

## Revaskularisation: Vor oder Nach Aortenklappenersatz?

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## Fakten I

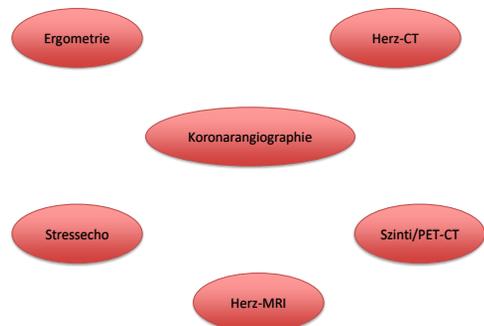
- Alle Patienten vor Aortenklappenersatz (SAVR oder TAVR) erhalten eine Koronarangiographie.
- TAVR Patienten sind in der Regel eher älter → somit Wahrscheinlichkeit für das Vorhandensein einer KHK höher.
  - Bis zu 60 % der TAVR-Patienten haben relevante KHK.

## Fakten II

- Häufigstes Symptom Dyspnoe → passend sowohl zu Aortenklappenstenose wie zu KHK
- Behandlung dieser Patienten stellt eine Herausforderung dar.
  - Nicht invasive Tests nicht gut verwertbar: LV-Hypertrophie → subendokardiale Ischämie auch ohne schwere KHK

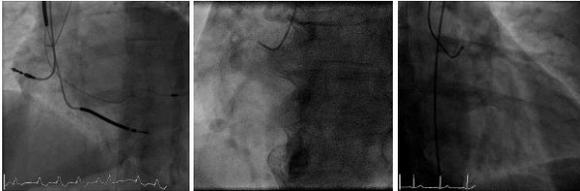
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## Keiner der gängigen Tests ist in dieser Population ideal



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## «KHK» hat viele Gesichter



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Indications for myocardial revascularization		
CABG is recommended in patients with a primary indication for aortic/mitral/tricuspid valve surgery and coronary artery diameter stenosis $\geq 70\%$ . <sup>e,f</sup>	<b>I</b>	<b>C</b>
CABG should be considered in patients with a primary indication for aortic/mitral/tricuspid valve surgery and coronary artery diameter stenosis $\geq 50-70\%$ .	<b>IIa</b>	<b>C</b>
PCI should be considered in patients with a primary indication to undergo TAVI and coronary artery diameter stenosis $>70\%$ in proximal segments.	<b>IIa</b>	<b>C</b>
PCI should be considered in patients with a primary indication to undergo transcatheter mitral valve intervention and coronary artery diameter stenosis $>70\%$ in proximal segments.	<b>IIa</b>	<b>C</b>

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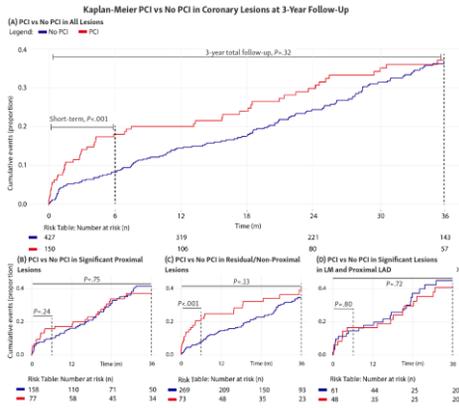
PCI should be considered in patients with a primary indication to undergo TAVI and coronary artery diameter stenosis  $>70\%$  in proximal segments.

**IIa****C**

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## Ist PCI immer sinnvoll?

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The Impact of Percutaneous Coronary Intervention on Mortality in Patients With Coronary Lesions Who Underwent Transcatheter Aortic Valve Replacement. JIC 2021

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### Argumente vor TAVI zu revaskularisieren

Pro	Kontra
- Koronarzugang einfacher	- Antiplättchen-Therapie
- Kleinere Gefahr einer hämodynamischen Verschlechterung während TAVI bei kritischer KHK	- Verschlechterung der Hämodynamik während PCI (bei bekannter schwerer AS und hohem Füllungsdruck)
- Weniger Kontrastmittel	

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### Argumente während TAVI zu revaskularisieren

Pro	Kontra
- Vereinfacht das Management	- Erhöht Kontrastmittelmenge
- Zugang für die Intervention bereits vorhanden	- Prozedur geht länger
- Risiko für hämodynamische Verschlechterung kleiner	- Schenkt man den Koronararterien genug Liebe?
- Spezialsituationen: ostiale Läsion, Gefahr der Koronarobstruktion während TAVI etc.	

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### Argumente nach TAVI zu revaskularisieren

Pro	Kontra
- Evtl. ist klinische Situation so verbessert, dass keine PCI notwendig	- Koronarzugang in der Regel schwieriger
- Patient hämodynamisch stabiler	- Prozedur geht länger

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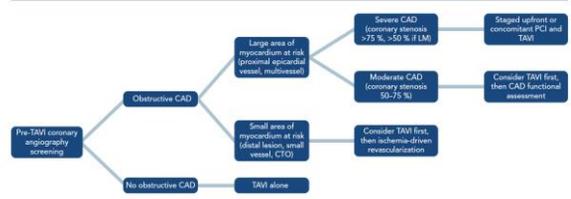
Table 4: Studies on Timing of PCI in TAVI Patients

Study	Year	PCI (n)	% PCI in CAD pts	Timing of PCI	Event type (%)	Follow-up	Outcomes	Conclusions	Additional findings
<b>Wenaweser<sup>10</sup></b>	2011	254	25.0 (9.5)	M = 28 days before TAVI (28 %), Concomitant with TAVI (61 %)	DES staged 53.1, 53.1, 88.4	Up to 2 years	No difference in 30-day mortality (2.4 % vs 3.2 %, p=0.24) and SMC endpoints between staged TAVI and PCI + TAVI	Staged and concomitant safe and feasible	Completeness of revascularization did not impact on long-term survival (both %)
<b>Cornell<sup>11</sup></b>	2011	28	100 (100)	30 days before TAVI (25 %), Concomitant (50 %), PCI + TAVI (25 %)	DES staged 100, 100, 100	30 days	In-hospital and 30-day mortality rate of 11.1 % (2/28 deaths) all in the PCI-concomitant TAVI group	Staged and concomitant PCI safe and feasible	No periprocedural MI or stroke – higher risk of renal failure with concomitant strategy
<b>Green<sup>12</sup></b>	2014	411	19.8	In-hospital (21 %), Concomitant (25 %), 30 days before TAVI (54 %)	DES staged 86.5, 71	Median 3 years	PCI + TAVI associated to increased rate of 30-day MI (6 % vs 1 %, p<0.01) and mortality (5 % vs 2 %, p<0.01) and minor 3-year survival (p=0.01)	Similar 3-year survival outcome staged and concomitant PCI	PCI associated to an elevated risk of MI and death regardless of synchronicity or revascularization strategy
<b>Van Rossum<sup>13</sup></b>	2015	95	100	<30 days (20 %), 30-90 days (80 %)	DES staged 85, 84	Up to 3 years	3-year mortality not associated to timing of staged PCI (p=0.24)	Staged or concomitant PCI safe and feasible	Higher rates of minor bleeding (p<0.01) and stroke (p=0.01) with PCI (>30 days)
<b>Foster<sup>14</sup></b>	2012	419	11.0	Same	DES staged 87, 87, 87	Up to 3 years	4.3 % mortality rate at 30 days (87 % survival rate at 1 year, 88 % at 2 and 3 years)	PCI immediately after transcatheter TAVI safe and feasible	100 % technical procedural success
<b>Bismonte<sup>15</sup></b>	2015	35	100	Any time after TAVI (23.3 %), 15-30 days (76.7 %)	DES staged 100, 100, 100	Procedural success of PCI	Coronary revascularization staged in 70 % cases with valve closing coronary stents	Supercoronary device and high valve reintegration may impact PCI at discrete subintony location	Coronary revascularization was feasible with any timing PCI
<b>Alami<sup>16</sup></b>	2016	17	100	Any time after TAVI (100 %)	DES staged 100, 100, 100	In-hospital	Successful coronary revascularization in 16 of 17 cases	PCI safe and concomitant with TAVI	1 procedural failure and consequent death in emergency setting

Abb.: from minor to major CAD = coronary artery disease; DES = drug-eluting stent; MI = myocardial infarction; PCI = percutaneous coronary intervention; SMC = stentless mitral valve; TAVI = transcatheter aortic valve replacement.

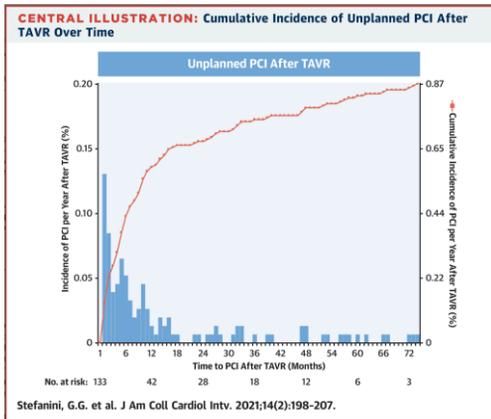
Cao et al. RADCLIFF CARDIOLOGY 2018

Figure 1: Flow Chart of Suggested Strategies for Coronary Artery Disease Management in Transcatheter Aortic Valve Implantation Candidates

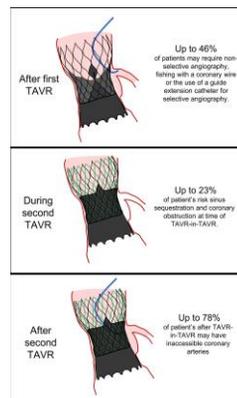


CAD = coronary artery disease; CTO = chronic total occlusion; FIM = left main; PCI = percutaneous coronary intervention; TAVI = transcatheter aortic valve implantation.

Cao et al. RADCLIFF CARDIOLOGY 2018

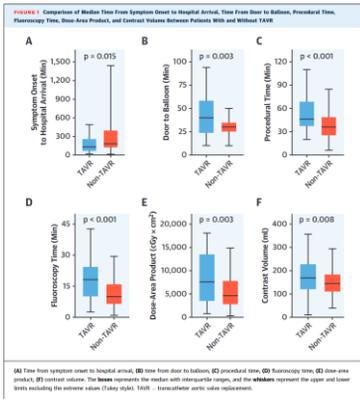


Stefanini, G.G. et al. J Am Coll Cardiol Interv. 2021;14(2):198-207.



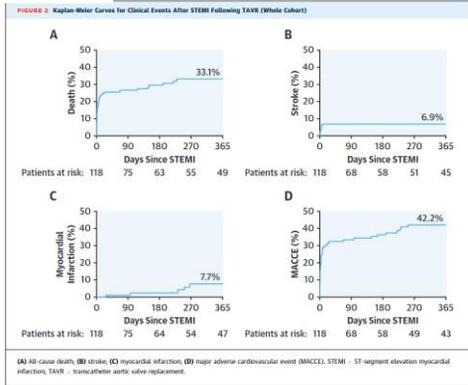
Brian J. Forrestal. Circulation: Cardiovascular Interventions. Risk of Coronary Obstruction and Feasibility of Coronary Access After Repeat Transcatheter Aortic Valve Replacement With the Self-Expanding Evolut Valve, Volume: 13, Issue: 12, DOI: (10.1161/CIRCINTERVENTIONS.120.009496)

ST-Segment Elevation Myocardial Infarction Following Transcatheter Aortic Valve Replacement



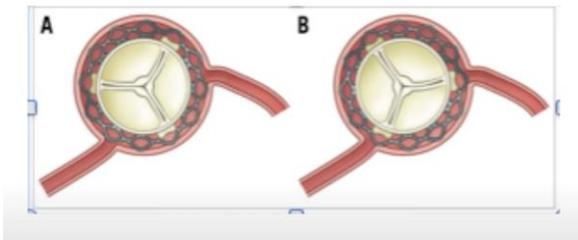
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ST-Segment Elevation Myocardial Infarction Following Transcatheter Aortic Valve Replacement



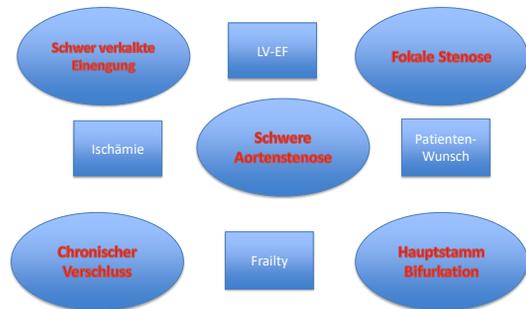
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Commissural alignment

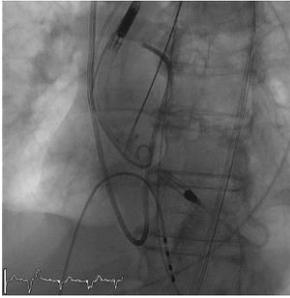


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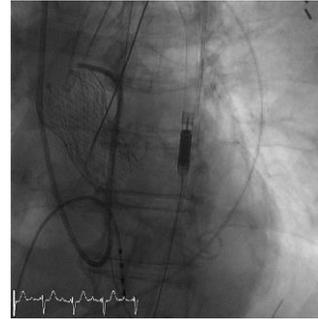
Revaskularisieren?



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## Zusammenfassung

- Eine Revaskularisation soll nur bei Stenosen/Verschlüssen von grossen epikardialen Gefässen mit hochgradigen Stenosen durchgeführt werden.
- Einfache Läsionen sollten idealerweise während der TAVI versorgt werden.
- Komplexere Läsionen können bei nicht kritischer Aortenstenose vor TAVI durchgeführt werden.

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