Impact of intracoronary imaging-guided percutaneous coronary intervention on procedural outcomes among complex patient groups

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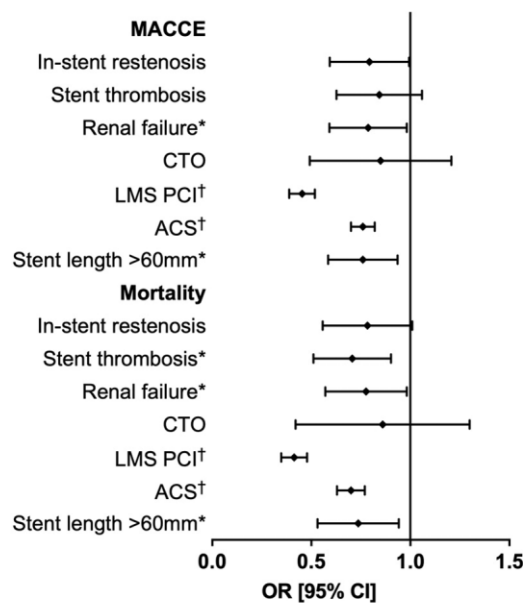[6]Keele University, Keele, United Kingdom of Great Britain & Northern Ireland
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Background: Intracoronary imaging (ICI) has been previously shown to improve survival and clinical outcomes after percutaneous coronary intervention (PCI). However, whether this prognostic benefit is sustained across different indications/patient groups remains unclear.

Methods: All PCI procedures performed in England and Wales between 1st April 2014 and 31st March 2020 were retrospectively analysed. The association between ICI use and in-hospital MACCE (major adverse cardiovascular and cerebrovascular outcomes; composite of all-cause mortality, stroke and reinfarction) and mortality was examined using multivariable logistic regression analysis for each imaging-recommended indication (stent thrombosis (ST), in-stent restenosis, stent length>60mm, acute coronary syndrome (ACS) indications, chronic total occlusion, left main stem (LMS) intervention, renal failure and bioresorbable vascular scaffolds (BVS)).

Results: Of 555,398 PCI procedures, 10.8% (n=59,752) were performed under ICI guidance. ICI use doubled between 2014 (7.8%) and 2020 (17.5%). ICI use was highest for BVS (44.7%) and LMS PCI (41.2%) cases and lowest in ACS (9%). Overall, the odds ratios (OR) of in-hospital MACCE and mortality were only reduced with ICI-guided PCI in cases with an imaging-recommended indication (OR 0.75 95% confidence interval (CI) 0.69-0.81 and OR 0.69 95%CI 0.63-0.76, respectively). Only specific imaging-recommended indications were associated with reduced MACCE and mortality, including LMS PCI (OR 0.45 95%CI 0.39-0.52 and 0.41 95%CI 0.35-0.48, respectively), ACS (OR 0.76 95%CI 0.70-0.82 and 0.70 95%CI 0.63-0.77), stent length>60mm (OR 0.75 95%CI 0.59-0.94 and 0.72 95%CI 0.54-0.95). ST was only associated with lower mortality (OR: 0.69 95%CI 0.52-0.91) while renal failure was associated with reduced MACCE (OR 0.77 95%CI 0.60-0.99) but not mortality. (Figure 1)

Conclusion: The utilisation of ICI has more than doubled over a seven-year period at a national level but remains low, with less than 1-in-5 procedures performed under ICI guidance. In-hospital survival was better with ICI-guided than angiography-guided PCI, albeit only for specific indications.

*p<0.05; † p<0.001

Figure 1