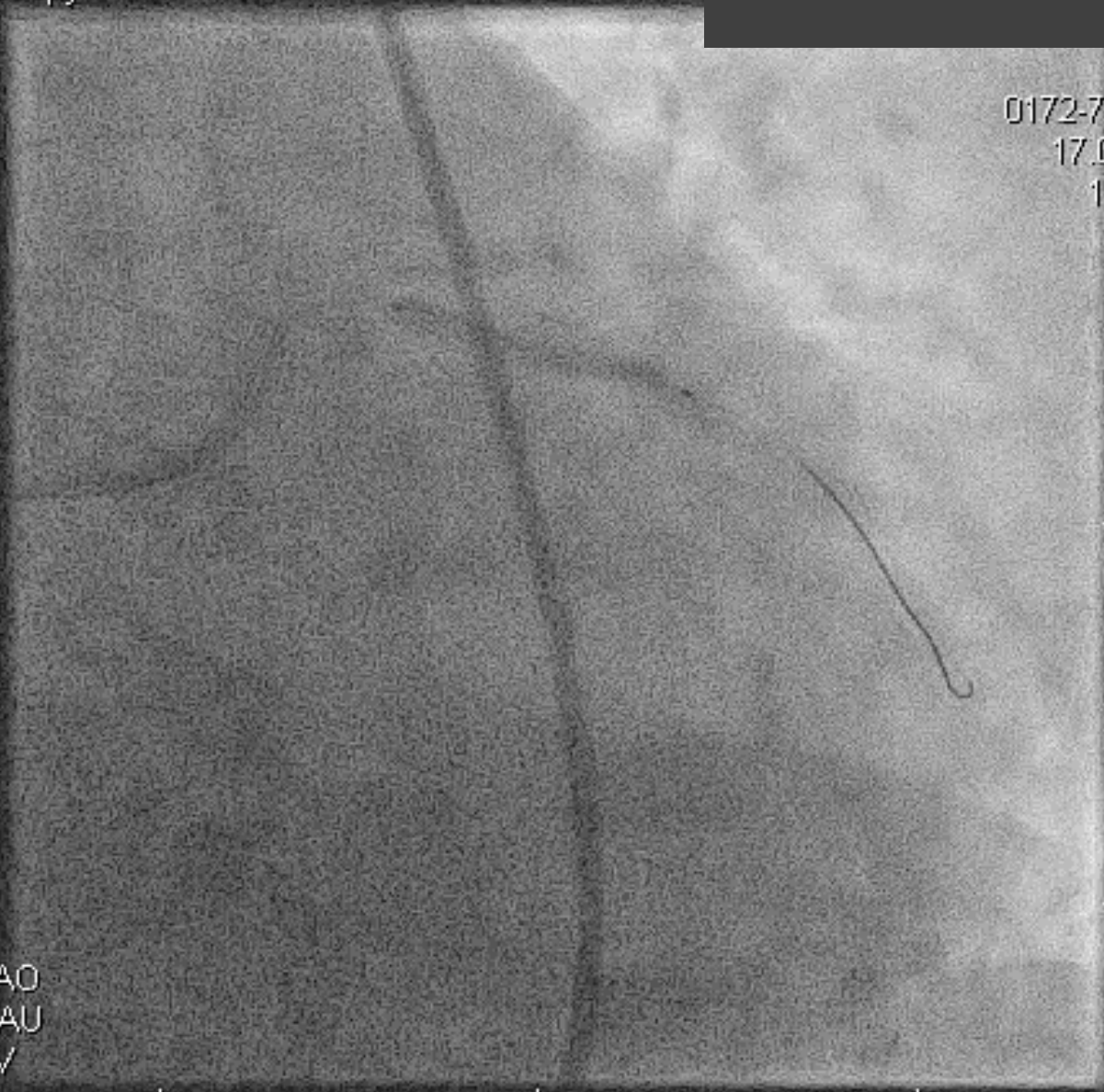


78Y F
0172-743/18-2
17.04.2018
10:57:35

15.7 LAO
34.1 CAU
98.6 kV
6.0 mA

Velikost pixelu: 0.342 mm

W: 1023 L: 511



78Y F
0172-743/18-2
17.04.2018
10:57:35

bez AP

15.7 LAO
34.1 CAU
80.0 kV
797.0 mA

Velikost pixelu: 0.342 mm

W: 1023 L: 511



ROTAPRO™

System pro rotační aterektomii

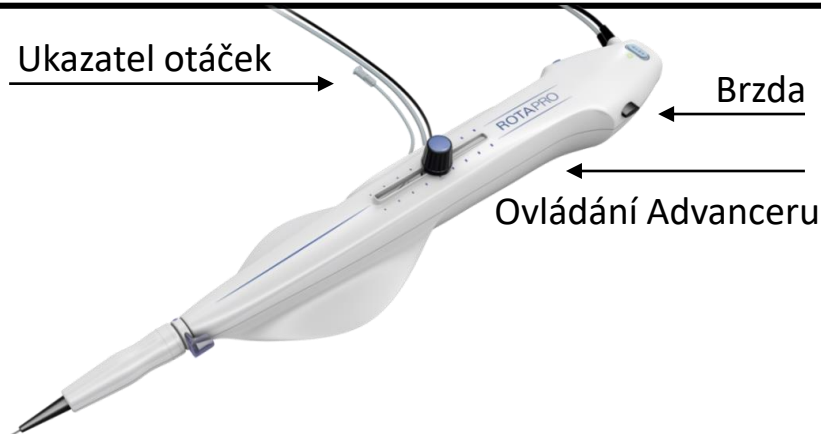


Ukazatel otáček
Digitální displej

Časovač

Nastavení otáček

Připojení jednorázového
setu ROTAPRO



Ukazatel otáček

Brzda

Ovládání Advanceru



ON/OFF tlačítko

Dynaglide
ON/OFF

Dynaglide

XA2/2
Fr: 1
Left Coro 15 fps Low

I.IKAK FN U SV. ANNY, BRNO CZ

67Y M
0172-232/19-3
28.02.2019
11:20:48

M, 67 let
Ao vada s grad. 42/22mmHg
AP CCS II
H, HLP, DM II

4.2 LAO
32.9 CRA
81.4 kV
762.0 mA
Velikost pixelu: 0.342 mm
W: 1023 L: 511

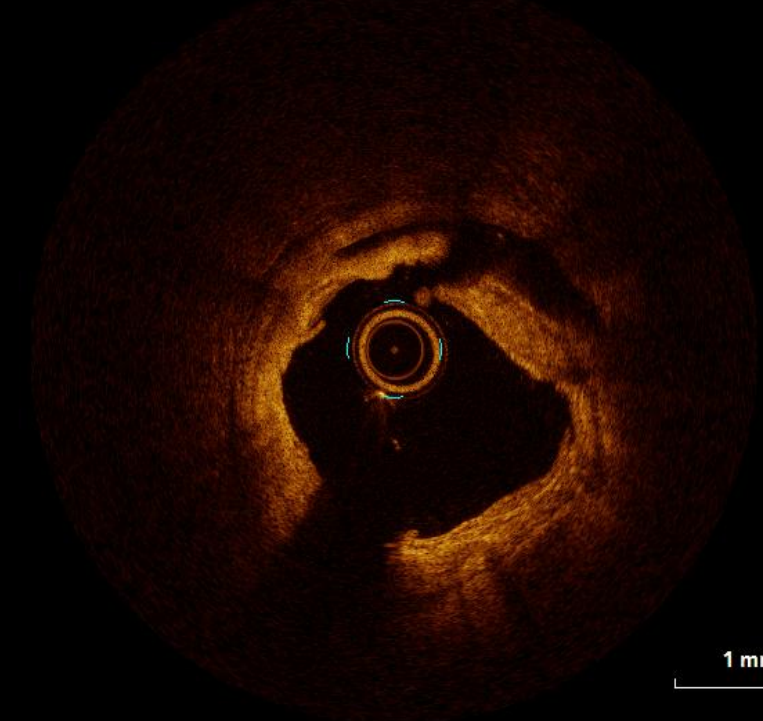
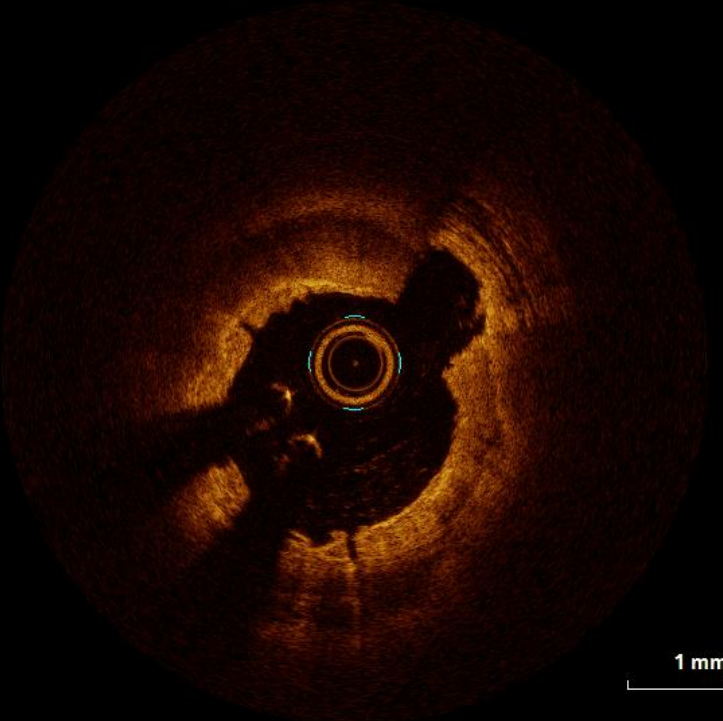
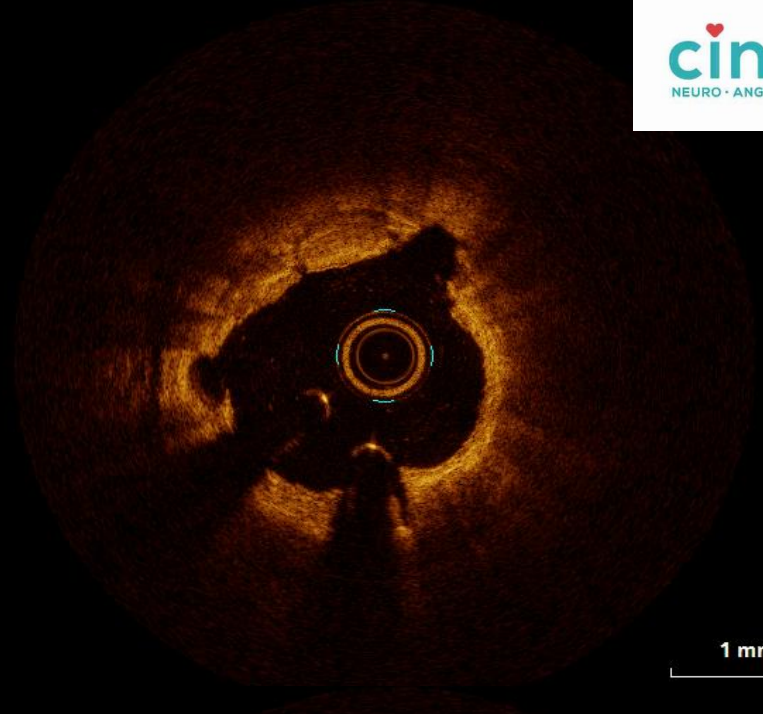
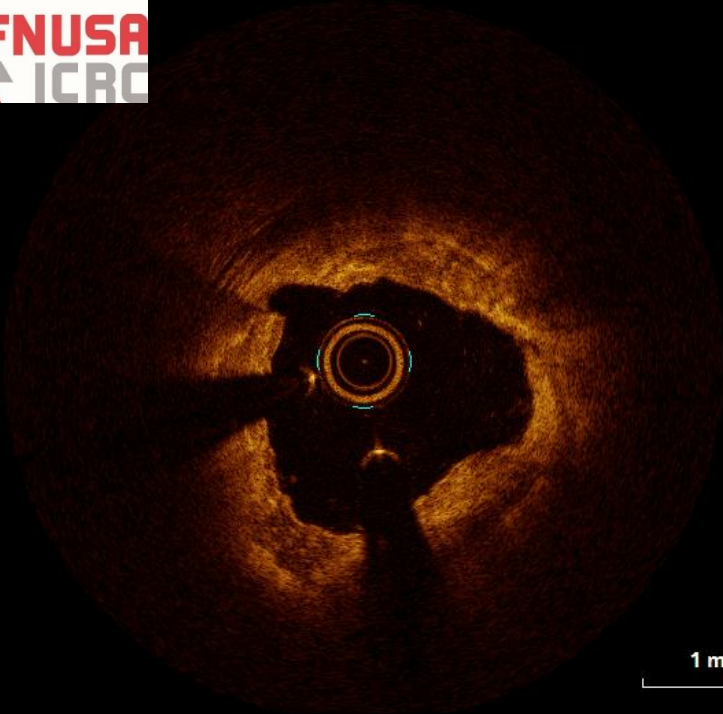
Shockwave lithotripsy



Výhody:
0,014 wire
Jednoduché
↓ Disekcí
↓ Perforací
↓ Slow flow

Nevýhody:
↓ zavedení
cena

DIAMETER (mm) 2.5, 3.0, 3.5, 4.0
 LENGTH (mm) 12
 GUIDEWIRE COMPATIBILITY (in) 0.014
 GUIDE CATHETER COMPATIBILITY 6F
 WORKING LENGTH (cm) 138
CROSSING PROFILE RANGE* (in) 0.044, +/-0.002
 PULSES (max) 80
 *0.043" max. for 2.5mm, 0.044" max for 3.0-3.5mm
 and 0.046" max. for 4.0mm



XAJ37/37

I.IKAK FN U SV. ANNY. BRNO CZ

Fr: 1

Left Coro 15 fps Low

67Y M
0172-232/19-3
26.02.2019
11:20:48

37.1 RAO

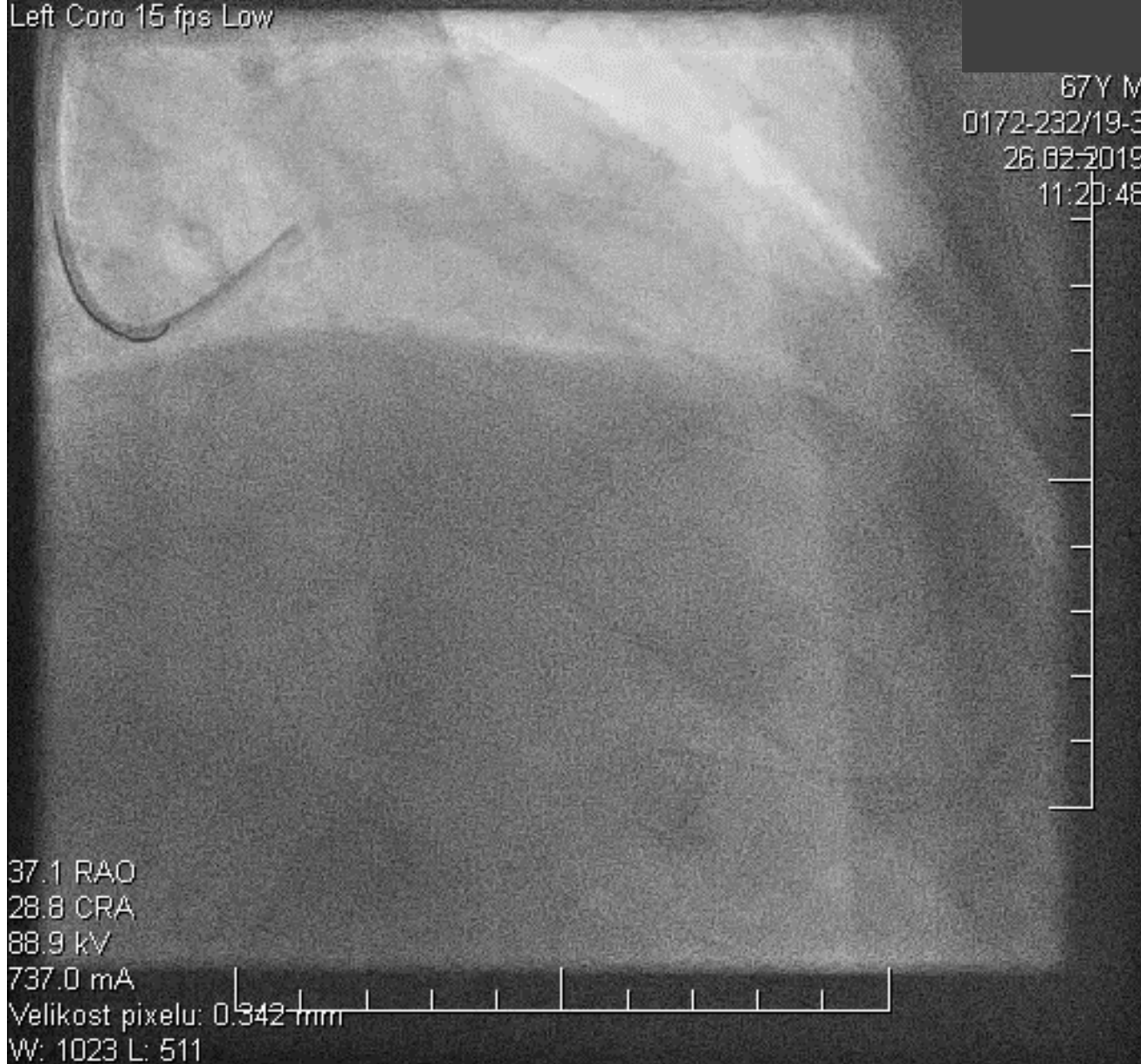
28.8 CRA

88.9 kV

737.0 mA

Velikost pixelu: 0.342 mm

W: 1023 L: 511



Orbitální aterektomie

Device Features

- Simple device setup
- Microsecond feedback to changes in loading
- 135cm usable length

0.012 Viper Wire

On-handle speed control

- Low (80K) and High Speed (120K)

Power on/off switch

- 8 cm axial travel

Electric motor powered handle

Eccentrically mounted diamond-coated crown

6Fr Guide Compatible Saline Sheath

Saline Infusion Pump

- Mounts directly on to an IV pole
- Provides power
- Delivers fluid
- Includes saline sensor

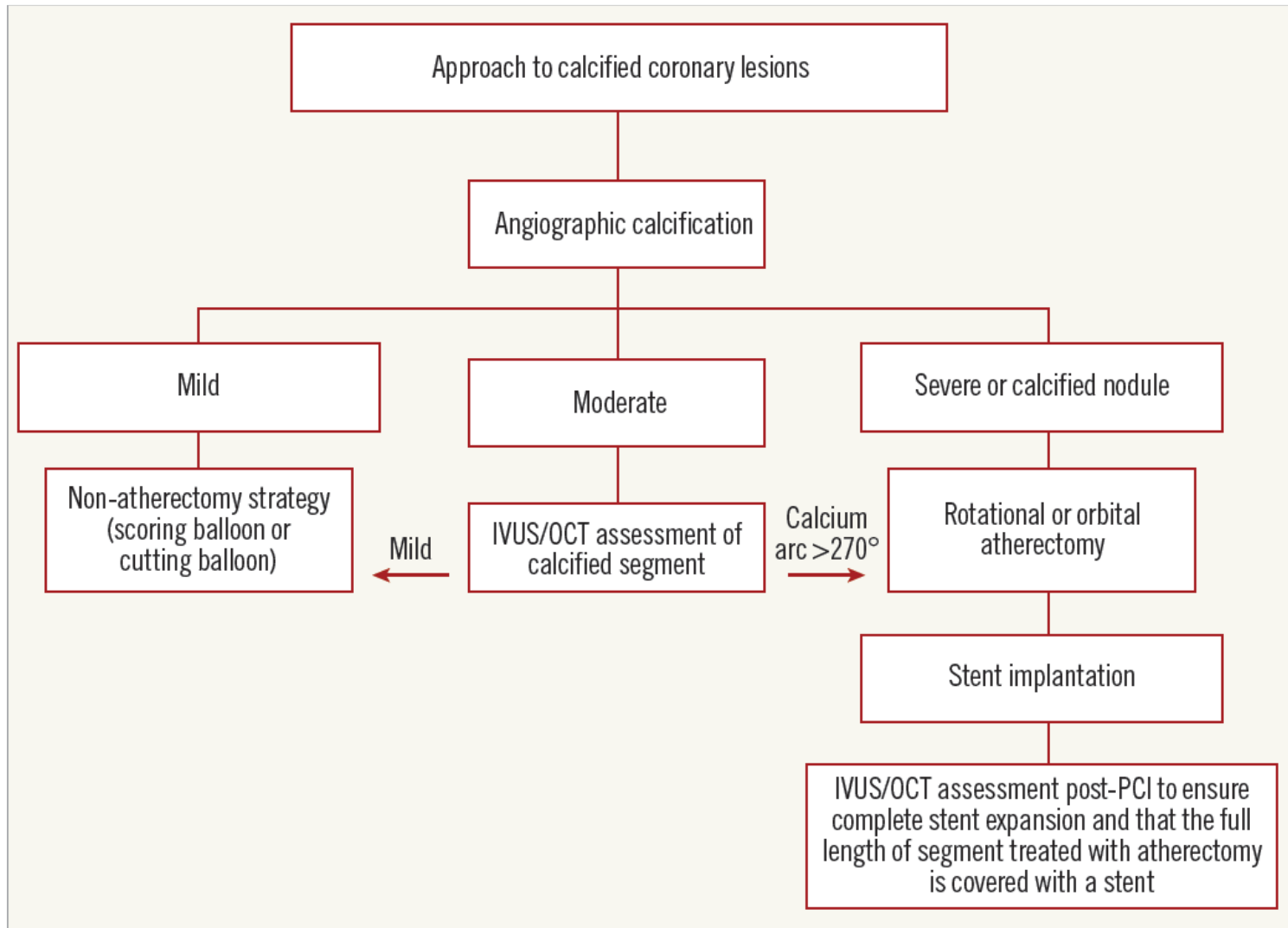
ViperSlide® Lubricant

- ViperSlide reduces friction during operation
- 20ml ViperSlide per liter of saline

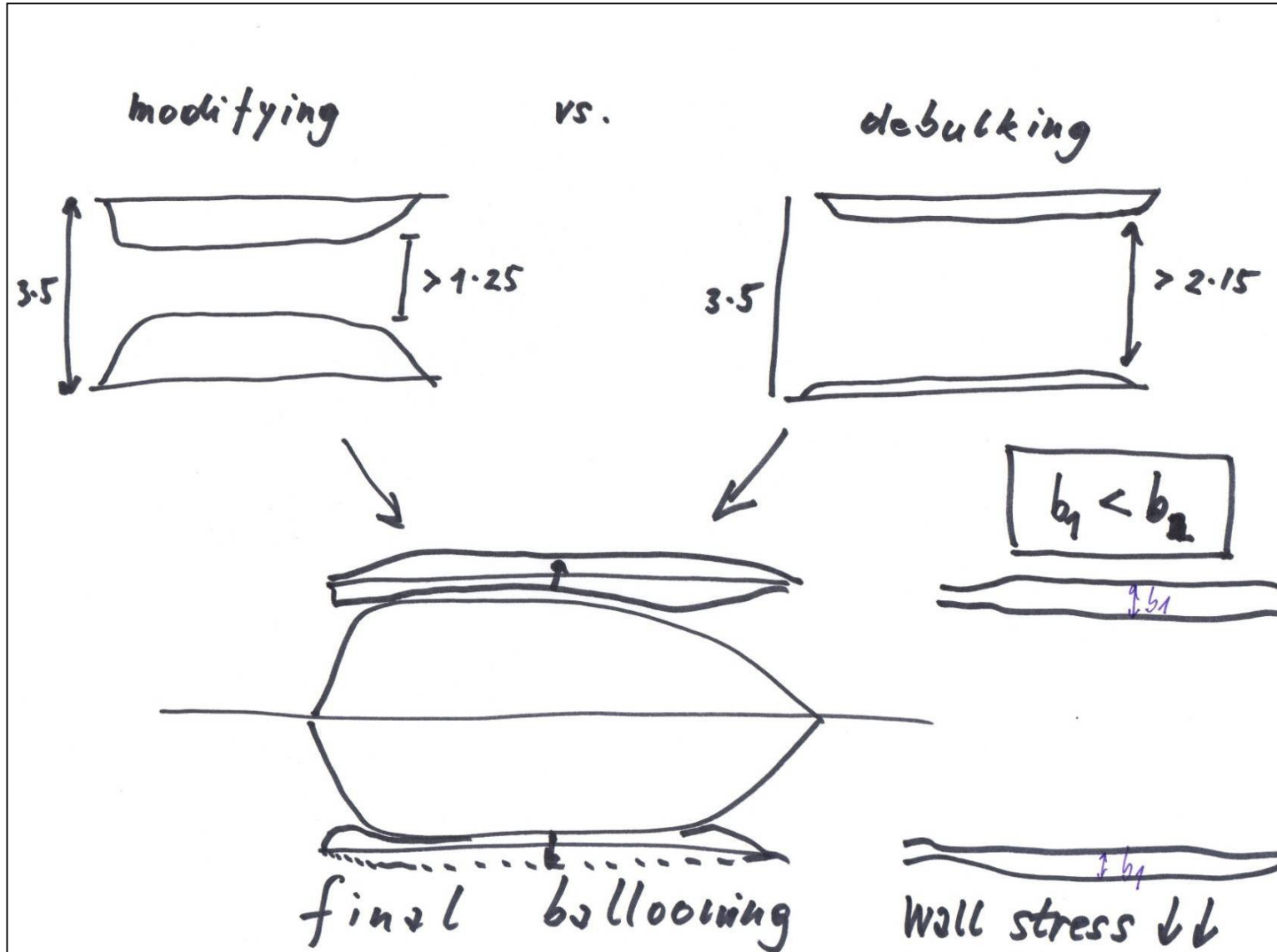
Závěr

- Kalcifikace komplikují PCI a zhoršují prognózu
- Precizní příprava tepny před implantací stentu
- Cutting, scoring katery – mírné kalcifikace
- Rotační aterektomie – kritické stenózy
- Intrakoronární lithotripsie – rezid. lumen
- Vysokotlaká NC dilatace
- IVUS/OCT

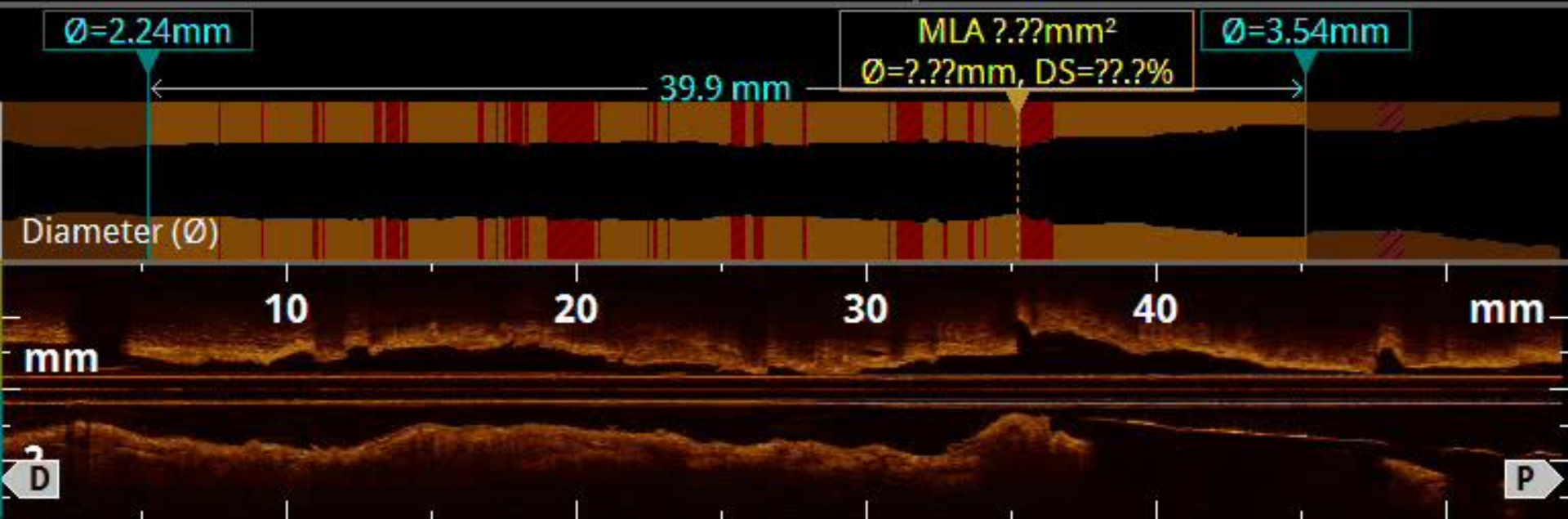
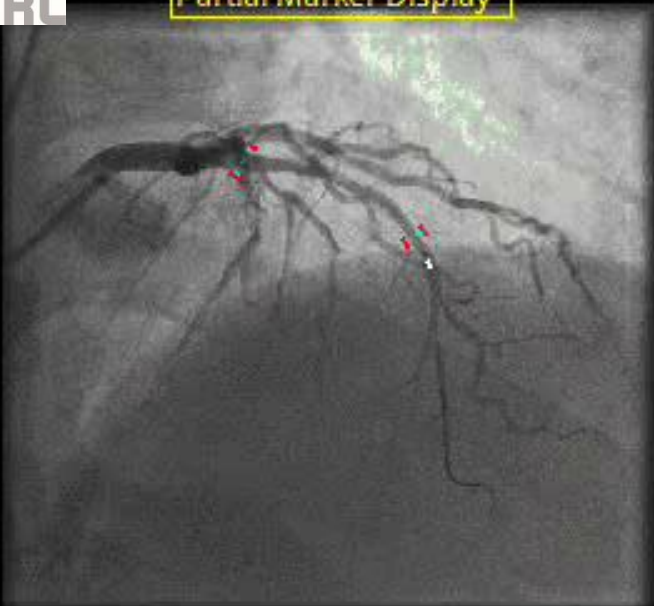
Kalcifikace a PCI

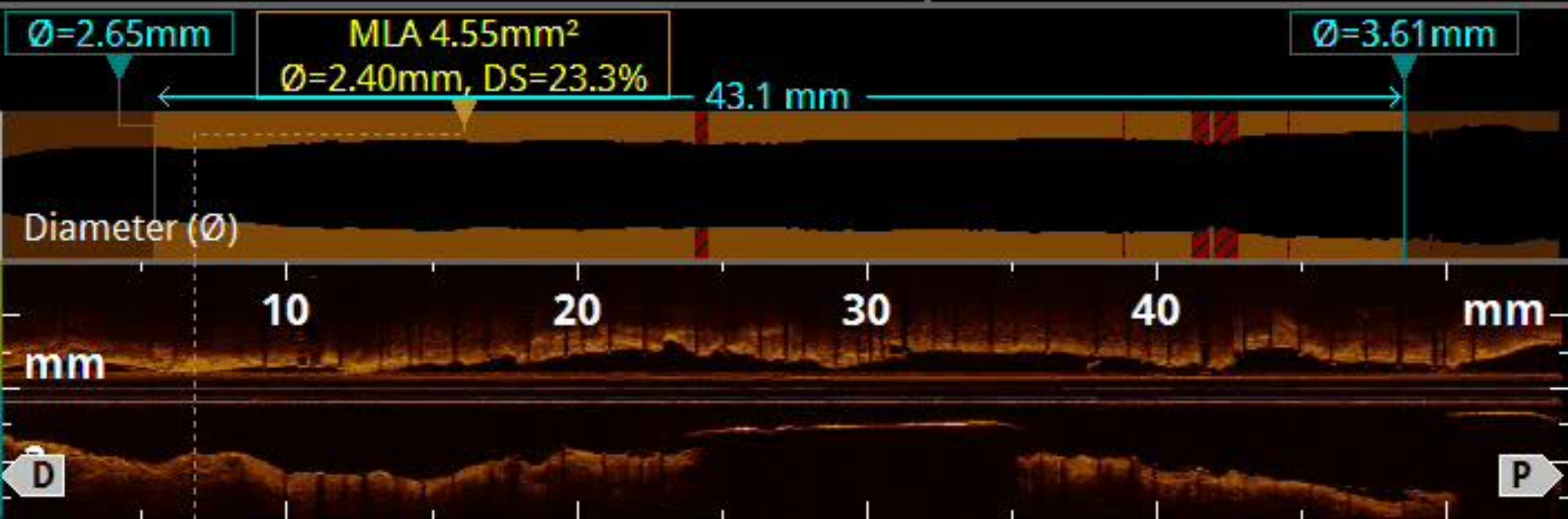
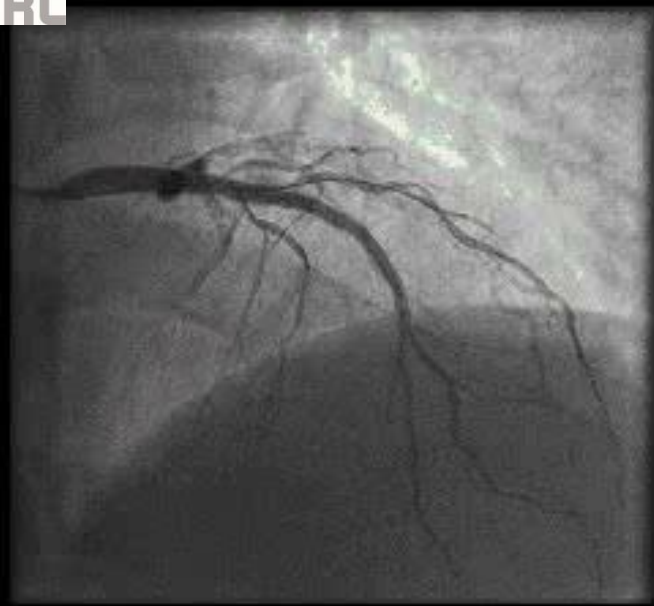


Rebirth of the Rotablator™



Partial Marker Display





Are there RCT's to show Rota-efficacy?

Question	trial	result
Rota > POBA ?	ERBAC	neg.
	CARAT	neg.
	DART	neg.
Rota > POBA before stenting?	SPORT [BMS]	neg.
	ROTAXUS [DES]	neutral/neg
Rota > POBA in BMS-ISR?	ARTIST	neg.

Is there any explanation for these trial failures?

study	recommended speed [krpm]	burr-to-artery ratio	balloon dilatation after Rota	pecking technique?	time of protocol generation
ERBAC	160 -180	0,58 ± 0,16	<4 bar	not known	1991
DART	180[burr <2,00] 160[burr =/> 2,00]	0,7 -0,9	< 1 bar, oversized	Y	1996
COBRA	160 -190	=/> 0,7	<4 bar	Y	1992
SPORT	140-170	0,65-0,75	no balloon afterdilatation	Y	1995
ROTAXUS	166 ± 9	0,48	afterdil, 13,6 ± 5,1 bar	Y	2004/5
ARTIST	160, later 140	>0,7	<6 bar, oversized	Y	1996

Recommendation about the technique by Boston-Scientific/FDA

- burr speed 160 – 180 krpm
- pecking technique
 - single burr technique possible
- temporary pacemaker mandatory, at least for interventions in the RCA or in a big Cx