

## Revaskularisation: Vor oder Nach Aortenklappenersatz?

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## Fakten I

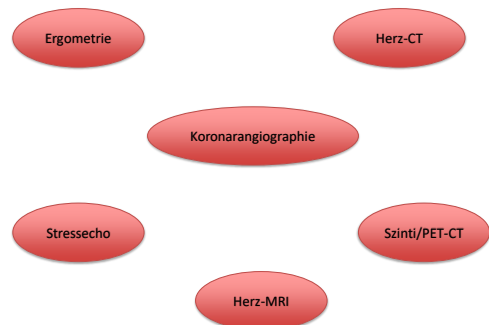
- Alle Patienten vor Aortenklappenersatz (SAVR oder TAVR) erhalten eine Koronarangiographie.
- TAVR Patienten sind in der Regel eher älter → somit Wahrscheinlichkeit für das Vorhandensein einer KHK höher.
  - Bis zu 60 % der TAVR-Patienten haben relevante KHK.

## 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

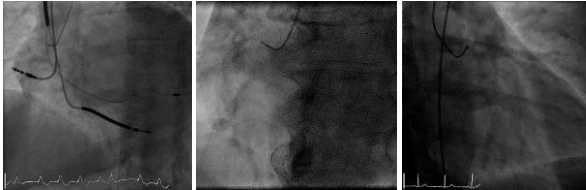
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## Keiner der gängigen Tests ist in dieser Population ideal



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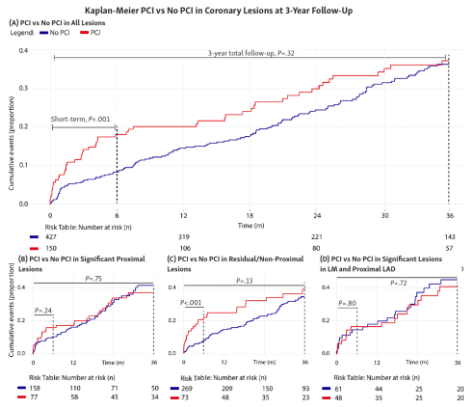
PCI should be considered in patients with a primary indication to undergo TAVI and coronary artery diameter stenosis  $>70\%$  in proximal segments.

<b>IIa</b>	<b>C</b>
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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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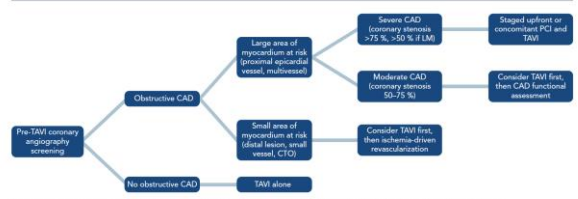
Table 4: Studies on Timing of PCI in TAVI Patients

Study	Year	Pts (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 (63.8)	M = 28 days before TAVI (28.7%); Concomitant with TAVI (71.3%)	DES staged 10.1% DES 10.1% BKA	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 (25.0%); Concomitant (75.0%)	DES 10.1% DES 10.1%	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 (21.9%); Concomitant (78.1%)	DES 10.1% DES 10.1%	Median 3 years	PCI + TAVI associated to increased rate of 30-day MACE (6.1% vs 1.1%, p<0.01) and mortality (5.1% vs 1.5%, p<0.01) and minor 3-year survival (p=0.01)	Similar 3-year survival outcome	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 (30.5%); 30-90 days (69.5%)	DES 10.1% DES 10.1%	Up to 3 years	3-year mortality not associated to timing of staged PCI (p=0.24)	Shorty or remotely staged PCI before TAVI yields comparable results	Higher rates of minor bleeding (p<0.01) and moderate/severe renal dysfunction (p<0.01) (vs 10 days)
<b>Foster<sup>14</sup></b>	2012	419	11.0	Same	DES 10.1% DES 10.1%	Up to 3 years	4.3% mortality rate at 30 days (87.1% survival rate at 1 year, 88.1% 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 (22.9%); 10-14 days (77.1%)	DES 10.1% DES 10.1%	Procedural success of PCI	Procedural success of PCI with valve closing coronary occlusion	Supercoronary device and high valve implantation success after TAVI	Coronary revascularization was feasible with any timing PCI at discrete coronary location
<b>Alami<sup>16</sup></b>	2016	17	100	Any time after TAVI (100%)	DES 10.1% DES 10.1%	In-hospital	Successful coronary cannulation in 16 of 17 patients	PCI safe and concomitant with TAVI	1 procedural failure and consequent death in emergency setting

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

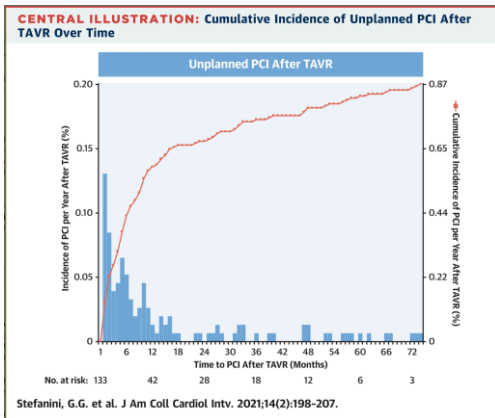
Cao et al. RADCLIFF CARDIOLOGY 2018

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

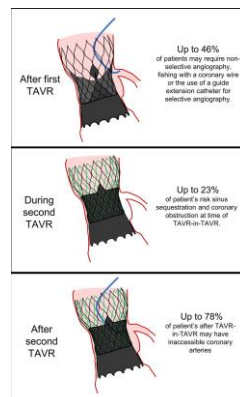


CAD = coronary artery disease; CTO = chronic total occlusion; FLM = left main; PCI = percutaneous coronary intervention; TAVI = transcatheter aortic valve implantation.

Cao et al. RADCLIFF CARDIOLOGY 2018

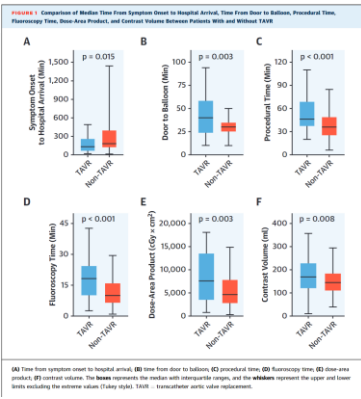


Stefanini, G.G. et al. J Am Coll Cardiol Interv. 2021;14(2):198-207.



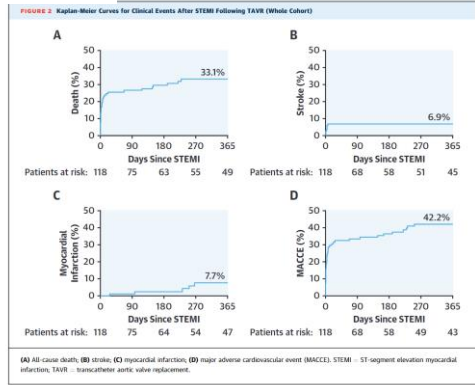
Brian J. Forrestal. Circulation: Cardiovascular Interventions, Risk of Coronary Obstruction and Feasibility of Coronary Access After Repeat Transcatheter Aortic Valve Replacement With the Self-Expanding Evolut Valve, Volume: 13, Issue: 12, DOI: (10.1161/CIRCINTERVENTIONS.120.009496)

ST-Segment Elevation Myocardial Infarction Following Transcatheter Aortic Valve Replacement



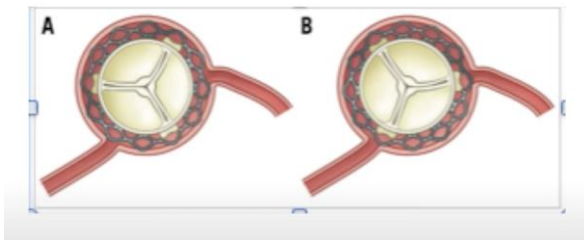
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ST-Segment Elevation Myocardial Infarction Following Transcatheter Aortic Valve Replacement



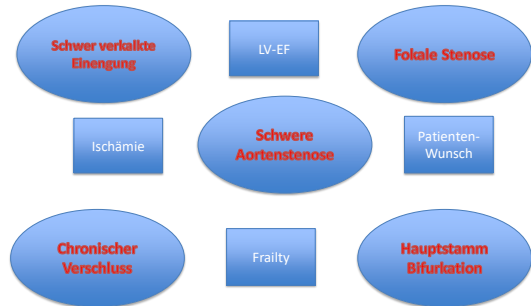
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Commissural alignment

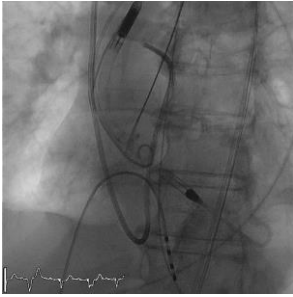


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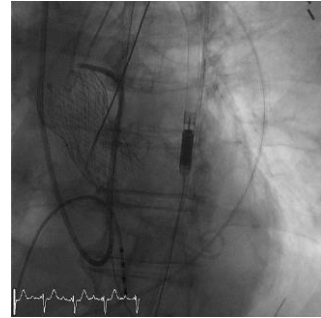
Revaskularisieren?



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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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