

# National Analysis Questions Role of First-Line PCI in SCAD

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The largest analysis to date of spontaneous coronary artery dissection (SCAD) in women supports conservative management over PCI as the upfront strategy for SCAD in patients admitted for acute MI.<sup>[1]</sup>

After examining 752,352 women with acute MI in the National Inpatient Sample (NIS) database, researchers unsurprisingly found that in-hospital mortality was higher in those with SCAD than those without (6.8% vs 3.4%).

The incidence of in-hospital mortality in patients with SCAD, however, declined over the study period, from 11.4% in 2009 to 5.0% in 2014 ( $P$  for trend  $<0.0001$ ), and ran parallel to a decrease in PCI for SCAD, from 82.5% to 69.1% ( $P$  for trend  $<0.0001$ ).

Further, PCI was associated with higher multivariable-adjusted in-hospital mortality than was conservative management in patients with SCAD who had non-ST-segment MI (NSTEMI) (odds ratio [OR], 2.01; 95% CI, 1.00–4.47) but not with STEMI (OR, 0.62; 95% CI, 0.41–0.96), according to the study, published recently in *JACC Cardiovascular Interventions*.

"Using PCI and putting stents in those patients might not be the way to go, and they might actually have worse outcomes," first author, Dr Ahmed N Mahmoud (University of Florida, Gainesville) told *theheart.org* | *Medscape Cardiology*.

He noted that performing balloon angioplasty or placing wires in a dissected artery can actually extend and worsen the hematoma that forms within the intramural space. Also, several series have shown that most of these hematomas spontaneously resolve.

In a related editorial,<sup>[2]</sup> Dr Hani Jneid (Baylor College of Medicine, Houston, TX) argues that the observed relationship between PCI and mortality is "at best an association and does not prove causality," given the observational nature of the study, and that the authors' conclusions about the role of PCI are "controversial," given the lack of data on procedural variables and adjunctive therapies, which can confound the mortality finding.

He notes that a recent meta-analysis<sup>[3]</sup> reported no significant differences in mortality, MI, target vessel revascularization, or SCAD recurrence between revascularization and medical management in patients with SCAD.

"In the case of STEMI with compromised coronary flow (nearly 45% of SCAD patients in the current report presented with STEMI) or in patients with hemodynamic or electrical instability, it is difficult to justify anything short of attempted revascularization, preferably with PCI," Jneid writes. "Therefore, clinicians should account for the heterogeneity in the clinical presentation of SCAD and ascribe a tailored approach to these patients."

Senior author, Dr Jacqueline Saw (University of British Columbia, Vancouver), said in an interview that it's "absolutely true" their observational study cannot prove causality between PCI and mortality. But "this observation is in keeping with what we have observed in many other contemporary series, where PCI is fraught with challenges, higher failure rates, and more complications."

She said the findings support current recommendations and a soon-to-be released American Heart Association scientific statement on the management of SCAD, on which she is a co-chair of the writing committee.

"If the patient has unique symptoms or hemodynamic instability and ongoing ischemia from an occluded artery, you have to attempt PCI to revascularize and reopen the channel, but in the absence of clinical instability, PCI is definitely not recommended," Saw said.

Commenting for *theheart.org* | *Medscape Cardiology*, Dr Rajiv Gulati (Mayo Clinic, Rochester, MN), who was not involved with the study, said, "Our group and Jackie's group both showed the very high rates of complication with PCI for SCAD, and that information does appear to be penetrating the interventional community."

He also noted that SCAD often affects distal, small branch vessels and that in the past these may have been missed and mislabeled as normal coronaries. "So it's quite possible that some of the decline in PCI is that we're now seeing the disease and labeling it in these small, distal vessels that would never get PCI in the first place, so the denominator may have changed."

Among the 752,352 women with AMI in the NIS database, the overall prevalence of SCAD was about 1%.

Notably, the 7347 women with a SCAD diagnosis were younger than those without SCAD (mean age, 61.7 vs 67.1 years) and had fewer CAD risk factors, including diabetes (21.2% vs 32.4%), hypertension (64.3% vs 74.3%), and obesity (17.1% vs 18.7%).

The incidence of SCAD increased slightly over the study period (929 vs 961 per 100,000 women with acute MI), but Saw said it's not possible to tease out whether this reflects an actual increase or greater recognition of SCAD and use of intravascular ultrasonography or optical coherence tomography for diagnosis.

Still, the risk for in-hospital mortality was higher in patients with SCAD than those without after propensity matching (OR, 1.87; 95% CI, 1.65–2.11) and in multivariable regression analyses that included at least 60 potential confounders (OR, 2.41; 95% CI, 2.07–2.80).

Gulati said the strength of the study is the large sample size and that it addresses the most important limitation of prior registry studies, survivor bias.

"We only had patients who survived long enough to registry, so we never really had a handle on the true acute mortality risk of SCAD, and so this I think is the major benefit of this national inpatient study: that we can for the first time get some idea of the acute mortality with SCAD," he said.

Gulati expressed concern, however, that coding or diagnostic errors may have populated the SCAD population with patients without SCAD because "there are many things that don't fit with our general understanding of patients with SCAD."

He noted that the biggest registries, the Mayo Clinic's and Saw's, have shown a median age of 42 and 52 years, while the median age in the present study was in the low 60s. Also, patients in prior Mayo Clinic registry studies, in which SCAD was confirmed on angiography, were generally much healthier.

Still, patients with SCAD were younger than the non-SCAD group, so it's likely there was a good proportion of SCAD within it, Gulati added. "And I think despite the contamination with non-SCAD patients in that group, these findings are believable and likely real."

Going forward, Saw said it is important to continue to educate healthcare professionals about SCAD so women who present with chest pain aren't sent home without ECG and a troponin test.

She continued, "The message also has to get out to women themselves that they don't ignore the symptoms. A lot of these patients present late because they ignore the symptoms for 1, 2, or 3 days before they come into the hospital," and that can be deadly.

*Mahmoud has disclosed no relevant financial relationships. Saw reports receiving research grants for SCAD research from the Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada, University of British Columbia Division of Cardiology, AstraZeneca, Abbott Vascular, St. Jude Medical, and Servier; serving as a consultant for Boston Scientific, Abbott Vascular, and St Jude; receiving honoraria for proctoring from Boston Scientific and St Jude; and receiving speaker honoraria for SCAD from AstraZeneca, St Jude, and Sunovion. Jneid has disclosed no relevant financial relationships.*

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## References

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3. Martins JL, Afreixo V, Santos L, et al. Medical treatment or revascularization as the best approach for spontaneous coronary artery dissection: a systematic review and meta-analysis. *Eur Heart J Acute Cardiovasc Care* 2017; doi: 10.1177/2048872617706502. [Abstract](#)

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