

FROM THE HEART **Aseem Malhotra**

Too much angioplasty

Stenting offers no prognostic benefit over drugs in stable coronary disease

George W Bush's recent decision to consent—in the absence of symptoms—to the implantation of a stent by an interventional cardiologist has led to an entirely justifiable debate on how best to treat stable coronary artery disease.

Though the clinical benefit of percutaneous coronary intervention (PCI) in managing acute coronary syndromes has been proved,¹⁻⁴ many robust randomised studies (which included patients at low and at high risk) have not shown any prognostic value in stenting for stable angina in addition to optimal medical therapy.⁵

Given the complications related to the procedure, the fact that many serious events result from non-significant lesions,⁶ the potentially thrombotic milieu created by a metal scaffold apposed to the intima of a coronary artery after it is stretched by a balloon, and the potency of lifestyle changes and drug treatment, it is perhaps easier to understand that even stenting a 90% stenosed artery for stable angina does not prevent heart attacks or prolong life. Yet such practice continues to contribute to overspending in healthcare in the US, whose total healthcare spending is predicted to exceed \$3.1 trillion (£1.9 trillion) next year.⁷

Often a gulf exists between cardiologists' knowledge of the available evidence and their clinical practice. Psychological factors, such as fear of untreated stenosis causing cardiac events, and pressure from patients who may not fully understand the complexity of coronary disease, can influence decision making towards intervention. In one study 88% of patients undergoing a procedure for stable angina believed that angioplasty would prevent a myocardial infarction; and, given various scenarios, 43% of cardiologists said that they would go ahead with PCI even if they thought it would not benefit the patient.⁹

Much of clinical medicine is

“palliative,” and it is justifiable to perform stenting to improve the quality of life of patients with limiting angina where medical therapy may have failed, as long as the patient is given all the information. The increased uptake of fractional flow reserve (FFR) may also mitigate the harms of “too much stenting.” This well validated technology, in which a wire tipped with a sensor is passed down a coronary artery, can assess the functional implications of lesions causing ischaemia.

Recent studies support the idea that physiological assessment of specific coronary stenosis treated with PCI is a much better discriminator for subsequent events than the most commonly used, crude, and subjective two dimensional angiographic interpretation of the significance of lesions.¹⁰⁻¹¹ One study also showed that use of FFR altered the treatment plans in 26% of patients who would benefit most from medical therapy, PCI, or coronary artery bypass graft surgery.¹² Compared with decision making based on angiogram alone, FFR also seems cost effective by reducing unnecessary stenting and limiting exposure to radiation and use of contrast.¹³

There is certainly an opportunity for more responsible angioplasty with the development of technologies such as virtual FFR, with the non-invasive assessment of coronary plaques,¹⁴ and increasing use of intra-coronary imaging, which provides a better understanding of coronary atheroma. And better use of stents may help to improve clinical decisions while mitigating harm.

But we should proceed cautiously. History has taught us the dangers of embracing a new technology, often fuelled by the manufacturer's promotion of its product's benefits. Cardiologists are still coming to terms with a randomised controlled trial's finding that an intra-aortic balloon pump had no objective benefit in



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reducing the risk of death at 30 days and one year.¹⁵⁻¹⁶ This device had been implanted for decades to treat the sickest of patients with acute myocardial infarction—those with cardiogenic shock. Previous guidelines were dictated by non-randomised studies.

The average purchase cost of the machine that works the pump is about £40 000, and the individual pumps come at about £800 a patient. With close to 140 000 patients a year worldwide receiving this technology, the overall costs add up to an astounding amount.¹⁷ What about the negative effects on patients? Many would have experienced serious complications such as stroke, kidney failure, and even limb amputation. And don't forget the valuable time spent by doctors and nurses who have for years been implanting and managing the device for up to several days in hospital wards, wholeheartedly believing that it was saving lives.

So why did an asymptomatic and active former US president receive a stent after a yearly check up? And was he given all the information before agreeing to a procedure with a 1% risk of myocardial infarction, stroke, or death? A greater appreciation among clinicians and patients that stenting for stable coronary disease has no prognostic benefit above medical therapy would reduce unnecessary referrals, lessen anxiety, and help wind back the harms of “too much” angioplasty. But translating the best available data into clinical practice, resulting in more responsible PCI and avoiding “shamangioplasty” and potential “disastoplasty,” remains a big challenge.

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