SCAAR reveals lower risk of stent thrombosis and restenosis with unrestricted use of 'new-generation' drug-eluting stents in clinical practice

Data from the Swedish Coronary Angiography and Angioplasty Registry (SCAAR), an observational study from a large real-world population (n=94,384), has demonstrated that percutaneous coronary intervention (PCI) with new-generation drug-eluting stents (DES) is associated with a 38% lower risk of clinically meaningful restenosis, a 43% lower risk of stent thrombosis, and a 23% lower risk of death compared with older-generation DES.[1]

SCAAR, established in 1989, contains patient data from all 29 centres that perform coronary angiography and PCI in Sweden. The registry is the largest of its kind in the world and also has the longest patient follow-up.

Restenosis due to neointimal formation is an inherent limitation of bare-metal stents (BMS). The first-generation of DES were developed to elute anti-proliferative agents, such as paclitaxel, to help inhibit restenosis. Despite numerous studies supporting the efficacy and safety benefits of these older generation DES, long-term safety concerns about an increased incidence of stent thrombosis have been raised for these devices. Recently, next-generation stents, such as Endeavor Resolute (Medtronic, Inc.) and Xience V (Abbott Laboratories), which combine improved biocompatibility, mechanical design and alternative anti-proliferative-eluting drugs, have demonstrated promising results. Two-year data from the RESOLUTE trial (n=139) demonstrated rates of target lesion revascularization, target vessel revascularization (TVR), and target vessel failure rates of 1.4%, 1.4%, and 7.9% respectively.[2]
In 1,800 patients, Xience V has been shown to have reduced levels for all death, non-fatal myocardial infarction (MI), TVR compared to an old-generation stent (Taxus Liberté) at one year (56/827 [6%] vs 82/903 [9%] respectively; P=0.02).[3]
Recently, in 2,292 adult patients with chronic, stable coronary artery disease or acute coronary syndromes, the Resolute stent has been shown to be non-inferior to the Xience V stent for cardiac death, target vessel MI, and ischaemia-driven target lesion revascularization at 1 year.[4] However, long-term and comparative clinical data for these stents are limited. The findings of the SCAAR registry help to shed light on the long-term benefits of these new stent designs.

As well as demonstrating that new-generation DES (e.g., Endeavor Resolute; Xience V; Promos, Boston Scientific) are associated with a 23% lower risk of death at 2 years compared with older-generation DES (e.g., Cypher, Cordis Copr; Taxus, Boston Scientific; Endeavor, Medtronic, Inc.), these data[1], published in the European Heart Journal, represent the first time any mortality reduction has been shown between both new and old-generation DES, and BMS (e.g., Multilink, Abbott; Driver, Medtronic, Inc.; Chrono, CID) – either in randomized trials or from previous reports from SCAAR. The risk of death was 45% lower with new-generation DES and 28% lower with older-generation DES, when compared with BMS (1.9%, 3.4% and 6.8% mortality respectively). The authors note that that this phenomenon has not been observed in previous randomized studies and that unrecorded differences in baseline characteristics may have influenced this figure. However, they also note that the large study size could provide sufficient power to detect these differences.

Whilst these data demonstrate the advantages of new-generation DES, the authors acknowledge that further work is required to understand how the findings might impact on the clinical management of patients, especially those with a high-risk profile for stent thrombosis and restenosis.

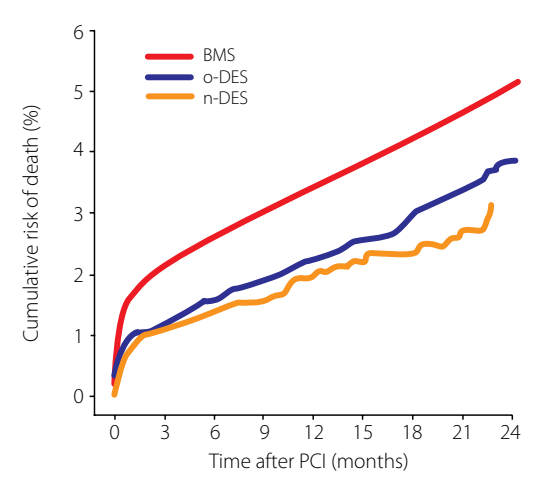

fig. 1

Adjusted cumulative risk of death up to 2 years in BMS, old-generation DES (o-DES) and new-generation DES (n-DES).

(adapted from Sarno et al. 2012[1])

REFERENCES:

1. Sarno G, et al. Lower risk of stent thrombosis and restenosis with unrestricted use of 'new-generation' drug-eluting stents: a report from the nationwide Swedish Coronary Angiography and Angioplasty Registry (SCAAR). *Eur Heart J* 2012;Epub ahead of print.
2. Meredith I, et al. Long-term clinical outcomes with the next-generation Resolute Stent System: a report of the two-year follow-up from the RESOLUTE clinical trial. *EuroIntervention* 2010;5(6):692-7.
3. Kedhi E, et al. Second-generation everolimus-eluting and paclitaxel-eluting stents in real-life practice (COMPARE): a randomised trial. *Lancet* 2010;375(9710):201-9.
4. Serruys P, et al. Comparison of zotarolimus-eluting and everolimus-eluting coronary stents. *New Engl J Med* 2010;363(2):136-46.