



## Developing World Perspective - Are Errors of Omission Less of a Crime?

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### The Cardiac Capital of the World!

Cardio Vascular Diseases (CVDs) have now become the leading cause of mortality in India. A quarter of all mortality is attributable to CVD. Ischemic heart disease and stroke are the predominant causes and are responsible for >80% of CVD deaths. The Global Burden of Disease study estimate of age-standardized CVD death rate of 272 per 100 000 population in India is higher than the global average of 235 per 100 000 population. According to current estimates, India will soon have the highest number of cases of cardiovascular disease in the world, and by some estimates might account for 35.9 per cent deaths by the year 2030. We often hear stories of patients in their 30s and 40s succumbing to heart disease.

### Are Errors of Omission Less of a Crime?

The profound burden of coronary disease, with high event rates underscores the need to carefully identify those at risk and also to offer treatment to patients with the disease at high risk for bad outcomes. While primary prevention (exercise, controlling risk factors) is paramount, unfortunately, a significant amount proportion of patients still present with prognostically important and anatomically complex disease even as their initial presentation.

There is a lot of hue and cry about inappropriate angioplasty and stenting i.e. performing needless procedures. Globally, and in particular in India, a patient population that is least likely to be offered revascularization is the group that is considered high risk or extreme (inoperable) surgical risk. Yet another subset of patients are those that have had prior bypass surgery and later have failed grafts, and continue to be have symptoms despite good medical therapy. Another under-treated group of patients are those patients with Chronic Total Occlusions (CTO). Presence of a CTO is a significant deterrent to interventionalists taking up these patients for angioplasty, are often referred for bypass surgery even with single vessel disease.

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### Why the Under - Treatment?

Let us examine some of the reasons why patients at higher-risk or those that might need technically challenging procedures are under-treated

In some cases it is because of

- Extensive comorbidities (potentially futile).
- Lack of widespread technical expertise,
- Cost of procedure
- Perception of low procedural success, and
- Confusion about accepted indications for stenting in this population.

### Extensive comorbidities

This might truly be a good reason to avoid interventional procedures (be it bypass surgery or angioplasty). It is important to do any interventional procedure only when the potential benefit outweighs the risk of the procedure.

### Lack of widespread technical expertise

Angioplasty of high-risk indicated patients and chronic total occlusions are amongst the most complex procedures performed by interventional cardiologists. The lack of expertise in performing such procedures primarily stems from there being very limited interventional training centers in the country for such procedures. It is to be mentioned that there is also a lack of structured fellowship

programs in the country where basic angioplasty is taught to trainee cardiologists. The ratio of general cardiologists to patients is woefully inadequate, and the ratio is even more skewed when it comes to trained interventional cardiologists.

### **Cost of procedure**

It is true that the high-risk patient often might require more support devices and often more interventional equipment (wires, balloons, specialty devices) to perform revascularization. However, the significant decrease in the prices of stents (which was one of the highest contributors to the cost of the procedure before the price cap) can help offset the higher cost of the 'complex angioplasty'.

### **Perception of low procedural success**

While this was true especially in the case of Chronic Total Occlusion (CTOs) angioplasty historically, current experts in the field globally achieve success rates over 90% even amongst the most complex blockages (compared to historically 50% to 60% success rates). This compounded by a 'risk-aversion' attitude even when the benefits clearly outweigh the risks leads to few attempts of complex procedures.

### **Confusion about accepted indications for stenting in this population**

There is a widespread misconception that patients with far advanced CAD often derive no meaningful clinical benefit. Paradoxically, studies have suggested that for the high-risk coronary disease patient, appropriate revascularization (along with good medical therapy) can help improve both quality of life and reduce adverse clinical events.

### **The Challenge to Our Profession**

If we as interventionalists knew getting into the procedure that we would not fail, which patients/procedures would we take on? Or in other words, is there a convenient selection bias that prompts us to select only those cases that we know we can do, and not the ones that we should do.

The onus is on our profession to better ourselves both from knowledge and a technical standpoint on a continuous basis and further to teach the next generation of interventionalists to be better than us.