Direct Coronary Stenting: The Way to go in Pakistan

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Coronary Angioplasty marked a turning point in the history of modern Cardiology[1]. The simple concept of balloon dilatation of a coronary stenotic atherosclerotic narrowing by a pre-shaped non compliant balloon opened the way for an effective alternate to coronary bypass surgery. After this technique, pioneered by Dr. Andreas Gruentzig was established, several new technologies emerged to address the limitations and complications of balloon dilatation of coronary lesions[2]. However, every new technology soon fell out of favour due to either inherent limitations or scaling down of unwarranted expectations after initial over-enthusiasm. Some of these technologies became irrelevant while others went on to a more selective 'niche' technology in the overall scheme of coronary angioplasty[3]. It was apparent that the balloon still reigned supreme and the only significant advances were those made in better guiding systems, better wires and better and lower profile balloons. Then appeared on the scene the metallic slotted tube stents which could be mounted and crimped on to a balloon and delivered to the stenotic dilated area to prop up any dissection flap or recoil[4]. After the initial learning curve leveled off and the teething problems were taken care of, a debate raged as to the superiority or otherwise of a stent verses plain old balloon angioplasty (POPA) in denovo lesions rather than only ,as a bailout standby for complications of PDBA. The Stress and Benestent balloon verses stent trials in the early 1990's established the utility and superiority of the stent over POBA both in terms of immediate results and re-stenosis later[5,6]. The era of stenting had arrived and effectively pushed away all other experimental technologies and represented the first major breakthrough in angioplasty after the introduction of the balloon catheter itself. While the balloons and stents have gotten better, there has been no further major breakthrough in the technology in the last several years. Also, the greatest limitation and scourge of stenting i.e., re-stenosis continues to remain the main challenge[7].

The standard technique of coronary angioplasty with stenting continues to require the initial step of dilatation of a lesion by balloon inflation and either acceptance of the end result if satisfactory, or, the implantation of a coronary stent. In many cases, even when it is clear at the outset that a stent would have to be placed, still, current operating procedure requires a pre-dilatation with a simple balloon followed by deployment of a balloon mounted stent. With the availability of pre-mounted and low profile stents, angioplasters begin experimenting with directly stenting coronary narrowings without the required pre-dilatation[8]. As experience was gained in the late 1999's, it became apparent that a large number of stenoses could be stented directly without any prior balloon dilatation. After a number of non-randomized studies, several randomized trials have been done on direct coronary stenting around the world[9,10]. One such study reported in this issue of JPMA is from Pakistan. It has now been repeatedly shown that except for the severely calcified and severely tortous lesions, direct stenting is successful in the large majority of lesions seen in the day to day practice of Coronary Angioplasty. Not only are the results as gratifying with direct stenting compared to pre-dilatation followed by stenting, there are a number of other benefits being shown. There is a significant reduction in the procedure time, the fluoroscopy and radiation exposure 'to the patient and physician, the amount of radiographic dye used and last but not the least, the cost of the procedure due to decrease in the number of devices used and by using one less balloon[8-10]. All these advantages plus the fact that there may be an actual superiority in terms of lesser trauma with lesser shift of plaque burden and additionally, in the absence of pre-dilatation there may well be less

trauma to the intima beyond the edges of the stent. Whether this will translate into reduced rate of instent and stent edge re-stenosis is not yet established. If one adds to this the preliminary good news on the horizon regarding the dramatic reduction in instent re-stenosis with certain drug eluting stents[11], then these two put together may finally offer a solution to the nuisance of in-stent re-stenosis besides simplifying the stenting procedure.

The era of coronary stenting has matured and settled down as an accepted and a standard method of coronary revascularization with attractive advantages over coronary bypass surgery in selected cases. While there is good news everywhere, it should be kept in mind that these are but small battles won in the fight against coronary artery disease. The real war would be over only when a biological solution to the development of coronary atheroclerosis is found.

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