

Elective endovascular reperfusion therapies in intermediate-high risk pulmonary embolism after PERT assesment

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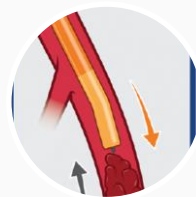
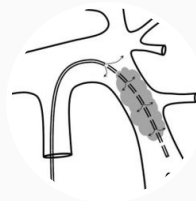


Background

- The ideal management of patients with intermediate-high risk (IHR) pulmonary embolism (PE) is still unknown.
- The combination of:



Identification
of pts at
higher risk



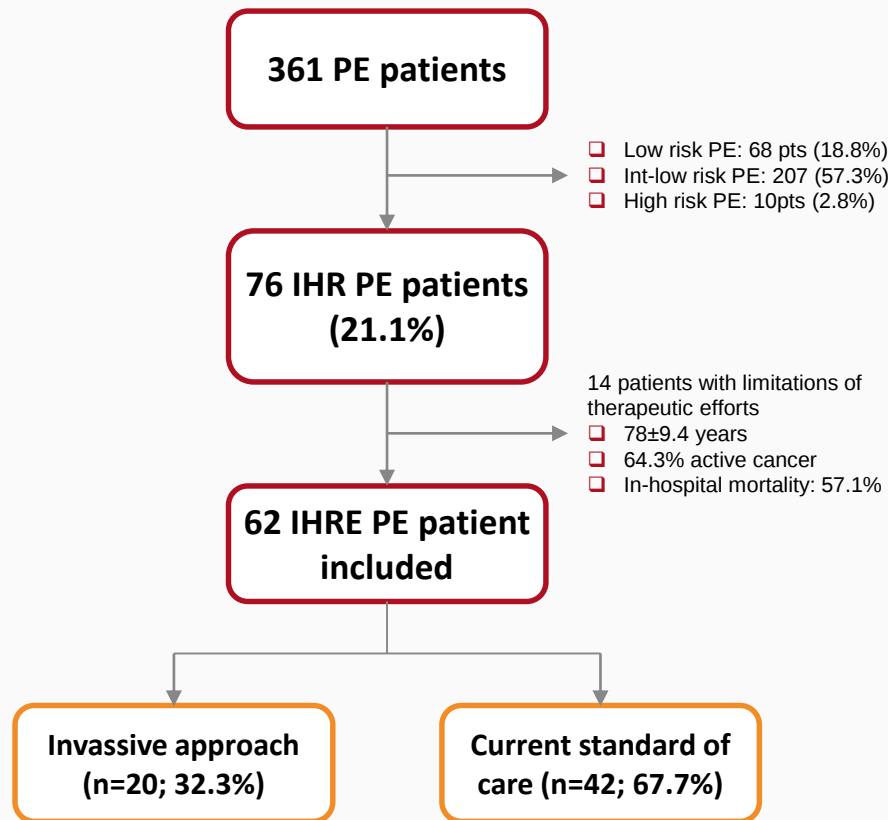
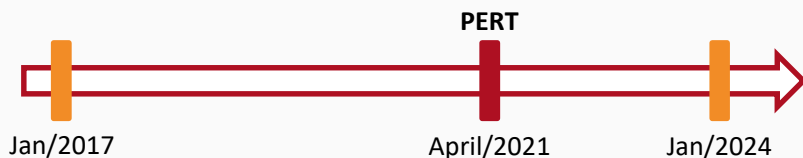
Catheter Directed
Therapies (CDT) with
a better safety profile

Purpose:

- Evaluate in-hospital events of elective endovascular reperfusion therapies in selected IHR PE patients after PERT assesment in a single center initial experience.

Methods

- Analysis of consecutive patients with PE admitted from **Jan/2017 to Jan/2024**.
- The in-hospital evolution of an **elective invasive strategy** defined by an institutional PERT (since April/2021) in IHR PE patients was compared **against the current standard of care** (isolated anticoagulation and reperfusion only after hemodynamic collapse).
- Patients with limitations of therapeutic efforts due to comorbidities were excluded.



Results

	Elective invasive approach (n=20)	Current standard of care (n=42)	p
Baseline characteristics			
Age	62.4 ±15.5	72.8 ±13.3	0.0082
Female gender	8 (40%)	19 (45.2%)	ns
Previous VTE	6 (30%)	6 (14.3%)	ns
Active Cancer	2 (10%)	6 (14.3%)	ns
Previous stroke	1 (5%)	2 (4.8%)	ns
Heart Failure	0 (0%)	12 (28.6%)	0.006
Atrial fibrillation	0 (0%)	10 (23.8%)	0.02
COPD	3 (15%)	9 (21.4%)	ns
Recent surgery	7 (35%)	10 (23.8%)	ns
Previous major bled	2 (10%)	5 (11.9%)	ns

✓ 10y younger, less comorbid.

Results

	Elective invasive approach (n=20)	Current standard of care (n=42)	p
Clinical presentation			
Systolic blood pressure (mmHg)	130 (120-145)	120 (110-140)	ns
Heart rate (bpm)	110 (92.5-125)	100 (85-110)	ns
Breathing rate (bpm)	22 (20-25)	18 (16-22)	0.0323
TAPSE	16 (14.5-20)	16.5 (14-20.5)	ns
IVS flattening	15 (75%)	14 (33.3%)	0.003
Central distribution of thrombus load	20 (100%)	27 (64.3%)	0.001
IVC contrast reflux	14 (70%)	15 (42.9%)	ns
Troponin peak	59 (41.2-129.1)	51 (30-180)	ns
Concomitant DVT	15 (75%)	23 (54.8%)	ns

- ✓ 10y younger, less comorbid.
- ✓ More “PE compromised” (variables not included in traditional stratification tools)

Results

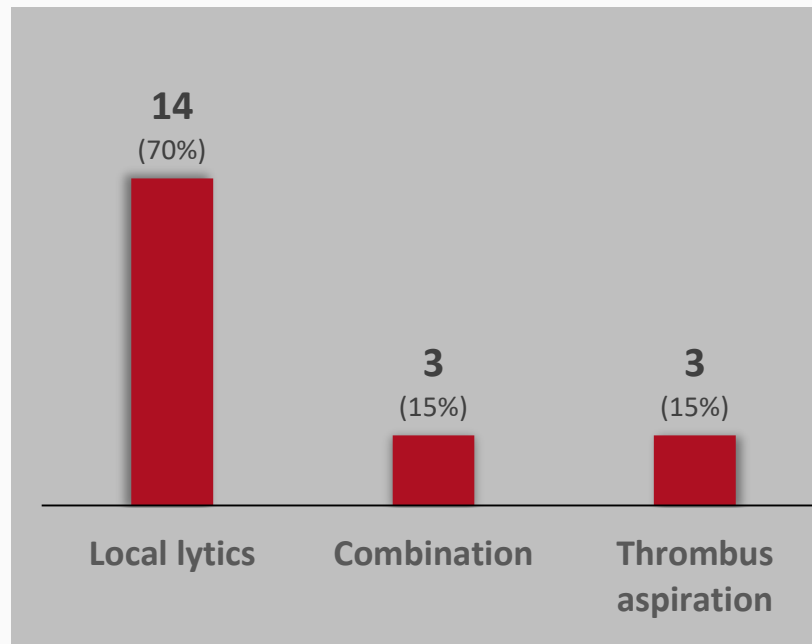
	Elective invasive approach (n=20)	Current standard of care (n=42)	p
In-hospital management			
PERT discussion	20 (100%)	6 (14.3%)	<0.001
Anticoagulation	19 (95%)	42 (100%)	ns
IVC Filter	6 (30%)	4 (9.5%)	0.06
Reperfusion therapies	20 (100%)	4 (9.5%)	<0.001

- ✓ 10y younger, less comorbid.
- ✓ More “PE compromised” (variables not included in traditional stratification tools)

Elective Invasive Approach (n=20)

Local Lytics (n=17)

- 100% standard infusion catheters (Fountain 5Fr)
- 82.4% (14/17) bilateral
- 100% US guided Access
- Access site:
 - Femoral: 30/31
 - Jugular: 1/31
- 20.8 mg (± 4) of rt-PA in 12h (10-24)



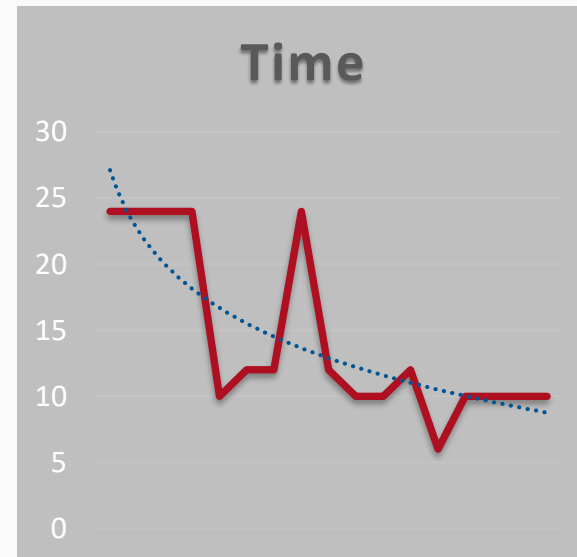
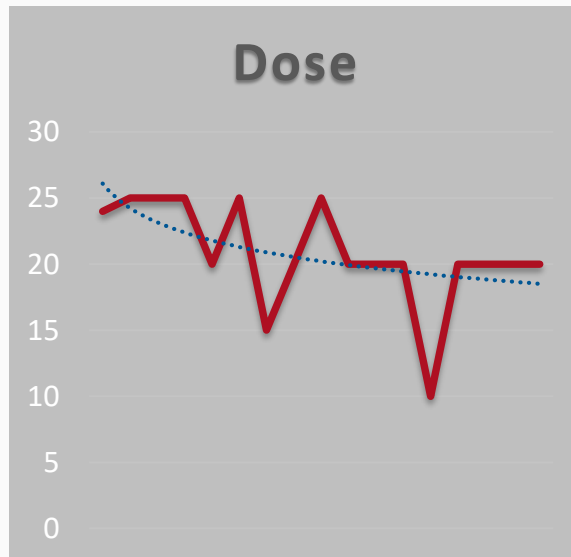
Thrombus aspiration (n=6)

- 3/6 (50%) Penumbra aspiration system
- 1/6 (16.67%) FlowTrievers catheter
- 2/6 (33.33%) manual aspiration with 8-10 Fr catheters.
- 100% US-guided femoral approach

Elective Invasive Approach (n=20)

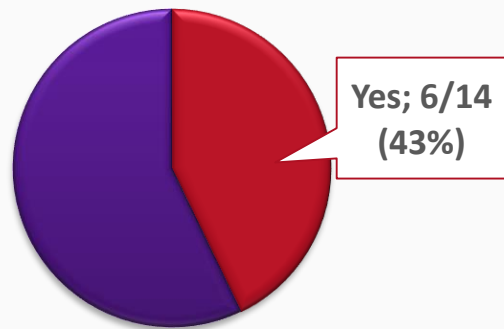
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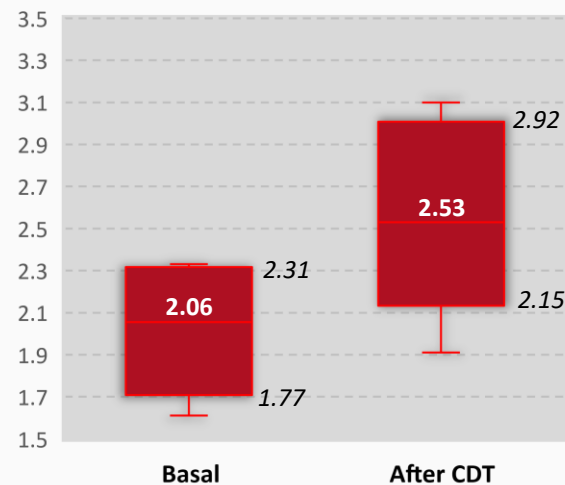
Elective Invasive Approach (n=20)

Normotensive shock (CI <2.2)



Measured in 14pts (70%)

Δ Cardiac Index after CDT

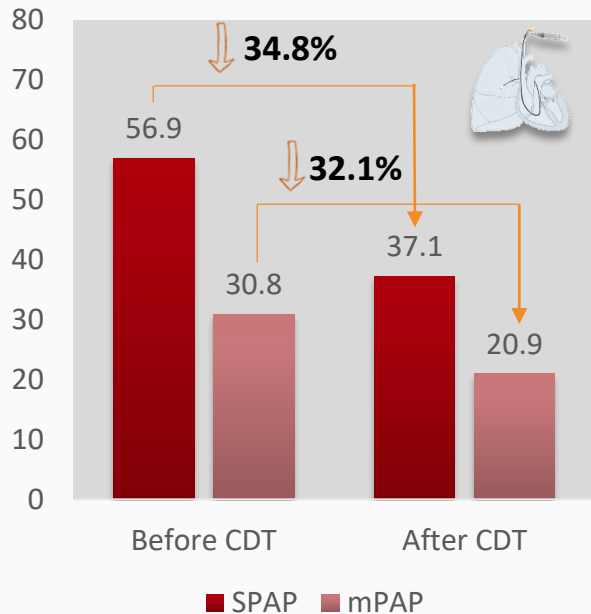


Measured in 8pts

↑ **22.8%**
p=0.07

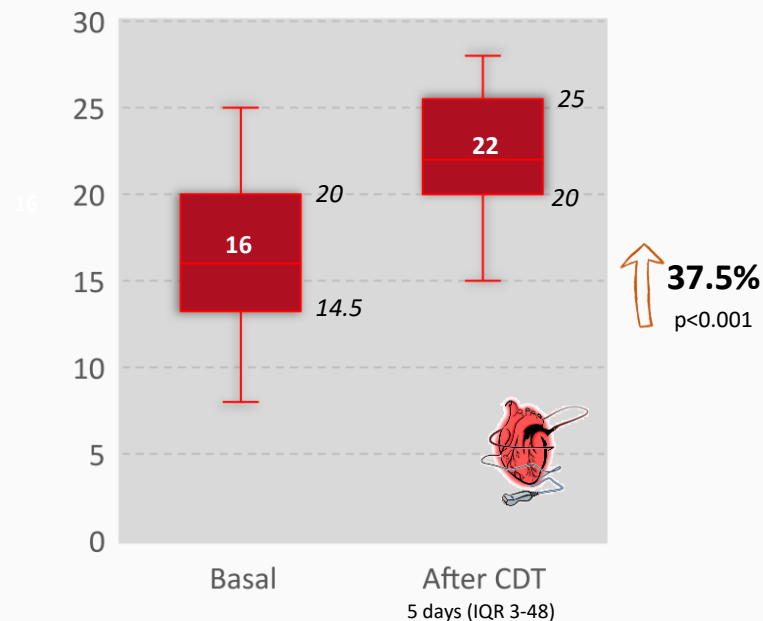
Elective Invasive Approach (n=20)

Hemodynamic impact of CDT



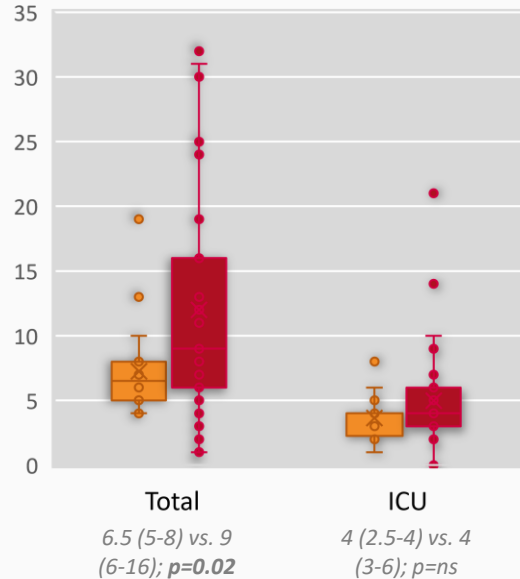
SPAP: 56.9mmHg ($\pm$ 14.2) vs. 37.1mmHg ($\pm$ 11.6); $p < 0.001$
mPAP: 30.8mmHg ($\pm$ 5.4) vs. 20.9mmHg ($\pm$ 4.6); $p < 0.005$

RV function assessed by TAPSE

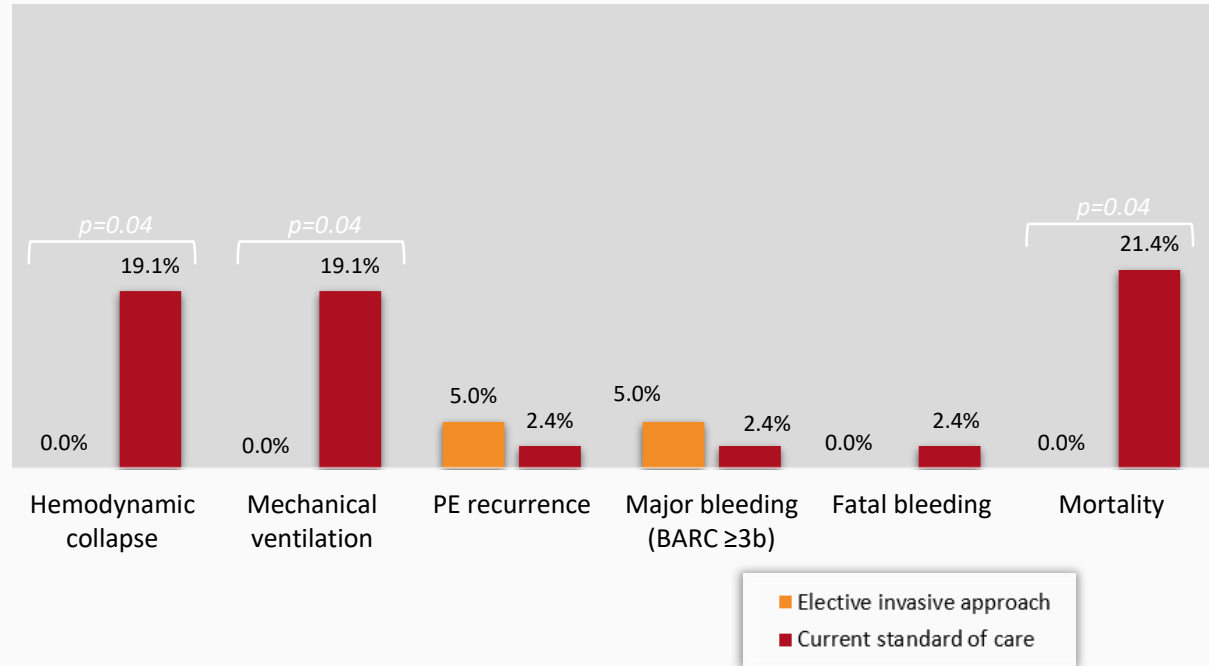


Results

Length of stay (days)



In-hospital events



Results

	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	p
Intercept	35.293	8.879	1	.003
Patient age	31.073	4.659	1	.031
History of Heart Failure	26.467	.053	1	.818
History of Atrial Fibrillation	26.66	.246	1	.620
Respiratory Rate	27.276	.862	1	.353
Invasive strategy	32.496	6.082	1	.014
Central distribution of thrombus	30.903	4.489	1	.034

Conclusions

- An "elective" invasive strategy in selected patients with IHR PE after PERT assessment was safe and resulted in less major in-hospital cardiovascular events in a single-center initial experience.
- Although these results should be taken with caution given the limitations of this study (single-center, small observational sample), they are in line with recent reports and are the focus of ongoing large randomized clinical trials.

