TAVI, how minimalist can we become ?

Thierry Lefèvre and the ICPS team

Compassionate use for the 1st case

Cardiogenic shock , surgery denied

16th of April 2002

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

EACTS — European Association For Cardio-Thoracic Surgery

ESC — European Society of Cardiology

| Recommendations	Class	Level
In patients who are at increased surgical risk (STS or EuroSCORE II ≥4% or logistic EuroSCORE I ≥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

Baumgartner et al. ESC 2017

Simplicity
is the ultimate
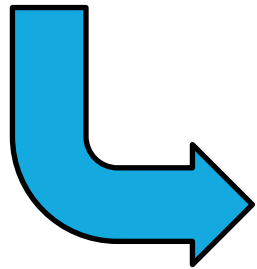sophistication

di Leonardo de Vinci

Everything should be made as simple as possible …

But not simpler
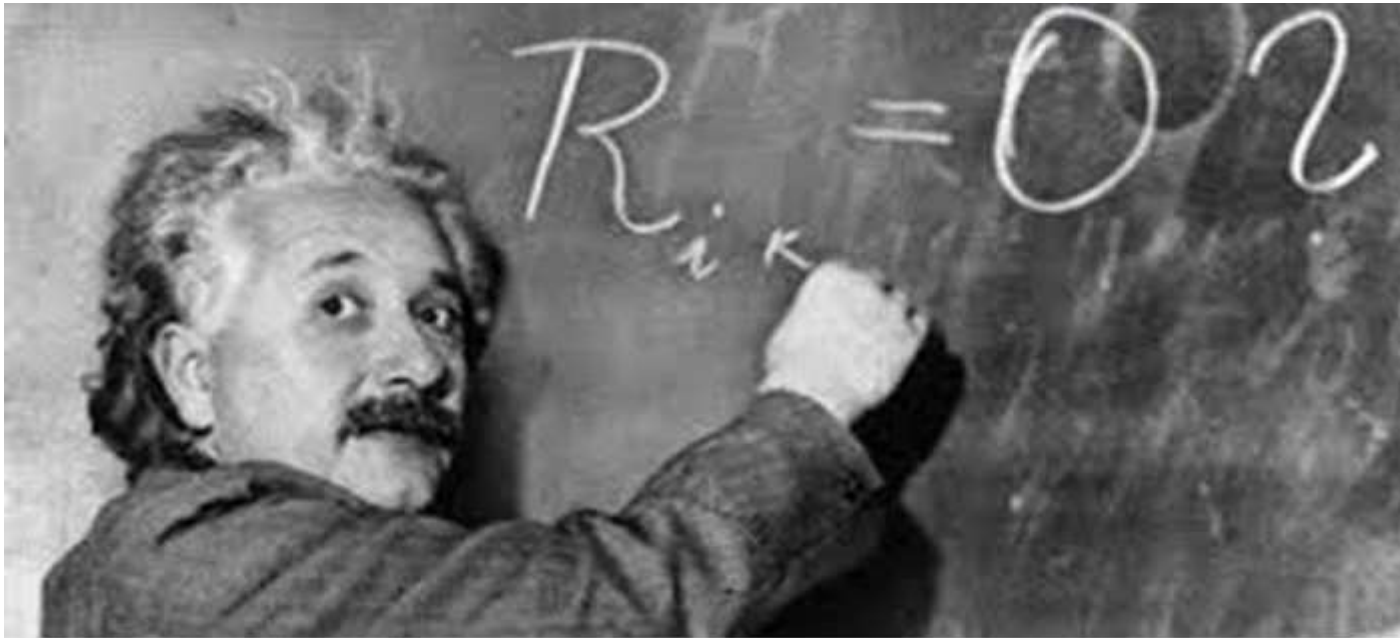
General anesthesia

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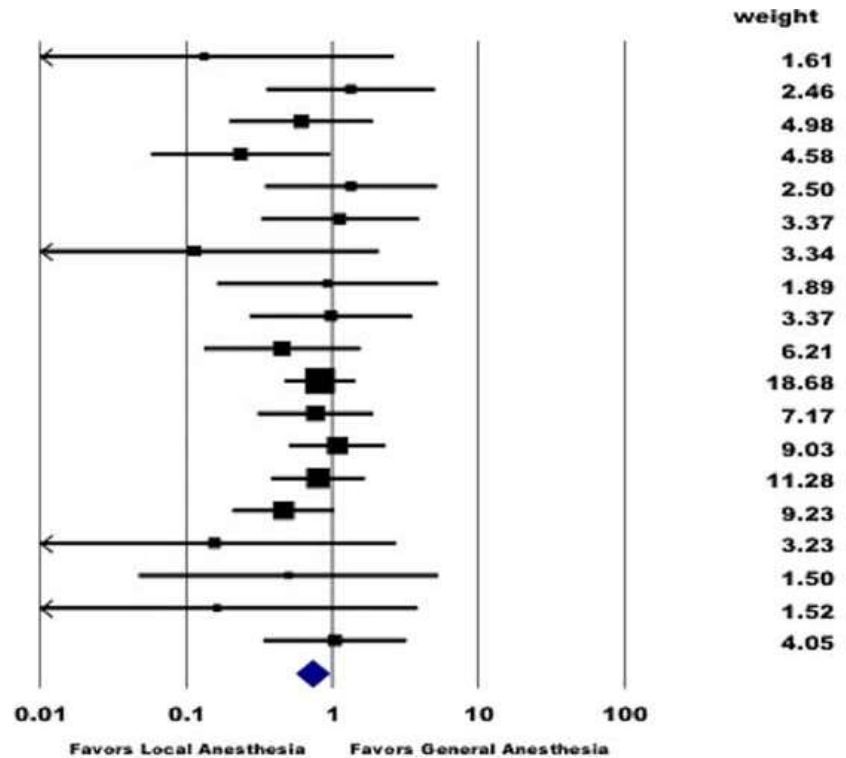- ✓ Prolonged ICU and hospital stay

Conscious sedation (April 2009)

Concious sedation vs General anesthesia

30 day death

	ratio	limit	limit	Anesthesia	Anesthesia		weight
Behan	0.13	0.01	2.63	0 / 9	1 / 3		1.61
Dehedin	1.34	0.35	5.05	3 / 34	6 / 91		2.46
Bergmann	0.61	0.20	1.91	6 / 100	5 / 51		4.98
Ben-Dor	0.24	0.06	0.97	3 / 70	4 / 22		4.58
Motloch	1.34	0.35	5.21	5 / 41	3 / 33		2.50
Yamamoto	1.13	0.33	3.91	10 / 130	3 / 44		3.37
Babaliaros	0.11	0.01	2.08	0 / 70	4 / 72		3.34
Balanika	0.93	0.16	5.30	2 / 41	3 / 57		1.89
Attizzani	0.98	0.27	3.55	5 / 116	4 / 91		3.37
Gauthier	0.45	0.13	1.57	3 / 66	11 / 110		6.21
Petronio	0.83	0.47	1.44	38 / 961	17 / 355		18.68
Kesimci	0.77	0.31	1.91	7 / 72	10 / 79		7.17
Brecker	1.08	0.50	2.33	13 / 245	12 / 245		9.03
D´Errigo	0.80	0.38	1.68	12 / 310	15 / 310		11.28
Kiramijyan	0.46	0.21	1.04	23 / 467	7 / 66		9.23
Jabbar	0.16	0.01	2.73	0 / 71	6 / 145		3.23
Miles	0.50	0.05	5.32	1 / 44	2 / 44		1.50
Palermo	0.16	0.01	3.84	0 / 44	1 / 21		1.52
Debry	1.04	0.34	3.23	4 / 52	9 / 122		4.05
	0.73	0.57	0.93	135 / 2943	123 / 1961		

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

Favors Local Anesthesia   Favors General Anesthesia

B

Villablanca et al. CCVI 2018;91:330-42

Too much monitoring

✓ Urinary catheter

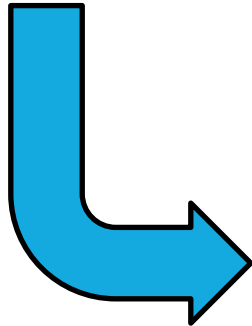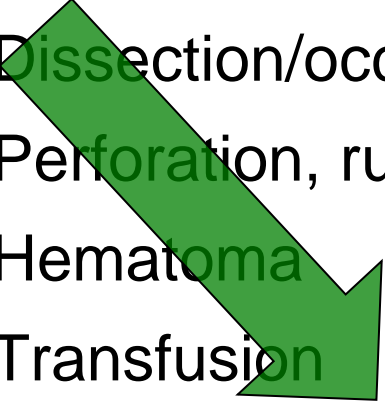✓ Jugular or subclavian vein

✓ Radial artery monitoring

✓ TEE
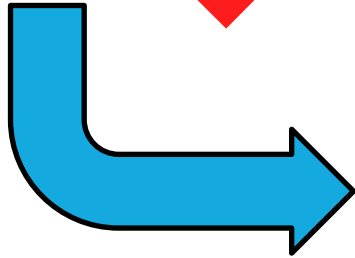
TTE (April 2009)

2 venous lines (April 2009, 1 basilic)

Main access site complications

✓ Dissection/occlusion

✓ Perforation, rupture

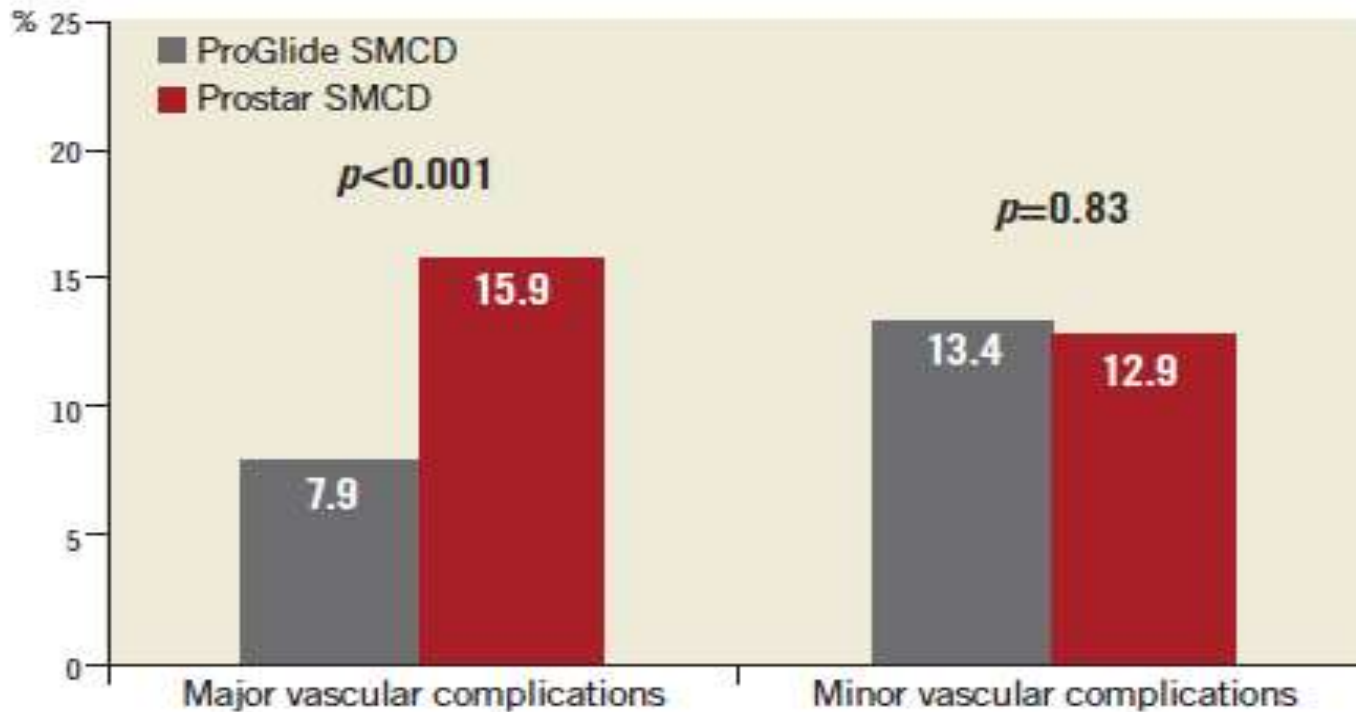✓ Hematoma

✓ Transfusion

Better pre-procedural screening
Prostar (2009)
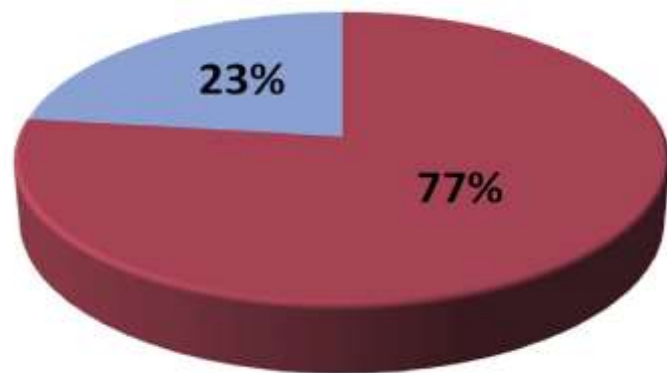Preclosing with Two Proglide (2015)
Downsizing from 24Fr to 14Fr
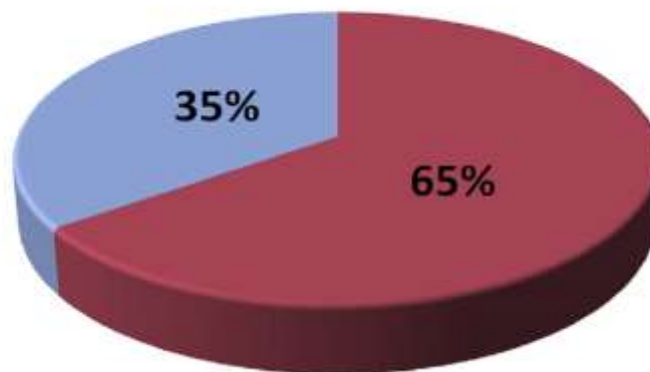Peripheral interventions toolbox

Proglide vs Prostar

Mehilli et al. Eurointervention 2016;12:1298-1304
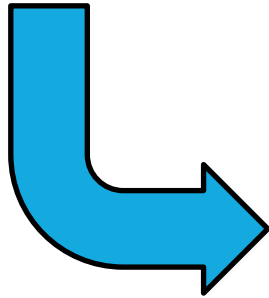
Access site complications

All vascular complications

Major vascular complications

■ Related to the primary access
□ Related to the secondary access

Allende, Urena, Rodés-Cabau et al., AJC, 2014

Secondary access site complications

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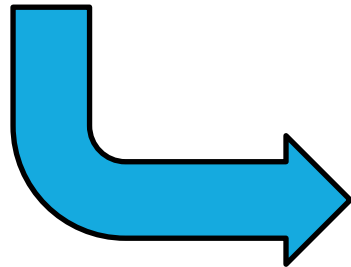- ✓ Hematoma
- ✓ Transfusion

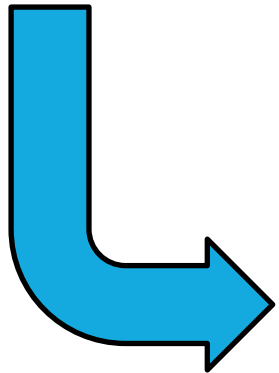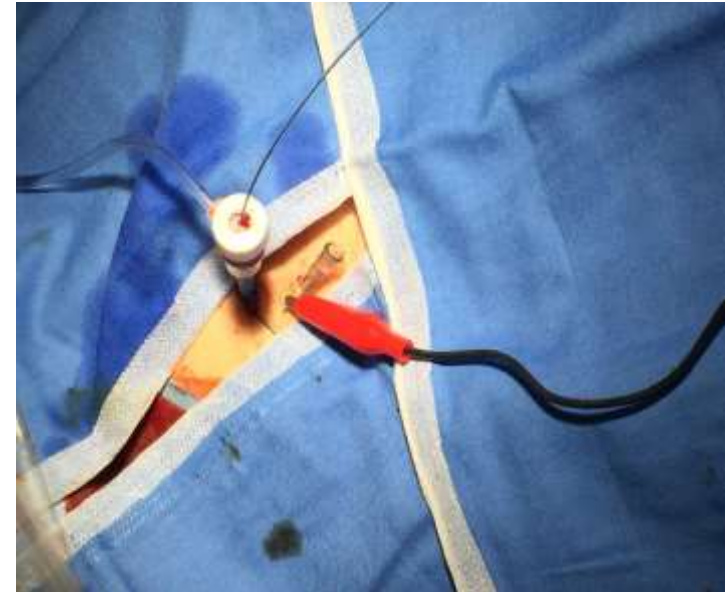Radial for 2nd access

(2015)
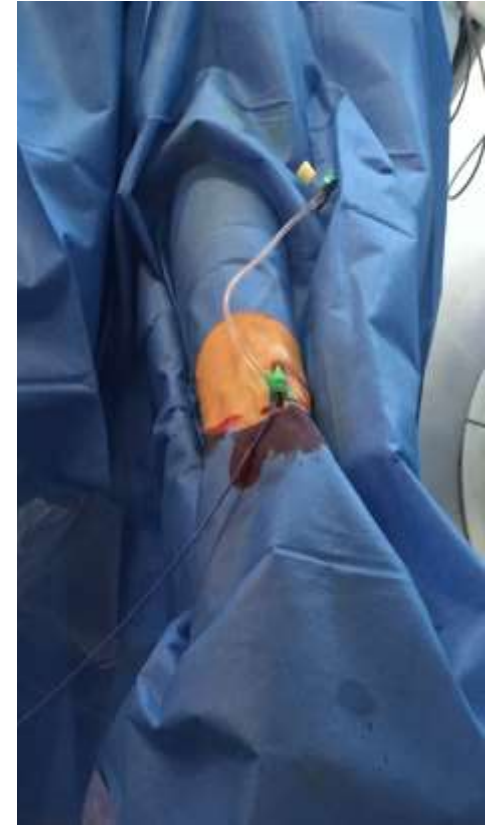
Predilatation

- ✓ 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%)	
Left ventricular ejection fraction (%)	45.9 ± 15.4	± 13.2
Mean gradient – Pre	46.5	49.1 ± 14.4
Surface – Pre (cm^2)	0.2	
Femoral approach	38 (100%)	
Central venous approach	0 (0%)	8 (9.2%)
Rate of pacing (mean) (bpm)	± 19.8	169.7 ± 14.8
Mean pressure during pacing (mmHg)	± 11.3	42.3 ± 7.0
Mean gradient – Post	18.0 ± 9.7	7.5 ± 4.5
Procedural complications		
Death	1 (2.6%)	4 (4.6%)
Stroke	2 (5.3%)	1 (1.1%)
Vascular complications	1 (2.6%)	10 (11.5%)
Temporary AV block	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^2)	31.5 ± 24.8	46.7 ± 38.9

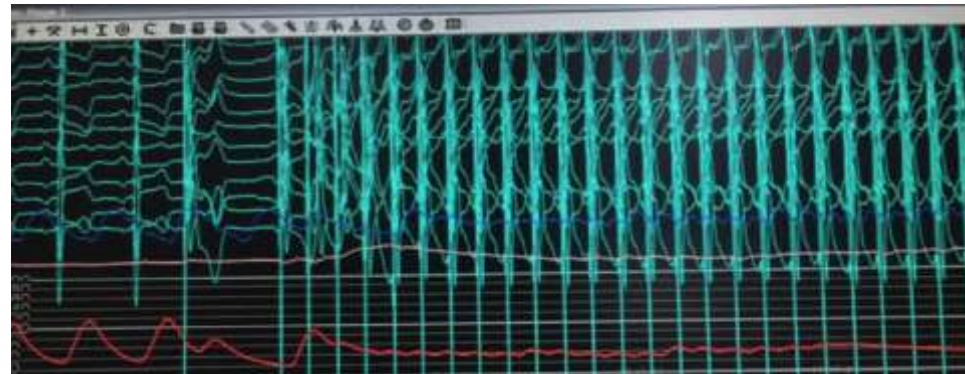Easy TAVI: 300 patients randomized LBT at London Valve meeting
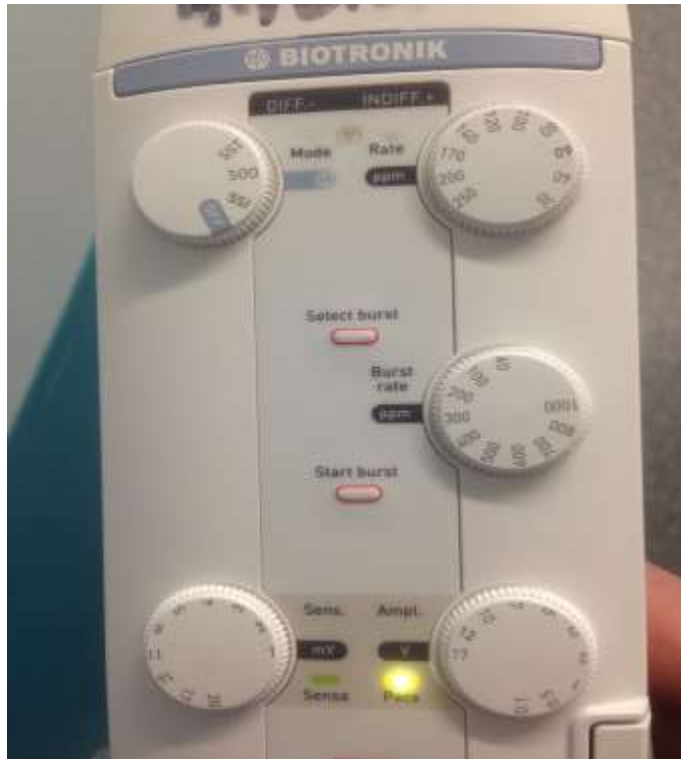
Faurie et al. CCVI 2016

Rapid pacing using the LV wire
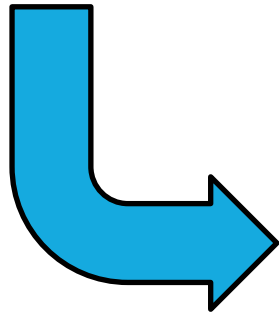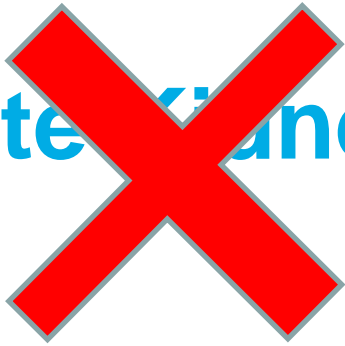
Temporary Pace-Maker
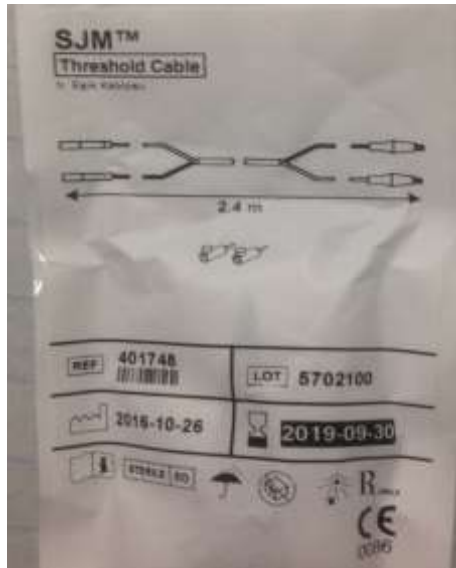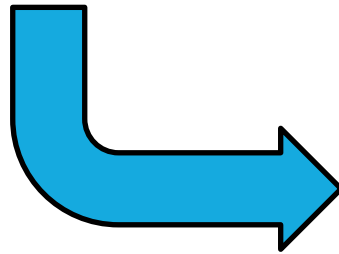
Rapid pacing using the LV wire

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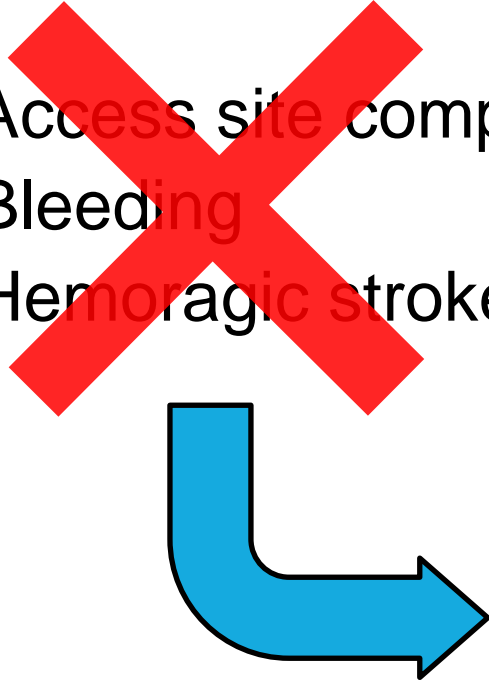
- ✓ Annulus rupture
- ✓ LV Perforation
- ✓ Coronary occlusions
- ✓ PVL > 1

MSCT, MSCT, MSCT

New valve generation

Dedicated wire

Coronary protection

DAPT Pre and Post

- ✓ Access site complications
- ✓ Bleeding
- ✓ Hemoragic 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 !