Elective Percutaneous Coronary Intervention and TAVI

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Disclosures

None

Introduction

- Treatment of concomitant obstructive coronary artery disease (CAD) during surgical aortic valve replacement (AVR) has been shown to negatively affect the perioperative mortality (1)
- When significant CAD coexists with severe aortic stenosis (AS), complete revascularization during surgical AVR improves both short and long-term survival (2)
- The practice guidelines therefore recommend surgical revascularization for significant coronary artery lesions in addition to surgical AVR (3)

1. Edwards FH et al. JACC 2001 ; 2. Lund O et al. J Thorac Cardiovasc Surg 1990 ; 3. Wijns W et al, EHJ 2010

TAVI and CAD

- TAVI has evolved as an effective treatment in patients with severe AS and increased operative mortality (4)
- The incidence of CAD is high among patients affected by degenerative AS (5)
- The presence of CAD has been shown to negatively impact procedural outcomes and long-term survival after TAVI (6)

4. Leon MB et al, NEJM 2010 ; 5. Otto CM et al, Circulation 1997 ; 6. Dewey TM et al, Ann Thorac Surg 2010

Revascularization before TAVI

- The management of obstructive CAD before TAVI is not yet well established
- The data concerning the management of concomitant obstructive CAD in patients undergoing TAVI is heterogeneous
- Both the appropriate revascularization strategy and the timing of interventions are a matter for controversy

Performing PCI before TAVI

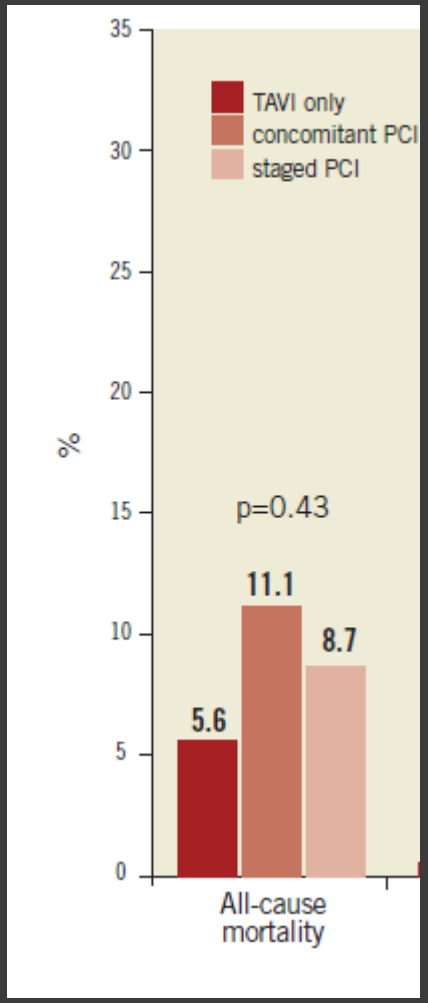
- Treatment of significant coronary artery lesions before TAVI helps to avoid worsening of myocardial ischemia during the procedural rapid ventricular pacing, and contributes to alleviation of symptoms post TAVI
- The main concerns from this combined procedures approach are increased periprocedural adverse event rate – especially bleeding and vascular complications, increased risk of stroke and contrast related kidney injury

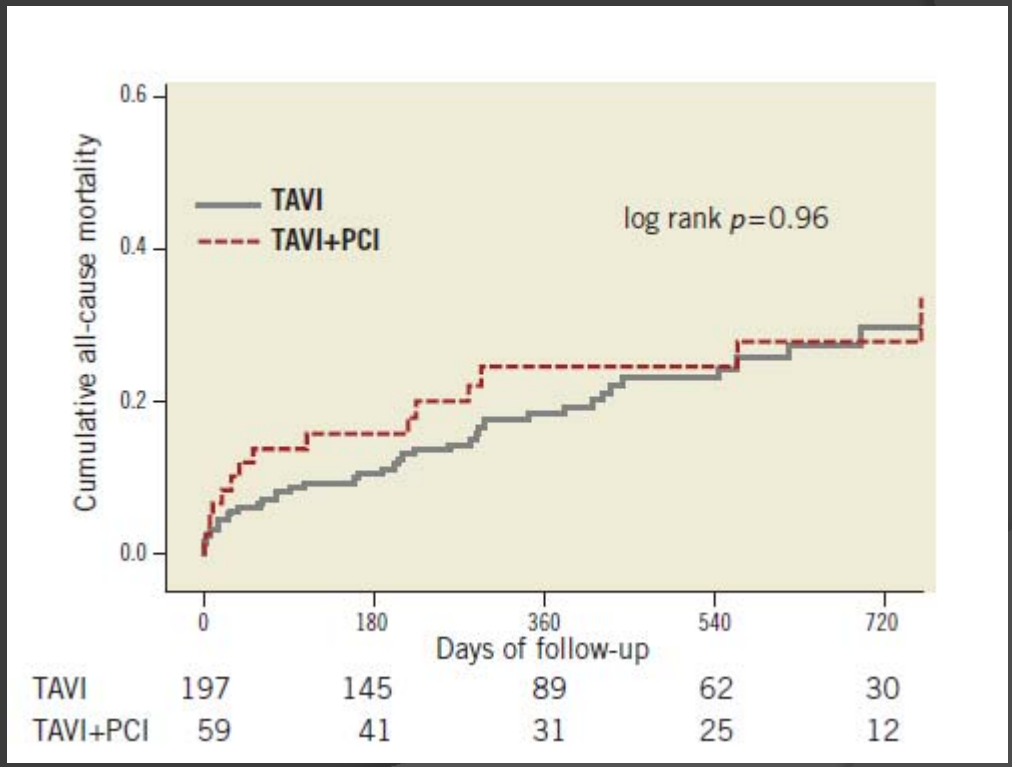
Previous Data

- First described by Conradi et al, (Clin Res Cardiol 2011) -28 patients (7 combined procedure): 30-day mortality was 7.1%, no MI or Stroke

- Pasic et al, (Interact Cardiovasc Thorac Surg 2011) - combined single-staged PCI and transapical TAVI in 46 patients: 30-day mortality was 4.3%, 1 periprocedural MI

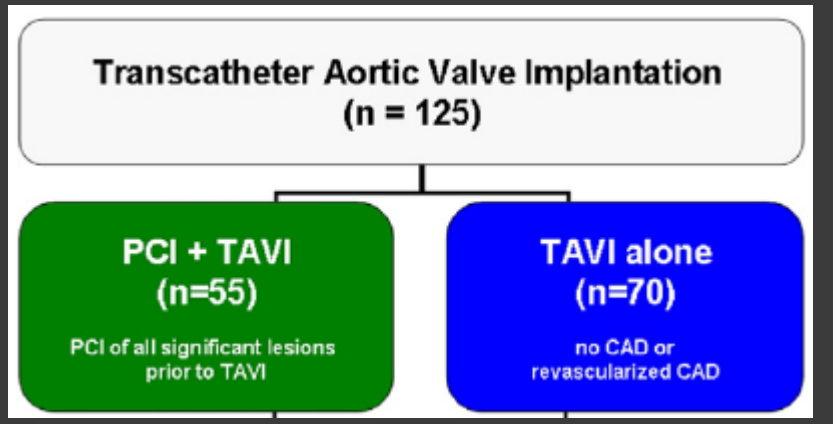
Previous Data

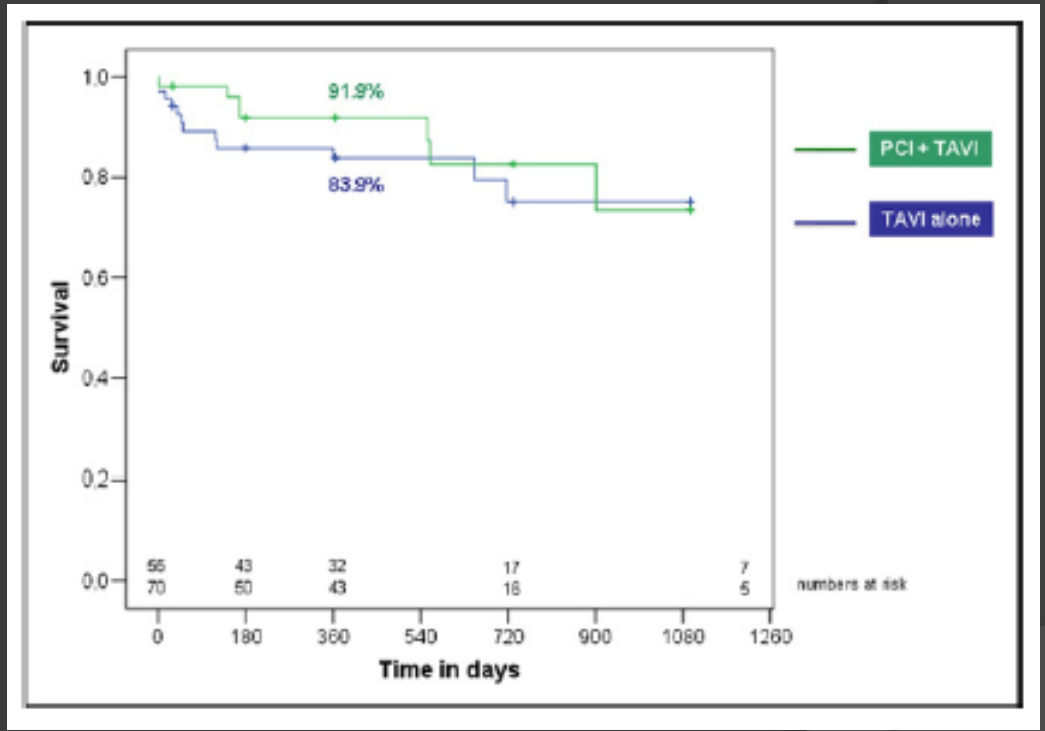




Wenaweser P et al, EuroIntervention 2011

Previous Data





Abdel-Wahab M et al, Am J Cardiol 2012

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Objective

To assess the safety and effectiveness of performing elective PCI before TAVI

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Methods

- Retrospective evaluation of clinical outcome of patients who underwent TAVI at Tel-Aviv Medical center
- Patients with significant lesions (≥70%) in a major epicardial coronary artery which were considered high-risk and clinically significant by the cardiologist underwent PCI
- PCI was performed up to 4 months prior to the TAVI procedure

Study population

- 249 patients between 3/2009 and 4/2012

PCI + TAVI (n=61)

TAVI Alone (n=188)

- Mean duration of follow-up was 17 months (range: 6-36 months)

Baseline clinical characteristics

	TAVI+PCI (n=61)	TAVI Alone (n=188)	P Value
Age (mean±SD)	83.6±6	83±5	NS
Men (%)	50.8	35.1	0.029
Previous CVA (%)	8.2	8.5	NS
HTN (%)	90.2	83.5	NS
DM (%)	24.6	34.6	NS
Dyslipidemia (%)	82	76.1	NS
PVD	16.4	10.1	NS
COPD (%)	11.5	28.2	0.008
Log. EuroScore (%)	31.3±14	24.6±14	0.001
CAD (%)	100	43.6	<0.0001
Previous MI (%)	18	13.8	NS
Previous CABG (%)	23	15.4	NS

Baseline echo-Doppler characteristics

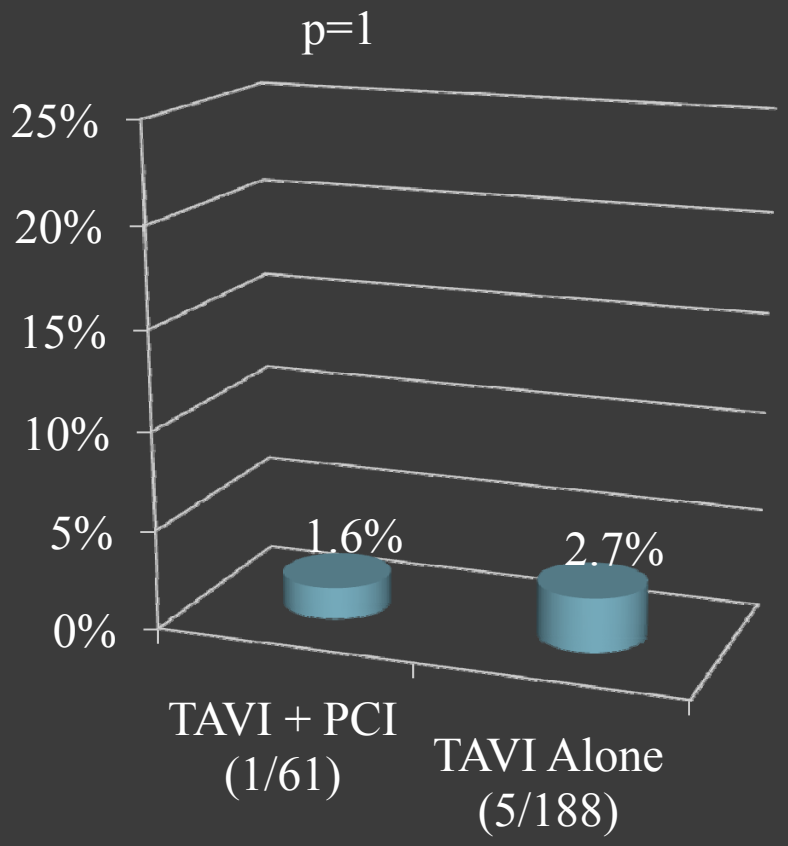
	TAVI+PCI (n=61)	TAVI Alone (n=188)	P Value
LVEF (%)	54.6 ± 9	56.4 ± 9	NS
AVA (CM^2)	0.67	0.69	NS
AV PPG (mmHG)	75.7	79	NS
AV MPG (mmHG)	45.9	47.7	NS

Procedural characteristics of PCI before TAVI

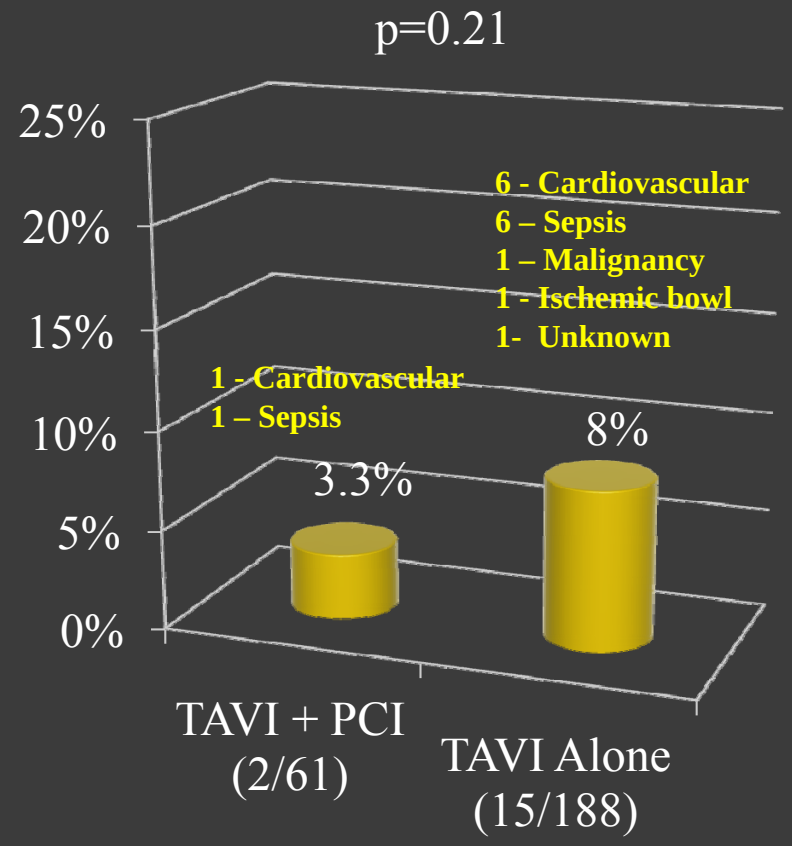
Stents/patient	1.59 ± 1
Minimal stent diameter (mm)	2.9 ± 0.5
Total stent Length (mm)	31.1 ± 25
Target vessel	
LM	8 (13.1%)
LAD	25 (41%)
Cx	16 (26.2%)
RCA	29 (47.5%)
Ramus intermidius	1 (1.6%)

- Mean duration from PCI to TAVI was 56.6 days (range: 0 – 120 days)
- 8 patients underwent PCI for multiple lesions in 2 separate procedures pre-TAVI
- 53 patients (86.9%) were treated with DES, 7 patients (11.5%) with BMS and 1 patient (1.6%) received both stent types

Mortality

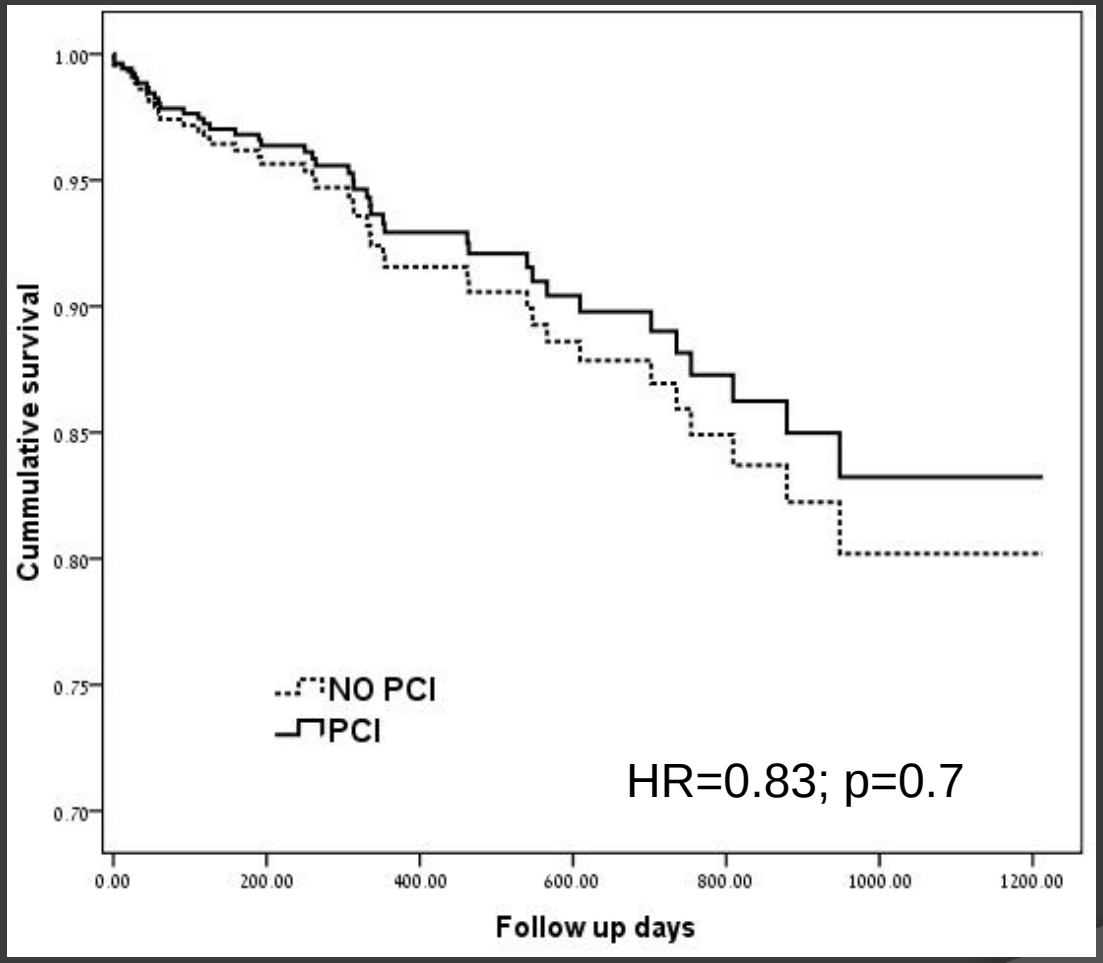


30 days



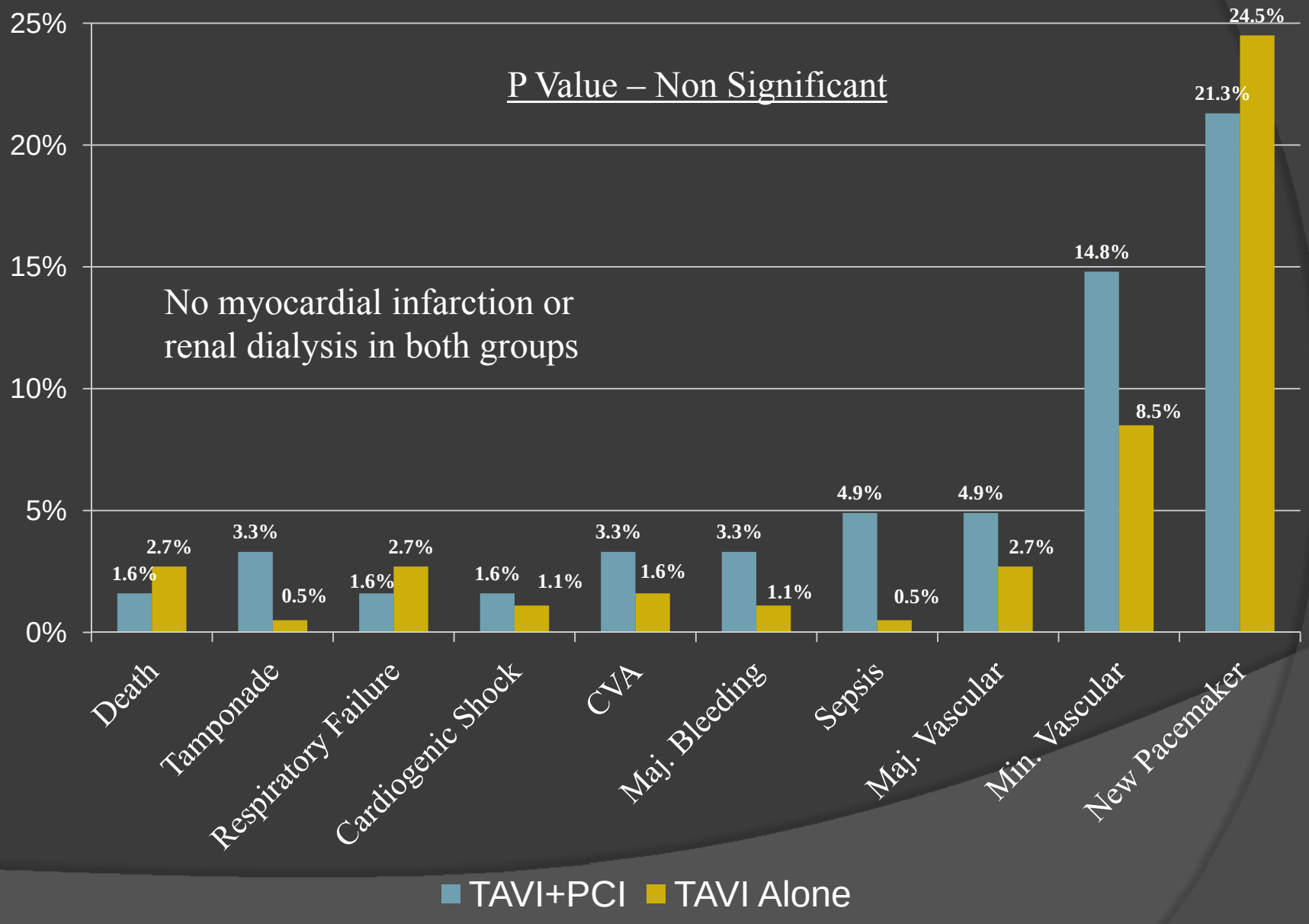
6 months

Overall Survival – Cox Regression



There was no mortality case during the study follow-up period among the 8 patients that had two separate PCI procedures before TAVI

30-day Outcome



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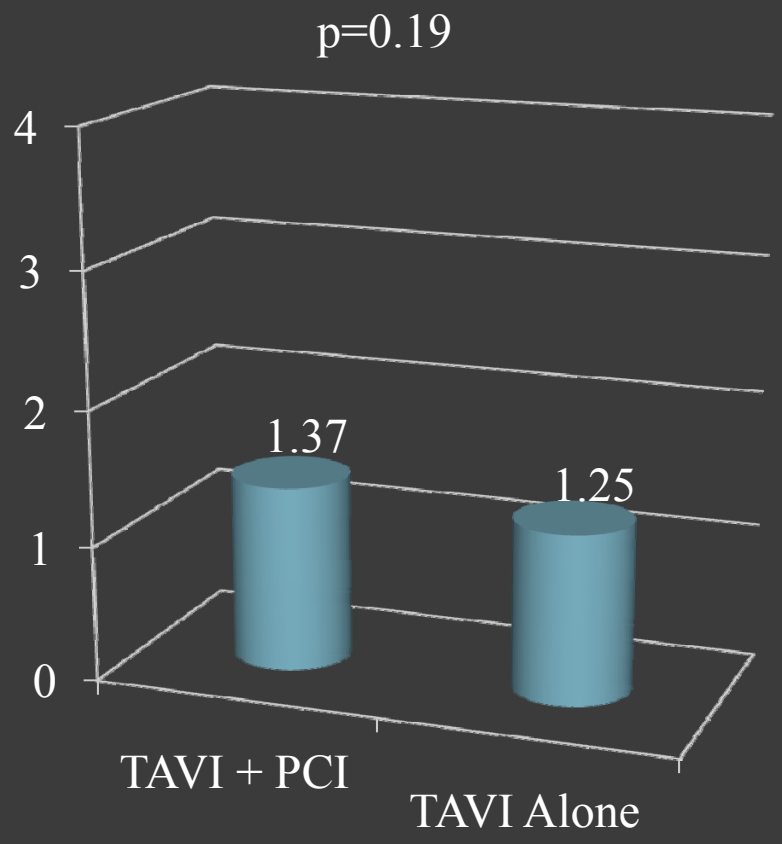
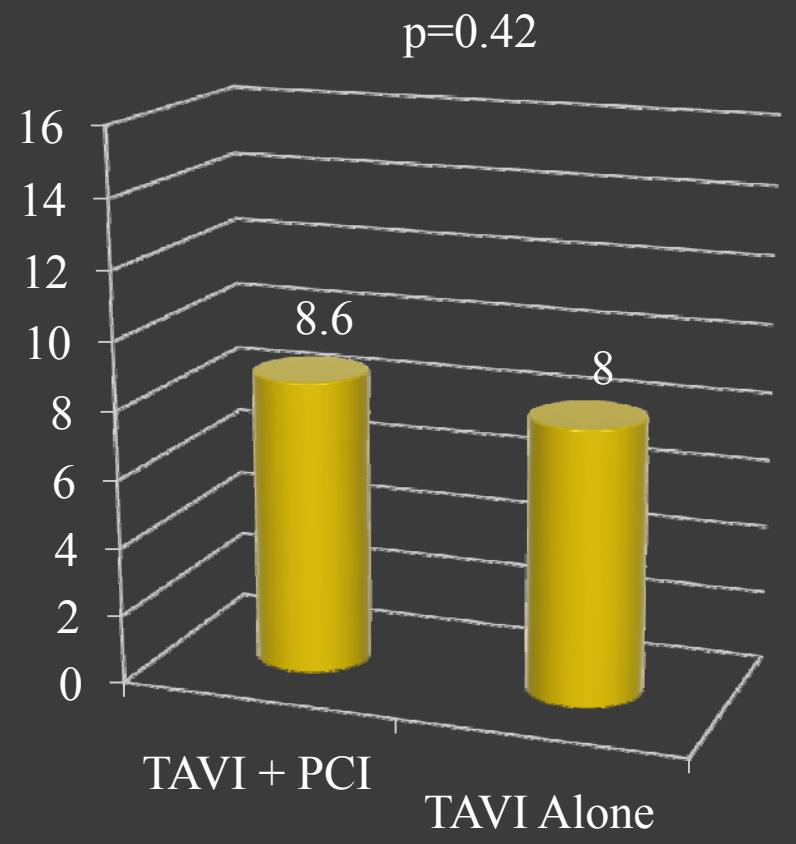


Average NYHA Class (pre-procedure – 3.3)



Average days in hospital

Coronary angiography during the follow-up period – TAVI + PCI group

- NSTEMI – 3 months s/p TAVI - LM in-stent restenosis that was treated successfully using a drug eluting balloon (DEB)
- NSTEMI- 7 months s/p TAVI - Open stents and no obstructive lesions
- UAP- 9 months s/p TAVI - LAD in-stent restenosis that was treated successfully using a DEB

Coronary angiography during the follow-up period – TAVI Alone group

- UAP– 4 months s/p CoreValve TAVI in a patient with normal coronaries before TAVI – mechanical LM stenosis that was treated successfully using a DES

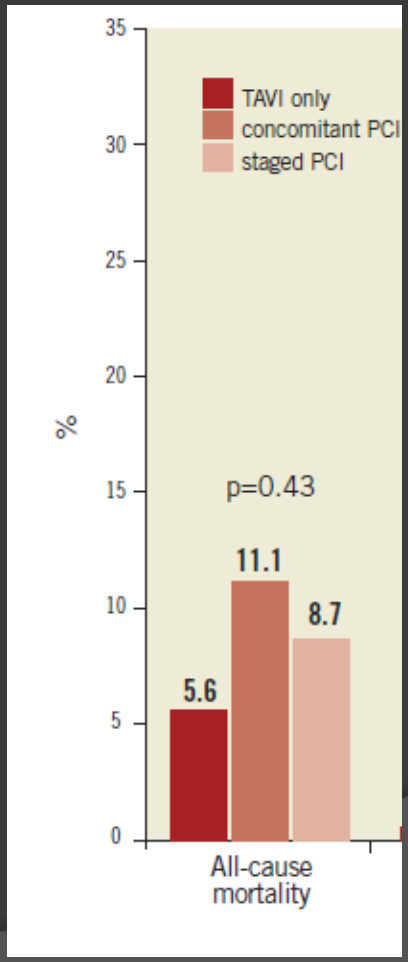
Timing

TAVI + PCI (n= 59)
– concomitant PCI (n=36)
– staged PCI (n=23)

TAVI
(n= 197)

	TAVI+ staged PCI N=23	TAVI + concomitant PCI N=36	*p*-value
Log. EuroSCORE (%, mean±SD)	30.3±14.3	24.5±17.3	0.19

Wenaweser P et al, EuroIntervention 2011



Timing

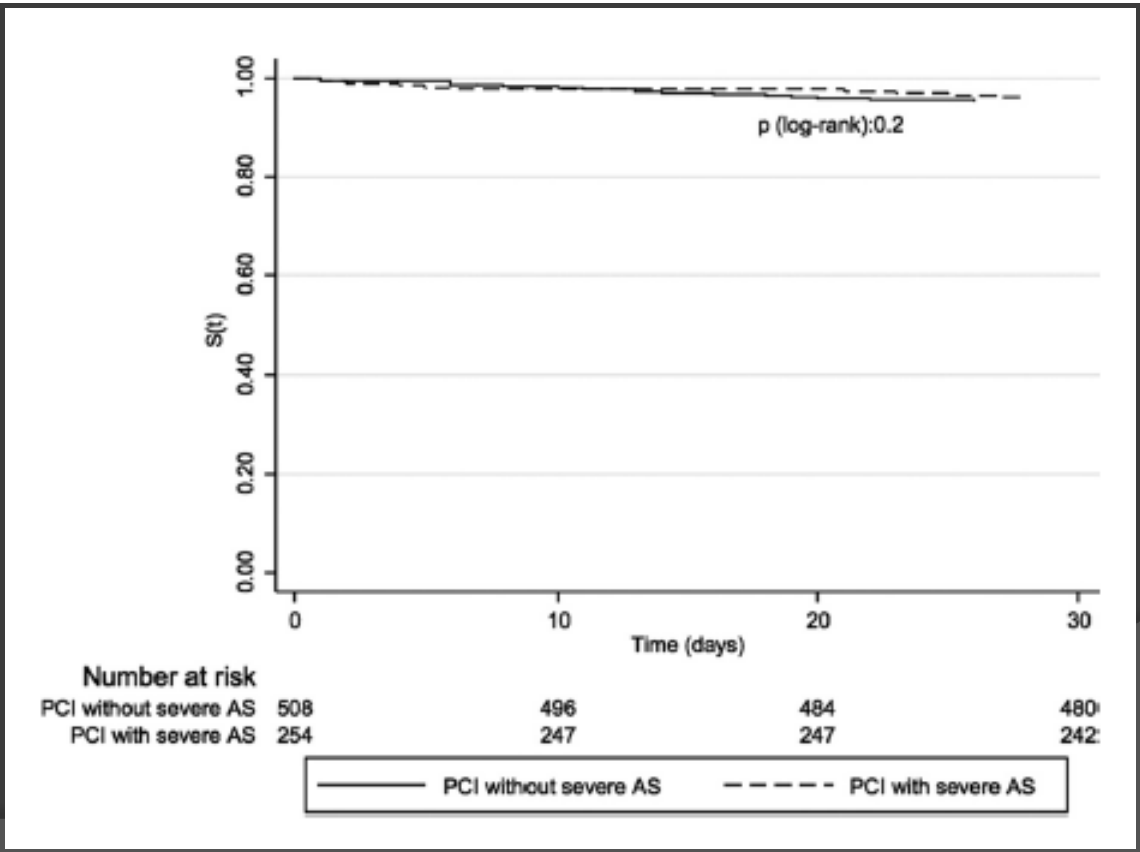
- Mean duration from PCI to TAVI was 56 days (range:0-120 days)

Recovery / Symptoms evaluation / Statins

Safety of performing PCI in patients with severe AS

Percutaneous Coronary Intervention in Patients With Severe Aortic Stenosis : Implications for Transcatheter Aortic Valve Replacement

Sachin S. Goel, Shikhar Agarwal, E. Murat Tuzcu, Stephen G. Ellis, Lars G. Svensson, Tarique Zaman, Navkaranbir Bajaj, Lee Joseph, Neil S. Patel, Olcay Aksoy, William J. Stewart, Brian P. Griffin and Samir R. Kapadia *Circulation*. 2012;125:1005-1013



Future research

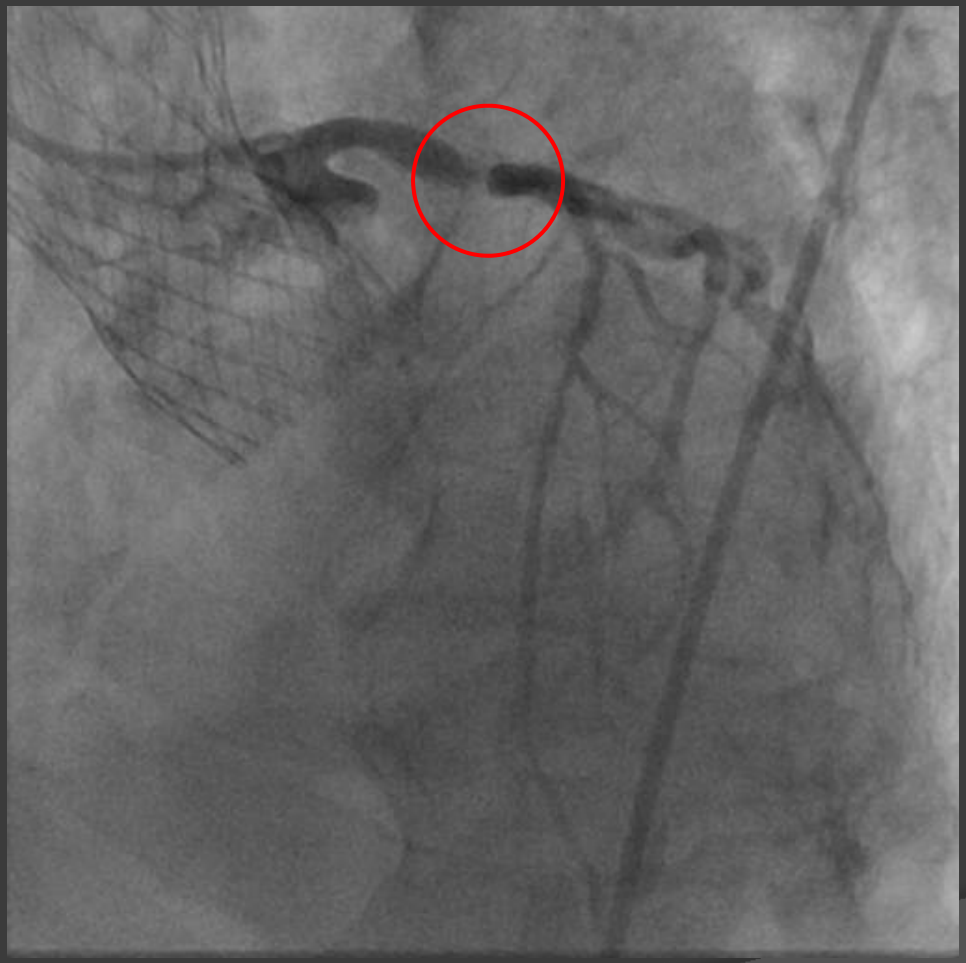
- Longer follow-up
- Randomized/ multi-center/ prospective
- PCI s/p TAVI

Conclusions

- Performing staged PCI before TAVI in high-risk elderly patients with obstructive CAD and severe AS is feasible and safe
- This combined approach did not increase the periprocedural risk, or the all-cause mortality

Thank You

NSTEMI – 3 months s/p TAVI



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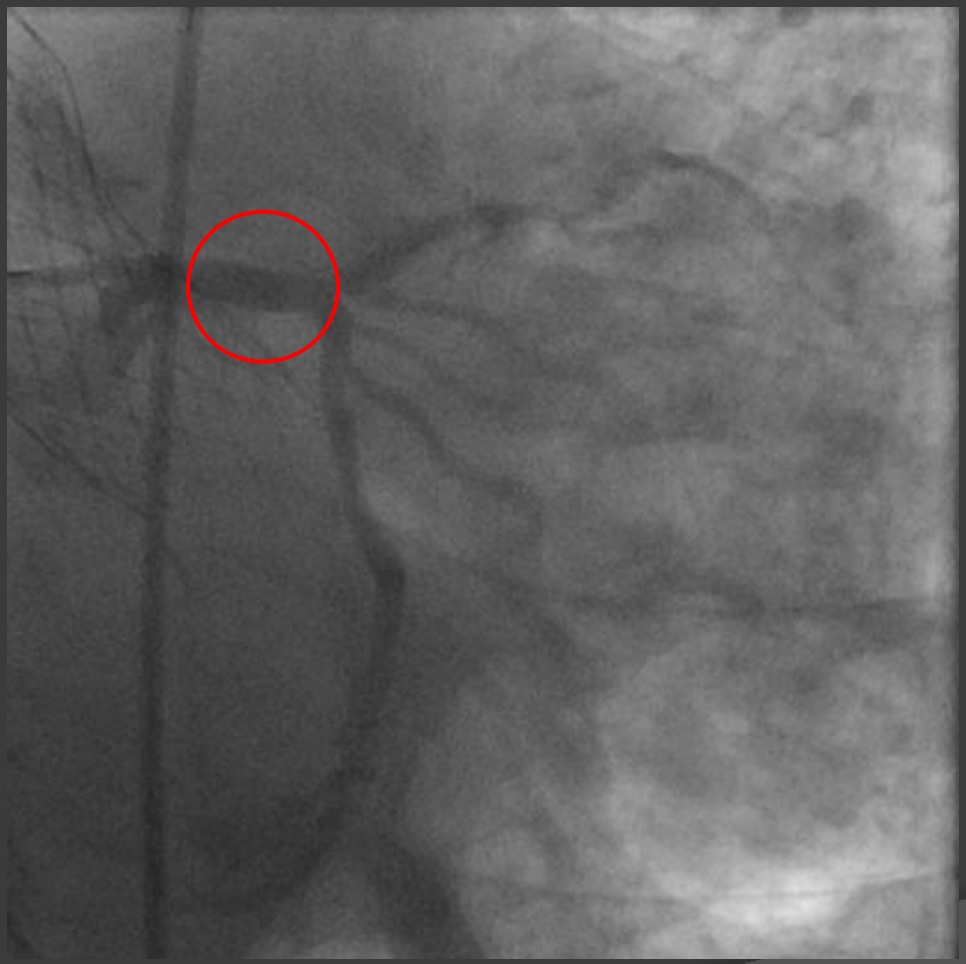
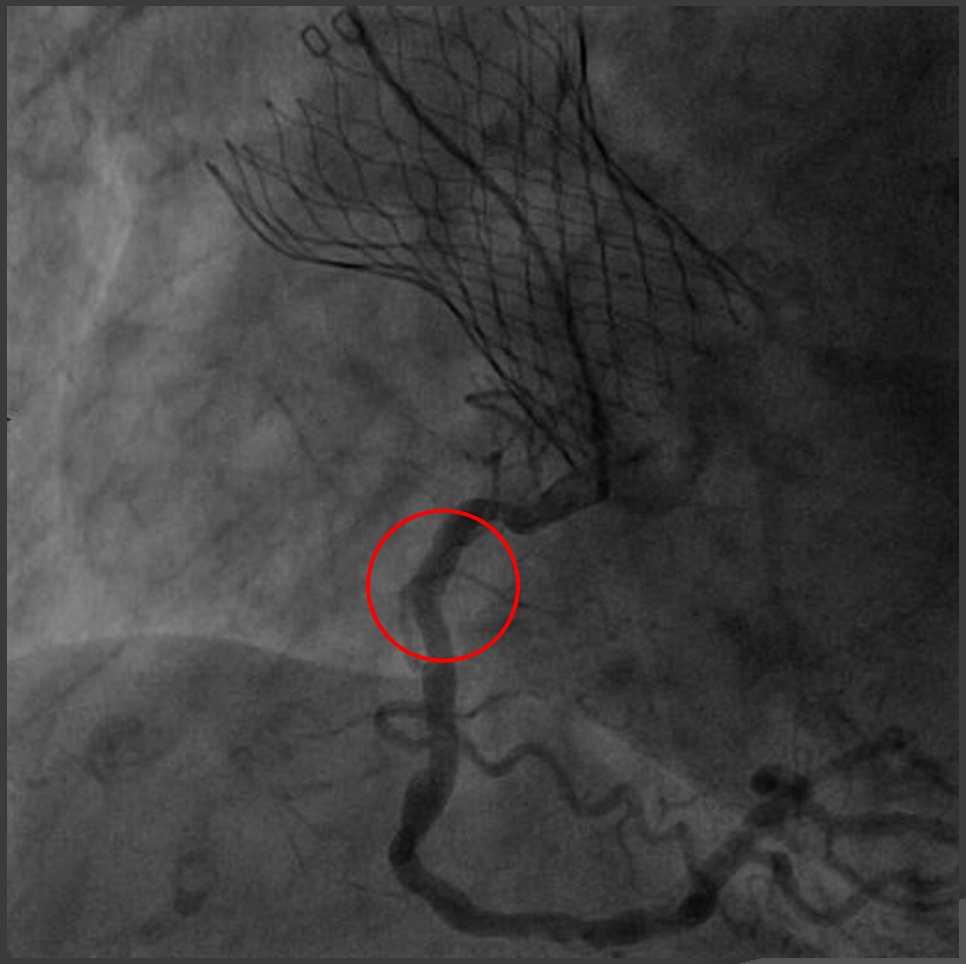


NSTEMI – 7 months s/p TAVI



UAP – 9 months s/p TAVI

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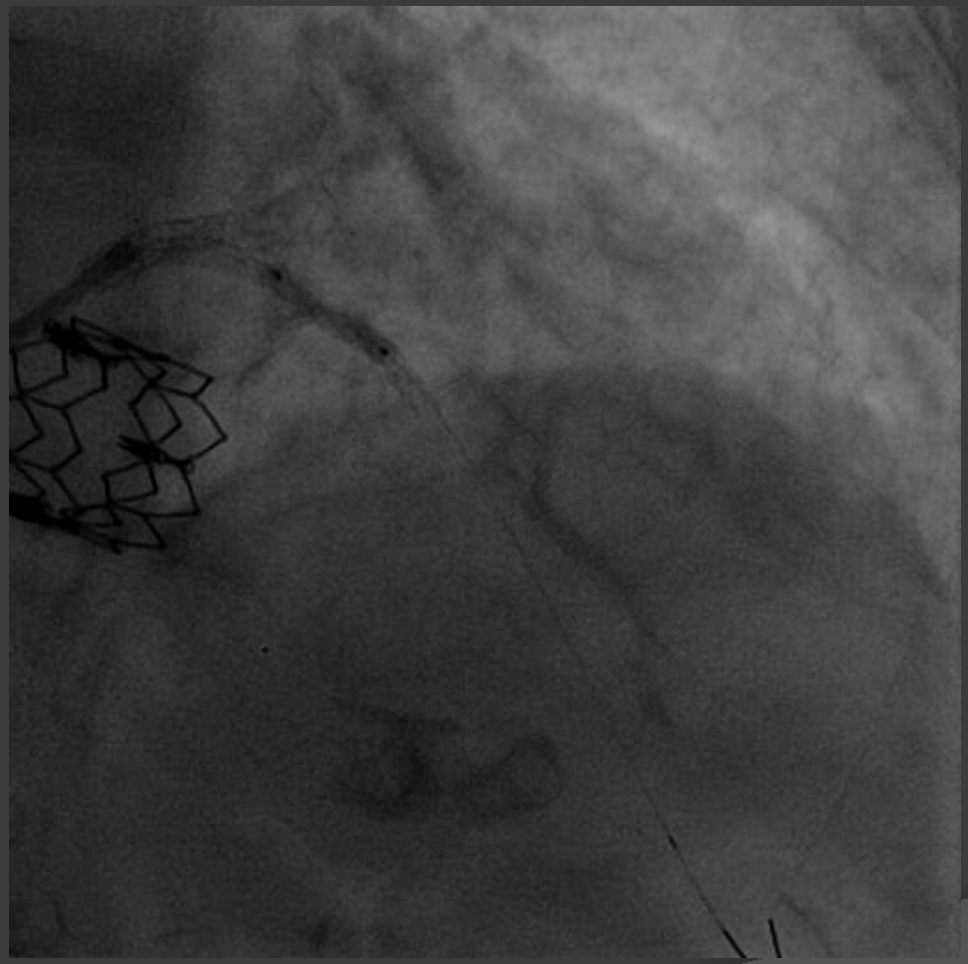

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