

HEART ARTERIES: HOW BLOCKED IS “BLOCKED”?

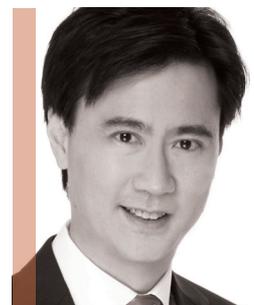
ARTERIES ARE LIKE PIPES. DURING AN ANGIOGRAM EXAMINATION, DYE FILLS THE INSIDE OF THE PIPES. THIS DYE does not allow X-ray to pass through. Therefore arteries appear as black tubes on the angiogram. Any narrowing in an artery will have a 'dog bone' appearance, like fingers pinching a tube. A narrowing of at least 75 per cent will be considered significant and needs opening with a stent in general.

However, this is based almost entirely on visual estimation. Furthermore, it does not take into account whether the area of heart supplied by this narrowed artery actually suffers from lack of oxygen. Implanting a stent in such an artery would be very easy, but this could do more harm than good.

Therefore, how does one find out if a narrowed artery, be it severely narrowed or only borderline narrowed, is actually causing oxygen insufficiency? The latest technology utilises a wire that incorporates a blood pressure detector. The wire is passed across the narrowing and measures the blood pressure beyond the narrowed portion. This 'downstream' pressure is compared to the pressure before the narrowing. Consider a garden hose. If one were to pinch the hose near the exit end, water will squirt out of the hose further. However, the water pressure downstream from your pinch will drop. This is the principle for 'Fractional Flow Reserve' or FFR.

Studies have shown that if the ratio of the pressure beyond the narrowing to the pressure before the narrowing is more than 0.8, stenting does not give any benefit. Instead, it may actually increase the risk of death, heart attack or even bypass operation. In these studies, it was also proven that not stenting an artery with an FFR of more than 0.8 has no long term ill effect. On the other hand, in another study it was shown that if an artery with an FFR of less than 0.8 were not treated, it would result in more emergency events.

In summary, the FFR wire is the latest tool in determining the need for stenting during angiography. It takes into account the amount of heart muscle supplied by the diseased artery as well as the severity of the narrowing. Most of all, it is easy to deploy and prevents unnecessary stenting procedures. ■



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