



**INSTITUT  
CARDIOVASCULAIRE  
PARIS  
SUD**

# **TAVI, how minimalist can we become ?**

**Thierry Lefèvre and the ICPS team**

# Compassionate use for the 1st case

**Cardiogenic shock , surgery denied**





## Indications for intervention in aortic stenosis and recommendations for the choice of intervention mode *(continued)*



Recommendations	Class	Level
In patients who are at increased surgical risk (STS or EuroSCORE II $\geq 4\%$ or logistic EuroSCORE I $\geq 10\%$ or other risk factors not included in these scores such as frailty, porcelain aorta, sequelae of chest radiation), the decision between SAVR and TAVI should be made by the Heart Team according to the individual patient characteristics (see according table), with TAVI being favoured in elderly patients suitable for transfemoral access.	I	B

Simplicity  
is the ultimate  
sophistication

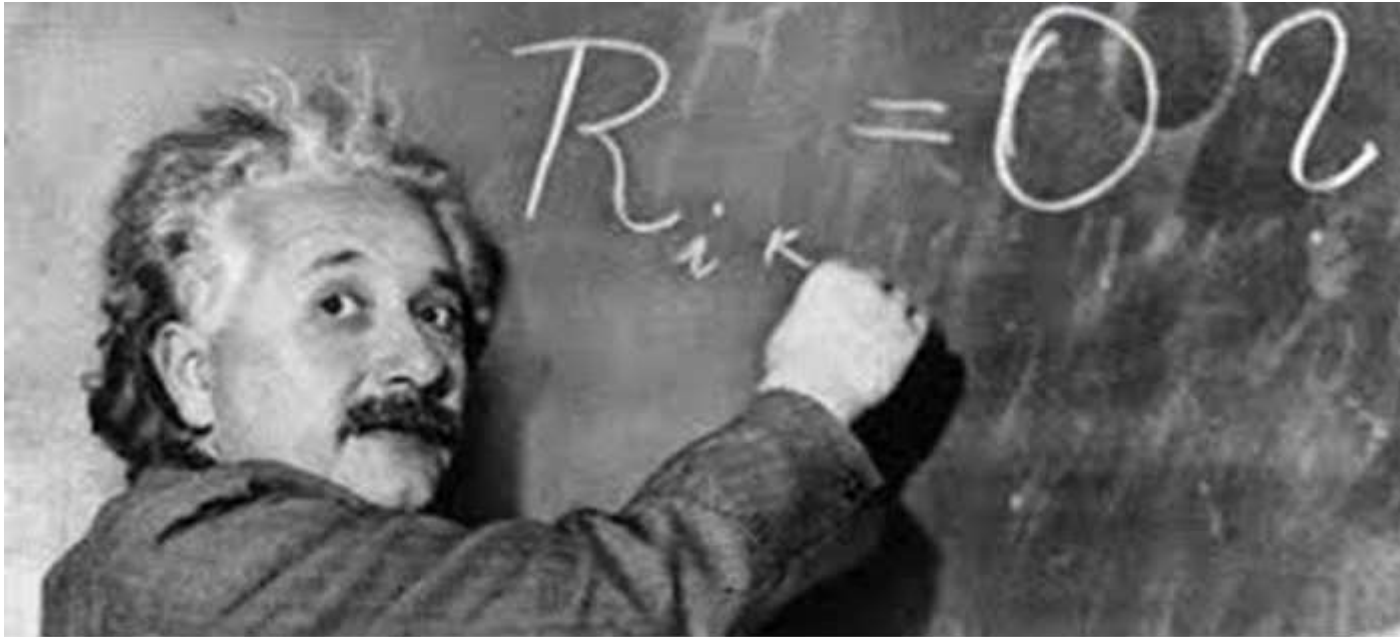
*di Leonardo da Vinci*





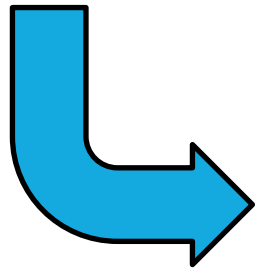
**Everything should be made as simple as possible ...**

**But not simpler**



# General anesthesia

- ✓ Hemodynamic instability
- ✓ Late stroke identification
- ✓ Pulmonary infection
- ✓ Difficult extubation
- ✓ Prolonged ICU and hospital stay

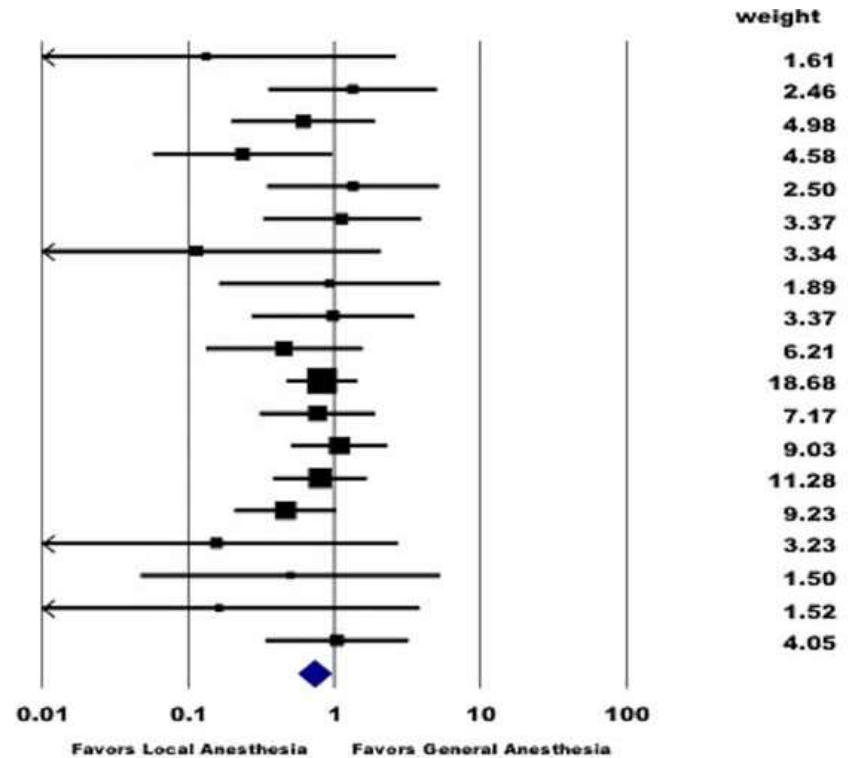


Conscious sedation (April 2009)

# Conscious sedation vs General anesthesia

## 30 day death

	ratio	limit	limit	Anesthesia	Anesthesia
Behan	0.13	0.01	2.63	0 / 9	1 / 3
Dehedin	1.34	0.35	5.05	3 / 34	6 / 91
Bergmann	0.61	0.20	1.91	6 / 100	5 / 51
Ben-Dor	0.24	0.06	0.97	3 / 70	4 / 22
Motloch	1.34	0.35	5.21	5 / 41	3 / 33
Yamamoto	1.13	0.33	3.91	10 / 130	3 / 44
Babaliaros	0.11	0.01	2.08	0 / 70	4 / 72
Balanika	0.93	0.16	5.30	2 / 41	3 / 57
Attizzani	0.98	0.27	3.55	5 / 116	4 / 91
Gauthier	0.45	0.13	1.57	3 / 66	11 / 110
Petronio	0.83	0.47	1.44	38 / 961	17 / 355
Kesimci	0.77	0.31	1.91	7 / 72	10 / 79
Brecker	1.08	0.50	2.33	13 / 245	12 / 245
D'Errigo	0.80	0.38	1.68	12 / 310	15 / 310
Kiramijyan	0.46	0.21	1.04	23 / 467	7 / 66
Jabbar	0.16	0.01	2.73	0 / 71	6 / 145
Miles	0.50	0.05	5.32	1 / 44	2 / 44
Palermo	0.16	0.01	3.84	0 / 44	1 / 21
Debry	1.04	0.34	3.23	4 / 52	9 / 122
	0.73	0.57	0.93	135 / 2943	123 / 1961

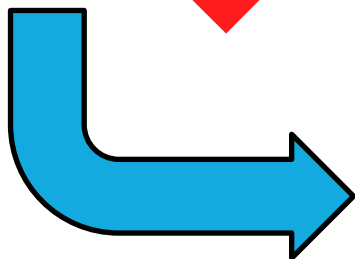


Heterogeneity: Tau<sup>2</sup>=0.00; Chi<sup>2</sup>= 13.1, df= 18, P=.78; I<sup>2</sup>= 0%  
 Test for overall effect: Z= -2.50 (P=.01)

B

# Too much monitoring

- ✓ Urinary catheter
- ✓ Jugular or subclavian vein
- ✓ Radial artery monitoring
- ✓ TEE



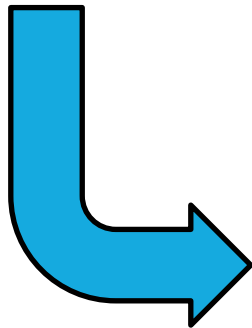
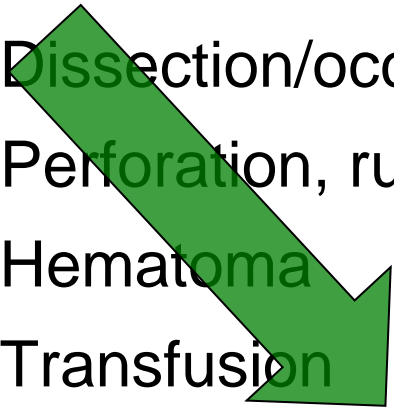
TTE (April 2009)

2 venous lines (April 2009, 1 basilic)



# Main access site complications

- ✓ Dissection/occlusion
- ✓ Perforation, rupture
- ✓ Hematoma
- ✓ Transfusion



Better pre-procedural screening

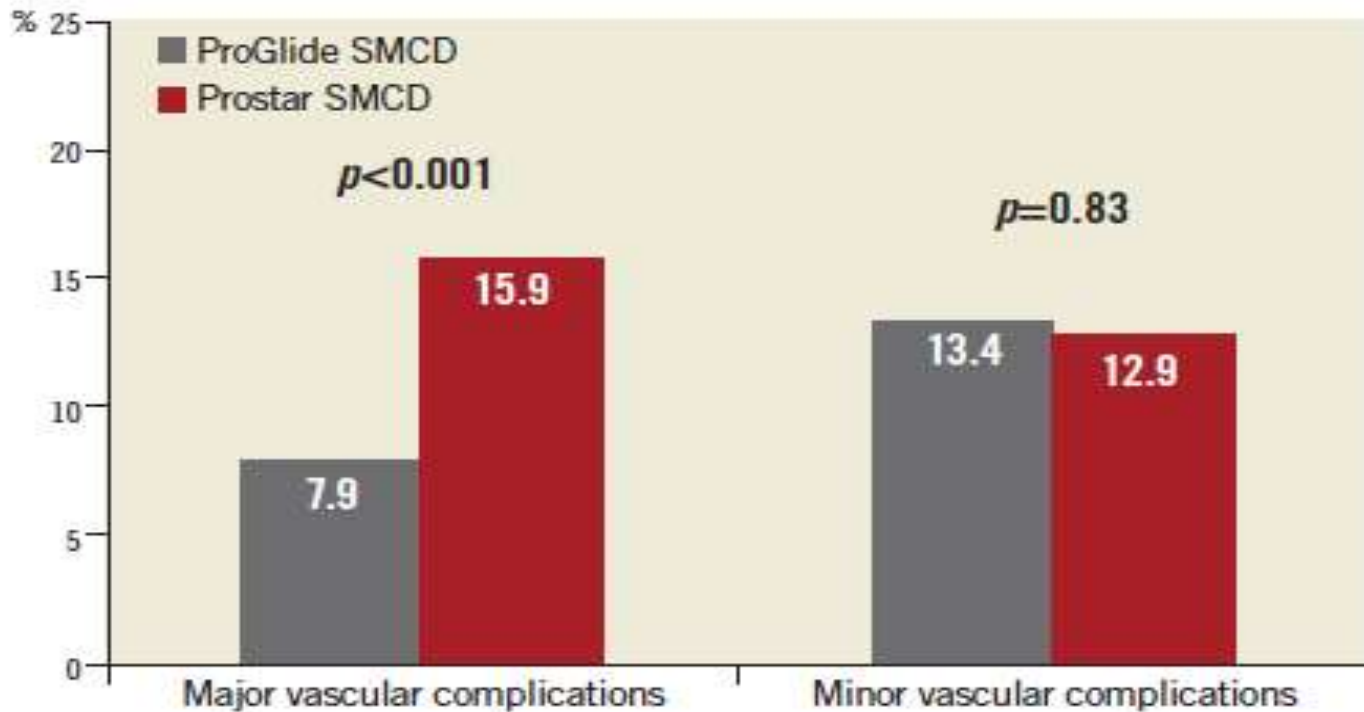
Prostar (2009)

Preclosing with Two Proglide (2015)

Downsizing from 24Fr to 14Fr

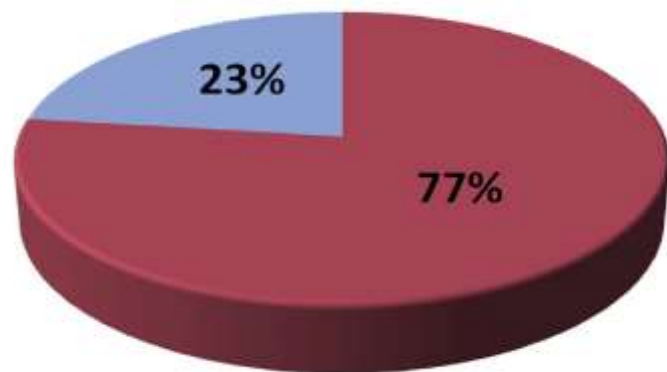
Peripheral interventions toolbox

# Proglide vs Prostar

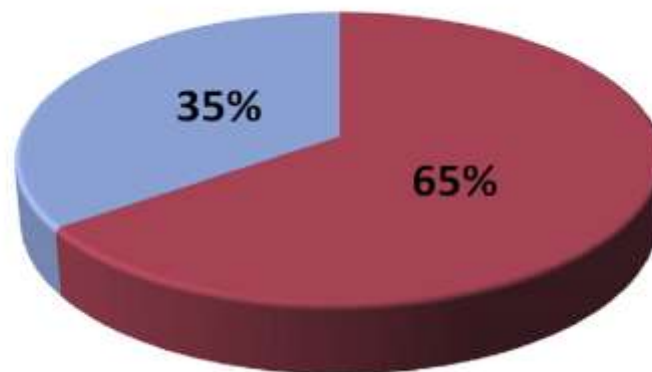




# Access site complications

**All vascular complications**



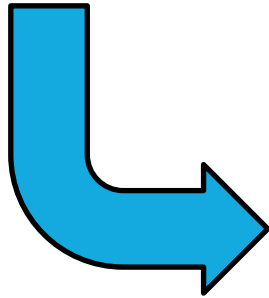
**Major vascular complications**



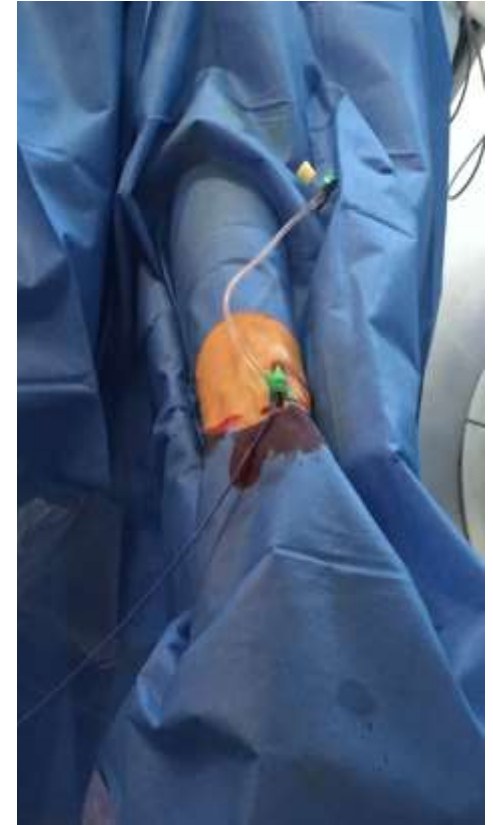
-  Related to the primary access
-  Related to the secondary access

# Secondary access site complications

- ✓ Dissection/occlusion
- ✓ Perforation
- ✓ Hematoma
- ✓ Transfusion

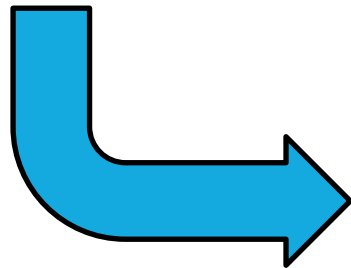


Radial for 2nd access  
(2015)



# Predilatation

- ✓ Acute aortic regurgitation (1-2%)
- ✓ Higher risk of AV Block ?
- ✓ Higher risk of stroke ?
- ✓ Worse valve deployment stability

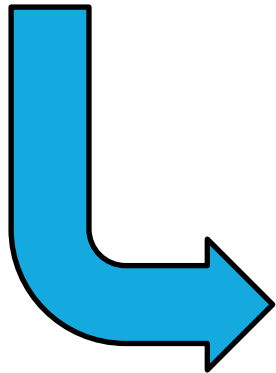
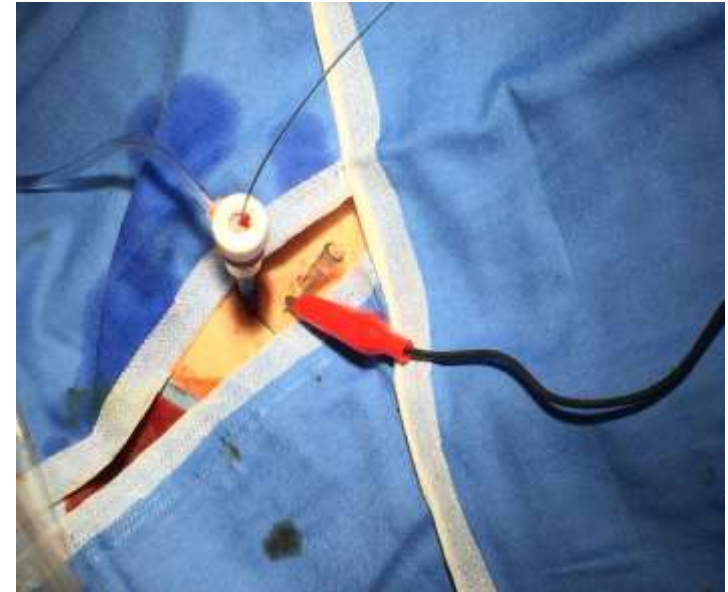


No predilatation (2014)



# Temporary Pacemaker

- ✓ Pericardial effusion/ tamponade
- ✓ Infection
- ✓ Hematoma
- ✓ Transfusion



LV wire stimulation (2005)

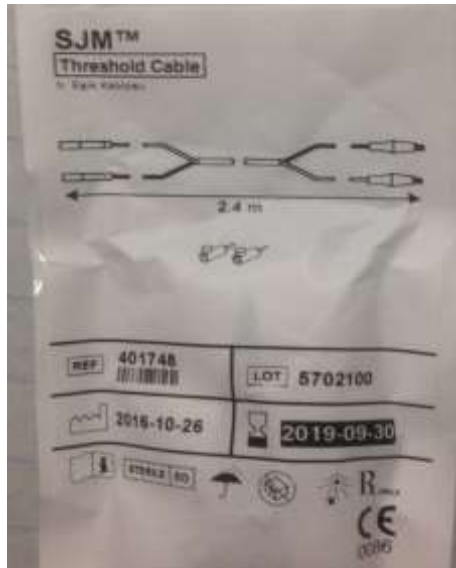
# Rapid pacing using the LV wire

	BAV N=38	TAVI N=87
Atrial fibrillation	12 (31.6%)	15 (17.2%)
Left bundle branch block	7 (18.4%)	4 (4.6%)
Right bundle branch block	1 (2.6%)	9 (10.3%)
Left ventricular ejection fraction (%)	45.9 ± 15.5	46.4 ± 13.2
Mean gradient – Pre	46.5 ± 11.5	49.1 ± 14.4
Surface – Pre (cm <sup>2</sup> )	0.2 ± 0.2	0.2 ± 0.2
Femoral approach	38 (100%)	8 (9.2%)
Central venous approach	0 (0%)	8 (9.2%)
Rate of pacing (mean) (bpm)	168.3 ± 9.8	169.7 ± 14.8
Mean pressure during pacing (mm Hg)	41.6 ± 11.3	42.3 ± 7.0
Mean gradient – Post	18.0 ± 9.7	7.5 ± 4.5
<b>Procedural complications</b>		
Death	1 (2.6%)	4 (4.6%)
Stroke	2 (5.3%)	1 (1.1%)
Valvular complications	1 (2.6%)	10 (11.5%)
Temporary LBBB	1 (2.6%)	6 (6.9%)
Tamponade	0 (0%)	1 (1.1%)
Valve malposition	0 (0%)	5 (5.7%)
Stimulation failure	0 (0%)	0 (0%)
Permanent pacemaker (new PM)	2 (2.6%)	14 (16.1%)
Procedure duration (min)	49.7 ± 31	68.7 ± 30.9
X-ray exposure (G/cm <sup>2</sup> )	31.5 ± 24.8	46.7 ± 38.9

Easy TAVI: 300 patients randomized  
LBT at London Valve meeting

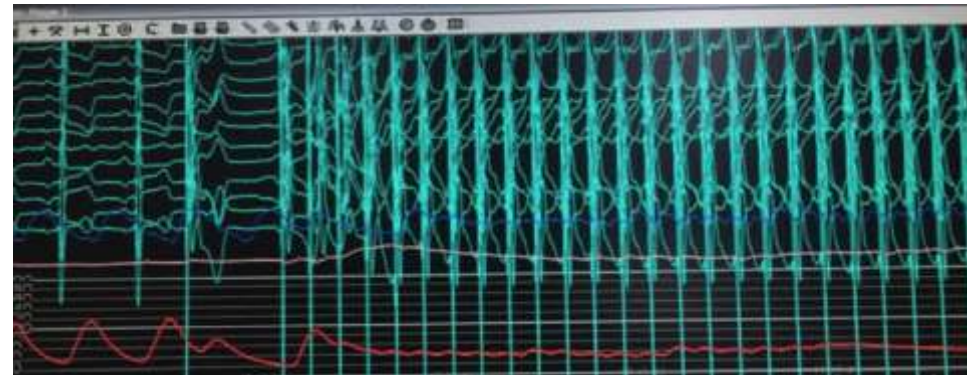
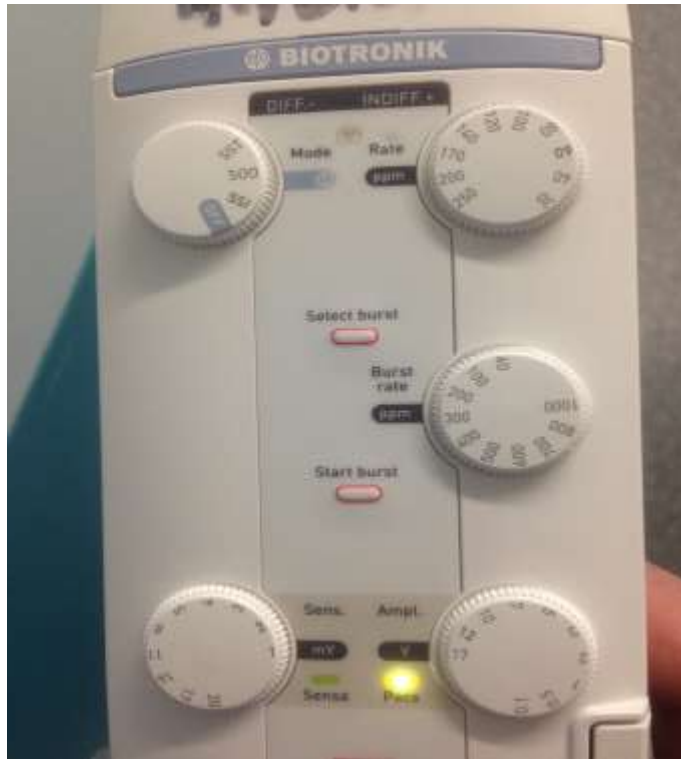
# Rapid pacing using the LV wire

## Temporary Pace-Maker

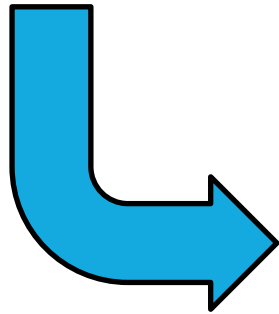
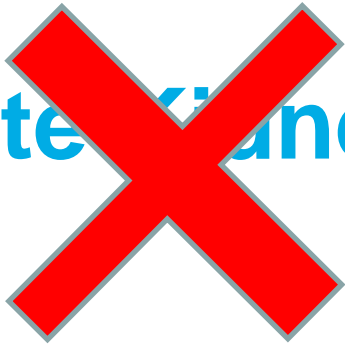


# Rapid pacing using the LV wire

## Temporary Pace-Maker



# Acute ~~Kidney~~ Injury

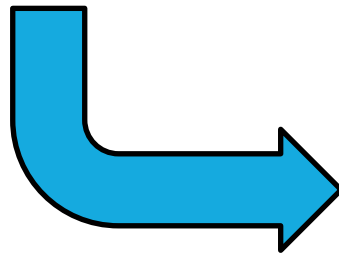


Screening 1-2 weeks before  
Patient preparation  
Contrast media/saline (80/20%)  
Renal guard (clairance < 40)  
Optimal view defined by MSCT



# Rare Complications

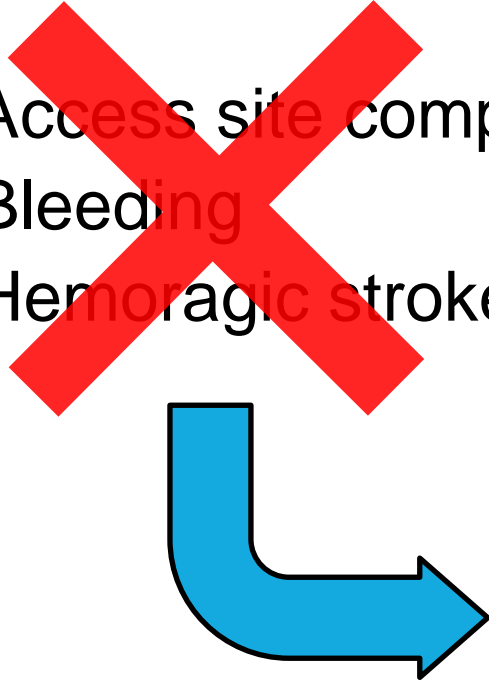
- ✓ Annulus rupture
- ✓ LV Perforation
- ✓ Coronary occlusions
- ✓ PVL > 1



MSCT, MSCT, MSCT  
New valve generation  
Dedicated wire  
Coronary protection

# DAPT Pre and Post

- ✓ Access site complications
- ✓ Bleeding
- ✓ Hemorrhagic stroke



DAPT post only 1 month

DAPT 3-6 months in case of stent

No DAPT in patient on anticoagulant

(anticoagulant and plavix 3-6 months post stenting)

# Why should we make it simple ?

- ✓ Shorter procedural time
- ✓ Less complications
- ✓ Better patient confort
- ✓ Decrease ICU and hospital stay
- ✓ Decrease staff workload
- ✓ Improved mid-term outcome
- ✓ Lower cost

Thank you for your attention !

