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Reverse TAP versus DK Crush for Coronary Bifurcations

Interim analysis of the rTAP trial

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Potential conflicts of interest (1)

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☑ I do not have any potential conflict of interest to declare

Why this study?

- Bifurcation lesions are approximately 15-20% of PCIs and in up to 30% of procedures a 2-stent approach is required.
- Many techniques have been used. The double kissing (DK) crush technique is an established approach as has showed lower TVR compared to provisional stenting and Cullote technique
- We have recently described a modification of the TAP technique, the Reverse T – Stenting and Small Protrusion Technique (rTAP).
- The rTAP trial is a randomized, multicenter, clinical trial designed to compare the rTAP with the DK crush technique.

- **Our technique : reverse TAP technique**

  1st step : Predilate

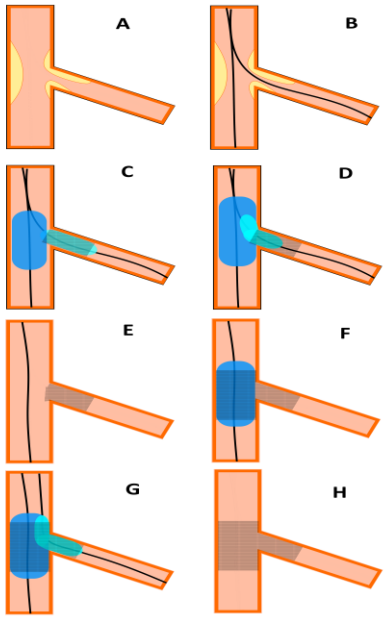
  2nd step: position the side branch stent mini protruded and main vessel balloon also

  3rd step: inflate stent and balloon simultaneously (kissing)

  4th step : Pull back half of the balloon of the sidebranch stent into the main vessel and do kissing again

  5th step : Remove side branch wire , position and inflate main vessel stent

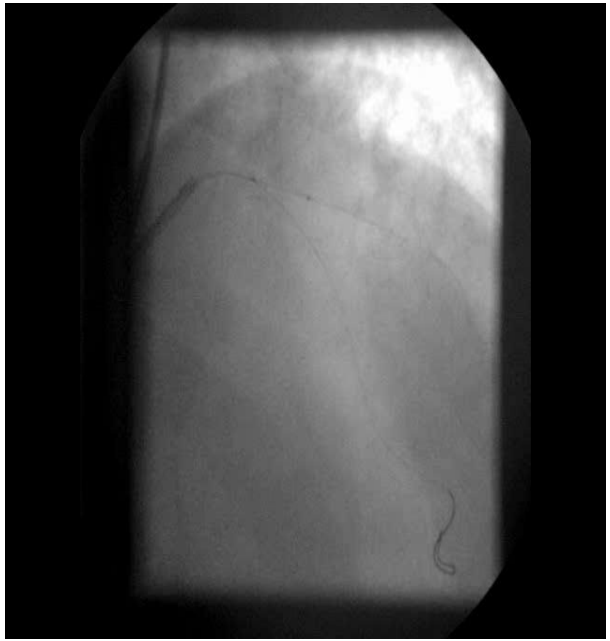
  6th step : Rewire side branch and do final kissing

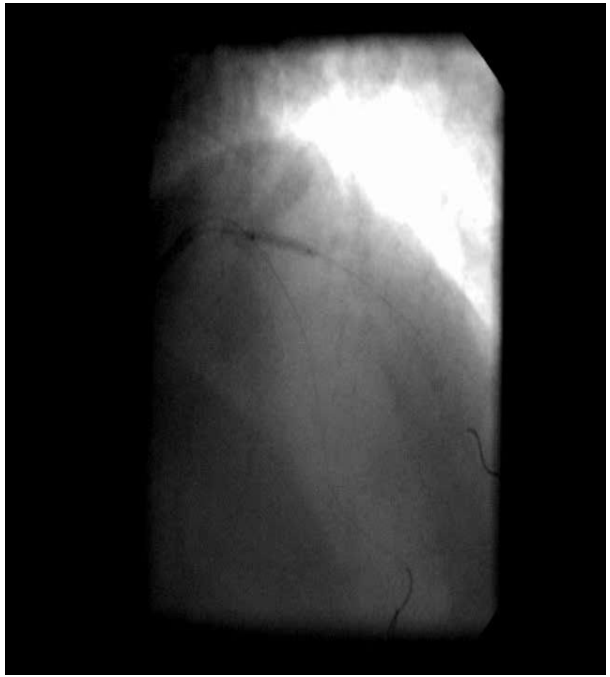


Our technique : reverse TAP technique

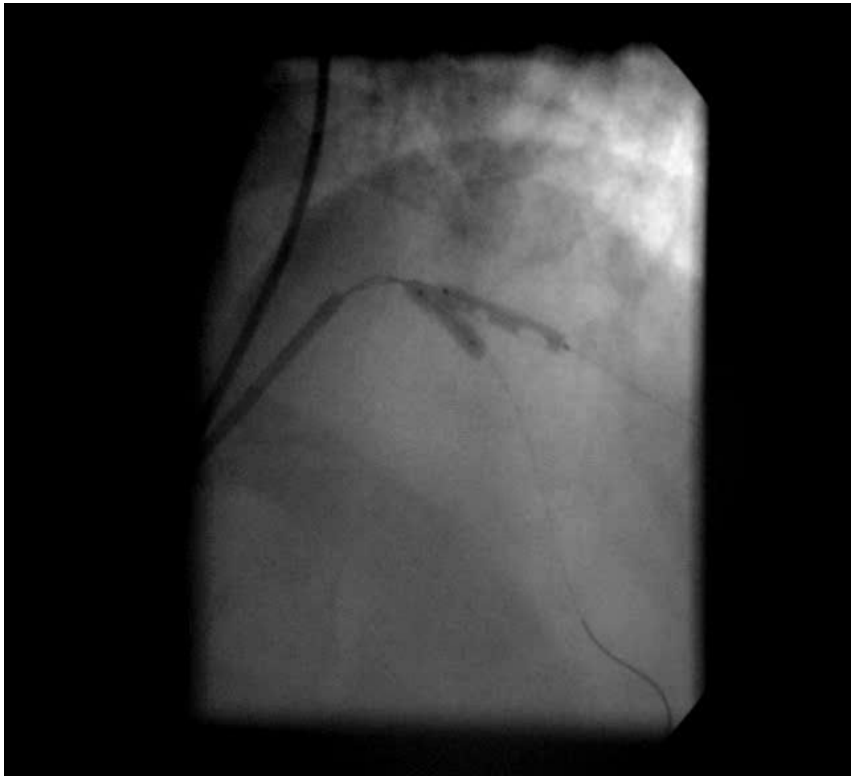
1st step : Predilate and

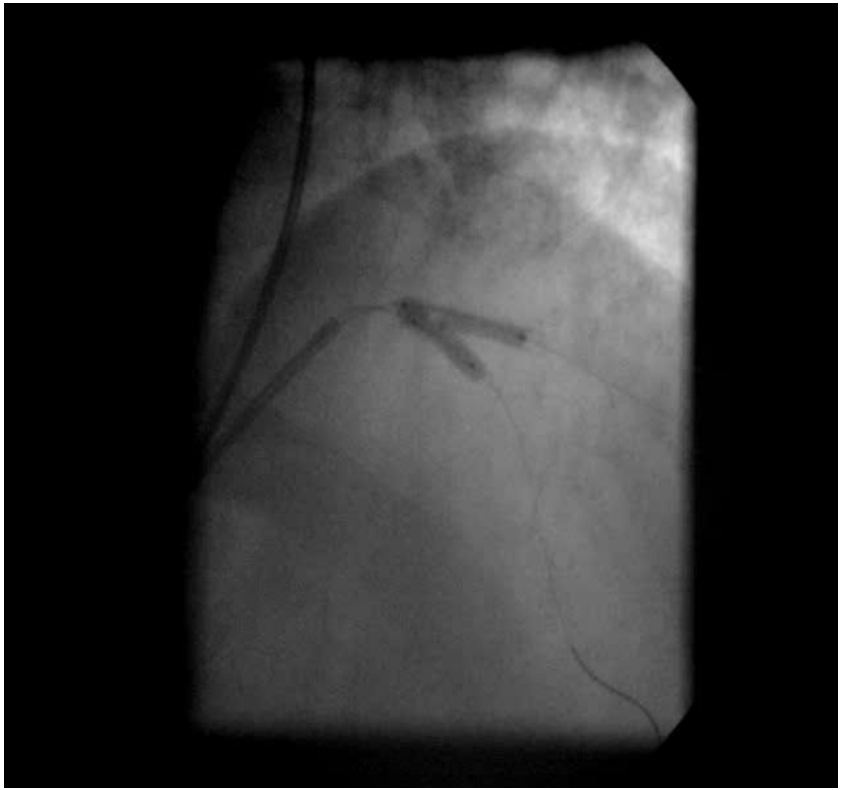
2nd step: position the side branch stent mini protruded and main vessel balloon also



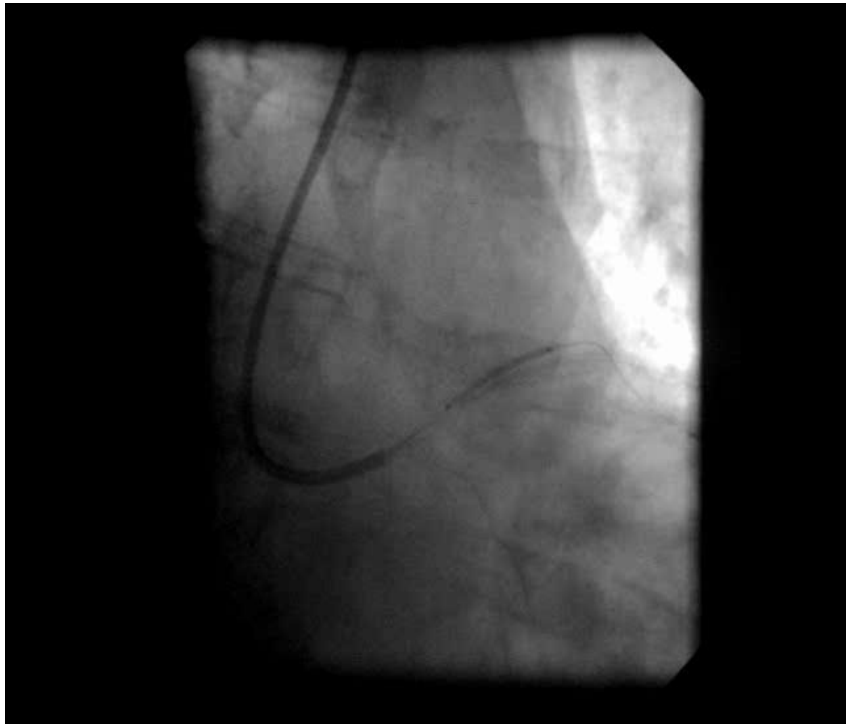


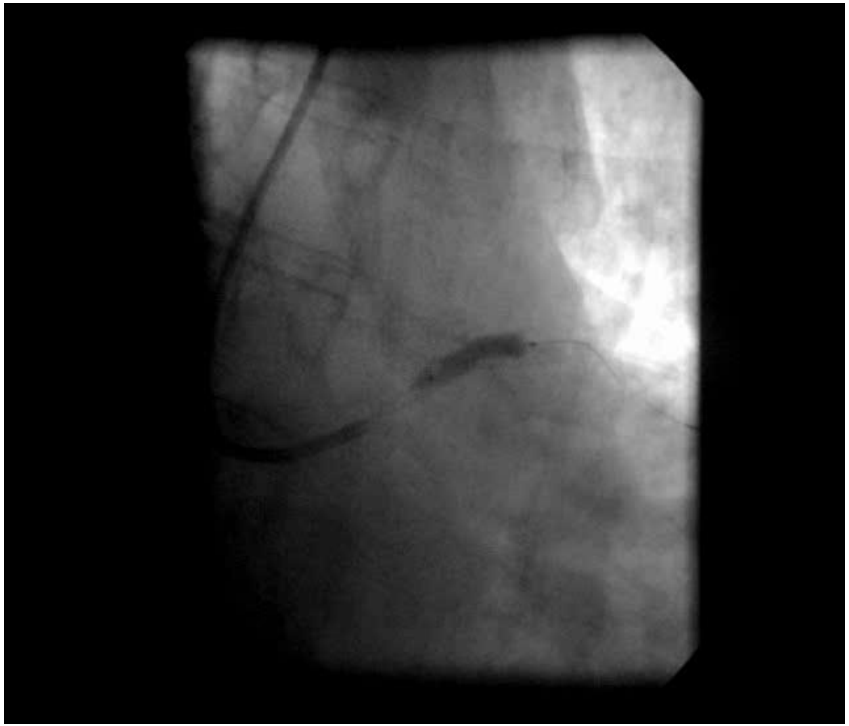
3rd step : inflate stent and baloon and do kissing
4th step : Pull back half of the baloon of the sidebranch stent into the main vessel and do kissing again



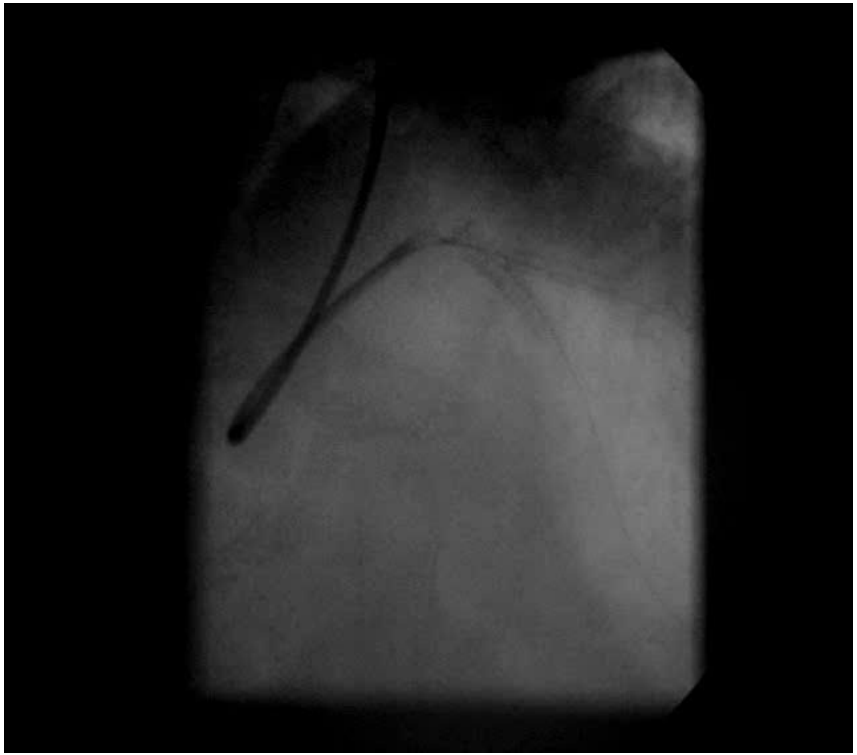


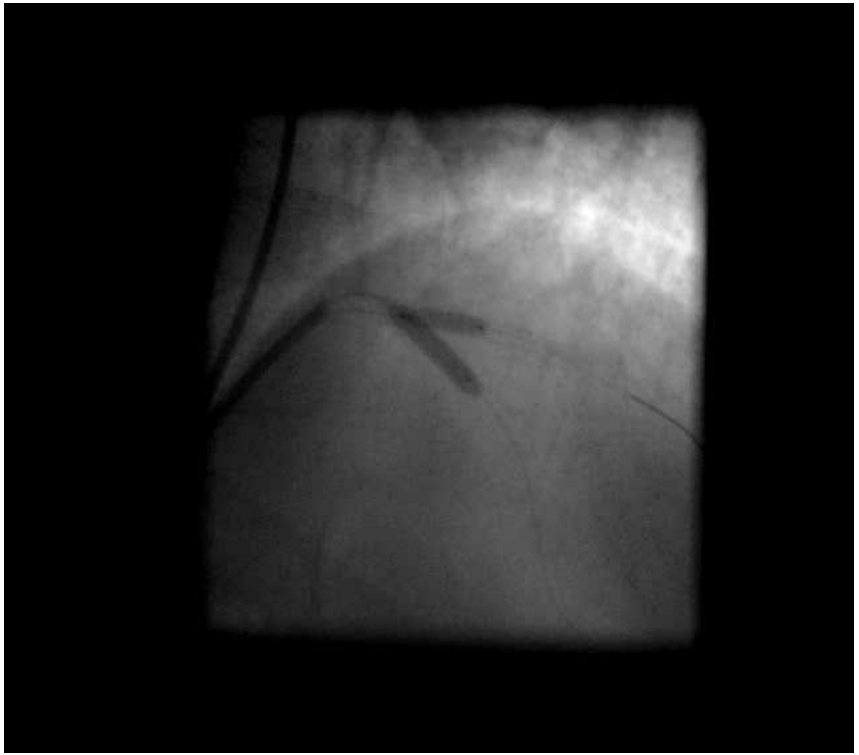
5th step: Remove side branch wire , position and inflate main vessel stent



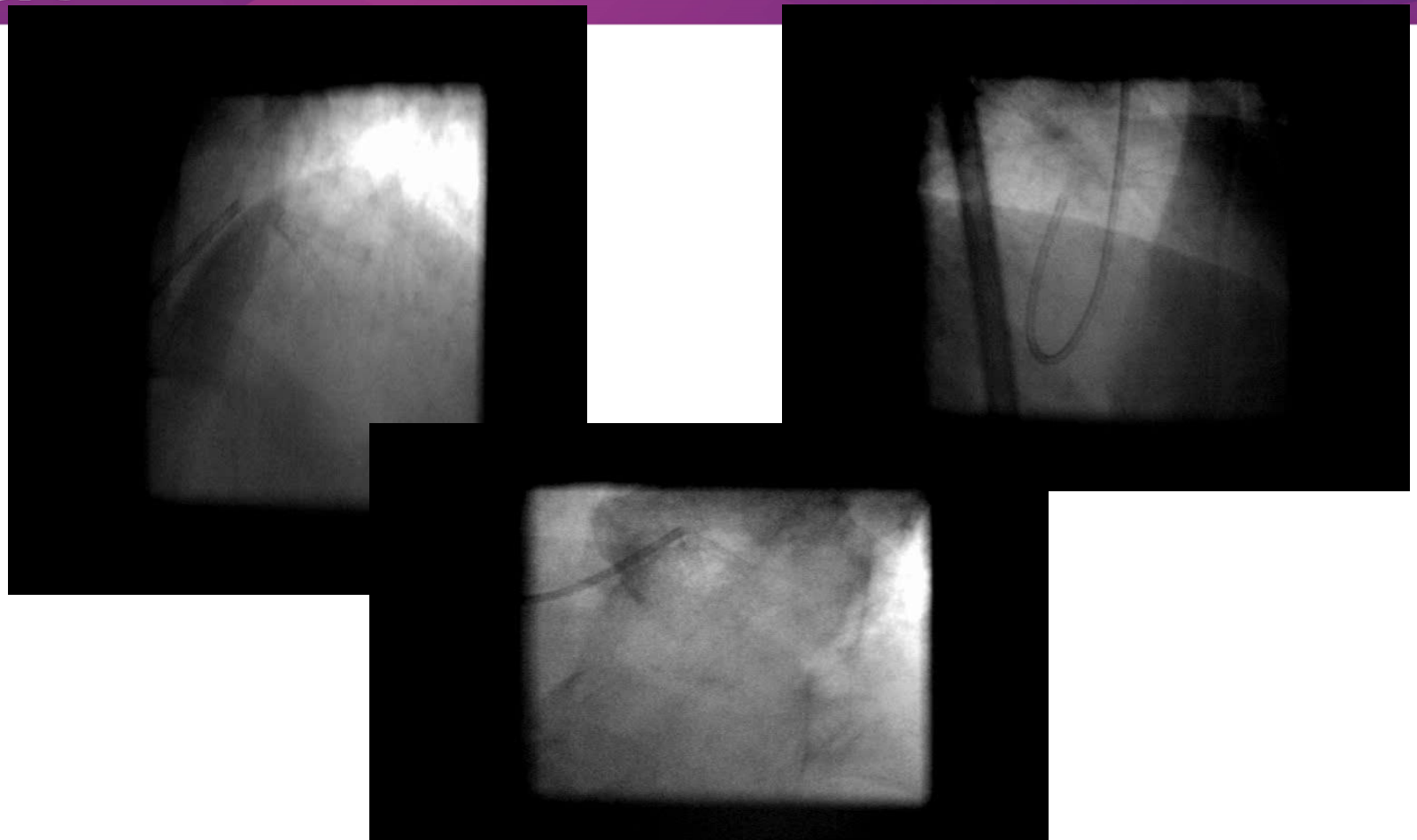


6th step: Rewire side branch and do kissing





Final result



Advantages of r-TAP technique

- Simple and quick
- Eliminates possibility of protruding struts in the main vessel
- No jailed wire
- Two stents in bifurcation lesion with 6fr catheter
- Easily positioning stents-no passing through struts
- The plan of the technique is first stenting the side branch fully covering the ostium and then stenting the main vessel

Model from bench testing

What did we study?

- Patients with bifurcation lesions amenable to PCI are randomly assigned to a rTAP or a DK crush procedure.
- Clinical follow-up visits are performed at 1, 6, 8, and 12 months. Follow-up coronary angiography is performed at 8 months after the index procedure.
- The primary endpoint of the study is restenosis at the SB at 8 months following the index procedure.
- Secondary endpoints are total and net [engagement of guide cath to final kissing balloon] fluoroscopy and procedural time, and the occurrence of major adverse cardiac events at 12 months, including cardiac death, myocardial infarction, or target vessel revascularization.
- During a period of 10 months, 32 patients (of total sample size of 136 pts required) have been enrolled in the trial; 17 patients in the rTAP group and 15 patients in the DK group.

Patient Characteristics

	rTAP	DK-Crush	P
	n=17	n=15	
Male	12 (70.6%)	13 (86.7%)	0.402
Age	65.4±9.6	65.2±9.8	0.951
Diabetes	8 (47.1%)	10 (66.7%)	0.308
Hypertension	14 (82.4%)	8 (53.3%)	0.128
Dyslipidemia	16 (94.1%)	11 (73.3%)	0.161
Current smoking	7 (41.2%)	4 (26.7%)	0.472
Previous MI	4 (23.5%)	7 (46.7%)	0.365
Previous CABG	0 (0%)	1 (6.7%)	0.469
Indication for PCI			
Stable angina	4 (23.5%)	6 (40%)	0.397
Unstable angina	3 (17.6%)	3 (20%)	
NSTEMI	9 (52.9%)	6 (40%)	
STEMI	1 (5.9%)	0 (0%)	
P2Y12 inhibitor treatment			
Clopidogrel	6 (35.3%)	7 (46.7%)	0.659
Ticagrelor	9 (52.9%)	7 (46.7%)	
Prasugrel	2 (11.8%)	1 (6.7%)	

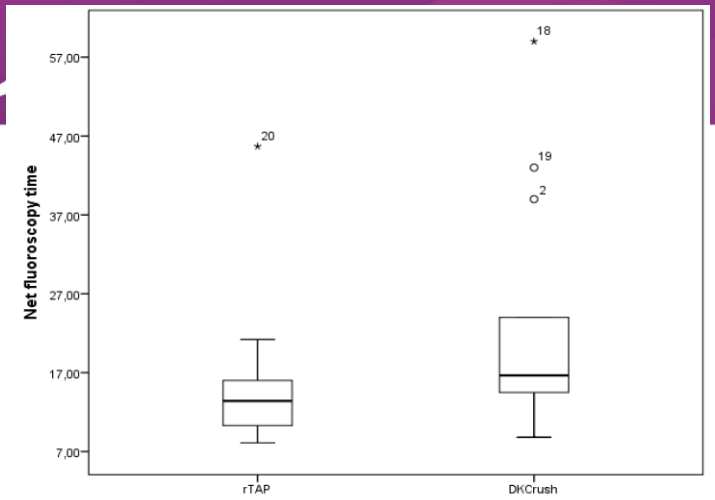
Angiographic Characteristics

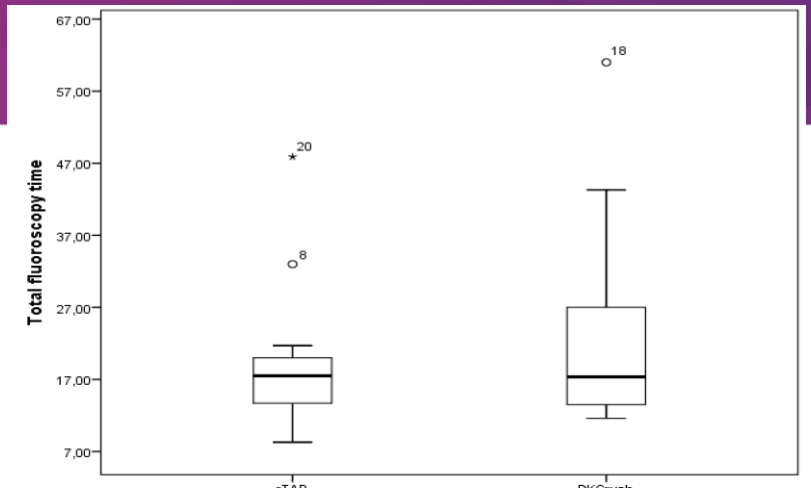
	rTAP	DK-Crush	P
	n=17	n=15	
Access site			
Radial	17 (100%)	16 (93.3%)	0.469
Femoral	0 (0%)	1 (6.7%)	
CAD extent			
1-vessel disease	5 (29.4%)	4 (26.7%)	0.827
2-vessel disease	9 (52.9%)	7 (46.7%)	
3-vessel disease	3 (17.6%)	4 (26.7%)	
Bifurcation site			
LAD-LCx	2 (11.8%)	2 (13.3%)	0.950
LAD_Diag	9 (52.9%)	9 (60%)	
LCx-OM	4 (23.5%)	3 (20%)	
RCA-RPDA	2 (11.8%)	1 (6.7%)	
Medina classification			
0:1:1	0 (0%)	3 (20%)	0.153
1:0:1	3 (17.6%)	2 (13.3%)	
1:1:1	14 (82.4%)	10 (66.7%)	
Total Number of Balloons used	3.6±1.4	5.2±2.0	0.018
Total Number of Stents used	2.5±0.8	2.5±0.5	0.894
MV stent diameter (mm)	3.03±0.45	3.12±0.44	0.632
MV stent length (mm)	23.5±4.6	23.5±6.5	0.973
SB stent diameter (mm)	2.65±0.39	2.67±0.29	0.835
SB stent length (mm)	16.9±6.1	22.0±6.1	0.029

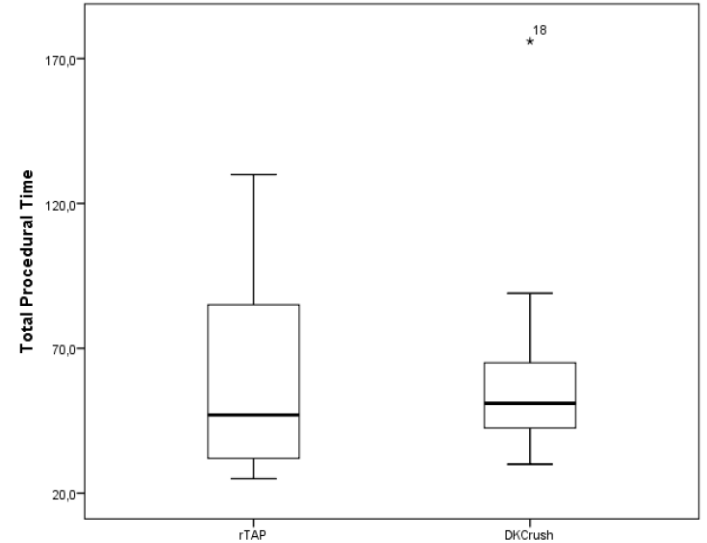
What are the essential results?

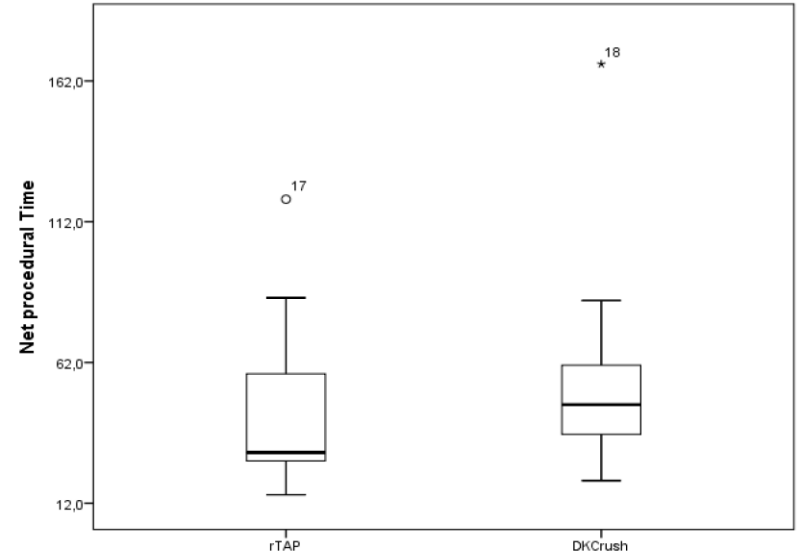
	rTAP	DK-Crush	P
	n=17	n=15	
In-hospital			
Cardiac death	0	0	
Emergency CABG	0	1	
30-day follow-up			
Cardiac death	0	0	
MI	0	0	
TVR	0	0	
TLR	0	0	
8-month clinical follow-up			
Cardiac death	0	0	
MI	0	0	
TVR	0	0	
TLR	0	0	
Angiographic follow-up with QCA (15 patients available)			
Main vessel			
PostPCI RVD (mm)	2.81±0.43	3.09±0.42	0.239
PostPCI MLD (mm)	2.71±0.43	2.98±0.45	0.272
Acute Gain (mm)	1.54±0.24	1.69±0.26	0.257
Follow-up MLD (mm)	2.44±0.40	2.65±0.39	0.321
Late Lumen Loss	0.28±0.07	0.33±0.10	0.272
Side-branch			
PostPCI MLD (mm)	2.51±0.52	2.47±0.17	0.820
Acute Gain (mm)	1.43±0.29	1.41±0.10	0.864
Follow-up MLD (mm)	2.31±0.46	2.28±0.18	0.849
Late Lumen Loss	0.20±0.09	0.19±0.07	0.799

- Total and net procedural time, as well as total and net fluoroscopy time, were lower in the rTAP group, albeit the differences were not statistically significant (58.8±33.3 vs. 61.1±35.3, p=0.545; 46.0±29.1 vs. 54.9±35.3, p=0.281; 18.8±9.3 vs. 23.5±14.8, p=0.706; 15.3±8.7 vs. 22.5±14.5, p=0.054; respectively).


Net fluoroscopy time
57,00
47,00
37,00
27,00
17,00
7,00
18
20
19
2
rTAP
DKCrush


Total fluoroscopy time
67,00
57,00
47,00
37,00
27,00
17,00
7,00
18
20
8


Total Procedural Time
170,0
120,0
70,0
20,0
18
rTAP
DKCrush


Net procedural Time
162,0
112,0
62,0
12,0
18
17
rTAP
DKCrush

Why is this important?

- Initial results of the rTAP trial suggest that the technique is equally effective with the DK crush technique, with a trend for lower procedural and fluoroscopy times.
- Statistical significance may be accomplished after the final enrollment of acquired sample size of pts

The essentials to remember

- **These are the first results in the r-TAP trial comparing the Reverse TAP technique with DK Crush technique for bifurcation lesions**
- **Less time and less complexity for our technique with no differences in initial angiographic results in follow up (8 months) suggest that may be equally effective and simpler in sellected patients that need two-stent technique.**
- **Waiting for final results after enrollement of the estimated sample size**

acknowledgments

to..

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